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KENNAMETAL®



MASTER CATALOGUE 2018

VOLUME TWO | **ROTATING** TOOLS



HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

KENNAMETAL



The Perfect Fusion of a Solid Carbide and an Indexable Drill

The new modular drill KenTIP™ FS covers more applications and provides better performance than any other modular system, delivering substantial cost savings and process simplifications on your shop floor.

KenTIP™ FS

See pages H6–H23.

Since its inception in 1938, Kennametal has understood precisely how to improve manufacturing performance and profitability — by introducing unparalleled products and services to reduce operating costs and lead times.

These 1900+ pages bring you the latest in milling and holemaking products and superior services — specifically engineered to enhance overall productivity, even in the most challenging metalworking applications.

Rely on Kennametal to significantly boost manufacturing competitiveness. To learn more, contact your Kennametal Representative or Authorised Kennametal Distributor.

Visit us at **kennametal.com**.

POWERED BY NOVO™

Volume II • Rotating Tools

This Catalogue Consists of Two Volumes — Vol. I: Turning Tools / Vol. II: Rotating Tools

Rotating Tools

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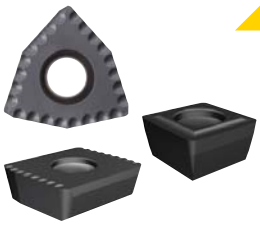
Holemaking

PRODUCT HIGHLIGHTS



DRILL FIX™ DFSP™

INDEXABLE DRILLS WITH DS AND LP INSERTS

See section J (Volume II) for more details.

DFSP is the renamed expanded Drill Fix DFS™ indexable drilling platform. The standard diameter range is now 14–55mm in L/D ratios 2 x D, 3 x D, 4 x D, and 5 x D. The DFSP platform combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert. These indexable drills offer increased metal removal rates and high surface quality and hole straightness.

Use new DS and LP chipbreaker insert designs with Drill Fix DFSP, DFT™, and HTS indexable drills, and KSEM PLUS™ modular drills. These inserts enable excellent chip formation on low-carbon steels and other long-chipping materials.

KENTIP™ FS

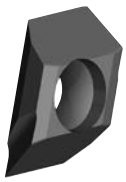
THE PERFECT FUSION OF A SOLID CARBIDE AND AN INDEXABLE DRILL

See section H (Volume II) for more details.

The new modular drill KenTIP FS covers more applications and provides better performance than any other modular system, delivering substantial cost savings and process simplifications on your shop floor.

- 3-point geometries, 3 high-performance grades, 3 different shank styles.
- 6–26mm diameter range.
- Up to 12 x D drilling depths.
- Applicable in steel, stainless steel, and cast iron.





COUNTERFIX MICRO

SMALL INSERTS THAT MAKE A BIG DIFFERENCE!

See section H (Volume II) for more details.

New CounterFix Micro (CFM) tangential inserts offer a new way to enhance drilling, chamfering, and counterboring operations. They enable very small incremental steps on tailor-made step drills, longer tool life per edge, and improved surface finish.

CFM inserts can be used on KenTIP, KSEM™, and Drill Fix products, as well as for made-to-order indexable countersinking tools.

CounterFix Micro will be available for KenTIP FS tailor-made drills in 2018 upon request.

NEW SGL DRILLS WITH THROUGH COOLANT FOR STAINLESS STEEL

See section G (Volume II) for more details.

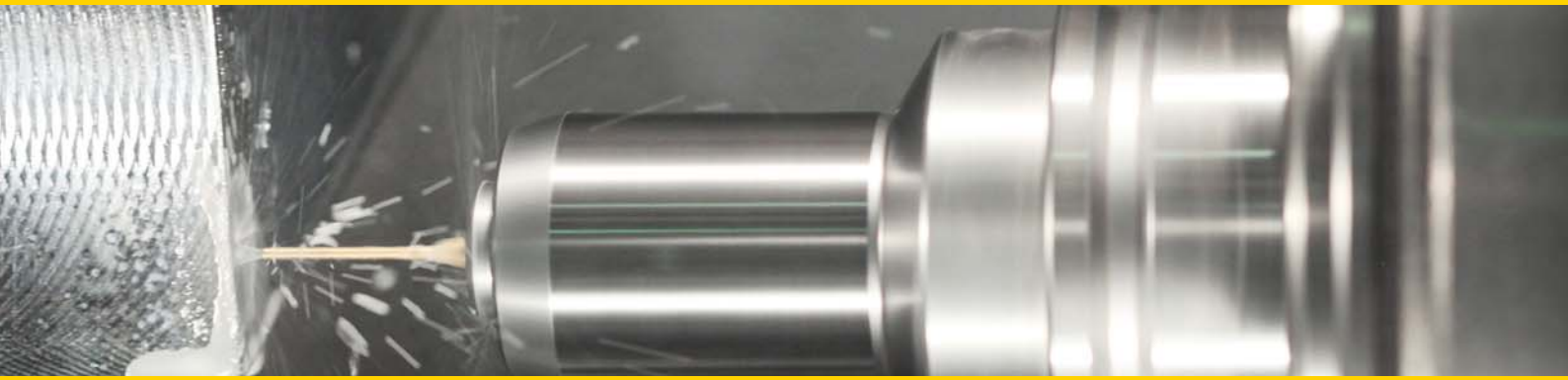
The all-new B21_SGL series solid carbide drills are designed specifically for stainless steel applications, offering high performance and long tool life in high-temperature alloys and regular steel, also.

By combining unique Kennametal features, such as the all-new SGL-point-geometry with patented gashing, a unique flute design, and a best-in-class coating into one tool, the B21*SGL drill is the ultimate high-volume production tool.

The all-new B27_SGL series is designed specifically for deep-hole drilling up to 40 x D applications in stainless steel and high-temperature alloys.









NEW KMH DRILLS FOR HARD MATERIALS

See section G (Volume II) for more details.

The all-new KMH solid carbide drills are engineered for hard material applications up to 65 HRC. The B94_drill series without through coolant is specifically designed to machine hardened and surface-hardened materials using flood coolant. With its 145° point angle, it is also perfectly suited as a pilot drill for the B95_drill series with through coolant and 140° point for deeper applications.

Both series come with an increased core to strengthen the drill, feature a curved cutting edge with corner chamfer to avoid chipping on the margin lands and increased tool life in these challenging materials.



RMR™ AND RHR™ DISC-STYLE REAMERS

See section K (Volume II) for more details.

Performance, quality, and regrindability, like solid carbide reamers for diameters 14–42,5mm.

Common reamers have single tips brazed onto a steel body. The new Kennametal RMR and RHR reamers have a solid carbide disc brazed onto the steel body. This enables more regrinds than a regular tipped reamer, reducing the cost-per-hole significantly. The new KCU05 coating holds the surface finish more than twice as long as conventional reamer coatings, depending on the workpiece material.



GOTAP™

MULTIPURPOSE HSS-E TAPS

See section M (Volume II) for more details.

GOtap is our multipurpose line of taps that include optimised geometries and PVD coatings capable of tapping a wide range of ductile materials, such as stainless steels, carbon and alloy steels, cast aluminium, and ductile iron. GOtap taps versatility extends beyond the part, as it can be used in a wide range of machine tools and application conditions. The new GOtap TC multipurpose taps enable blind-hole tapping with tension/compression holders without sizing problems due to over-feeding. The versatility of GOtap taps mean lower inventory costs with no loss of productivity, consistent tool life, and high-quality thread finish.

Solid End Milling

PRODUCT HIGHLIGHTS

DUO-λOCK®

See section O for more details.

Duo-Lock™ is a revolutionary new coupling for solid carbide end milling applications. This replaceable-head design combines high accuracy in runout and length repeatability with maximum stability, making it a precise and virtually unbreakable interface for challenging milling applications.

- **Up to 1 x D full slotting increases metal removal rates for significantly higher productivity.**
- **1,5 x D standard cutting edge length enables fewer passes.**
- **Cutting data and tool life comparable to high-performance solid carbide tools.**



DUO-λOCK®
by HAIMER® and Kennametal



HARVI™ III FAMILY

See section P for more details.

HARVI III end mills are the first choice for high-temperature alloy machining, profiling, semi-finishing, and finishing. Beyond grade KCSM15™ delivers maximum metal removal rates and exceptional tool life in titanium and stainless steel, as well as excellent surface finishes.

- **Taper ball nose for complex 5-axis machining.**
- **Ball nose for 3D profiling.**
- **Square end for semi-finishing/finishing operations.**

beyond



BEYOND™ EADE SOLID CERAMIC END MILLS

See section P for more details.

Beyond™ EADE solid ceramic end mills offer higher productivity in roughing nickel-based high-temperature alloys. With reduced machining time, EADE ceramic end mills also achieve significantly longer tool life compared to carbide tooling.

— Beyond grade KYS40™ enables cutting speeds up to 1000 m/min.



beyond



GOMILL™ GP PLATFORM

See section Q for more details.

GOmill GP tools enable plunging, slotting, and profiling, plus longer tool life, on a wide range of workpiece materials. They are designed to provide higher metal removal rates (MRR) and good surface finishes at an excellent cost-benefit ratio.

— Roughing and finishing with one tool.

— Excellent cost-benefit ratio.

— Multilayer KC633M™ grades for longer tool life.

Indexable Milling

PRODUCT HIGHLIGHTS

MILL 4-11™ AND MILL 4-15™

See section T for more details.

The Mill 4-11™ and Mill 4-15™ series tools are specially engineered to achieve excellent surface quality and higher metal removal rates in shoulder milling applications. The unique design enables multiple passes (stepping down) with outstanding results.

Use Mill 4-11 in roughing to finishing applications in steel, cast iron, stainless steel, non-ferrous materials, and high-temp alloys. Use Mill 4-15 for roughing to finishing in steel, cast iron, stainless steel, and titanium.





MILL 16™

See section S for more details.

The new Mill 16™ series is a tailor-made platform for rough milling of components like engine heads and blocks, housings and gear boxes in cast iron materials (CGI, DCI, GCI), and all other cast iron face milling jobs.



KCSM40™

NEW MILLING GRADE FOR TITANIUM MACHINING

Breakthrough indexable milling grade for roughing and semi-finishing operations in titanium and stainless steels — S40, M30 application range.

Available in these indexable milling platforms: Mill 1-10™, Mill 1-14™, Mill 1-18™, Mill 4-11™, Mill 4-15™, Dodeka™ Mini, Dodeka, Dodeka MAX™, MEGA™, KSOM™ Mini, KSOM™, KSRM™, NGE™, KSSM™ 90, KSSM8+™, Rodeka™, Stellram® 5230, Stellram 7713, and Stellram 7792.





STELLRAM® 7792VX HIGH-FEED SERIES

See section V for more details.

The 7792VX cutter series is designed for high-feed milling applications with superior surface generation. The 7792VX cutters are designed for a wide range of applications, including facing, pocketing, ramping, helical interpolation, and plunging. They are capable of machining all materials, including steel, stainless steel, cast iron, and high-temperature and aluminium alloys.

Turning

PRODUCT HIGHLIGHTS

BEYOND™ EVOLUTION™

See section C (Volume I) for more details.

Kennametal proudly introduces the Beyond™ Evolution™ platform. This innovative platform is built on simplicity and challenges today's approach to grooving and cut-off. Selecting the right tool is easy with the Beyond™ Evolution™ platform because this high-performance system is versatile and flexible. It is the first portfolio in the market to compete in all grooving and cut-off applications, with up to 35% less tooling than current competitors.

The proprietary coolant delivery system directs coolant precisely to the cutting edges underneath the chip, which is the best method for heat removal in grooving and cut-off applications.



beyond™ EVOLUTION™

BEYOND™ DRIVE™

See section B (Volume I) for more details.

Beyond™ Drive™ ISO turning inserts provide up to 50% improved insert edge utilisation. The advanced surface treatment reduces coating stress and improves coating adhesion. The bronze outer layer simplifies wear detection and increases insert utilisation. PVD grades KCU10™ and KCU25™ with Beyond™ technology resist the high temperatures of machining in tough alloys. Achieve up to 30–40% longer tool life for more profitability in general engineering, transportation, aerospace, energy, and earthworks markets. The PVD coating helps to maintain consistent chip control and minimise insert edge wear in turning, grooving, and cut-off operations in a wide range of materials and applications.



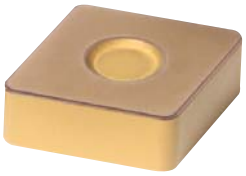
beyond™ DRIVE™



CAST IRON TURNING WITH KBK45™

See section B (Volume I) for more details.

KBK45 is a new high-content PcBN grade designed for high-performance machining of grey cast iron, such as brake discs and fly wheels. It is designed for reducing waste of unused corners, reducing cost-per-part (CPP) by maintaining tool changes between shifts, and enhancing output by using more reliable products. KBK45 grade provides an excellent CPP value.



HARD TURNING WITH KBH20™

See section B (Volume I) for more details.

KBH20 is the ideal PcBN hard turning grade in continuous to lightly interrupted applications with up to medium-severity interruption. The structure and different edge preparations enable tight and repeatable workpiece tolerances, excellent surface finishes, and surface integrity — even at elevated speeds.

KBH20 grade is a new substrate for applications like case-hardened components, including gears, shafts, and other drive-train components.

The nano-composite coating enhances speed capabilities and tool life. The improved edge preparation promotes longer tool life, reliable performance, and better surface finish.



Tooling Systems

PRODUCT HIGHLIGHTS

ERICKSON™

Visit **kennametal.com** or **kennametal.com/novo** for more details.

Kennametal proudly offers premium quality ERICKSON™ toolholder products, so you can be sure that you're buying the best the industry has to offer. The entire portfolio — including steep taper, HSK, straight shank extensions, collets, sleeves, and accompanying products — offers high productivity, increased accuracy, and application flexibility. Designed for both manual and automatic tool changing, ERICKSON interfaces are ideally suited for most machine tools and feature a compact and rigid construction guaranteed to handle high torque and deliver optimal metal removal rates.

Machinists have relied on the ERICKSON name for more than 60 years. With one of the broadest product offerings in the industry, ERICKSON tools can be used on all types of machine tools and in applications ranging from low-speed, heavy-milling jobs to high-speed operations greater than 20,000 RPM.





KM4X™

Visit **kennametal.com** or **kennametal.com/novo** for more details.

The KM4X spindle interface is designed for heavy-duty machining applications. It's especially suited for machining large structural components. These rotating and static tool adaptors handle 3x more bending capacity than similar competitive models.

- Rigid configuration through higher clamping force.
- Design enables front-loaded spindle configurations.
- High spindle speed capability.
- Designed for use in most applications.
- Use in a wide range of high and low speeds and torques.
- Can upgrade to the KM4X system on spindles which use HSK format.
- Maintain taper contact in higher speeds.



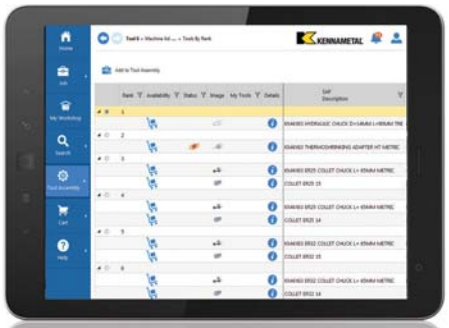
HYDROFORCE™ HYDRAULIC CHUCKS

Visit **kennametal.com** or **kennametal.com/novo** for more details.

Our most advanced and universal hydraulic chuck is your first choice for milling, drilling, and reaming applications. HydroForce hydraulic chucks require only two sizes for all tooling applications. Reducer sleeves are applied for all other diameters. We offer ERICKSON™ Safe-Lock™ Smart Coolant reducer sleeves, specially designed for secure clamping when used with end mills featuring Safe-Lock™ tool shanks. The special drive feature in the reducer sleeve and grooves in the tool shank prevent the end mill from spinning and pulling out of the sleeve during extreme machining conditions.



- High rigidity.
- Enables higher cutting parameters.
- Provides better surface quality.
- Up to 50% longer tool life and improved workpiece surface quality.
- More productivity at higher cutting speed.
- Consistently reliable clamping.
- No overtorque.
- No torque wrench required.
- Reduced toolholder inventory.
- Maximum flexibility.
- Minimum cost.



NOVO™ WITH MACHINE ADAPTOR ADVISOR

Visit **kennametal.com/novo** for more details.

Let the NOVO Machine Adaptor Advisor help you build the right assembly. With NOVO applications, simply select a rotating tool (end mill, drill, reamer, or tap), then use the Machine Adaptor Advisor to build an entire assembly from machine spindle to cutting tool with minimal data input. This new feature reduces a tool configuration build from minutes to seconds, regardless of gage length. Previously, it was a manual process to select a tool then individually filter and pick one adaptor after another. Now, NOVO applications make it easy.

Kennametal on the Web

kennametal.com

FIND THE LATEST PRODUCT INFORMATION

Whether your operation is turning, milling, or holemaking, Kennametal brands are the high-performance tooling you need. We offer standard and custom solutions for a wide range of applications.

Find information about our most current campaigns and catalogues.

Register on Konnect for the full functionality of the Kennametal online ordering website.



CONTACT US

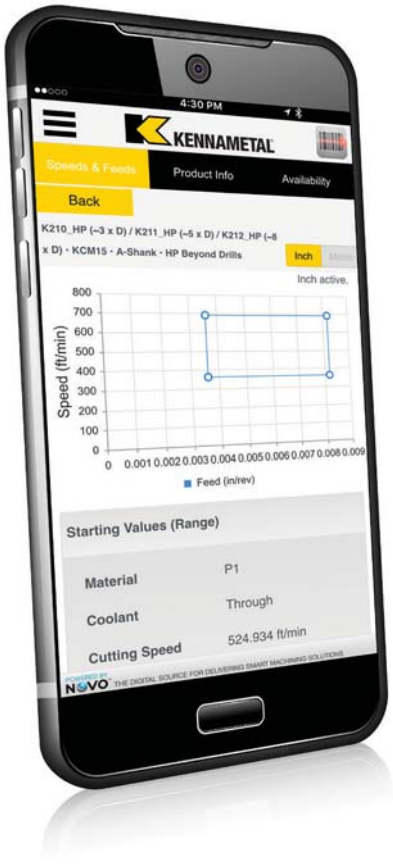
Our customers are important to us. We want to provide you the best customer service in the industry. If you have a comment or question, please send it to us. We strive to respond to all inquiries within 24 hours.

FIND A LOCAL AUTHORISED DISTRIBUTOR IN YOUR AREA

Kennametal offers world-class products and services globally. Our distributors know us, and more importantly, they know you. They know better than anyone in the industry how to put the global power of Kennametal to work for you — in your industry, in your region, and for your business.

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



FEATURES

Scan a Kennametal tool package barcode or search a product catalogue number to access complete product information.

Product information includes tool image, dimensions, grades, and product highlights.

View product availability at global locations.

Get speed and feed information in inch and metric values for all metalcutting products.

View tech tips for helpful solutions to common machining questions.

Contact Customer Support directly from the app.

MACHINING CALCULATORS

View data for milling and drilling applications.

Inch and metric values calculated.

ORDERING

Login using your Konnect credentials to complete a purchase.

WHERE TO FIND IT

Download the free app today from iTunes® or the Google Play™ store.

ANDROID APP ON Google play

Available on the App Store

Service and Support

Customer Application Support (CAS)

Get Fast and Reliable Answers to Your Toughest Metalcutting Problems

Our Customer Application Support (CAS) Team is the metalworking industry's leading help desk resource for tooling application solutions and problem resolution.

Easy Access to Proven Metalworking Expertise!

Kennametal Customer Application Engineers assist customers and engineering groups throughout the world with expert tool selection and application recommendations for the entire range of Kennametal tooling.

SERVICE LEVEL EXCELLENCE	Fast telephone response. Quick technical solutions. Efficient case management.
SERVICES	Operating parameters. Process optimisation. Hardware support. Tooling selection. Troubleshooting.
BEST-IN-CLASS SUPPORT TOOLS AND TECHNOLOGY	Materials database. Application calculators. Tooling performance experts.



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Numbers shown only serve the originating country listed.

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**



Holemaking

Holemaking Introduction F2–F10

Solid Carbide Drills G1–G153

Modular Drills H1–H106

Combination Tools I1–I27

Indexable Drills J1–J101

Hole Finishing K1–K212



Holemaking Products

Our latest Metalcutting Innovations are designed to deliver higher productivity, longer tool life, and increased application versatility.

For more information about the latest products and services from Kennametal, please contact your Kennametal Representative or Authorised Kennametal Distributor, or visit **kennametal.com**.

SOLID CARBIDE DRILLS

See Section G for more details.

GOdrill™
TF Drills
Beyond™ Drills
Deep-Hole Drills
Y-TECH™ Drills
TX Drills
CFRP Drills
Flat-Bottom Drills
NEW! KMH Drills
Kenna Universal™ Drills
NC Spot Drills

MODULAR DRILLS

See Section H for more details.

NEW! KenTIP™ FS
KenTIP™
KSEM™
KSEM PLUS™





COMBINATION TOOLS

See Section I for more details.

BF Combination Drilling System
SEFAS™ Combination Drilling System



INDEXABLE DRILLS

See Section J for more details.

Drill Fix™ DFR™, DFSP™, and DFT™
HTS™ Series Indexable Deep-Hole Drilling System
Indexable Drill Inserts
CTR Counterboring Tools
Counterboring Inserts

HOLE FINISHING

See Section K for more details.

Reaming Tools
SIF™ Steerable Toolholders
Romicron™ Fine-Boring System
ModBORE™ Boring System
PCD Customised Tooling



TAPS

See Section L and M for more details.

Beyond™ High-Performance
Solid Carbide Taps
High-Performance HSS-E-PM Taps
GOtap™ Multipurpose Taps
General-Purpose Taps
High-Performance Solid Carbide
Thread Mills

Select the Correct Holemaking Solution for Your Application

Added Value for Your Performance

Increase of Productivity and Efficiency

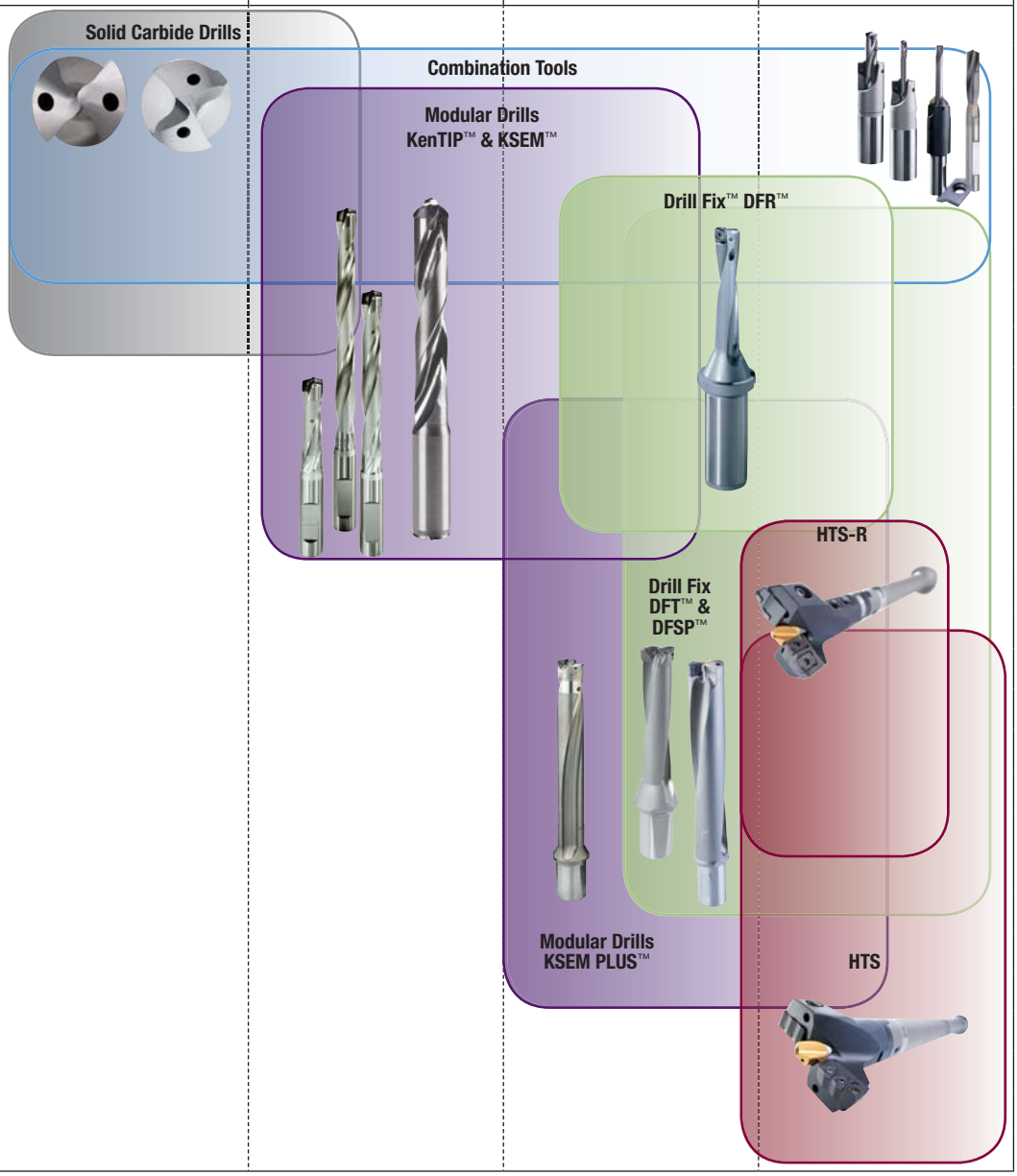
- Material and application-specific solutions.
- Maximum metal removal rates and repeatability.
- Standardised design platforms for special tools based on “proven solutions” for individual optimisations and combination tools.

Control of Total Tooling Costs

- High tool utilisation through material and application-specific solutions.
- Process-safe regrinding service.
- Reduction of stocks through efficient modular concepts.
- Multiple platforms per application to achieve the most cost-efficient solution.

Solid Drilling

diameter		hourly rate			
		high to normal	normal (M/C)	normal to low	low (rough)
		precision			
mm	inch	IT8	IT9	IT10	IT11
1,0	0.0393				
3,0	0.1181				
6,0	0.2362				
9,0	0.3543				
12,0	0.4724				
15,0	0.5906				
18,0	0.7087				
21,0	0.8268				
24,0	0.9449				
27,0	1.0630				
30,0	1.1811				
33,0	1.2992				
36,0	1.4173				
39,0	1.5354				
42,0	1.6535				
45,0	1.7717				
48,0	1.8898				
51,0	2.0079				
54,0	2.1260				
57,0	2.2441				
60,0	2.3622				
70,0	2.7559				
80,0	3.1496				
90,0	3.5433				
100,0	3.9370				
150,0	5.9055				
200,0	7.8740				
250,0	9.8425				
270,0	10				



(continued)

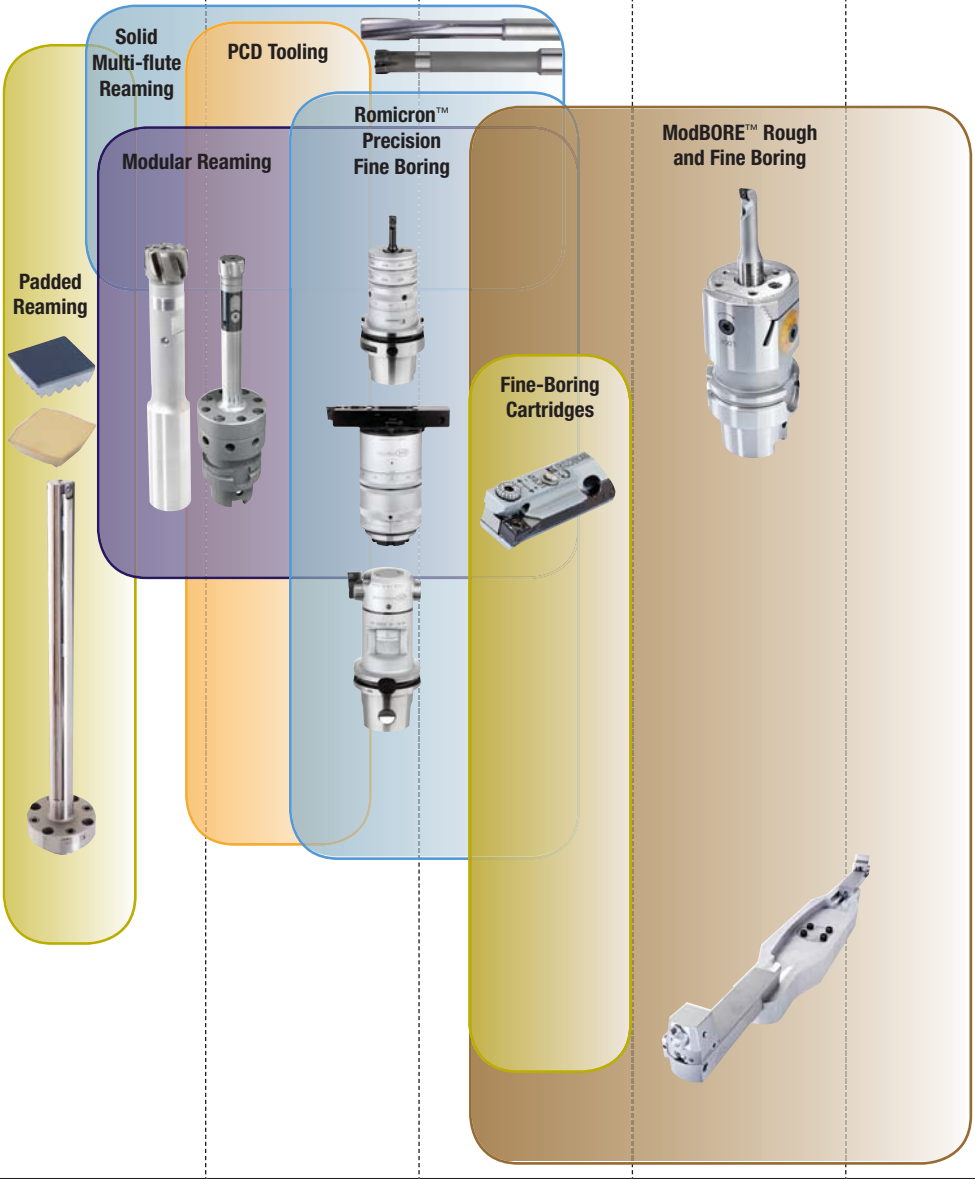
Select the Correct Holemaking Solution for Your Application *(continued)*

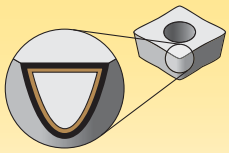
Optimised Purchase

- Broad selection of holemaking tools.
- Integrated into a full range of cutting tools and service offers.
- Onsite service for an efficient development and implementation of machining solutions.

Hole Finishing

diameter		hourly rate				
			very high	high (fine)	high to normal	normal (M/C)
		precision				
mm	inch	IT5	IT6	IT7	IT8	IT9
1,0	0.0393					
3,0	0.1181					
6,0	0.2362					
9,0	0.3543					
12,0	0.4724					
15,0	0.5906					
18,0	0.7087					
21,0	0.8268					
24,0	0.9449					
27,0	1.0630					
30,0	1.1811					
33,0	1.2992					
36,0	1.4173					
39,0	1.5354					
42,0	1.6535					
45,0	1.7717					
48,0	1.8898					
50,0	1.9685					
100,0	3.937					
150,0	5.9055					
200,0	7.878					
250,0	9.8425					
300,0	11.811					
400,0	15.748					
500,0	19.685					
1000,0	39.3701					
1500,0	59.0551					
2000,0	78.7402					
2500,0	98.4252					





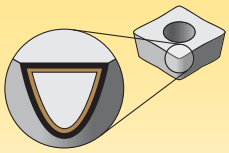
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

wear resistance ⟷ toughness

Solid Carbide Drill Grades

Coating	Grade Description	05	10	15	20	25	30	35	40	45
KN15	**Composition:** Uncoated, highly wear-resistant fine-grain carbide. **Application:** Highly polished chip flute surfaces ensure superior chip evacuation and reduce tendency for built-up edges. First choice for non-ferrous materials.			N	N	N				
					S	S				
KN25	**Composition:** Uncoated, highly wear-resistant ultra-fine-grain carbide. **Application:** Highly polished chip flute surfaces ensure superior chip evacuation and reduce tendency for built-up edges. First choice for deep-hole drilling of non-ferrous materials.									
				N	N	N	N			
K10	**Composition:** Uncoated, highly wear-resistant fine-grain carbide with enhanced hot hardness properties. **Application:** Best suited for dry and external flood coolant applications in aerospace materials like high-temperature resistant materials and wrought aluminium alloys. Due to its high wear-resistance, this grade is also applicable for cast iron machining at low to medium speeds.									
				K	K					
			N	N	N					
				S	S					
KCPK15	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide with superior surface finish. **Application:** First choice for alloyed and high-alloyed steel and cast iron. A state-of-the-art surface condition enables superior chip evacuation and offers highest level of wear resistance at enhanced material removal rates.									
			P	P	P					
				K	K	K				
KCPK20	**Composition:** Multilayered PVD AlCrN-based coated ultra-fine-grain carbide with superior surface finish. **Application:** First choice for deep-hole drilling applications in steel and cast iron. Due to the uniquely developed coating combined with the state-of-the-art surface condition, this grade offers extraordinary wear resistance and superior chip evacuation.									
			P	P	P					
				K	K	K				
KCK10	**Composition:** Multilayered PVD AlCrN-based coated fine-grain carbide with superior surface finish. **Application:** First choice for cast iron. Due to the uniquely developed coating combined with the state-of-the-art surface condition, this grade offers extraordinary wear resistance in abrasive materials at elevated cutting conditions.									
				K	K					
KCMS15	**Composition:** Monolayer PVD AlTiN-coated fine-grain carbide with superior surface finish. **Application:** First choice for stainless steel and high-temperature-resistant materials. The coating offers high hardness and excellent wear resistance as well as enhanced high-temperature properties increasing its applicability also to MQL machining of steel.									
			P	P	P					
			M	M	M					
				S	S					



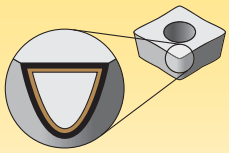
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

wear resistance ← → toughness

Solid Carbide Drill Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCMS20	**Composition:** Monolayer PVD AlTiN-coated ultra-fine-grain carbide with superior surface finish. **Application:** First choice for deep-hole drilling of stainless steel and high-temperature resistant materials. Due to the coating's enhanced high-temperature properties, this grade can also be applied to MQL applications in steel.	P			■	■	■				
		M			■	■	■				
		S			■	■	■				
KCH10	**Composition:** PVD AlTiN coated, ultra-fine-grain carbide. **Application:** First choice for hardened steels >55 HRC up to 5 x D.										
		H	■	■	■						
KCH15	**Composition:** PVD AlTiN coated, fine-grain carbide. **Application:** First choice for hardened steels between 48 and 55 HRC as well as case-hardened workpieces with hole depths >3 x D.										
		H		■	■	■					
KC7315	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide **Application:** Applicable for steel, cast iron, and hardened materials. This grade offers excellent wear resistance and reliability at intermediate to elevated cutting speeds.	P			■	■					
		K				■	■				
		H				■	■				
KC7325	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide with a TiN top layer for better wear identification. **Application:** This multipurpose grade has been combined with a unique general-purpose cutting geometry to offer high versatility and reliability across all material groups at intermediate cutting conditions.	P				■	■	■			
		M					■	■			
		K				■	■	■			
		N		■	■	■					
		S				■	■				
		H				■	■				
KDF400	**Composition:** CVD diamond-coated fine-grain carbide. **Application:** First choice for machining carbon-fiber reinforced polymers (CFRPs). The crystalline diamond-coated grade offers a high degree of abrasive wear resistance. Paired with sharp cutting geometries and low-axial thrust point geometries, this grade is perfectly suited to machine most CFRPs.										
		C	■	■							



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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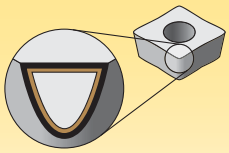
C	CFRP Materials

wear resistance ⟷ toughness

Modular Drill Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCP15	**Composition:** Monolayer PVD AlTiN-coated fine-grain carbide. **Application:** First choice for steel and second choice for cast iron. This AlTiN coating offers the perfect combination of enhanced high-temperature properties and optimised toughness for high-performance modular drilling applications.	P		■	■	■					
		K			■	■	■				
KCP15A	**Composition:** Monolayer PVD AlTiN coated fine-grain carbide **Application:** First choice for steel and second choice for cast iron. This grade consists of an updated AlTiN coating offering improved high-temperature properties on top of the proven fine-grain carbide substrate offering required toughness for modular drilling applications.	P		■	■	■					
		K			■	■	■				
KC7135	**Composition:** PVD TiCN/TiN-coated medium-grain carbide with high toughness. **Application:** Used for KSEM™ PC pre-centring inserts in most materials. The highly wear-resistant TiCN coating combined with a tough carbide substrate are perfectly suited to help with pre-centring operations in metastable machining conditions.	P								■	■
		M							■	■	
		K							■	■	
		S					■	■			
KC7315	**Composition:** Multilayered PVD TiN-TiAlN-coated fine-grain carbide. **Application:** Applicable for steel and cast iron. This grade offers excellent wear resistance and reliability at intermediate to elevated cutting speeds.	P			■	■	■				
		K				■	■	■			
KC7320	**Composition:** Monolayer PVD AlTiN-coated fine-grain carbide. **Application:** First choice for stainless steel and high-temperature-resistant materials. The coating offers high hardness and excellent wear resistance as well as enhanced high-temperature properties.	M		■	■	■					
		S		■	■	■					
KC7410	**Composition:** Multilayered PVD AlCrN-based-coated fine-grain carbide. **Application:** First choice for cast iron. Due to the uniquely developed coating, this grade exhibits extraordinary wear resistance in abrasive materials offering the highest material removal rates.	K	■	■	■	■					
KCPM45	**Composition:** Multilayered PVD TiN-TiAlN-coated medium-grain carbide. **Application:** Applicable for steel and cast iron. This grade offers excellent wear resistance and reliability at intermediate cutting speeds. Due to the medium-grain carbide, it offers superior chipping resistance in metastable machining conditions.	P						■	■	■	■
		M						■	■	■	



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
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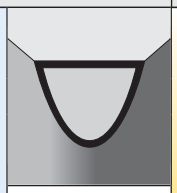
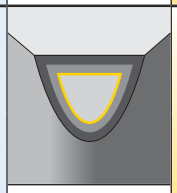
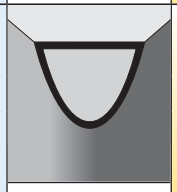
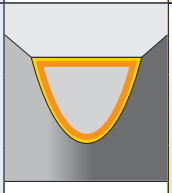
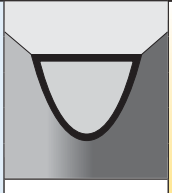
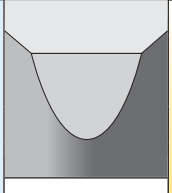
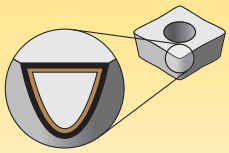
Modular Drill Grades

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KCMS35		**Composition:** Monolayer PVD AlTiN-coated medium-grain carbide. **Application:** Applicable for stainless steel and high-temperature resistant materials. The coating offers high hardness and excellent wear resistance as well as enhanced high-temperature properties. In combination with its tough substrate, this grade offers superior chipping resistance and is best suited for metastable machining conditions.	M S									
KCU25		**Composition:** Advanced CVD TiCN-Al_2O_3 coating combined with a tough carbide substrate. **Application:** First choice for steel, stainless steel, and cast iron. This grade offers adequate deformation resistance, excellent edge strength, and superior wear resistance over a wide range of machining conditions for high productivity with very good reliability.	P M K									
KCU40		**Composition:** Multilayered PVD TiN-TiAlN-coated fine-grain carbide. **Application:** First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper cutting edges. As a grade developed for high toughness applications, it withstands interruptions and provides high wear resistance for long tool life. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.	P M K S									
KC7140		**Composition:** PVD TiCN/TiN-coated medium-grain carbide with high toughness. **Application:** Best suited for machining of steel and stainless steel. This exceptionally tough grade is perfectly suited for metastable machining conditions offering excellent tool life.	P M S									
KC7225		**Composition:** PVD TiAlN-coated fine-grain carbide with enhanced toughness. **Application:** Best suited for machining of most materials. This grade offers excellent process reliability in metastable conditions due to enhanced carbide toughness. The TiAlN coating improves wear resistance for use at intermediate cutting conditions.	M K N S									
K715		**Composition:** Uncoated, highly wear-resistant fine-grain carbide. **Application:** For use on KenTIP™ and KSEM™ made-to-order inserts when a sharp cutting edge is needed. Non-coated, polished carbide for drilling aluminium, titanium, and non-ferrous materials.	N S									

wear resistance ← → toughness



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

Indexable Drill Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCPK10	**Composition:** Advanced CVD TiCN-Al_2O_3 coating combined with a cobalt-enriched carbide substrate. **Application:** The KCPK10™ grade offers a balanced combination of deformation resistance and edge toughness leading to outstanding abrasion and crater wear resistance for high-speed machining of steel and cast iron. Use for very high cutting speeds with low to medium feed rates.	P									
		K									
KCU25	**Composition:** Advanced CVD TiCN-Al_2O_3 coating combined with a tough carbide substrate. **Application:** First choice for steel, stainless steel, and cast iron. This grade offers adequate deformation resistance, excellent edge strength, and superior wear resistance over a wide range of machining conditions for high productivity with very good reliability.	P									
		M									
		K									
KCU40	**Composition:** Multilayered PVD TiN-TiAlN-coated fine-grain carbide. **Application:** First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper cutting edges. As a grade developed for high toughness applications, it withstands interruptions and provides high wear resistance for long tool life. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.	P									
		M									
		K									
KC7140	**Composition:** PVD TiCN/TiN-coated medium-grain carbide with high toughness. **Application:** Best suited for machining of steel and stainless steel. This exceptionally tough grade is perfectly suited for metastable machining conditions offering excellent tool life.	P									
		M									
KD1425	**Composition:** A multimodal PCD grade with a range of grain sizes brazed on carbide substrate. **Application:** Engineered for excellent abrasion resistance combined with good edge strength for demanding applications. An ideal choice for high-silicon aluminium alloys, MMCs, carbon fibre reinforced plastics, and other abrasive non-ferrous materials.	N									
		C									

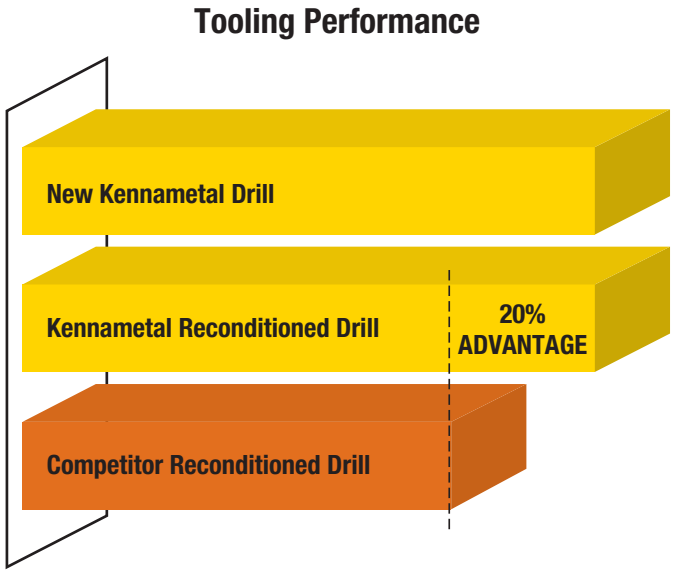
wear resistance ← → toughness

Why Reconditioning?

Reconditioning Services

Our Reconditioning Services optimise the value of your metalcutting tools by providing like-new performance to tools on-hand. Reconditioning tools is smart for business and the environment. You save money, reduce inventory, and avoid material waste.

Customers purchase Kennametal tooling for its high performance. Why not continue receiving that same high performance after each reconditioning cycle? Kennametal can help you reduce tooling costs by more than 50% versus purchasing new tools. Taking advantage of our innovative tooling designs provides even greater savings because the reconditioned tool continues to achieve the same like-new performance as the original purchase.



NOTE: Estimated value. Values vary based on machining conditions.

Kennametal keeps you performing at the highest productivity rates.

KENNAMETAL®

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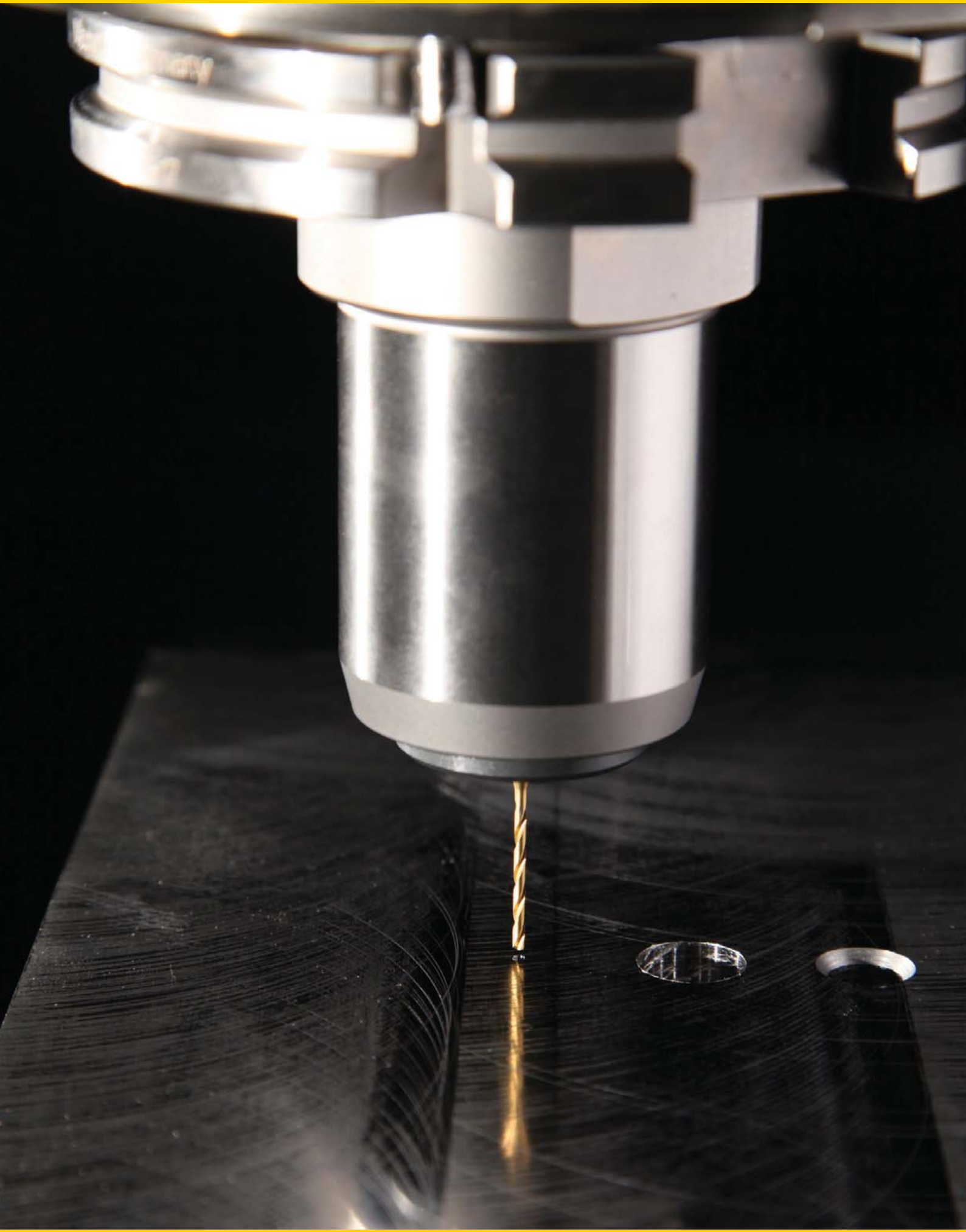


Solid Carbide Drills

Tool Selection Guide G2–G3

Solid Carbide Drills Dimension Tables and Recommendation Chart Foldout

GOdrill • Multiple Materials G6–G29

TF Drills • High Metal Removal Rates G30–G34

SGL Beyond Drills • Stainless Steel G36–G42

HP Beyond Drills • Steel G44–G55

YPC Beyond Drills • Iron Materials G56–G61

SE 4-Margin Drills • Steel G62–G64

HP Beyond 4-Margin, Long-Length Drills G66–G71

Deep-Hole Drills • Steel, Cast Iron, Stainless Steel, High-Temperature Alloys, and Non-Ferrous G72–G85

HPS Beyond Drills • Aluminium Machining G86–G91

Y-TECH Drills • Difficult-to-Machine Materials G92–G97

TX Drills • Close Tolerance Holes G98–G102

SPF Drills • CFRP G104–G105

DAL Drills • CFRP-Stacks G106–G111

Flat-Bottom Drills G112–G117

HP Beyond Step Drills G118–G122

KMH Drills • Hard Materials G124–G129

Kenna Universal Drills G130–G150

NC Spot Drills G152–G153

solid carbide drills for external coolant or dry machining		series	grade	standard* (● first choice ○ alternate choice) P	M	K	N	C	S	H	hole tolerance	standard range: diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
	GOdrill™ for Multiple Materials	**B04_CPG**	**KC7325**	●	●	●	●		●	○	IT9–IT10	1,0–20,0	.0394–.7874	3–5 x
	**TF Drill** for High Metal Removal Rates	**B105**	**K10**			●	●		○		IT9–IT10	3,0–21,0	.1130–.8101	5 x D
	**HP Drill** for Dry Applications or Flood Coolant	**B221/B222_HP**	**KCPK15**	●		●					IT9–IT10	3,0–21,0	.1181–.8268	3–5 x
	**SPF Drill** for Composite (CFRP) Materials	**B53_SPF**	**KDF400**					●			IT9–IT10	3,2–12,7	.1260–.5010	3–5 x
	**DAL Drill** for CFRP — Metal Stack Materials	**B551_DAL**	**KN15**					●			IT9–IT10	4,763–15,875	.1875–.6250	3 x
	**NEW KMH Drill** for Hard Materials	**B941**	**KCH10**	○		○				●	IT9–IT10	2,5–14,0	.0984–.5512	3 x
	**KU Drill** for Universal Applications	**B966/B967**	**KC7315**	●		●	○				IT9–IT10	3,0–20,0	.1181–.7874	3–5 x
	**NC Spot Drill 120°** **NC Spot Drill 90°**	**B501** **B505**	**K10** **K10**	● ●	○ ○	● ●	○ ○		○ ○		– –	6,0–12,0 6,0–20,0	.2352–.4724 .2362–.7874	1 x D 1 x D

solid carbide drills with internal coolant channel		series	grade	standard* (● first choice ○ alternate choice) P	M	K	N	C	S	H	hole tolerance	standard range: diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
	GOdrill™ for Multiple Materials	**B05_CPG**	**KC7325**	●	●	●	●		●	○	IT9–IT10	1,0–20,0	.0394–.7874	3–8 x
	**NEW SGL Drill** for Stainless Steel	**B21_SGL**	**KCMS15**	○	●				●		IT9–IT10	3,0–20,5	.1181–.8071	3–8 x
	**HP Drill** for Steel	**B224/B225_HP**	**KCPK15**	●		○					IT9–IT10	3,0–21,0	.1181–.8268	3–5 x
	**YPC Drill** for Cast Iron Materials	**B25_YPC**	**KCK10**			●					IT9–IT10	3,0–25,0	.1181–.9844	3–8 x
	**SE Drill** for Steel	**B256**	**KC7315**	●		○					IT9–IT10	5,0–16,0	.1969–.6299	8 x D
	Long-Length Drill for Steel, Iron, and Stainless Steel	**B269_HP**	**KCPK15**	●	○	○					IT9–IT10	3,0–20,0	.1181–.7874	12 x D
	**NEW Deep-Hole Drill** for Steel, Iron, and Non-Ferrous Materials for Stainless Steel and High-Temperature Alloys	**B27_HPG** **B27_HPS** **B27_SGL**	**KCPK20** **KN25** **KCMS20**	● ○	○ ●	●	 ●		 ●		IT9–IT10 IT9–IT10 IT9–IT10	2,4–16,0 2,4–16,0 2,4–16,0	.0938–.6299 .0938–.6299 .0938–.6299	15–40 x 15–40 x 15–40 x
	**HPS Drill** for Non-Ferrous Materials	**B28_HPS**	**KN15**				●				IT9–IT10	3,0–20,0	.1181–.7874	3–8 x
	**Y-TECH™ Drill** for High-Temperature Alloys	**B29_YPL**	**KC7315**	○	●				●		IT9–IT10	3,0–21,0	.1181–.8268	3–5 x
	**TX Drill** for Close Tolerance Holes	**B411**	**KF1**			●	●				IT8–IT9	3,2–25,0	.1250–.9843	5 x D
	**DAL Drill** for CFRP — Metal Stack Materials	**B556_DAL**	**KN15**					●			IT9–IT10	4,763–15,875	.1875–.6250	3 x
	**Flat-Bottom Drill** for Flat-Bottom Applications	**B707_FBG** **B707_FBL** **B707_FBS**	**KC7315** **KCMS15** **KN15**	●	 ●	●	 ●		 ●		IT9–IT10 IT9–IT10 IT9–IT10	3,0–21,0 3,0–21,0 3,0–21,0	.1181–.8268 .1181–.8268 .1181–.8268	3 x D 3 x D 3 x D
	**HP Step Drill** for Steel and Iron	**B73_HP**	**KCPK15**	●		●					IT9–IT10	3,7–19,45	.1470–.7656	short, long
	**NEW KMH Drill** for Hard Materials	**B951**	**KCH15**	○		○				●	IT9–IT10	3,0–16,0	.1181–.6299	3 x
	**KU Drill** for Universal Applications	**B97_**	**KC7315**	●	○	●	○		○		IT9–IT10	2,4–20,0	.0938–.7874	3–8 x

*In regard to coatings, anything is possible. If a specific drill is not suitable for your workpiece material, please contact our Engineered Solutions Department for an offer about special coatings and edge preparations.

*1 Drills be can optimised for performance in specific applications. Ask your local Kennametal representative about Kennametal Custom Solutions service for special coatings, grades, or geometries to increase productivity.

*2 Step Drill Capability Guidelines: 5 steps maximum; 10 different shapes; at least 0,4mm difference in diameters; the largest diameter may not exceed the smallest diameter by more than 2x.

custom solution range			■ standard □ custom solution capabilities																				
diameter range																							
D1 mm	D1 in	drilling depth																					page(s)
min-max	min-max																						
1,0–20,0	.0394–.7874	1.5–12 x	■				■			■			□	□				□	■	■	□		G6
3,0–25,0	.1130–1.00	1.5–8 x	■	■			■			■			□	□		■		□	■	□			G30
3,0–25,0	.1181–1.00	1.5–8 x	■	■			■			■			□	□	■		□	□	■	□			G44
3,0–25,0	.1181–1.00	1.5–5 x	■	■			■			■			□	□				□	■	□			G104
3,0–25,0	.1181–1.00	1.5–5 x	■	■			■	□		■			□	□	■		□	□	■	□			G106
2,5–20,0	.0984–.7874	1.5–8 x	■				■			■			□		■		□	□	■	□			G124
3,0–25,0	.1181–1.00	1.5–8 x	■	■			■	■		■			□	□	□		■	■	■	■			G130
6,0–20,0 6,0–20,0	.2362–.7874 .2362–.7874	1 x D 1 x D	■ ■																				G152

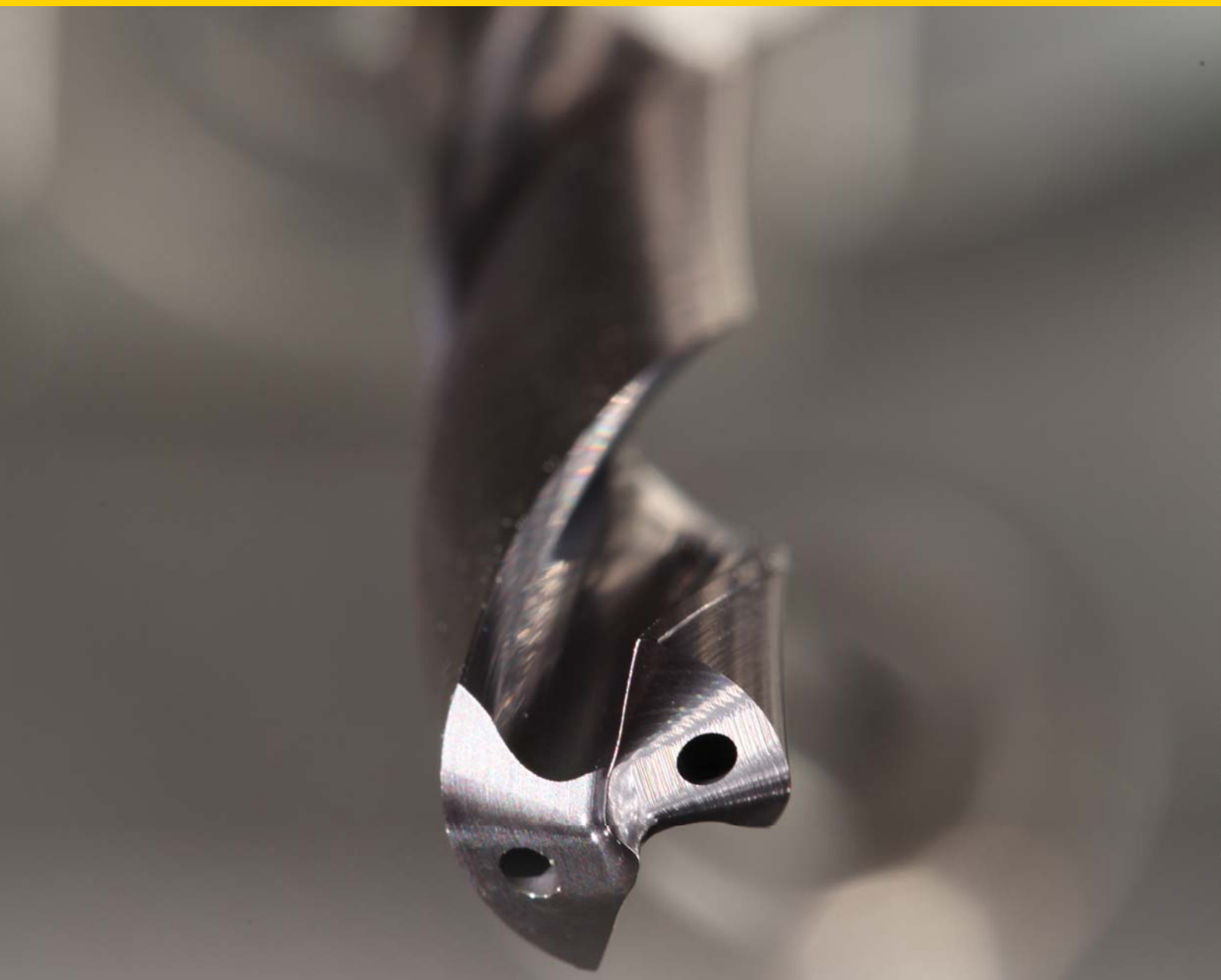
custom solution range			■ standard □ custom solution capabilities																				
diameter range																							
D1 mm	D1 in	drilling depth																					page(s)
min-max	min-max																						
1,0–20,0	.0394–.7874	1.5–12 x			■	■	■			■			□	□				□	■	■	□		G18
3,0–25,0	.1181–1.00	1.5–8 x			■		■			■			□	□	■		□	□	■	□			G36
3,0–25,0	.1181–1.00	1.5–5 x			■	■	■			■			□	□	■		□	□	■	□			G44
3,0–25,0	.1181–1.00	1.5–8 x			■	■	■	■		■			□	□		■		■	■	□			G56
3,0–25,0	.1181–1.00	1.5–12 x			■	■	■	■		■			□	□	□		■	□	■	□			G62
3,0–25,0	.1181–.7874	1.5–12 x			■	■	■	■		■			□	□	□		■	□	■	□			G66
2,4–16,0 2,4–16,0 2,4–16,0	.0938–.6299 .0938–.6299 .0938–.6299	500mm 500mm 500mm			■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■		■ ■ ■					□ □ □		■ ■ ■	□ □ □	■ ■ ■	□ □ □			G72
3,0–25,0	.1181–.7874	3–8 x			■	■	■						□	□	■		□	□	■	□			G86
3,0–25,0	.1181–1.00	1.5–8 x			■	■	■	■		■			□	□		■		□	■	□			G92
3,0–25,0	.1181–1.00	1.5–12 x			■	■	■	■	■	■	■		□	□	□		■	□	■	□			G98
3,0–25,0	.1181–1.00	1.5–5 x			■	■	■	□		■			□	□	■		□	□	■	□			G106
3,0–25,0 3,0–25,0 3,0–25,0	.1181–1.00 .1181–1.00 .1181–1.00	1.5–8 x 1.5–8 x 1.5–8 x			■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■		■ ■ ■	■ ■ ■	□ □ □	□ □ □	□ □ □		■ ■ ■	■ ■ ■	■ ■ ■	□ □ □			G112
3,0–25,0	.1181–1.00	1.5–8 x			■	■	■						■	■	■		□	□	■	□			G118
3,0–20,0	.1181–.7874	1.5–12 x			■		■	□		■			□	□	■		□	□	■	□			G127
2,4–25,0	.1181–1.00	1.5–12 x			■	■	■	■		■			□	□	□		■	□	■	■			G130

*3 Drill Shank Configuration Guidelines: shank diameter may be 2 “steps” larger than the standard shank in relation to the drill diameter or 1 step smaller than the standard shank. i.e. If the standard drill has 6mm shank, shank could be changed to 4mm, 8mm, or 10mm.

4 On symmetrical 2-fluted drills the following point geometries are possible: Split point (SP), Cone point (KM*), HP* point, SE* point, FB* point & FE* point; except for GOdrill™ which is limited to CP* point.

5 On asymmetrical 2-fluted drills (Y-TECH™) the Cone point and HP point are possible.

KENNAMETAL®



High-Performance Solid Carbide Drills

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**

Solid Carbide Drills • Recommendation Chart

Material Specific

standard first choice = **bold** alternate choice = regular simple special = grey	through coolant	flood coolant	MQL
P — Steels	**B224*HP** **B225*HP** B226*HP **B256**	**B221*HP** **B222*HP**	**B224*HP** **B225*HP** B226*HP **B256**
M — Stainless Steels	**B210*SGL** **B211*SGL** **B212*SGL**		
K — Cast Iron	**B254*YPC** **B255*YPC** **B256*YPC**	B105	**B254*YPC** **B255*YPC** **B256*YPC**
N — Non-Ferrous	**B284*HPS** **B285*HPS** **B286*HPS** **B411**	B105	**B284*HPS** **B285*HPS** **B286*HPS**
C1 — CFRP, CFRP/CFRP		**B531A** **B532A** B533AA	
C2 — CFRP/Non-Ferrous **C3 — CFRP/High-Temp** **C4 — CFRP/Stainless Steel**	B546A/**B556A** B547A/B557A B548A/B558A	B541A/**B551A** B542A/B552A B543A/B553A	B546A/**B556A** B547A/B557A B548A/B558A
S — Heat-Resistant Alloys, Titanium Alloys	**B291*YPL** **B292*YPL**		
H — Hardened Materials	B951/**B952**/B953 B955/B956/B957 B958/B959	B941/**B942**/B943 B945/B946/B947	

Application-Specific Solid Carbide Drills

Kennametal material-specific drills are targeted to end users with mass production and the need for very long tool life in a specific material, high cutting feeds and speeds, and reduced cost per part through time optimisation with high metal removal rates.

Application-specific drills are designed to solve certain machining operations, such as deep-hole drilling or flat-bottom drilling, to save cycle times and costs.

HP Beyond™ Drill Series is available for different materials offering highest cutting parameters and long tool life. These ultimate high-volume production tools, such as the all-new drill for aluminium, are often platform for make-to-order or Custom Solutions.

Application Specific				Versatile
dry	**deep hole**	**flat bottom**	**drill and chamfer**	**universal**
B221*HP **B222*HP**	**B269*HP** **B271*HPG** **B272*HPG** **B273*HPG** **B274*HPG** **B275*HPG**	B706*FBG **B707*FBG** B708*FBG B709*FBG	**B731*HP** **B732*HP**	**B966, B967** **B976, B977, B978** **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**
	B269*HP **B271*SGL** **B272*SGL** **B273*SGL** **B274*SGL** **B275*SGL**	B706*FBL **B707*FBL** B708*FBL B709*FBL		B966, B967 B976, B977, B978 **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**
B105	**B269*HP** **B271*HPG** **B272*HPG** **B273*HPG** **B274*HPG** **B275*HPG**	B706*FBG **B707*FBG** B708*FBG B709*FBG	**B731*HP** **B732*HP**	**B966, B967** **B976, B977, B978** **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**
	B271*HPS **B272*HPS** **B273*HPS** **B274*HPS** **B275*HPS**	B706*FBS **B707*FBS** B708*FBS B709*FBS		B966, B967 B976, B977, B978 B041*CPG, B042*CPG B051*CPG, B052*CPG, B053*CPG
B531A **B532A** B533AA				
B541A/**B551A** B542A/B552A B543A/B553A				
		B706*FBL **B707*FBL** B708*FBL B709*FBL		B966, B967 B976, B977, B978 **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**

Versatile Solid Carbide Drills

Kennametal versatile drills are targeted to end users with the need for long tool life in many materials, versatility and saving time for tool changes, and reducing the capital spent on a variety of SC Drill styles on the shelf.

The GOdrill™ is a multi-material drill. It addresses drilling operations in a diameter range of 1–20mm in a broad variety of materials and applications, such as fuel systems or medical components. Due to its very unique design, the GOdrill expands the advantages of modular drills into the small diameter range, enabling the full utilisation of the drill's tool life capacity.

The Kenna Universal™ Drill is a multi-purpose drill. It is engineered to deliver superior performance in steel, cast iron, and stainless steel applications, making it ideal for small- and medium-sized shops. The universal application profile reduces tool change times and the number of drills in inventory. Covering a large spectrum of off-the-shelf diameters and a broad range of applications makes Kenna Universal Drills an excellent alternative to other high-performance products.

Solid Carbide Drills • Dimension Tables

Dimensions for Kennametal Solid Carbide Drills (B_Series) • Metric

mm Ø		DIN 6535		SHORT* ~3 x D			LONG* ~5 x D			EXTRA LONG** ~8 x D			EXTRA LONG** NEW 8 x D (SGL)		
D1 min	D1 max	D	LS	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max
1,000	1,400	4	28	58	7	5	58	9	6	58	12	10	–	–	–
1,401	1,900	4	28	58	9	6	58	12	9	58	18	15	–	–	–
1,901	2,300	4	28	58	13	9	58	18	14	66	26	22	–	–	–
2,301	2,999	4	28	58	17	12	58	22	17	66	30	25	–	–	–
3,000	3,750	6	36	62	20	14	66	28	23	78	40	33	78	40	33
3,751	4,750	6	36	66	24	17	74	36	29	87	49	41	87	49	41
4,751	6,000	6	36	66	28	20	82	44	35	94	56	48	94	56	48
6,001	7,000	8	36	79	34	24	91	53	43	105	67	57	105	67	57
7,001	8,000	8	36	79	41	29	91	53	43	110	72	61	121	82	64
8,001	10,000	10	40	89	47	35	103	61	49	122	80	68	145	102	80
10,001	12,000	12	45	102	55	40	118	71	56	141	94	79	170	122	96
12,001	14,000	14	45	107	60	43	124	77	60	155	108	91	190	142	112
14,001	16,000	16	48	115	65	45	133	83	63	171	121	101	213	162	128
16,001	18,000	18	48	123	73	51	143	93	71	185	135	113	232	181	144
18,001	20,000	20	50	131	79	55	153	101	77	200	148	124	254	201	160
20,001	22,000	20	50	141	86	60	167	112	85	217	162	136	274	221	176
22,001	25,000	25	56	153	95	65	184	126	98	238	180	150	310	251	200

* D1<20mm to DIN 6537K
D1>20mm to factory standard
** To factory standard

NOTE: Solid Carbide Drills from Kennametal in short and regular lengths conform to DIN 6537.
Drills with long lengths conform to Kennametal factory standard.
Solid Carbide Drills with diameter D1>20mm (not DIN 6537) are also standardised to factory standard.

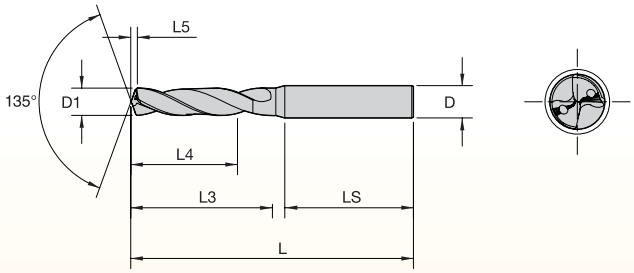
Shank designs to DIN 6535



Form HE,
2° angle
Design F



Form HA,
straight round
Design A

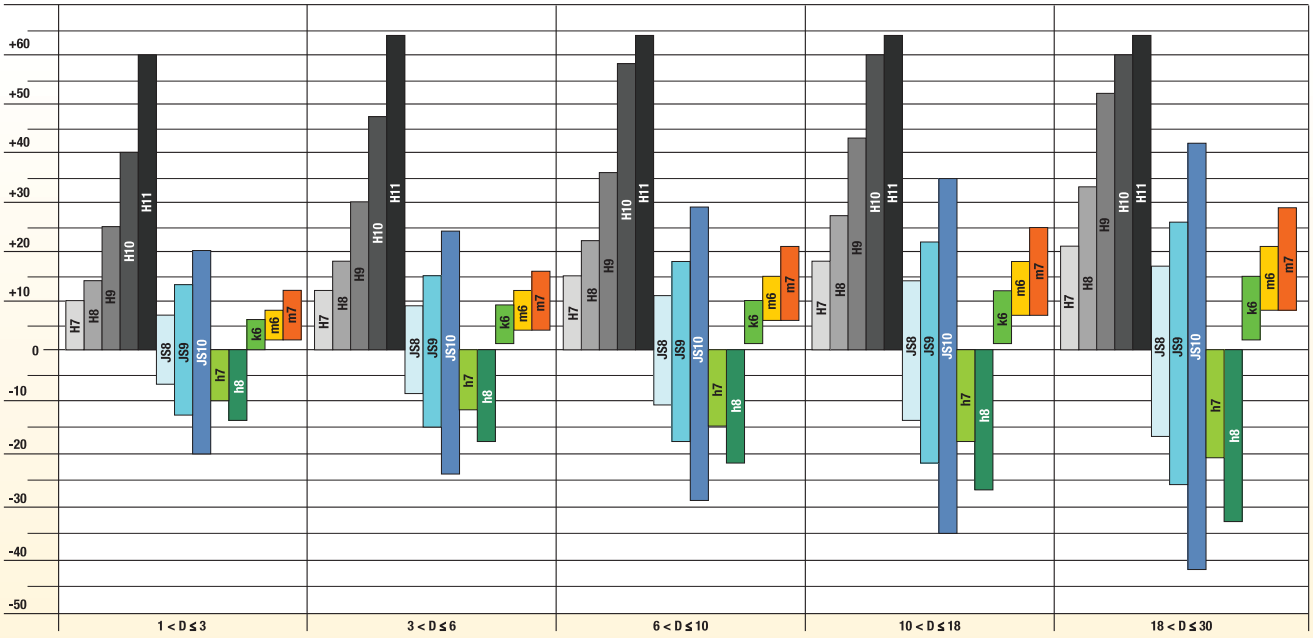


Holemaking Drilling Portfolio • Diameter Tolerances

Hole tolerances which can be achieved with solid carbide drills are listed in the table below.
Achievable tolerances depend on the application (machining conditions, material etc.) and may deviate from the list below.
Hole accuracy might decline with increasing drill length.
Other drilling tolerances require special solid carbide drill solutions.

drill type	drill tolerance	hole tolerance	hole tolerance (best*)	drill series
GO	h8	JS10	JS9	B04*CPG, B05*CPG ≤3mm
	h7	JS9	JS8	B04*CPG, B05*CPG ≥3mm
TF	m7	H9	H8	B105
HP/SGL	m7	H9	H8	B21*SGL, B22*HP, B269*HP
YPC	m7	H9	H8	B25*YPC
SE	m7	H9	H8	B256
HPG/SGL	h7	JS9	JS8	B27*HPG, B27*KMG, B27*SGL
HPS	h7	JS9	JS8	B27*HPS, B27*KMS
HPS	m7	H9	H8	B28*HPS
Y-TECH	m7	H9	H8	B29*YPL
BF	h7	JS9	JS8	B343
SPF	m7	H10	H9	B53*SPF
TX	k6	H8	H7	B41* ≤5 x D
	k6	H9	H8	B41* ≥5 x D
DAL	k6	H8	H7	B54*, B55* ≤5 x D
	k6	H9	H8	B54*, B55* ≥5 x D
FB*	m7	H11	H9	B70*FBG, B70*FBL
	m7	H10	H8	B70*FBS
KMH	m7	H9	H8	B94*, B95*
KU	m7	H9	H8	B96*, B97*

* Can be achieved in very good conditions.



Achievable hole tolerance in µm per diameter range (mm).
Tolerance table according to DIN EN ISO 286-1.

GOdrill™

For Multiple Materials

Primary Application

The GOdrill platform addresses drilling operations in a diameter range of 1–20mm in a broad variety of materials and applications such as fuel systems or medical components. Due to its very unique design, the GOdrill platform expands the advantages of modular drills into the small diameter range: high-end grades, wear-indicator coating, and new, proprietary geometries enable full utilisation of the drill's tool life capacity. The GOdrill platform qualifies as a very cost-effective, throwaway-type tool in the given diameter range.

Features and Benefits

GOdrill Design

- Marginless design for reduced friction and heat — thus longer tool life.
- Very versatile tool works in a wide range of materials.
- Cost-effective, no regrind logistics.
- No setup.
- Throw away or recycle.
- Through-coolant option down to diameter 1mm.

CPG Point

- Optimised gashing design for microdrilling ensures free flow of chips in the centre of the drill.
- Excellent centring capabilities.
- Reduced axial forces.
- Good hole quality, roundness, and cylindricity for all materials.

The high-performance solid carbide drill tailored for very small- to medium-diameter drilling applications.

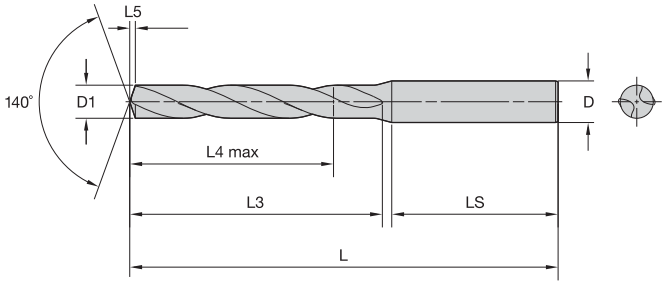


KC7325™ Grade

The grade contains a double coating:

- The multilayer, TiAlN-based coating with high hot hardness enables the drill to run at high cutting speeds as well as in MQL applications.
- A TiN top layer serves as wear indicator for easier monitoring on small drills, which can be difficult to see.
- Improved visibility of wear helps to utilise the tool's full tool life capacity.

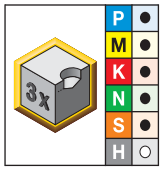


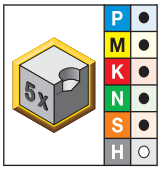




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B041A/B042A • ~3 x D/~5 x D



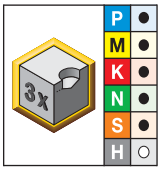


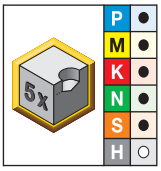
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041A01000CPG	B042A01000CPG	1,000	.0394	0,1	28	4
B041A01016CPG	B042A01016CPG	1,016	.0400	0,1	28	4
B041A01041CPG	B042A01041CPG	1,041	.0410	0,2	28	4
B041A01067CPG	B042A01067CPG	1,067	.0420	0,2	28	4
B041A01092CPG	B042A01092CPG *	1,092	.0430	0,2	28	4
B041A01100CPG	B042A01100CPG	1,100	.0433	0,2	28	4
B041A01181CPG	B042A01181CPG	1,181	.0465	0,2	28	4
B041A01191CPG	B042A01191CPG	1,191	.0469	0,2	28	4
B041A01200CPG	B042A01200CPG	1,200	.0472	0,2	28	4
B041A01300CPG	B042A01300CPG	1,300	.0512	0,2	28	4
B041A01321CPG	B042A01321CPG	1,321	.0520	0,2	28	4
B041A01397CPG	B042A01397CPG	1,397	.0550	0,2	28	4
B041A01400CPG	B042A01400CPG	1,400	.0551	0,2	28	4
B041A01500CPG	B042A01500CPG	1,500	.0591	0,2	28	4
B041A01600CPG	B042A01600CPG	1,600	.0630	0,2	28	4
B041A01700CPG	B042A01700CPG	1,700	.0669	0,3	28	4
B041A01800CPG	B042A01800CPG	1,800	.0709	0,3	28	4
B041A01900CPG	B042A01900CPG	1,900	.0748	0,3	28	4
B041A01984CPG	B042A01984CPG	1,984	.0781	0,3	28	4
B041A02000CPG	B042A02000CPG	2,000	.0787	0,3	28	4
B041A02100CPG	B042A02100CPG	2,100	.0827	0,3	28	4
B041A02200CPG	B042A02200CPG	2,200	.0866	0,3	28	4
B041A02300CPG	B042A02300CPG	2,300	.0906	0,4	28	4
B041A02383CPG	B042A02383CPG	2,383	.0938	0,4	28	4
B041A02400CPG	B042A02400CPG	2,400	.0945	0,4	28	4
B041A02439CPG	B042A02439CPG	2,439	.0960	0,4	28	4
B041A02489CPG	B042A02489CPG	2,489	.0980	0,4	28	4
B041A02500CPG	B042A02500CPG	2,500	.0984	0,4	28	4
B041A02578CPG	B042A02578CPG	2,578	.1015	0,4	28	4
B041A02600CPG	B042A02600CPG	2,600	.1024	0,4	28	4
B041A02642CPG	B042A02642CPG	2,642	.1040	0,4	28	4
B041A02700CPG	B042A02700CPG	2,700	.1063	0,4	28	4

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



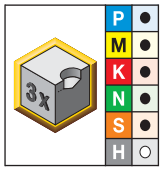


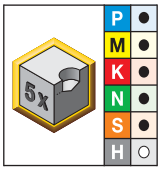
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041A02705CPG	B042A02705CPG	2,705	.1065	0,4	28	4
B041A02779CPG	B042A02779CPG	2,779	.1094	0,4	28	4
B041A02800CPG	B042A02800CPG	2,800	.1102	0,5	28	4
B041A02820CPG	B042A02820CPG	2,820	.1110	0,5	28	4
B041A02870CPG	B042A02870CPG	2,870	.1130	0,5	28	4
B041A02900CPG	B042A02900CPG	2,900	.1142	0,5	28	4
B041A02947CPG	B042A02947CPG	2,947	.1160	0,5	28	4
B041A03000CPG	B042A03000CPG	3,000	.1181	0,5	36	6
B041A03048CPG	B042A03048CPG	3,048	.1200	0,5	36	6
B041A03100CPG	B042A03100CPG	3,100	.1220	0,5	36	6
B041A03175CPG	B042A03175CPG	3,175	.1250	0,5	36	6
B041A03200CPG	B042A03200CPG	3,200	.1260	0,5	36	6
B041A03264CPG	B042A03264CPG	3,264	.1285	0,5	36	6
B041A03300CPG	B042A03300CPG	3,300	.1299	0,5	36	6
B041A03400CPG	B042A03400CPG	3,400	.1339	0,6	36	6
B041A03455CPG	B042A03455CPG	3,455	.1360	0,6	36	6
B041A03500CPG	B042A03500CPG	3,500	.1378	0,6	36	6
B041A03571CPG	B042A03571CPG	3,571	.1406	0,6	36	6
B041A03600CPG	B042A03600CPG	3,600	.1417	0,6	36	6
B041A03658CPG	B042A03658CPG	3,658	.1440	0,6	36	6
B041A03700CPG	B042A03700CPG	3,700	.1457	0,6	36	6
B041A03734CPG	B042A03734CPG	3,734	.1470	0,6	36	6
B041A03800CPG	B042A03800CPG	3,800	.1496	0,6	36	6
B041A03900CPG	B042A03900CPG	3,900	.1535	0,6	36	6
B041A03970CPG	B042A03970CPG	3,970	.1563	0,7	36	6
B041A04000CPG	B042A04000CPG	4,000	.1575	0,7	36	6
B041A04039CPG	B042A04039CPG	4,039	.1590	0,7	36	6
B041A04090CPG	B042A04090CPG	4,090	.1610	0,7	36	6
B041A04100CPG	B042A04100CPG	4,100	.1614	0,7	36	6
B041A04200CPG	B042A04200CPG	4,200	.1654	0,7	36	6
B041A04217CPG	B042A04217CPG	4,217	.1660	0,7	36	6
B041A04300CPG	B042A04300CPG	4,300	.1693	0,7	36	6
B041A04366CPG	B042A04366CPG	4,366	.1719	0,7	36	6
B041A04400CPG	B042A04400CPG	4,400	.1732	0,7	36	6
B041A04500CPG	B042A04500CPG	4,500	.1772	0,7	36	6
B041A04600CPG	B042A04600CPG	4,600	.1811	0,8	36	6
B041A04623CPG	B042A04623CPG	4,623	.1820	0,8	36	6
B041A04700CPG	B042A04700CPG	4,700	.1850	0,8	36	6
B041A04763CPG	B042A04763CPG	4,763	.1875	0,8	36	6
B041A04800CPG	B042A04800CPG	4,800	.1890	0,8	36	6
B041A04852CPG	B042A04852CPG	4,852	.1910	0,8	36	6
B041A04900CPG	B042A04900CPG	4,900	.1929	0,8	36	6
B041A05000CPG	B042A05000CPG	5,000	.1969	0,8	36	6
B041A05100CPG	B042A05100CPG	5,100	.2008	0,8	36	6
B041A05106CPG	B042A05106CPG	5,106	.2010	0,8	36	6
B041A05159CPG	B042A05159CPG	5,159	.2031	0,9	36	6
B041A05200CPG	B042A05200CPG	5,200	.2047	0,9	36	6
B041A05300CPG	B042A05300CPG	5,300	.2087	0,9	36	6
B041A05400CPG	B042A05400CPG	5,400	.2126	0,9	36	6
B041A05410CPG	B042A05410CPG	5,410	.2130	0,9	36	6
B041A05500CPG	B042A05500CPG	5,500	.2165	0,9	36	6
B041A05558CPG	B042A05558CPG	5,558	.2188	0,9	36	6

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



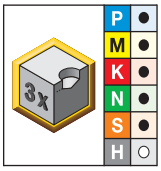


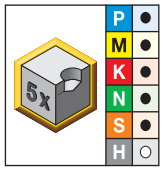
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041A05600CPG	B042A05600CPG	5,600	.2205	0,9	36	6
B041A05616CPG	B042A05616CPG	5,616	.2211	0,9	36	6
B041A05700CPG	B042A05700CPG	5,700	.2244	1,0	36	6
B041A05800CPG	B042A05800CPG	5,800	.2283	1,0	36	6
B041A05900CPG	B042A05900CPG	5,900	.2323	1,0	36	6
B041A05954CPG	B042A05954CPG	5,954	.2344	1,0	36	6
B041A06000CPG	B042A06000CPG	6,000	.2362	1,0	36	6
B041A06100CPG	B042A06100CPG	6,100	.2402	1,0	36	8
B041A06200CPG	B042A06200CPG	6,200	.2441	1,0	36	8
B041A06300CPG	B042A06300CPG	6,300	.2480	1,1	36	8
B041A06350CPG	B042A06350CPG	6,350	.2500	1,1	36	8
B041A06400CPG	B042A06400CPG	6,400	.2520	1,1	36	8
B041A06500CPG	B042A06500CPG	6,500	.2559	1,1	36	8
B041A06528CPG	B042A06528CPG	6,528	.2570	1,1	36	8
B041A06600CPG	B042A06600CPG	6,600	.2598	1,1	36	8
B041A06630CPG	B042A06630CPG	6,630	.2610	1,1	36	8
B041A06700CPG	B042A06700CPG	6,700	.2638	1,1	36	8
B041A06746CPG	B042A06746CPG	6,746	.2656	1,1	36	8
B041A06800CPG	B042A06800CPG	6,800	.2677	1,1	36	8
B041A06900CPG	B042A06900CPG	6,900	.2717	1,2	36	8
B041A07000CPG	B042A07000CPG	7,000	.2756	1,2	36	8
B041A07100CPG	B042A07100CPG	7,100	.2795	1,2	36	8
B041A07145CPG	B042A07145CPG	7,145	.2813	1,2	36	8
B041A07200CPG	B042A07200CPG	7,200	.2835	1,2	36	8
B041A07300CPG	B042A07300CPG	7,300	.2874	1,2	36	8
B041A07400CPG	B042A07400CPG	7,400	.2913	1,3	36	8
B041A07500CPG	B042A07500CPG	7,500	.2953	1,3	36	8
B041A07541CPG	B042A07541CPG	7,541	.2969	1,3	36	8
B041A07600CPG	B042A07600CPG	7,600	.2992	1,3	36	8
B041A07700CPG	B042A07700CPG	7,700	.3031	1,3	36	8
B041A07800CPG	B042A07800CPG	7,800	.3071	1,3	36	8
B041A07900CPG	B042A07900CPG	7,900	.3110	1,3	36	8
B041A07938CPG	B042A07938CPG	7,938	.3125	1,3	36	8
B041A08000CPG	B042A08000CPG	8,000	.3150	1,4	36	8
B041A08100CPG	B042A08100CPG	8,100	.3189	1,4	40	10
B041A08200CPG	B042A08200CPG	8,200	.3228	1,4	40	10
B041A08300CPG	B042A08300CPG	8,300	.3268	1,4	40	10
B041A08334CPG	B042A08334CPG	8,334	.3281	1,4	40	10
B041A08400CPG	B042A08400CPG	8,400	.3307	1,4	40	10
B041A08433CPG	B042A08433CPG	8,433	.3320	1,4	40	10
B041A08500CPG	B042A08500CPG	8,500	.3346	1,4	40	10
B041A08600CPG	B042A08600CPG	8,600	.3386	1,5	40	10
B041A08700CPG	B042A08700CPG	8,700	.3425	1,5	40	10
B041A08733CPG	B042A08733CPG	8,733	.3438	1,5	40	10
B041A08800CPG	B042A08800CPG	8,800	.3465	1,5	40	10
B041A08900CPG	B042A08900CPG	8,900	.3504	1,5	40	10
B041A09000CPG	B042A09000CPG	9,000	.3543	1,5	40	10
B041A09100CPG	B042A09100CPG	9,100	.3583	1,5	40	10
B041A09129CPG	B042A09129CPG	9,129	.3594	1,6	40	10
B041A09200CPG	B042A09200CPG	9,200	.3622	1,6	40	10
B041A09300CPG	B042A09300CPG	9,300	.3661	1,6	40	10
B041A09347CPG	B042A09347CPG	9,347	.3680	1,6	40	10

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



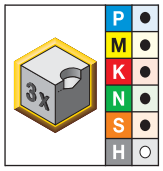


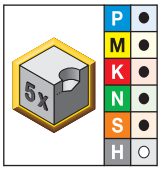
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041A09400CPG	B042A09400CPG	9,400	.3701	1,6	40	10
B041A09500CPG	B042A09500CPG	9,500	.3740	1,6	40	10
B041A09525CPG	B042A09525CPG	9,525	.3750	1,6	40	10
B041A09600CPG	B042A09600CPG	9,600	.3780	1,6	40	10
B041A09700CPG	B042A09700CPG	9,700	.3819	1,7	40	10
B041A09800CPG	B042A09800CPG	9,800	.3858	1,7	40	10
B041A09900CPG	B042A09900CPG	9,900	.3898	1,7	40	10
B041A09921CPG	B042A09921CPG	9,921	.3906	1,7	40	10
B041A10000CPG	B042A10000CPG	10,000	.3937	1,7	40	10
B041A10100CPG	B042A10100CPG	10,100	.3976	1,7	45	12
B041A10200CPG	B042A10200CPG	10,200	.4016	1,7	45	12
B041A10300CPG	B042A10300CPG	10,300	.4055	1,8	45	12
B041A10320CPG	B042A10320CPG	10,320	.4063	1,8	45	12
B041A10400CPG	B042A10400CPG	10,400	.4094	1,8	45	12
B041A10500CPG	B042A10500CPG	10,500	.4134	1,8	45	12
B041A10600CPG	B042A10600CPG	10,600	.4173	1,8	45	12
B041A10700CPG	B042A10700CPG	10,700	.4213	1,8	45	12
B041A10716CPG	B042A10716CPG	10,716	.4219	1,8	45	12
B041A10800CPG	B042A10800CPG	10,800	.4252	1,8	45	12
B041A10900CPG	B042A10900CPG	10,900	.4291	1,9	45	12
B041A11000CPG	B042A11000CPG	11,000	.4331	1,9	45	12
B041A11100CPG	B042A11100CPG	11,100	.4370	1,9	45	12
B041A11113CPG	B042A11113CPG	11,113	.4375	1,9	45	12
B041A11200CPG	B042A11200CPG	11,200	.4409	1,9	45	12
B041A11300CPG	B042A11300CPG	11,300	.4449	1,9	45	12
B041A11400CPG	B042A11400CPG *	11,400	.4488	2,0	45	12
B041A11500CPG	B042A11500CPG	11,500	.4528	2,0	45	12
B041A11509CPG	B042A11509CPG	11,509	.4531	2,0	45	12
B041A11600CPG	B042A11600CPG	11,600	.4567	2,0	45	12
B041A11700CPG	B042A11700CPG	11,700	.4606	2,0	45	12
B041A11800CPG	B042A11800CPG	11,800	.4646	2,0	45	12
B041A11900CPG	B042A11900CPG	11,900	.4685	2,0	45	12
B041A11908CPG	B042A11908CPG	11,908	.4688	2,0	45	12
B041A12000CPG	B042A12000CPG	12,000	.4724	2,1	45	12
B041A12100CPG	B042A12100CPG	12,100	.4764	2,1	45	14
B041A12200CPG	B042A12200CPG	12,200	.4803	2,1	45	14
B041A12300CPG	B042A12300CPG	12,300	.4843	2,1	45	14
B041A12304CPG	B042A12304CPG	12,304	.4844	2,1	45	14
B041A12400CPG	B042A12400CPG *	12,400	.4882	2,1	45	14
B041A12500CPG	B042A12500CPG	12,500	.4921	2,1	45	14
B041A12600CPG	B042A12600CPG	12,600	.4961	2,2	45	14
B041A12700CPG	B042A12700CPG	12,700	.5000	2,2	45	14
B041A12800CPG	B042A12800CPG	12,800	.5039	2,2	45	14
B041A12900CPG	B042A12900CPG	12,900	.5079	2,2	45	14
B041A13000CPG	B042A13000CPG	13,000	.5118	2,2	45	14
B041A13096CPG	B042A13096CPG	13,096	.5156	2,3	45	14
B041A13100CPG	B042A13100CPG	13,100	.5157	2,3	45	14
B041A13200CPG	B042A13200CPG	13,200	.5197	2,3	45	14
B041A13300CPG	B042A13300CPG	13,300	.5236	2,3	45	14
B041A13400CPG	B042A13400CPG	13,400	.5276	2,3	45	14
B041A13500CPG	B042A13500CPG	13,500	.5315	2,3	45	14
B041A13600CPG	B042A13600CPG	13,600	.5354	2,3	45	14

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



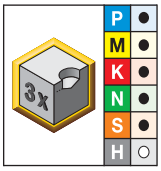


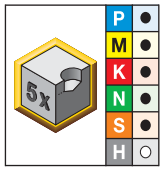
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041A13700CPG	B042A13700CPG	13,700	.5394	2,4	45	14
B041A13800CPG	B042A13800CPG	13,800	.5433	2,4	45	14
B041A13891CPG	B042A13891CPG	13,891	.5469	2,4	45	14
B041A13900CPG	B042A13900CPG	13,900	.5472	2,4	45	14
B041A14000CPG	B042A14000CPG	14,000	.5512	2,4	45	14
B041A14100CPG	B042A14100CPG	14,100	.5551	2,4	48	16
B041A14200CPG	B042A14200CPG	14,200	.5591	2,5	48	16
B041A14288CPG	B042A14288CPG	14,288	.5625	2,5	48	16
B041A14300CPG	B042A14300CPG	14,300	.5630	2,5	48	16
B041A14400CPG	B042A14400CPG	14,400	.5669	2,5	48	16
B041A14500CPG	B042A14500CPG	14,500	.5709	2,5	48	16
B041A14600CPG	B042A14600CPG	14,600	.5748	2,5	48	16
B041A14684CPG	B042A14684CPG	14,684	.5781	2,5	48	16
B041A14700CPG	B042A14700CPG	14,700	.5787	2,5	48	16
B041A14800CPG	B042A14800CPG	14,800	.5827	2,6	48	16
B041A14900CPG	B042A14900CPG	14,900	.5866	2,6	48	16
B041A15000CPG	B042A15000CPG	15,000	.5906	2,6	48	16
B041A15083CPG	B042A15083CPG	15,083	.5938	2,6	48	16
B041A15100CPG	B042A15100CPG	15,100	.5945	2,6	48	16
B041A15200CPG	B042A15200CPG	15,200	.5984	2,6	48	16
B041A15300CPG	B042A15300CPG	15,300	.6024	2,6	48	16
B041A15400CPG	B042A15400CPG	15,400	.6063	2,7	48	16
B041A15479CPG	B042A15479CPG	15,479	.6094	2,7	48	16
B041A15500CPG	B042A15500CPG	15,500	.6102	2,7	48	16
B041A15600CPG	B042A15600CPG	15,600	.6142	2,7	48	16
B041A15700CPG	B042A15700CPG	15,700	.6181	2,7	48	16
B041A15800CPG	B042A15800CPG	15,800	.6220	2,7	48	16
B041A15875CPG	B042A15875CPG	15,875	.6250	2,7	48	16
B041A15900CPG	B042A15900CPG	15,900	.6260	2,8	48	16
B041A16000CPG	B042A16000CPG	16,000	.6299	2,8	48	16
B041A16100CPG	B042A16100CPG	16,100	.6339	2,8	48	18
B041A16200CPG	B042A16200CPG	16,200	.6378	2,8	48	18
B041A16271CPG	B042A16271CPG	16,271	.6406	2,8	48	18
B041A16300CPG	B042A16300CPG	16,300	.6417	2,8	48	18
B041A16400CPG	B042A16400CPG	16,400	.6457	2,8	48	18
B041A16500CPG	B042A16500CPG	16,500	.6496	2,9	48	18
B041A16600CPG	B042A16600CPG	16,600	.6535	2,9	48	18
B041A16670CPG	B042A16670CPG	16,670	.6563	2,9	48	18
B041A16700CPG	B042A16700CPG	16,700	.6575	2,9	48	18
B041A16800CPG	B042A16800CPG	16,800	.6614	2,9	48	18
B041A16900CPG	B042A16900CPG	16,900	.6654	2,9	48	18
B041A17000CPG	B042A17000CPG	17,000	.6693	2,9	48	18
B041A17100CPG	B042A17100CPG	17,100	.6732	3,0	48	18
B041A17200CPG	B042A17200CPG	17,200	.6772	3,0	48	18
B041A17300CPG	B042A17300CPG	17,300	.6811	3,0	48	18
B041A17400CPG	B042A17400CPG	17,400	.6850	3,0	48	18
B041A17463CPG	B042A17463CPG	17,463	.6875	3,0	48	18
B041A17500CPG	B042A17500CPG	17,500	.6890	3,0	48	18
B041A17600CPG	B042A17600CPG	17,600	.6929	3,1	48	18
B041A17700CPG	B042A17700CPG	17,700	.6969	3,1	48	18
B041A17800CPG	B042A17800CPG	17,800	.7008	3,1	48	18
B041A17859CPG	B042A17859CPG	17,859	.7031	3,1	48	18

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



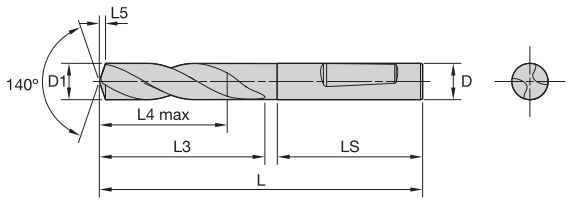


● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041A17900CPG	B042A17900CPG	17,900	.7047	3,1	48	18
B041A18000CPG	B042A18000CPG	18,000	.7087	3,1	48	18
B041A18100CPG	B042A18100CPG	18,100	.7126	3,1	50	20
B041A18200CPG	B042A18200CPG	18,200	.7165	3,2	50	20
B041A18258CPG	B042A18258CPG	18,258	.7188	3,2	50	20
B041A18300CPG	B042A18300CPG	18,300	.7205	3,2	50	20
B041A18400CPG	B042A18400CPG	18,400	.7244	3,2	50	20
B041A18500CPG	B042A18500CPG	18,500	.7283	3,2	50	20
B041A18600CPG	B042A18600CPG	18,600	.7323	3,2	50	20
B041A18654CPG	B042A18654CPG	18,654	.7344	3,2	50	20
B041A18700CPG	B042A18700CPG	18,700	.7362	3,2	50	20
B041A18800CPG	B042A18800CPG	18,800	.7402	3,3	50	20
B041A18900CPG	B042A18900CPG	18,900	.7441	3,3	50	20
B041A19000CPG	B042A19000CPG	19,000	.7480	3,3	50	20
B041A19050CPG	B042A19050CPG	19,050	.7500	3,3	50	20
B041A19100CPG	B042A19100CPG	19,100	.7520	3,3	50	20
B041A19200CPG	B042A19200CPG	19,200	.7559	3,3	50	20
B041A19300CPG	B042A19300CPG	19,300	.7598	3,4	50	20
B041A19400CPG	B042A19400CPG	19,400	.7638	3,4	50	20
B041A19500CPG	B042A19500CPG	19,500	.7677	3,4	50	20
B041A19600CPG	B042A19600CPG	19,600	.7717	3,4	50	20
B041A19700CPG	B042A19700CPG	19,700	.7756	3,4	50	20
B041A19800CPG	B042A19800CPG	19,800	.7795	3,4	50	20
B041A19900CPG	B042A19900CPG	19,900	.7835	3,5	50	20
B041A20000CPG	B042A20000CPG	20,000	.7874	3,5	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

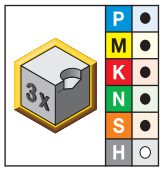


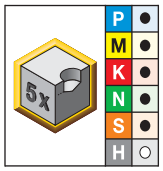




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B041F/B042F • ~3 x D/~5 x D



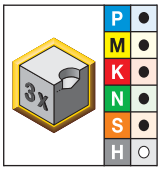


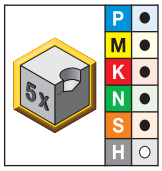
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041F03000CPG	B042F03000CPG	3,000	.1181	0,5	36	6
B041F03100CPG	B042F03100CPG	3,100	.1220	0,5	36	6
B041F03200CPG	B042F03200CPG	3,200	.1260	0,5	36	6
B041F03300CPG	B042F03300CPG	3,300	.1299	0,5	36	6
B041F03400CPG	B042F03400CPG	3,400	.1339	0,6	36	6
B041F03500CPG	B042F03500CPG	3,500	.1378	0,6	36	6
B041F03600CPG	B042F03600CPG	3,600	.1417	0,6	36	6
B041F03700CPG	B042F03700CPG	3,700	.1457	0,6	36	6
B041F03800CPG	B042F03800CPG	3,800	.1496	0,6	36	6
B041F03900CPG	B042F03900CPG	3,900	.1535	0,6	36	6
B041F04000CPG	B042F04000CPG	4,000	.1575	0,7	36	6
B041F04100CPG	B042F04100CPG	4,100	.1614	0,7	36	6
B041F04200CPG	B042F04200CPG	4,200	.1654	0,7	36	6
B041F04300CPG	B042F04300CPG	4,300	.1693	0,7	36	6
B041F04400CPG	B042F04400CPG	4,400	.1732	0,7	36	6
B041F04500CPG	B042F04500CPG	4,500	.1772	0,7	36	6
B041F04600CPG	B042F04600CPG	4,600	.1811	0,8	36	6
B041F04700CPG	B042F04700CPG	4,700	.1850	0,8	36	6
B041F04800CPG	B042F04800CPG	4,800	.1890	0,8	36	6
B041F04900CPG	B042F04900CPG	4,900	.1929	0,8	36	6
B041F05000CPG	B042F05000CPG	5,000	.1969	0,8	36	6
B041F05100CPG	B042F05100CPG	5,100	.2008	0,8	36	6
B041F05200CPG	B042F05200CPG	5,200	.2047	0,9	36	6
B041F05300CPG	B042F05300CPG	5,300	.2087	0,9	36	6
B041F05400CPG	B042F05400CPG	5,400	.2126	0,9	36	6
B041F05500CPG	B042F05500CPG	5,500	.2165	0,9	36	6
B041F05600CPG	B042F05600CPG	5,600	.2205	0,9	36	6
B041F05700CPG	B042F05700CPG	5,700	.2244	1,0	36	6
B041F05800CPG	B042F05800CPG	5,800	.2283	1,0	36	6
B041F05900CPG	B042F05900CPG	5,900	.2323	1,0	36	6
B041F06000CPG	B042F06000CPG	6,000	.2362	1,0	36	6
B041F06100CPG	B042F06100CPG	6,100	.2402	1,0	36	8
B041F06200CPG	B042F06200CPG	6,200	.2441	1,0	36	8
B041F06300CPG	B042F06300CPG	6,300	.2480	1,1	36	8
B041F06400CPG	B042F06400CPG	6,400	.2520	1,1	36	8
B041F06500CPG	B042F06500CPG	6,500	.2559	1,1	36	8

(continued)

(B041F/B042F • ~3 x D/~5 x D — continued)



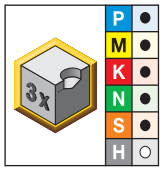


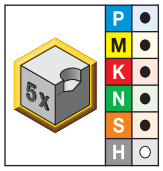
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041F06600CPG	B042F06600CPG	6,600	.2598	1,1	36	8
B041F06700CPG	B042F06700CPG	6,700	.2638	1,1	36	8
B041F06800CPG	B042F06800CPG	6,800	.2677	1,1	36	8
B041F06900CPG	B042F06900CPG	6,900	.2717	1,2	36	8
B041F07000CPG	B042F07000CPG	7,000	.2756	1,2	36	8
B041F07100CPG	B042F07100CPG	7,100	.2795	1,2	36	8
B041F07200CPG	B042F07200CPG	7,200	.2835	1,2	36	8
B041F07300CPG	B042F07300CPG	7,300	.2874	1,2	36	8
B041F07400CPG	B042F07400CPG	7,400	.2913	1,3	36	8
B041F07500CPG	B042F07500CPG	7,500	.2953	1,3	36	8
B041F07600CPG	B042F07600CPG	7,600	.2992	1,3	36	8
B041F07700CPG	B042F07700CPG	7,700	.3031	1,3	36	8
B041F07800CPG	B042F07800CPG	7,800	.3071	1,3	36	8
B041F07900CPG	B042F07900CPG	7,900	.3110	1,3	36	8
B041F08000CPG	B042F08000CPG	8,000	.3150	1,4	36	8
B041F08100CPG	B042F08100CPG	8,100	.3189	1,4	40	10
B041F08200CPG	B042F08200CPG	8,200	.3228	1,4	40	10
B041F08300CPG	B042F08300CPG	8,300	.3268	1,4	40	10
B041F08400CPG	B042F08400CPG	8,400	.3307	1,4	40	10
B041F08500CPG	B042F08500CPG	8,500	.3346	1,4	40	10
B041F08600CPG	B042F08600CPG	8,600	.3386	1,5	40	10
B041F08700CPG	B042F08700CPG	8,700	.3425	1,5	40	10
B041F08800CPG	B042F08800CPG	8,800	.3465	1,5	40	10
B041F08900CPG	B042F08900CPG	8,900	.3504	1,5	40	10
B041F09000CPG	B042F09000CPG	9,000	.3543	1,5	40	10
B041F09100CPG	B042F09100CPG	9,100	.3583	1,5	40	10
B041F09200CPG	B042F09200CPG	9,200	.3622	1,6	40	10
B041F09300CPG	B042F09300CPG	9,300	.3661	1,6	40	10
B041F09400CPG	B042F09400CPG	9,400	.3701	1,6	40	10
B041F09500CPG	B042F09500CPG	9,500	.3740	1,6	40	10
B041F09600CPG	B042F09600CPG	9,600	.3780	1,6	40	10
B041F09700CPG	B042F09700CPG	9,700	.3819	1,7	40	10
B041F09800CPG	B042F09800CPG	9,800	.3858	1,7	40	10
B041F09900CPG	B042F09900CPG	9,900	.3898	1,7	40	10
B041F10000CPG	B042F10000CPG	10,000	.3937	1,7	40	10
B041F10100CPG	B042F10100CPG	10,100	.3976	1,7	45	12
B041F10200CPG	B042F10200CPG	10,200	.4016	1,7	45	12
B041F10300CPG	B042F10300CPG	10,300	.4055	1,8	45	12
B041F10400CPG	B042F10400CPG	10,400	.4094	1,8	45	12
B041F10500CPG	B042F10500CPG	10,500	.4134	1,8	45	12
B041F10600CPG	B042F10600CPG	10,600	.4173	1,8	45	12
B041F10700CPG	B042F10700CPG	10,700	.4213	1,8	45	12
B041F10800CPG	B042F10800CPG	10,800	.4252	1,8	45	12
B041F10900CPG	B042F10900CPG	10,900	.4291	1,9	45	12
B041F11000CPG	B042F11000CPG	11,000	.4331	1,9	45	12
B041F11100CPG	B042F11100CPG	11,100	.4370	1,9	45	12
B041F11200CPG	B042F11200CPG	11,200	.4409	1,9	45	12
B041F11300CPG	B042F11300CPG	11,300	.4449	1,9	45	12
B041F11400CPG	B042F11400CPG	11,400	.4488	2,0	45	12
B041F11500CPG	B042F11500CPG	11,500	.4528	2,0	45	12
B041F11600CPG	B042F11600CPG	11,600	.4567	2,0	45	12
B041F11700CPG	B042F11700CPG	11,700	.4606	2,0	45	12

(continued)

(B041F/B042F • ~3 x D/~5 x D — continued)



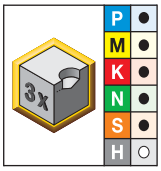


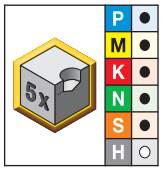
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041F11800CPG	B042F11800CPG	11,800	.4646	2,0	45	12
B041F11900CPG	B042F11900CPG	11,900	.4685	2,0	45	12
B041F12000CPG	B042F12000CPG	12,000	.4724	2,1	45	12
B041F12100CPG	B042F12100CPG	12,100	.4764	2,1	45	14
B041F12200CPG	B042F12200CPG	12,200	.4803	2,1	45	14
B041F12300CPG	B042F12300CPG	12,300	.4843	2,1	45	14
B041F12400CPG	B042F12400CPG	12,400	.4882	2,1	45	14
B041F12500CPG	B042F12500CPG	12,500	.4921	2,1	45	14
B041F12600CPG	B042F12600CPG	12,600	.4961	2,2	45	14
B041F12700CPG	B042F12700CPG	12,700	.5000	2,2	45	14
B041F12800CPG	B042F12800CPG	12,800	.5039	2,2	45	14
B041F12900CPG	B042F12900CPG	12,900	.5079	2,2	45	14
B041F13000CPG	B042F13000CPG	13,000	.5118	2,2	45	14
B041F13100CPG	B042F13100CPG	13,100	.5157	2,3	45	14
B041F13200CPG	B042F13200CPG	13,200	.5197	2,3	45	14
B041F13300CPG	B042F13300CPG	13,300	.5236	2,3	45	14
B041F13400CPG	B042F13400CPG	13,400	.5276	2,3	45	14
B041F13500CPG	B042F13500CPG	13,500	.5315	2,3	45	14
B041F13600CPG	B042F13600CPG	13,600	.5354	2,3	45	14
B041F13700CPG	B042F13700CPG	13,700	.5394	2,4	45	14
B041F13800CPG	B042F13800CPG	13,800	.5433	2,4	45	14
B041F13900CPG	B042F13900CPG	13,900	.5472	2,4	45	14
B041F14000CPG	B042F14000CPG	14,000	.5512	2,4	45	14
B041F14100CPG	B042F14100CPG	14,100	.5551	2,4	48	16
B041F14200CPG	B042F14200CPG	14,200	.5591	2,5	48	16
B041F14300CPG	B042F14300CPG	14,300	.5630	2,5	48	16
B041F14400CPG	B042F14400CPG	14,400	.5669	2,5	48	16
B041F14500CPG	B042F14500CPG	14,500	.5709	2,5	48	16
B041F14600CPG	B042F14600CPG	14,600	.5748	2,5	48	16
B041F14700CPG	B042F14700CPG	14,700	.5787	2,5	48	16
B041F14800CPG	B042F14800CPG	14,800	.5827	2,6	48	16
B041F14900CPG	B042F14900CPG	14,900	.5866	2,6	48	16
B041F15000CPG	B042F15000CPG	15,000	.5906	2,6	48	16
B041F15100CPG	B042F15100CPG	15,100	.5945	2,6	48	16
B041F15200CPG	B042F15200CPG	15,200	.5984	2,6	48	16
B041F15300CPG	B042F15300CPG	15,300	.6024	2,6	48	16
B041F15400CPG	B042F15400CPG	15,400	.6063	2,7	48	16
B041F15500CPG	B042F15500CPG	15,500	.6102	2,7	48	16
B041F15600CPG	B042F15600CPG	15,600	.6142	2,7	48	16
B041F15700CPG	B042F15700CPG	15,700	.6181	2,7	48	16
B041F15800CPG	B042F15800CPG	15,800	.6220	2,7	48	16
B041F15900CPG	B042F15900CPG	15,900	.6260	2,8	48	16
B041F16000CPG	B042F16000CPG	16,000	.6299	2,8	48	16
B041F16100CPG	B042F16100CPG	16,100	.6339	2,8	48	18
B041F16200CPG	B042F16200CPG	16,200	.6378	2,8	48	18
B041F16300CPG	B042F16300CPG	16,300	.6417	2,8	48	18
B041F16400CPG	B042F16400CPG	16,400	.6457	2,8	48	18
B041F16500CPG	B042F16500CPG	16,500	.6496	2,9	48	18
B041F16600CPG	B042F16600CPG	16,600	.6535	2,9	48	18
B041F16700CPG	B042F16700CPG	16,700	.6575	2,9	48	18
B041F16800CPG	B042F16800CPG	16,800	.6614	2,9	48	18
B041F16900CPG	B042F16900CPG	16,900	.6654	2,9	48	18

(continued)

(B041F/B042F • ~3 x D/~5 x D — continued)





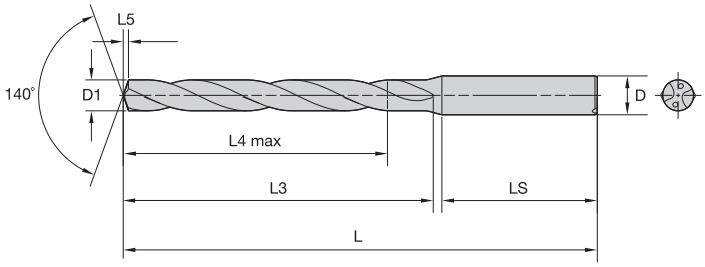
● first choice
○ alternate choice

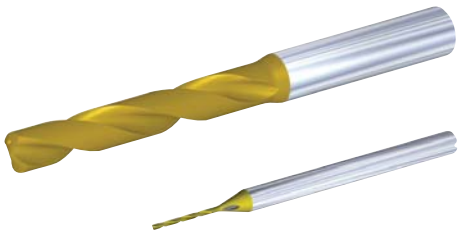
short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B041F17000CPG	B042F17000CPG	17,000	.6693	2,9	48	18
B041F17100CPG	B042F17100CPG	17,100	.6732	3,0	48	18
B041F17200CPG	B042F17200CPG	17,200	.6772	3,0	48	18
B041F17300CPG	B042F17300CPG	17,300	.6811	3,0	48	18
B041F17400CPG	B042F17400CPG	17,400	.6850	3,0	48	18
B041F17500CPG	B042F17500CPG	17,500	.6890	3,0	48	18
B041F17600CPG	B042F17600CPG	17,600	.6929	3,1	48	18
B041F17700CPG	B042F17700CPG	17,700	.6969	3,1	48	18
B041F17800CPG	B042F17800CPG	17,800	.7008	3,1	48	18
B041F17900CPG	B042F17900CPG	17,900	.7047	3,1	48	18
B041F18000CPG	B042F18000CPG	18,000	.7087	3,1	48	18
B041F18100CPG	B042F18100CPG	18,100	.7126	3,1	50	20
B041F18200CPG	B042F18200CPG	18,200	.7165	3,2	50	20
B041F18300CPG	B042F18300CPG	18,300	.7205	3,2	50	20
B041F18400CPG	B042F18400CPG	18,400	.7244	3,2	50	20
B041F18500CPG	B042F18500CPG	18,500	.7283	3,2	50	20
B041F18600CPG	B042F18600CPG	18,600	.7323	3,2	50	20
B041F18700CPG	B042F18700CPG	18,700	.7362	3,2	50	20
B041F18800CPG	B042F18800CPG	18,800	.7402	3,3	50	20
B041F18900CPG	B042F18900CPG	18,900	.7441	3,3	50	20
B041F19000CPG	B042F19000CPG	19,000	.7480	3,3	50	20
B041F19100CPG	B042F19100CPG	19,100	.7520	3,3	50	20
B041F19200CPG	B042F19200CPG	19,200	.7559	3,3	50	20
B041F19300CPG	B042F19300CPG	19,300	.7598	3,4	50	20
B041F19400CPG	B042F19400CPG	19,400	.7638	3,4	50	20
B041F19500CPG	B042F19500CPG	19,500	.7677	3,4	50	20
B041F19600CPG	B042F19600CPG	19,600	.7717	3,4	50	20
B041F19700CPG	B042F19700CPG	19,700	.7756	3,4	50	20
B041F19800CPG	B042F19800CPG	19,800	.7795	3,4	50	20
B041F19900CPG	B042F19900CPG	19,900	.7835	3,5	50	20
B041F20000CPG	B042F20000CPG	20,000	.7874	3,5	50	20

Tolerance • Metric

nominal size range	D1 tolerance	D tolerance h6
1–3	0,000/-0,014 (h8)	0,000/-0,006
>3–6	0,000/-0,012 (h7)	0,000/-0,008
>6–10	0,000/-0,015 (h7)	0,000/-0,009
>10–18	0,000/-0,018 (h7)	0,000/-0,011
>18–20	0,000/-0,021 (h7)	0,000/-0,013

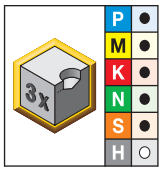


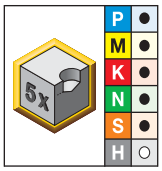


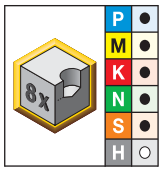


For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D





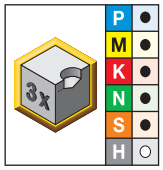


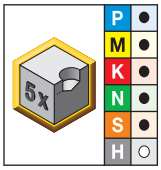
● first choice
○ alternate choice

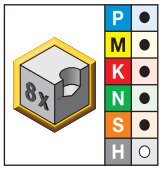
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
–	–	B053A01000CPG	1,000	.0394	0,1	28	4
–	–	B053A01016CPG	1,016	.0400	0,1	28	4
–	–	B053A01067CPG	1,067	.0420	0,2	28	4
–	–	B053A01100CPG	1,100	.0433	0,2	28	4
–	–	B053A01181CPG	1,181	.0465	0,2	28	4
–	–	B053A01191CPG	1,191	.0469	0,2	28	4
–	–	B053A01200CPG	1,200	.0472	0,2	28	4
–	–	B053A01300CPG	1,300	.0512	0,2	28	4
–	–	B053A01321CPG	1,321	.0520	0,2	28	4
–	–	B053A01397CPG	1,397	.0550	0,2	28	4
–	–	B053A01400CPG	1,400	.0551	0,2	28	4
B051A01500CPG	B052A01500CPG	B053A01500CPG	1,500	.0591	0,2	28	4
B051A01600CPG	B052A01600CPG	B053A01600CPG	1,600	.0630	0,2	28	4
B051A01700CPG	B052A01700CPG	B053A01700CPG	1,700	.0669	0,3	28	4
B051A01800CPG	B052A01800CPG	B053A01800CPG	1,800	.0709	0,3	28	4
B051A01900CPG	B052A01900CPG	B053A01900CPG	1,900	.0748	0,3	28	4
B051A01984CPG	B052A01984CPG	B053A01984CPG	1,984	.0781	0,3	28	4
B051A02000CPG	B052A02000CPG	B053A02000CPG	2,000	.0787	0,3	28	4
B051A02100CPG	B052A02100CPG	B053A02100CPG	2,100	.0827	0,3	28	4
B051A02200CPG	B052A02200CPG	B053A02200CPG	2,200	.0866	0,3	28	4
B051A02300CPG	B052A02300CPG	B053A02300CPG	2,300	.0906	0,4	28	4
B051A02383CPG	B052A02383CPG	B053A02383CPG	2,383	.0938	0,4	28	4
B051A02400CPG	B052A02400CPG	B053A02400CPG	2,400	.0945	0,4	28	4
B051A02439CPG	B052A02439CPG	B053A02439CPG	2,439	.0960	0,4	28	4
B051A02489CPG	B052A02489CPG	B053A02489CPG	2,489	.0980	0,4	28	4
B051A02500CPG	B052A02500CPG	B053A02500CPG	2,500	.0984	0,4	28	4
B051A02578CPG	B052A02578CPG	B053A02578CPG	2,578	.1015	0,4	28	4
B051A02600CPG	B052A02600CPG	B053A02600CPG	2,600	.1024	0,4	28	4
B051A02642CPG	B052A02642CPG	B053A02642CPG	2,642	.1040	0,4	28	4
B051A02700CPG	B052A02700CPG	B053A02700CPG	2,700	.1063	0,4	28	4
B051A02705CPG	B052A02705CPG	B053A02705CPG	2,705	.1065	0,4	28	4
B051A02779CPG	B052A02779CPG	B053A02779CPG	2,779	.1094	0,4	28	4
B051A02800CPG	B052A02800CPG	B053A02800CPG	2,800	.1102	0,5	28	4
B051A02820CPG	B052A02820CPG	B053A02820CPG	2,820	.1110	0,5	28	4
B051A02870CPG	B052A02870CPG	B053A02870CPG	2,870	.1130	0,5	28	4
B051A02900CPG	B052A02900CPG	B053A02900CPG	2,900	.1142	0,5	28	4

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





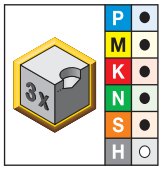


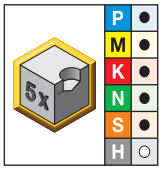
● first choice
○ alternate choice

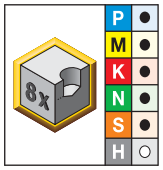
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051A02947CPG	B052A02947CPG	B053A02947CPG	2,947	.1160	0,5	28	4
B051A03000CPG	B052A03000CPG	B053A03000CPG	3,000	.1181	0,5	36	6
B051A03048CPG	B052A03048CPG	B053A03048CPG	3,048	.1200	0,5	36	6
B051A03100CPG	B052A03100CPG	B053A03100CPG	3,100	.1220	0,5	36	6
B051A03175CPG	B052A03175CPG	B053A03175CPG	3,175	.1250	0,5	36	6
B051A03200CPG	B052A03200CPG	B053A03200CPG	3,200	.1260	0,5	36	6
B051A03264CPG	B052A03264CPG	B053A03264CPG	3,264	.1285	0,5	36	6
B051A03300CPG	B052A03300CPG	B053A03300CPG	3,300	.1299	0,5	36	6
B051A03400CPG	B052A03400CPG	B053A03400CPG	3,400	.1339	0,6	36	6
B051A03455CPG	B052A03455CPG	B053A03455CPG	3,455	.1360	0,6	36	6
B051A03500CPG	B052A03500CPG	B053A03500CPG	3,500	.1378	0,6	36	6
B051A03571CPG	B052A03571CPG	B053A03571CPG	3,571	.1406	0,6	36	6
B051A03600CPG	B052A03600CPG	B053A03600CPG	3,600	.1417	0,6	36	6
B051A03658CPG	B052A03658CPG	B053A03658CPG	3,658	.1440	0,6	36	6
B051A03700CPG	B052A03700CPG	B053A03700CPG	3,700	.1457	0,6	36	6
B051A03734CPG	B052A03734CPG	B053A03734CPG	3,734	.1470	0,6	36	6
B051A03800CPG	B052A03800CPG	B053A03800CPG	3,800	.1496	0,6	36	6
B051A03900CPG	B052A03900CPG	B053A03900CPG	3,900	.1535	0,6	36	6
B051A03970CPG	B052A03970CPG	B053A03970CPG	3,970	.1563	0,7	36	6
B051A04000CPG	B052A04000CPG	B053A04000CPG	4,000	.1575	0,7	36	6
B051A04039CPG	B052A04039CPG	B053A04039CPG	4,039	.1590	0,7	36	6
B051A04090CPG	B052A04090CPG	B053A04090CPG	4,090	.1610	0,7	36	6
B051A04100CPG	B052A04100CPG	B053A04100CPG	4,100	.1614	0,7	36	6
B051A04200CPG	B052A04200CPG	B053A04200CPG	4,200	.1654	0,7	36	6
B051A04217CPG	B052A04217CPG	B053A04217CPG	4,217	.1660	0,7	36	6
B051A04300CPG	B052A04300CPG	B053A04300CPG	4,300	.1693	0,7	36	6
B051A04366CPG	B052A04366CPG	B053A04366CPG	4,366	.1719	0,7	36	6
B051A04400CPG	B052A04400CPG	B053A04400CPG	4,400	.1732	0,7	36	6
B051A04500CPG	B052A04500CPG	B053A04500CPG	4,500	.1772	0,7	36	6
B051A04600CPG	B052A04600CPG	B053A04600CPG	4,600	.1811	0,8	36	6
B051A04623CPG	B052A04623CPG	B053A04623CPG	4,623	.1820	0,8	36	6
B051A04700CPG	B052A04700CPG	B053A04700CPG	4,700	.1850	0,8	36	6
B051A04763CPG	B052A04763CPG	B053A04763CPG	4,763	.1875	0,8	36	6
B051A04800CPG	B052A04800CPG	B053A04800CPG	4,800	.1890	0,8	36	6
B051A04852CPG	B052A04852CPG	B053A04852CPG	4,852	.1910	0,8	36	6
B051A04900CPG	B052A04900CPG	B053A04900CPG	4,900	.1929	0,8	36	6
B051A05000CPG	B052A05000CPG	B053A05000CPG	5,000	.1969	0,8	36	6
B051A05100CPG	B052A05100CPG	B053A05100CPG	5,100	.2008	0,8	36	6
B051A05106CPG	B052A05106CPG	B053A05106CPG	5,106	.2010	0,8	36	6
B051A05159CPG	B052A05159CPG	B053A05159CPG	5,159	.2031	0,9	36	6
B051A05200CPG	B052A05200CPG	B053A05200CPG	5,200	.2047	0,9	36	6
B051A05300CPG	B052A05300CPG	B053A05300CPG	5,300	.2087	0,9	36	6
B051A05400CPG	B052A05400CPG	B053A05400CPG	5,400	.2126	0,9	36	6
B051A05410CPG	B052A05410CPG	B053A05410CPG	5,410	.2130	0,9	36	6
B051A05500CPG	B052A05500CPG	B053A05500CPG	5,500	.2165	0,9	36	6
B051A05558CPG	B052A05558CPG	B053A05558CPG	5,558	.2188	0,9	36	6
B051A05600CPG	B052A05600CPG	B053A05600CPG	5,600	.2205	0,9	36	6
B051A05616CPG	B052A05616CPG	B053A05616CPG	5,616	.2211	0,9	36	6
B051A05700CPG	B052A05700CPG	B053A05700CPG	5,700	.2244	1,0	36	6
B051A05800CPG	B052A05800CPG	B053A05800CPG	5,800	.2283	1,0	36	6
B051A05900CPG	B052A05900CPG	B053A05900CPG	5,900	.2323	1,0	36	6
B051A05954CPG	B052A05954CPG	B053A05954CPG	5,954	.2344	1,0	36	6

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





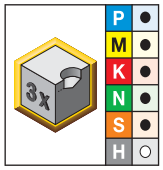


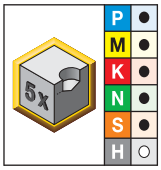
● first choice
○ alternate choice

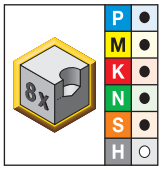
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051A06000CPG	B052A06000CPG	B053A06000CPG	6,000	.2362	1,0	36	6
B051A06100CPG	B052A06100CPG	B053A06100CPG	6,100	.2402	1,0	36	8
B051A06200CPG	B052A06200CPG	B053A06200CPG	6,200	.2441	1,0	36	8
B051A06300CPG	B052A06300CPG	B053A06300CPG	6,300	.2480	1,1	36	8
B051A06350CPG	B052A06350CPG	B053A06350CPG	6,350	.2500	1,1	36	8
B051A06400CPG	B052A06400CPG	B053A06400CPG	6,400	.2520	1,1	36	8
B051A06500CPG	B052A06500CPG	B053A06500CPG	6,500	.2559	1,1	36	8
B051A06528CPG	B052A06528CPG	B053A06528CPG	6,528	.2570	1,1	36	8
B051A06600CPG	B052A06600CPG	B053A06600CPG	6,600	.2598	1,1	36	8
B051A06630CPG	B052A06630CPG	B053A06630CPG	6,630	.2610	1,1	36	8
B051A06700CPG	B052A06700CPG	B053A06700CPG	6,700	.2638	1,1	36	8
B051A06746CPG	B052A06746CPG	B053A06746CPG	6,746	.2656	1,1	36	8
B051A06800CPG	B052A06800CPG	B053A06800CPG	6,800	.2677	1,1	36	8
B051A06900CPG	B052A06900CPG	B053A06900CPG	6,900	.2717	1,2	36	8
B051A07000CPG	B052A07000CPG	B053A07000CPG	7,000	.2756	1,2	36	8
B051A07100CPG	B052A07100CPG	B053A07100CPG	7,100	.2795	1,2	36	8
B051A07145CPG	B052A07145CPG	B053A07145CPG	7,145	.2813	1,2	36	8
B051A07200CPG	B052A07200CPG	B053A07200CPG	7,200	.2835	1,2	36	8
B051A07300CPG	B052A07300CPG	B053A07300CPG	7,300	.2874	1,2	36	8
B051A07400CPG	B052A07400CPG	B053A07400CPG	7,400	.2913	1,3	36	8
B051A07500CPG	B052A07500CPG	B053A07500CPG	7,500	.2953	1,3	36	8
B051A07541CPG	B052A07541CPG	B053A07541CPG	7,541	.2969	1,3	36	8
B051A07600CPG	B052A07600CPG	B053A07600CPG	7,600	.2992	1,3	36	8
B051A07700CPG	B052A07700CPG	B053A07700CPG	7,700	.3031	1,3	36	8
B051A07800CPG	B052A07800CPG	B053A07800CPG	7,800	.3071	1,3	36	8
B051A07900CPG	B052A07900CPG	B053A07900CPG	7,900	.3110	1,3	36	8
B051A07938CPG	B052A07938CPG	B053A07938CPG	7,938	.3125	1,3	36	8
B051A08000CPG	B052A08000CPG	B053A08000CPG	8,000	.3150	1,4	36	8
B051A08100CPG	B052A08100CPG	B053A08100CPG	8,100	.3189	1,4	40	10
B051A08200CPG	B052A08200CPG	B053A08200CPG	8,200	.3228	1,4	40	10
B051A08300CPG	B052A08300CPG	B053A08300CPG	8,300	.3268	1,4	40	10
B051A08334CPG	B052A08334CPG	B053A08334CPG	8,334	.3281	1,4	40	10
B051A08400CPG	B052A08400CPG	B053A08400CPG	8,400	.3307	1,4	40	10
B051A08433CPG	B052A08433CPG	B053A08433CPG	8,433	.3320	1,4	40	10
B051A08500CPG	B052A08500CPG	B053A08500CPG	8,500	.3346	1,4	40	10
B051A08600CPG	B052A08600CPG	B053A08600CPG	8,600	.3386	1,5	40	10
B051A08700CPG	B052A08700CPG	B053A08700CPG	8,700	.3425	1,5	40	10
B051A08733CPG	B052A08733CPG	B053A08733CPG	8,733	.3438	1,5	40	10
B051A08800CPG	B052A08800CPG	B053A08800CPG	8,800	.3465	1,5	40	10
B051A08900CPG	B052A08900CPG	B053A08900CPG	8,900	.3504	1,5	40	10
B051A09000CPG	B052A09000CPG	B053A09000CPG	9,000	.3543	1,5	40	10
B051A09100CPG	B052A09100CPG	B053A09100CPG	9,100	.3583	1,5	40	10
B051A09129CPG	B052A09129CPG	B053A09129CPG	9,129	.3594	1,6	40	10
B051A09200CPG	B052A09200CPG	B053A09200CPG	9,200	.3622	1,6	40	10
B051A09300CPG	B052A09300CPG	B053A09300CPG	9,300	.3661	1,6	40	10
B051A09347CPG	B052A09347CPG	B053A09347CPG	9,347	.3680	1,6	40	10
B051A09400CPG	B052A09400CPG	B053A09400CPG	9,400	.3701	1,6	40	10
B051A09500CPG	B052A09500CPG	B053A09500CPG	9,500	.3740	1,6	40	10
B051A09525CPG	B052A09525CPG	B053A09525CPG	9,525	.3750	1,6	40	10
B051A09600CPG	B052A09600CPG	B053A09600CPG	9,600	.3780	1,6	40	10
B051A09700CPG	B052A09700CPG	B053A09700CPG	9,700	.3819	1,7	40	10
B051A09800CPG	B052A09800CPG	B053A09800CPG	9,800	.3858	1,7	40	10

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





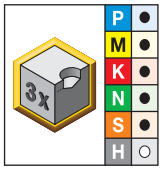


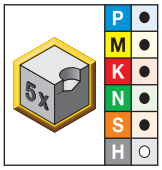
● first choice
○ alternate choice

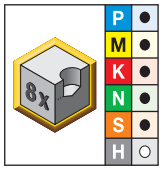
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051A09900CPG	B052A09900CPG	B053A09900CPG	9,900	.3898	1,7	40	10
B051A09921CPG	B052A09921CPG	B053A09921CPG	9,921	.3906	1,7	40	10
B051A10000CPG	B052A10000CPG	B053A10000CPG	10,000	.3937	1,7	40	10
B051A10100CPG	B052A10100CPG	B053A10100CPG	10,100	.3976	1,7	45	12
B051A10200CPG	B052A10200CPG	B053A10200CPG	10,200	.4016	1,7	45	12
B051A10300CPG	B052A10300CPG	B053A10300CPG	10,300	.4055	1,8	45	12
B051A10320CPG	B052A10320CPG	B053A10320CPG	10,320	.4063	1,8	45	12
B051A10400CPG	B052A10400CPG	B053A10400CPG	10,400	.4094	1,8	45	12
B051A10500CPG	B052A10500CPG	B053A10500CPG	10,500	.4134	1,8	45	12
B051A10600CPG	B052A10600CPG	B053A10600CPG	10,600	.4173	1,8	45	12
B051A10700CPG	B052A10700CPG	B053A10700CPG	10,700	.4213	1,8	45	12
B051A10716CPG	B052A10716CPG	B053A10716CPG	10,716	.4219	1,8	45	12
B051A10800CPG	B052A10800CPG	B053A10800CPG	10,800	.4252	1,8	45	12
B051A10900CPG	B052A10900CPG	B053A10900CPG	10,900	.4291	1,9	45	12
B051A11000CPG	B052A11000CPG	B053A11000CPG	11,000	.4331	1,9	45	12
B051A11100CPG	B052A11100CPG	B053A11100CPG	11,100	.4370	1,9	45	12
B051A11113CPG	B052A11113CPG	B053A11113CPG	11,113	.4375	1,9	45	12
B051A11200CPG	B052A11200CPG	B053A11200CPG	11,200	.4409	1,9	45	12
B051A11300CPG	B052A11300CPG	B053A11300CPG	11,300	.4449	1,9	45	12
B051A11400CPG	B052A11400CPG	B053A11400CPG	11,400	.4488	2,0	45	12
B051A11500CPG	B052A11500CPG	B053A11500CPG	11,500	.4528	2,0	45	12
B051A11509CPG	B052A11509CPG	B053A11509CPG	11,509	.4531	2,0	45	12
B051A11600CPG	B052A11600CPG	B053A11600CPG	11,600	.4567	2,0	45	12
B051A11700CPG	B052A11700CPG	B053A11700CPG	11,700	.4606	2,0	45	12
B051A11800CPG	B052A11800CPG	B053A11800CPG	11,800	.4646	2,0	45	12
B051A11900CPG	B052A11900CPG	B053A11900CPG	11,900	.4685	2,0	45	12
B051A11908CPG	B052A11908CPG	B053A11908CPG	11,908	.4688	2,0	45	12
B051A12000CPG	B052A12000CPG	B053A12000CPG	12,000	.4724	2,1	45	12
B051A12100CPG	B052A12100CPG	B053A12100CPG	12,100	.4764	2,1	45	14
B051A12200CPG	B052A12200CPG	B053A12200CPG	12,200	.4803	2,1	45	14
B051A12300CPG	B052A12300CPG	B053A12300CPG	12,300	.4843	2,1	45	14
B051A12304CPG	B052A12304CPG	B053A12304CPG	12,304	.4844	2,1	45	14
B051A12400CPG	B052A12400CPG	B053A12400CPG	12,400	.4882	2,1	45	14
B051A12500CPG	B052A12500CPG	B053A12500CPG	12,500	.4921	2,1	45	14
B051A12600CPG	B052A12600CPG	B053A12600CPG	12,600	.4961	2,2	45	14
B051A12700CPG	B052A12700CPG	B053A12700CPG	12,700	.5000	2,2	45	14
B051A12800CPG	B052A12800CPG	B053A12800CPG	12,800	.5039	2,2	45	14
B051A12900CPG	B052A12900CPG	B053A12900CPG	12,900	.5079	2,2	45	14
B051A13000CPG	B052A13000CPG	B053A13000CPG	13,000	.5118	2,2	45	14
B051A13096CPG	B052A13096CPG	B053A13096CPG	13,096	.5156	2,3	45	14
B051A13100CPG	B052A13100CPG	B053A13100CPG	13,100	.5157	2,3	45	14
B051A13200CPG	B052A13200CPG	B053A13200CPG	13,200	.5197	2,3	45	14
B051A13300CPG	B052A13300CPG	B053A13300CPG	13,300	.5236	2,3	45	14
B051A13400CPG	B052A13400CPG	B053A13400CPG	13,400	.5276	2,3	45	14
B051A13500CPG	B052A13500CPG	B053A13500CPG	13,500	.5315	2,3	45	14
B051A13600CPG	B052A13600CPG	B053A13600CPG	13,600	.5354	2,3	45	14
B051A13700CPG	B052A13700CPG	B053A13700CPG	13,700	.5394	2,4	45	14
B051A13800CPG	B052A13800CPG	B053A13800CPG	13,800	.5433	2,4	45	14
B051A13891CPG	B052A13891CPG	B053A13891CPG	13,891	.5469	2,4	45	14
B051A13900CPG	B052A13900CPG	B053A13900CPG	13,900	.5472	2,4	45	14
B051A14000CPG	B052A14000CPG	B053A14000CPG	14,000	.5512	2,4	45	14
B051A14100CPG	B052A14100CPG	B053A14100CPG	14,100	.5551	2,4	48	16

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





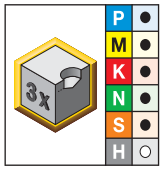


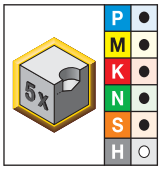
● first choice
○ alternate choice

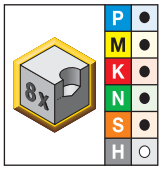
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051A14200CPG	B052A14200CPG	B053A14200CPG	14,200	.5591	2,5	48	16
B051A14288CPG	B052A14288CPG	B053A14288CPG	14,288	.5625	2,5	48	16
B051A14300CPG	B052A14300CPG	B053A14300CPG	14,300	.5630	2,5	48	16
B051A14400CPG	B052A14400CPG	B053A14400CPG	14,400	.5669	2,5	48	16
B051A14500CPG	B052A14500CPG	B053A14500CPG	14,500	.5709	2,5	48	16
B051A14600CPG	B052A14600CPG	B053A14600CPG	14,600	.5748	2,5	48	16
B051A14684CPG	B052A14684CPG	B053A14684CPG	14,684	.5781	2,5	48	16
B051A14700CPG	B052A14700CPG	B053A14700CPG	14,700	.5787	2,5	48	16
B051A14800CPG	B052A14800CPG	B053A14800CPG	14,800	.5827	2,6	48	16
B051A14900CPG	B052A14900CPG	B053A14900CPG	14,900	.5866	2,6	48	16
B051A15000CPG	B052A15000CPG	B053A15000CPG	15,000	.5906	2,6	48	16
B051A15083CPG	B052A15083CPG	B053A15083CPG	15,083	.5938	2,6	48	16
B051A15100CPG	B052A15100CPG	B053A15100CPG	15,100	.5945	2,6	48	16
B051A15200CPG	B052A15200CPG	B053A15200CPG	15,200	.5984	2,6	48	16
B051A15300CPG	B052A15300CPG	B053A15300CPG	15,300	.6024	2,6	48	16
B051A15400CPG	B052A15400CPG	B053A15400CPG	15,400	.6063	2,7	48	16
B051A15479CPG	B052A15479CPG	B053A15479CPG	15,479	.6094	2,7	48	16
B051A15500CPG	B052A15500CPG	B053A15500CPG	15,500	.6102	2,7	48	16
B051A15600CPG	B052A15600CPG	B053A15600CPG	15,600	.6142	2,7	48	16
B051A15700CPG	B052A15700CPG	B053A15700CPG	15,700	.6181	2,7	48	16
B051A15800CPG	B052A15800CPG	B053A15800CPG	15,800	.6220	2,7	48	16
B051A15875CPG	B052A15875CPG	B053A15875CPG	15,875	.6250	2,7	48	16
B051A15900CPG	B052A15900CPG	B053A15900CPG	15,900	.6260	2,8	48	16
B051A16000CPG	B052A16000CPG	B053A16000CPG	16,000	.6299	2,8	48	16
B051A16100CPG	B052A16100CPG	B053A16100CPG	16,100	.6339	2,8	48	18
B051A16200CPG	B052A16200CPG	B053A16200CPG	16,200	.6378	2,8	48	18
B051A16271CPG	B052A16271CPG	B053A16271CPG	16,271	.6406	2,8	48	18
B051A16300CPG	B052A16300CPG	B053A16300CPG	16,300	.6417	2,8	48	18
B051A16400CPG	B052A16400CPG	B053A16400CPG	16,400	.6457	2,8	48	18
B051A16500CPG	B052A16500CPG	B053A16500CPG	16,500	.6496	2,9	48	18
B051A16600CPG	B052A16600CPG	B053A16600CPG	16,600	.6535	2,9	48	18
B051A16670CPG	B052A16670CPG	B053A16670CPG	16,670	.6563	2,9	48	18
B051A16700CPG	B052A16700CPG	B053A16700CPG	16,700	.6575	2,9	48	18
B051A16800CPG	B052A16800CPG	B053A16800CPG	16,800	.6614	2,9	48	18
B051A16900CPG	B052A16900CPG	B053A16900CPG	16,900	.6654	2,9	48	18
B051A17000CPG	B052A17000CPG	B053A17000CPG	17,000	.6693	2,9	48	18
B051A17100CPG	B052A17100CPG	B053A17100CPG	17,100	.6732	3,0	48	18
B051A17200CPG	B052A17200CPG	B053A17200CPG	17,200	.6772	3,0	48	18
B051A17300CPG	B052A17300CPG	B053A17300CPG	17,300	.6811	3,0	48	18
B051A17400CPG	B052A17400CPG	B053A17400CPG	17,400	.6850	3,0	48	18
B051A17463CPG	B052A17463CPG	B053A17463CPG	17,463	.6875	3,0	48	18
B051A17500CPG	B052A17500CPG	B053A17500CPG	17,500	.6890	3,0	48	18
B051A17600CPG	B052A17600CPG	B053A17600CPG	17,600	.6929	3,1	48	18
B051A17700CPG	B052A17700CPG	B053A17700CPG	17,700	.6969	3,1	48	18
B051A17800CPG	B052A17800CPG	B053A17800CPG	17,800	.7008	3,1	48	18
B051A17859CPG	B052A17859CPG	B053A17859CPG	17,859	.7031	3,1	48	18
B051A17900CPG	B052A17900CPG	B053A17900CPG	17,900	.7047	3,1	48	18
B051A18000CPG	B052A18000CPG	B053A18000CPG	18,000	.7087	3,1	48	18
B051A18100CPG	B052A18100CPG	B053A18100CPG	18,100	.7126	3,1	50	20
B051A18200CPG	B052A18200CPG	B053A18200CPG	18,200	.7165	3,2	50	20
B051A18258CPG	B052A18258CPG	B053A18258CPG	18,258	.7188	3,2	50	20
B051A18300CPG	B052A18300CPG	B053A18300CPG	18,300	.7205	3,2	50	20

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





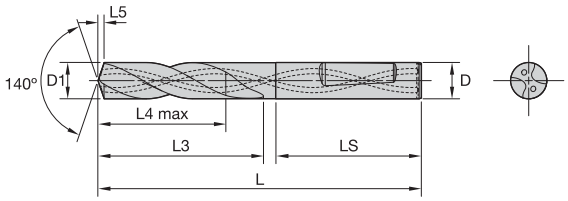


● first choice
○ alternate choice

short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051A18400CPG	B052A18400CPG	B053A18400CPG	18,400	.7244	3,2	50	20
B051A18500CPG	B052A18500CPG	B053A18500CPG	18,500	.7283	3,2	50	20
B051A18600CPG	B052A18600CPG	B053A18600CPG	18,600	.7323	3,2	50	20
B051A18654CPG	B052A18654CPG	B053A18654CPG	18,654	.7344	3,2	50	20
B051A18700CPG	B052A18700CPG	B053A18700CPG	18,700	.7362	3,2	50	20
B051A18800CPG	B052A18800CPG	B053A18800CPG	18,800	.7402	3,3	50	20
B051A18900CPG	B052A18900CPG	B053A18900CPG	18,900	.7441	3,3	50	20
B051A19000CPG	B052A19000CPG	B053A19000CPG	19,000	.7480	3,3	50	20
B051A19050CPG	B052A19050CPG	B053A19050CPG	19,050	.7500	3,3	50	20
B051A19100CPG	B052A19100CPG	B053A19100CPG	19,100	.7520	3,3	50	20
B051A19200CPG	B052A19200CPG	B053A19200CPG	19,200	.7559	3,3	50	20
B051A19300CPG	B052A19300CPG	B053A19300CPG	19,300	.7598	3,4	50	20
B051A19400CPG	B052A19400CPG	B053A19400CPG	19,400	.7638	3,4	50	20
B051A19500CPG	B052A19500CPG	B053A19500CPG	19,500	.7677	3,4	50	20
B051A19600CPG	B052A19600CPG	B053A19600CPG	19,600	.7717	3,4	50	20
B051A19700CPG	B052A19700CPG	B053A19700CPG	19,700	.7756	3,4	50	20
B051A19800CPG	B052A19800CPG	B053A19800CPG	19,800	.7795	3,4	50	20
B051A19900CPG	B052A19900CPG	B053A19900CPG	19,900	.7835	3,5	50	20
B051A20000CPG	B052A20000CPG	B053A20000CPG	20,000	.7874	3,5	50	20

NOTE: GOdrills with a D1 < 1,5mm (.0591") have coolant exiting the shank.

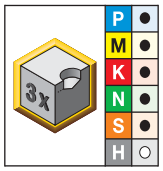


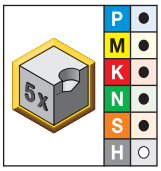




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B051F/B052F/B053F • ~3 x D/~5 x D/~8 x D



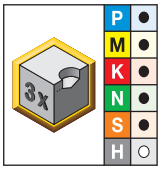


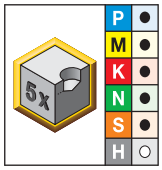
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051F03000CPG	B052F03000CPG	3,000	.1181	0,5	36	6
B051F03100CPG	B052F03100CPG	3,100	.1220	0,5	36	6
B051F03200CPG	B052F03200CPG	3,200	.1260	0,5	36	6
B051F03300CPG	B052F03300CPG	3,300	.1299	0,5	36	6
B051F03400CPG	B052F03400CPG	3,400	.1339	0,6	36	6
B051F03500CPG	B052F03500CPG	3,500	.1378	0,6	36	6
B051F03600CPG	B052F03600CPG	3,600	.1417	0,6	36	6
B051F03700CPG	B052F03700CPG	3,700	.1457	0,6	36	6
B051F03800CPG	B052F03800CPG	3,800	.1496	0,6	36	6
B051F03900CPG	B052F03900CPG	3,900	.1535	0,6	36	6
B051F04000CPG	B052F04000CPG	4,000	.1575	0,7	36	6
B051F04100CPG	B052F04100CPG	4,100	.1614	0,7	36	6
B051F04200CPG	B052F04200CPG	4,200	.1654	0,7	36	6
B051F04300CPG	B052F04300CPG	4,300	.1693	0,7	36	6
B051F04400CPG	B052F04400CPG	4,400	.1732	0,7	36	6
B051F04500CPG	B052F04500CPG	4,500	.1772	0,7	36	6
B051F04600CPG	B052F04600CPG	4,600	.1811	0,8	36	6
B051F04700CPG	B052F04700CPG	4,700	.1850	0,8	36	6
B051F04800CPG	B052F04800CPG	4,800	.1890	0,8	36	6
B051F04900CPG	B052F04900CPG	4,900	.1929	0,8	36	6
B051F05000CPG	B052F05000CPG	5,000	.1969	0,8	36	6
B051F05100CPG	B052F05100CPG	5,100	.2008	0,8	36	6
B051F05200CPG	B052F05200CPG	5,200	.2047	0,9	36	6
B051F05300CPG	B052F05300CPG	5,300	.2087	0,9	36	6
B051F05400CPG	B052F05400CPG	5,400	.2126	0,9	36	6
B051F05500CPG	B052F05500CPG	5,500	.2165	0,9	36	6
B051F05600CPG	B052F05600CPG	5,600	.2205	0,9	36	6
B051F05700CPG	B052F05700CPG	5,700	.2244	1,0	36	6
B051F05800CPG	B052F05800CPG	5,800	.2283	1,0	36	6
B051F05900CPG	B052F05900CPG	5,900	.2323	1,0	36	6
B051F06000CPG	B052F06000CPG	6,000	.2362	1,0	36	6
B051F06100CPG	B052F06100CPG	6,100	.2402	1,0	36	8

(continued)

(B051F/B052F/B053F • ~3 x D/~5 x D/~8 x D — continued)



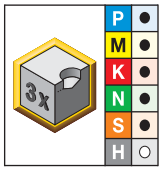


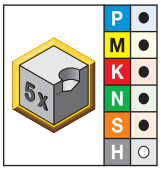
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051F06200CPG	B052F06200CPG	6,200	.2441	1,0	36	8
B051F06300CPG	B052F06300CPG	6,300	.2480	1,1	36	8
B051F06400CPG	B052F06400CPG	6,400	.2520	1,1	36	8
B051F06500CPG	B052F06500CPG	6,500	.2559	1,1	36	8
B051F06600CPG	B052F06600CPG	6,600	.2598	1,1	36	8
B051F06700CPG	B052F06700CPG	6,700	.2638	1,1	36	8
B051F06800CPG	B052F06800CPG	6,800	.2677	1,1	36	8
B051F06900CPG	B052F06900CPG	6,900	.2717	1,2	36	8
B051F07000CPG	B052F07000CPG	7,000	.2756	1,2	36	8
B051F07100CPG	B052F07100CPG	7,100	.2795	1,2	36	8
B051F07200CPG	B052F07200CPG	7,200	.2835	1,2	36	8
B051F07300CPG	B052F07300CPG	7,300	.2874	1,2	36	8
B051F07400CPG	B052F07400CPG	7,400	.2913	1,3	36	8
B051F07500CPG	B052F07500CPG	7,500	.2953	1,3	36	8
B051F07600CPG	B052F07600CPG	7,600	.2992	1,3	36	8
B051F07700CPG	B052F07700CPG	7,700	.3031	1,3	36	8
B051F07800CPG	B052F07800CPG	7,800	.3071	1,3	36	8
B051F07900CPG	B052F07900CPG	7,900	.3110	1,3	36	8
B051F08000CPG	B052F08000CPG	8,000	.3150	1,4	36	8
B051F08100CPG	B052F08100CPG	8,100	.3189	1,4	40	10
B051F08200CPG	B052F08200CPG	8,200	.3228	1,4	40	10
B051F08300CPG	B052F08300CPG	8,300	.3268	1,4	40	10
B051F08400CPG	B052F08400CPG	8,400	.3307	1,4	40	10
B051F08500CPG	B052F08500CPG	8,500	.3346	1,4	40	10
B051F08600CPG	B052F08600CPG	8,600	.3386	1,5	40	10
B051F08700CPG	B052F08700CPG	8,700	.3425	1,5	40	10
B051F08800CPG	B052F08800CPG	8,800	.3465	1,5	40	10
B051F08900CPG	B052F08900CPG	8,900	.3504	1,5	40	10
B051F09000CPG	B052F09000CPG	9,000	.3543	1,5	40	10
B051F09100CPG	B052F09100CPG	9,100	.3583	1,5	40	10
B051F09200CPG	B052F09200CPG	9,200	.3622	1,6	40	10
B051F09300CPG	B052F09300CPG	9,300	.3661	1,6	40	10
B051F09400CPG	B052F09400CPG	9,400	.3701	1,6	40	10
B051F09500CPG	B052F09500CPG	9,500	.3740	1,6	40	10
B051F09600CPG	B052F09600CPG	9,600	.3780	1,6	40	10
B051F09700CPG	B052F09700CPG	9,700	.3819	1,7	40	10
B051F09800CPG	B052F09800CPG	9,800	.3858	1,7	40	10
B051F09900CPG	B052F09900CPG	9,900	.3898	1,7	40	10
B051F10000CPG	B052F10000CPG	10,000	.3937	1,7	40	10
B051F10100CPG	B052F10100CPG	10,100	.3976	1,7	45	12
B051F10200CPG	B052F10200CPG	10,200	.4016	1,7	45	12
B051F10300CPG	B052F10300CPG	10,300	.4055	1,8	45	12
B051F10400CPG	B052F10400CPG	10,400	.4094	1,8	45	12
B051F10500CPG	B052F10500CPG	10,500	.4134	1,8	45	12
B051F10600CPG	B052F10600CPG	10,600	.4173	1,8	45	12
B051F10700CPG	B052F10700CPG	10,700	.4213	1,8	45	12
B051F10800CPG	B052F10800CPG	10,800	.4252	1,8	45	12
B051F10900CPG	B052F10900CPG	10,900	.4291	1,9	45	12
B051F11000CPG	B052F11000CPG	11,000	.4331	1,9	45	12
B051F11100CPG	B052F11100CPG	11,100	.4370	1,9	45	12
B051F11200CPG	B052F11200CPG	11,200	.4409	1,9	45	12
B051F11300CPG	B052F11300CPG	11,300	.4449	1,9	45	12

(continued)

(B051F/B052F/B053F • ~3 x D/~5 x D/~8 x D — continued)



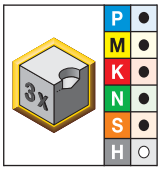


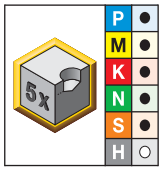
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051F11400CPG	B052F11400CPG	11,400	.4488	2,0	45	12
B051F11500CPG	B052F11500CPG	11,500	.4528	2,0	45	12
B051F11600CPG	B052F11600CPG	11,600	.4567	2,0	45	12
B051F11700CPG	B052F11700CPG	11,700	.4606	2,0	45	12
B051F11800CPG	B052F11800CPG	11,800	.4646	2,0	45	12
B051F11900CPG	B052F11900CPG	11,900	.4685	2,0	45	12
B051F12000CPG	B052F12000CPG	12,000	.4724	2,1	45	12
B051F12100CPG	B052F12100CPG	12,100	.4764	2,1	45	14
B051F12200CPG	B052F12200CPG	12,200	.4803	2,1	45	14
B051F12300CPG	B052F12300CPG	12,300	.4843	2,1	45	14
B051F12400CPG	B052F12400CPG	12,400	.4882	2,1	45	14
B051F12500CPG	B052F12500CPG	12,500	.4921	2,1	45	14
B051F12600CPG	B052F12600CPG	12,600	.4961	2,2	45	14
B051F12700CPG	B052F12700CPG	12,700	.5000	2,2	45	14
B051F12800CPG	B052F12800CPG	12,800	.5039	2,2	45	14
B051F12900CPG	B052F12900CPG	12,900	.5079	2,2	45	14
B051F13000CPG	B052F13000CPG	13,000	.5118	2,2	45	14
B051F13100CPG	B052F13100CPG	13,100	.5157	2,3	45	14
B051F13200CPG	B052F13200CPG	13,200	.5197	2,3	45	14
B051F13300CPG	B052F13300CPG	13,300	.5236	2,3	45	14
B051F13400CPG	B052F13400CPG	13,400	.5276	2,3	45	14
B051F13500CPG	B052F13500CPG	13,500	.5315	2,3	45	14
B051F13600CPG	B052F13600CPG	13,600	.5354	2,3	45	14
B051F13700CPG	B052F13700CPG	13,700	.5394	2,4	45	14
B051F13800CPG	B052F13800CPG	13,800	.5433	2,4	45	14
B051F13900CPG	B052F13900CPG	13,900	.5472	2,4	45	14
B051F14000CPG	B052F14000CPG	14,000	.5512	2,4	45	14
B051F14100CPG	B052F14100CPG	14,100	.5551	2,4	48	16
B051F14200CPG	B052F14200CPG	14,200	.5591	2,5	48	16
B051F14300CPG	B052F14300CPG	14,300	.5630	2,5	48	16
B051F14400CPG	B052F14400CPG	14,400	.5669	2,5	48	16
B051F14500CPG	B052F14500CPG	14,500	.5709	2,5	48	16
B051F14600CPG	B052F14600CPG	14,600	.5748	2,5	48	16
B051F14700CPG	B052F14700CPG	14,700	.5787	2,5	48	16
B051F14800CPG	B052F14800CPG	14,800	.5827	2,6	48	16
B051F14900CPG	B052F14900CPG	14,900	.5866	2,6	48	16
B051F15000CPG	B052F15000CPG	15,000	.5906	2,6	48	16
B051F15100CPG	B052F15100CPG	15,100	.5945	2,6	48	16
B051F15200CPG	B052F15200CPG	15,200	.5984	2,6	48	16
B051F15300CPG	B052F15300CPG	15,300	.6024	2,6	48	16
B051F15400CPG	B052F15400CPG	15,400	.6063	2,7	48	16
B051F15500CPG	B052F15500CPG	15,500	.6102	2,7	48	16
B051F15600CPG	B052F15600CPG	15,600	.6142	2,7	48	16
B051F15700CPG	B052F15700CPG	15,700	.6181	2,7	48	16
B051F15800CPG	B052F15800CPG	15,800	.6220	2,7	48	16
B051F15900CPG	B052F15900CPG	15,900	.6260	2,8	48	16
B051F16000CPG	B052F16000CPG	16,000	.6299	2,8	48	16
B051F16100CPG	B052F16100CPG	16,100	.6339	2,8	48	18
B051F16200CPG	B052F16200CPG	16,200	.6378	2,8	48	18
B051F16300CPG	B052F16300CPG	16,300	.6417	2,8	48	18
B051F16400CPG	B052F16400CPG	16,400	.6457	2,8	48	18
B051F16500CPG	B052F16500CPG	16,500	.6496	2,9	48	18

(continued)

(B051F/B052F/B053F • ~3 x D/~5 x D/~8 x D — continued)





● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	D1 diameter in	L5	LS	D
B051F16600CPG	B052F16600CPG	16,600	.6535	2,9	48	18
B051F16700CPG	B052F16700CPG	16,700	.6575	2,9	48	18
B051F16800CPG	B052F16800CPG	16,800	.6614	2,9	48	18
B051F16900CPG	B052F16900CPG	16,900	.6654	2,9	48	18
B051F17000CPG	B052F17000CPG	17,000	.6693	2,9	48	18
B051F17100CPG	B052F17100CPG	17,100	.6732	3,0	48	18
B051F17200CPG	B052F17200CPG	17,200	.6772	3,0	48	18
B051F17300CPG	B052F17300CPG	17,300	.6811	3,0	48	18
B051F17400CPG	B052F17400CPG	17,400	.6850	3,0	48	18
B051F17500CPG	B052F17500CPG	17,500	.6890	3,0	48	18
B051F17600CPG	B052F17600CPG	17,600	.6929	3,1	48	18
B051F17700CPG	B052F17700CPG	17,700	.6969	3,1	48	18
B051F17800CPG	B052F17800CPG	17,800	.7008	3,1	48	18
B051F17900CPG	B052F17900CPG	17,900	.7047	3,1	48	18
B051F18000CPG	B052F18000CPG	18,000	.7087	3,1	48	18
B051F18100CPG	B052F18100CPG	18,100	.7126	3,1	50	20
B051F18200CPG	B052F18200CPG	18,200	.7165	3,2	50	20
B051F18300CPG	B052F18300CPG	18,300	.7205	3,2	50	20
B051F18400CPG	B052F18400CPG	18,400	.7244	3,2	50	20
B051F18500CPG	B052F18500CPG	18,500	.7283	3,2	50	20
B051F18600CPG	B052F18600CPG	18,600	.7323	3,2	50	20
B051F18700CPG	B052F18700CPG	18,700	.7362	3,2	50	20
B051F18800CPG	B052F18800CPG	18,800	.7402	3,3	50	20
B051F18900CPG	B052F18900CPG	18,900	.7441	3,3	50	20
B051F19000CPG	B052F19000CPG	19,000	.7480	3,3	50	20
B051F19100CPG	B052F19100CPG	19,100	.7520	3,3	50	20
B051F19200CPG	B052F19200CPG	19,200	.7559	3,3	50	20
B051F19300CPG	B052F19300CPG	19,300	.7598	3,4	50	20
B051F19400CPG	B052F19400CPG	19,400	.7638	3,4	50	20
B051F19500CPG	B052F19500CPG	19,500	.7677	3,4	50	20
B051F19600CPG	B052F19600CPG	19,600	.7717	3,4	50	20
B051F19700CPG	B052F19700CPG	19,700	.7756	3,4	50	20
B051F19800CPG	B052F19800CPG	19,800	.7795	3,4	50	20
B051F19900CPG	B052F19900CPG	19,900	.7835	3,5	50	20
B051F20000CPG	B052F20000CPG	20,000	.7874	3,5	50	20

Tolerance • Metric

nominal size range	D1 tolerance	D tolerance h6
1–3	0,000/-0,014 (h8)	0,000/-0,006
>3–6	0,000/-0,012 (h7)	0,000/-0,008
>6–10	0,000/-0,015 (h7)	0,000/-0,009
>10–18	0,000/-0,018 (h7)	0,000/-0,011
>18–20	0,000/-0,021 (h7)	0,000/-0,013

GOdrill™ • B04_CPG Series • Grade KC7325™ • Flood Coolant • Drill Diameters 1–20mm • Metric



Material Group		Cutting Speed – vc			Metric										
		Range – m/min			Recommended Feed Rate (f) by Diameter										
		min	Starting Value	max		1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	**80**	115	mm/r	0,03–0,08	0,04–0,09	0,05–0,11	0,08–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	60	**70**	100	mm/r	0,04–0,09	0,05–0,11	0,06–0,13	0,09–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	80	**90**	100	mm/r	0,04–0,09	0,05–0,11	0,06–0,13	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	50	**70**	90	mm/r	0,05–0,11	0,06–0,13	0,07–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	**70**	100	mm/r	0,04–0,12	0,05–0,13	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	30	**40**	60	mm/r	0,03–0,05	0,04–0,06	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
	6	30	**40**	60	mm/r	0,03–0,05	0,04–0,06	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	20	**30**	40	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	30	**40**	50	mm/r	0,02–0,06	0,03–0,07	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	20	**30**	40	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	**130**	170	mm/r	0,09–0,18	0,10–0,20	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	2	90	**110**	120	mm/r	0,06–0,13	0,08–0,15	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**110**	130	mm/r	0,05–0,11	0,06–0,13	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
N	1	90	**230**	270	mm/r	0,05–0,12	0,06–0,13	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	**220**	270	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	**180**	225	mm/r	0,10–0,13	0,11–0,14	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	**130**	270	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	20	**25**	30	mm/r	0,01–0,04	0,02–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	**20**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	20	**25**	40	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	20	**25**	50	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
H	1	10	**15**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	2	10	**10**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15

GOdrill™ • B05_CPG Series • Grade KC7325™ • Through Coolant • Drill Diameters 1–20mm • Metric



Material Group		Cutting Speed — vc			Metric										
		Range — m/min			Recommended Feed Rate (f) by Diameter										
		min	Starting Value	max		1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	**80**	115	mm/r	0,03–0,08	0,04–0,09	0,05–0,11	0,08–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	70	**100**	140	mm/r	0,04–0,09	0,05–0,12	0,07–0,14	0,08–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	90	**120**	140	mm/r	0,04–0,09	0,05–0,12	0,07–0,14	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	60	**80**	100	mm/r	0,05–0,10	0,06–0,13	0,08–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	**80**	100	mm/r	0,05–0,10	0,06–0,13	0,07–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	40	**50**	70	mm/r	0,03–0,05	0,04–0,06	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
	6	40	**50**	70	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10	0,08–0,14	0,10–0,18	0,13–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	20	**30**	40	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	30	**40**	50	mm/r	0,02–0,06	0,03–0,07	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	20	**30**	40	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	**120**	170	mm/r	0,08–0,16	0,09–0,17	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	2	80	**110**	140	mm/r	0,10–0,14	0,11–0,15	0,12–0,16	0,13–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**100**	130	mm/r	0,05–0,13	0,07–0,15	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60
N	1	90	**230**	315	mm/r	0,05–0,12	0,06–0,13	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	**225**	270	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	**180**	270	mm/r	0,10–0,13	0,11–0,14	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	**135**	180	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	10	**25**	30	mm/r	0,01–0,04	0,02–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	**20**	25	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	10	**25**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	10	**25**	40	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
H	1	10	**15**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	2	10	**10**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15

TF Drill for High Metal Removal Rates

Primary Application

B105 Solid Carbide Drills are ideal for high metal removal rates and excellent hole quality in short chipping materials such as grey cast iron, ductile iron, and aluminium as well as in short-hole titanium applications.

Features and Benefits

Three Cutting Edges

- Higher feed rates than with two-edged drills.

Three Spacious Flutes

- Rapid chip evacuation.
- Three-margin lands deliver better hole quality and straightness than two-flute drills.

Wear-Resistant Carbide Grade

- High tool life in abrasive materials such as cast iron and aluminium die cast alloys.



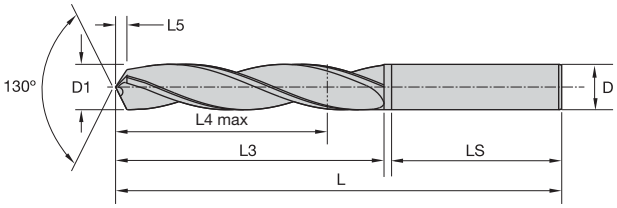
Uncoated K10™ Grade

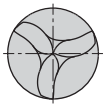
- The uncoated grade helps to prevent built-up edge in drilling aluminium and high-temp alloys.

Customisation

- Intermediate diameters available as engineered solutions.
- Length variations and step drills available as custom solutions.

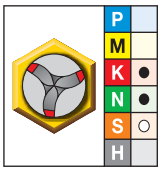








B105 • ~5 x D

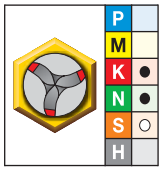


● first choice
○ alternate choice

K10	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B105A03000	3,000	.1181	66	28	23	0,7	36	6
B105A03100	3,100	.1220	66	28	23	0,8	36	6
B105A03200	3,200	.1260	66	28	23	0,8	36	6
B105A03300	3,300	.1299	66	28	23	0,8	36	6
B105A03400	3,400	.1339	66	28	23	0,8	36	6
B105A03500	3,500	.1378	66	28	23	0,9	36	6
B105A03600	3,600	.1417	66	28	23	0,9	36	6
B105A03700	3,700	.1457	66	28	23	0,9	36	6
B105A03800	3,800	.1496	74	36	29	0,9	36	6
B105A03900	3,900	.1535	74	36	29	1,0	36	6
B105A04000	4,000	.1575	74	36	29	1,0	36	6
B105A04100	4,100	.1614	74	36	29	1,0	36	6
B105A04200	4,200	.1654	74	36	29	1,0	36	6
B105A04300	4,300	.1693	74	36	29	1,1	36	6
B105A04500	4,500	.1772	74	36	29	1,1	36	6
B105A04600	4,600	.1811	74	36	29	1,1	36	6
B105A04650	4,650	.1831	74	36	29	1,2	36	6
B105A04700	4,700	.1850	74	36	29	1,2	36	6
B105A04800	4,800	.1890	82	44	35	1,2	36	6
B105A04900	4,900	.1929	82	44	35	1,2	36	6
B105A05000	5,000	.1969	82	44	35	1,2	36	6
B105A05100	5,100	.2008	82	44	35	1,3	36	6
B105A05200	5,200	.2047	82	44	35	1,3	36	6
B105A05400	5,400	.2126	82	44	35	1,3	36	6
B105A05500	5,500	.2165	82	44	35	1,4	36	6
B105A05550	5,550	.2185	82	44	35	1,4	36	6
B105A05600	5,600	.2205	82	44	35	1,4	36	6
B105A05700	5,700	.2244	82	44	35	1,4	36	6
B105A05800	5,800	.2283	82	44	35	1,4	36	6
B105A06000	6,000	.2362	82	44	35	1,5	36	6
B105A06100	6,100	.2402	91	53	43	1,5	36	8
B105A06200	6,200	.2441	91	53	43	1,5	36	8
B105A06300	6,300	.2480	91	53	43	1,6	36	8
B105A06350	6,350	.2500	91	53	43	1,6	36	8
B105A06400	6,400	.2520	91	53	43	1,6	36	8
B105A06500	6,500	.2559	91	53	43	1,6	36	8

(continued)

(B105 • ~5 x D — continued)

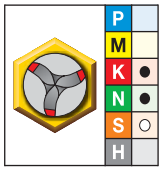


● first choice
○ alternate choice

K10	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B105A06600	6,600	.2598	91	53	43	1,6	36	8
B105A06700	6,700	.2638	91	53	43	1,7	36	8
B105A06800	6,800	.2677	91	53	43	1,7	36	8
B105A07000	7,000	.2756	91	53	43	1,7	36	8
B105A07100	7,100	.2795	91	53	43	1,8	36	8
B105A07400	7,400	.2913	91	53	43	1,8	36	8
B105A07500	7,500	.2953	91	53	43	1,9	36	8
B105A07600	7,600	.2992	91	53	43	1,9	36	8
B105A07800	7,800	.3071	91	53	43	1,9	36	8
B105A08000	8,000	.3150	91	53	43	2,0	36	8
B105A08100	8,100	.3189	103	61	49	2,0	40	10
B105A08200	8,200	.3228	103	61	49	2,0	40	10
B105A08300	8,300	.3268	103	61	49	2,1	40	10
B105A08400	8,400	.3307	103	61	49	2,1	40	10
B105A08500	8,500	.3346	103	61	49	2,1	40	10
B105A08600	8,600	.3386	103	61	49	2,1	40	10
B105A08700	8,700	.3425	103	61	49	2,2	40	10
B105A08800	8,800	.3465	103	61	49	2,2	40	10
B105A09000	9,000	.3543	103	61	49	2,2	40	10
B105A09100	9,100	.3583	103	61	49	2,3	40	10
B105A09300	9,300	.3661	103	61	49	2,3	40	10
B105A09500	9,500	.3740	103	61	49	2,4	40	10
B105A09700	9,700	.3819	103	61	49	2,4	40	10
B105A09800	9,800	.3858	103	61	49	2,4	40	10
B105A10000	10,000	.3937	103	61	49	2,5	40	10
B105A10100	10,100	.3976	118	71	56	2,5	45	12
B105A10200	10,200	.4016	118	71	56	2,5	45	12
B105A10300	10,300	.4055	118	71	56	2,6	45	12
B105A10400	10,400	.4094	118	71	56	2,6	45	12
B105A10500	10,500	.4134	118	71	56	2,6	45	12
B105A10700	10,700	.4213	118	71	56	2,7	45	12
B105A10800	10,800	.4252	118	71	56	2,7	45	12
B105A11000	11,000	.4331	118	71	56	2,7	45	12
B105A11100	11,100	.4370	118	71	56	2,8	45	12
B105A11200	11,200	.4409	118	71	56	2,8	45	12
B105A11500	11,500	.4528	118	71	56	2,9	45	12
B105A11700	11,700	.4606	118	71	56	2,9	45	12
B105A11800	11,800	.4646	118	71	56	2,9	45	12
B105A12000	12,000	.4724	118	71	56	3,0	45	12
B105A12100	12,100	.4764	124	77	60	3,0	45	14
B105A12500	12,500	.4921	124	77	60	3,1	45	14
B105A12700	12,700	.5000	124	77	60	3,2	45	14
B105A12800	12,800	.5039	124	77	60	3,2	45	14
B105A13000	13,000	.5118	124	77	60	3,2	45	14
B105A13100	13,100	.5157	124	77	60	3,3	45	14
B105A13500	13,500	.5315	124	77	60	3,4	45	14
B105A13800	13,800	.5433	124	77	60	3,4	45	14
B105A14000	14,000	.5512	124	77	60	3,5	45	14
B105A14200	14,200	.5591	133	83	63	3,5	48	16
B105A14500	14,500	.5709	133	83	63	3,6	48	16
B105A15000	15,000	.5906	133	83	63	3,7	48	16
B105A15100	15,100	.5945	133	83	63	3,8	48	16

(continued)

(B105 • ~5 x D — continued)



● first choice
○ alternate choice

K10	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B105A15500	15,500	.6102	133	83	63	3,9	48	16
B105A15800	15,800	.6220	133	83	63	3,9	48	16
B105A16000	16,000	.6299	133	83	63	4,0	48	16
B105A16500	16,500	.6496	143	93	71	4,1	48	18
B105A17000	17,000	.6693	143	93	71	4,2	48	18
B105A17500	17,500	.6890	143	93	71	4,4	48	18
B105A18000	18,000	.7087	143	93	71	4,5	48	18
B105A18500	18,500	.7283	153	101	77	4,6	50	20
B105A19000	19,000	.7480	153	101	77	4,7	50	20
B105A19500	19,500	.7677	153	101	77	4,9	50	20
B105A20000	20,000	.7874	153	101	77	5,0	50	20
B105A20500	20,500	.8071	167	112	85	5,1	50	20
B105A21000	21,000	.8268	167	112	85	5,2	50	20

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Application Data

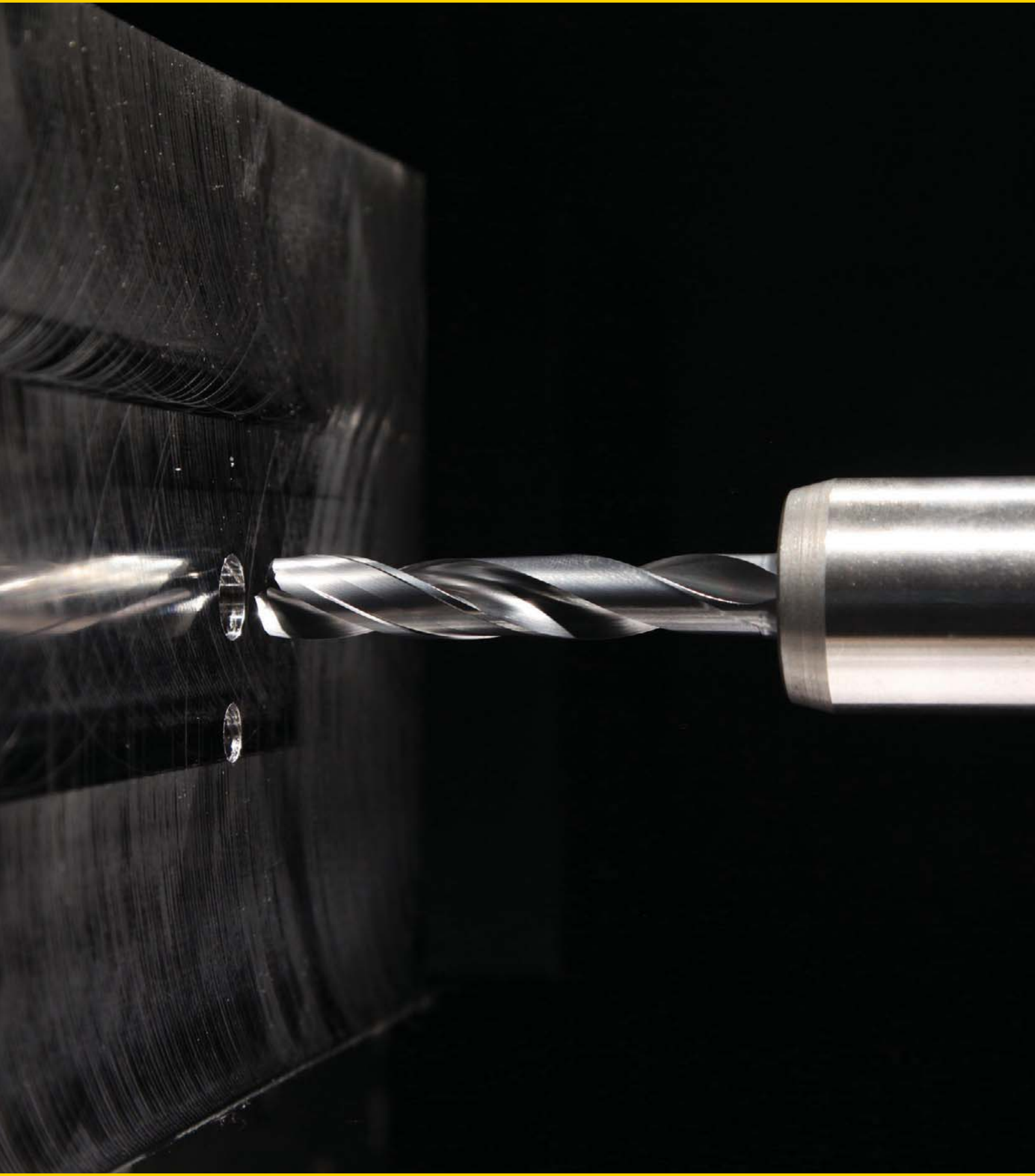
TF Drills • B105 Series • Grade K10™ • Flood Coolant • Drill Diameters 3–20mm • Metric





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K	1	60	**85**	110	mm/r	0,11–0,20	0,12–0,20	0,16–0,28	0,20–0,35	0,22–0,42	0,24–0,50	0,28–0,61	0,30–0,68	
	2	70	**70**	90	mm/r	0,11–0,20	0,12–0,20	0,16–0,28	0,20–0,35	0,22–0,42	0,24–0,50	0,28–0,61	0,30–0,68	
	3	50	**50**	70	mm/r	0,09–0,18	0,10–0,18	0,14–0,26	0,18–0,33	0,02–0,40	0,22–0,48	0,26–0,59	0,28–0,66	
N	1	100	**210**	410	mm/r	0,09–0,15	0,10–0,20	0,18–0,33	0,20–0,38	0,25–0,43	0,03–0,51	0,43–0,58	0,64–0,79	
	2	100	**250**	250	mm/r	0,10–0,19	0,12–0,21	0,18–0,33	0,25–0,42	0,30–0,50	0,35–0,58	0,44–0,74	0,52–0,88	
	3	100	**180**	400	mm/r	0,09–0,16	0,10–0,20	0,12–0,26	0,16–0,36	0,20–0,40	0,24–0,45	0,30–0,50	0,34–0,60	
	4	60	**170**	250	mm/r	0,08–0,15	0,13–0,18	0,18–0,33	0,20–0,36	0,23–0,38	0,33–0,46	0,38–0,48	0,58–0,76	
S	4	20	**20**	50	mm/r	0,03–0,05	0,04–0,07	0,07–0,09	0,09–0,12	0,11–0,15	0,13–0,18	0,17–0,24	0,22–0,30	

KENNAMETAL®



New SGL Drills with Through Coolant for Stainless Steel

Primary Application

The all-new B21_SGL series solid carbide drills are designed specifically for stainless steel applications, offering high performance and long tool life in high-temperature alloys and regular steel, also.

By combining unique Kennametal features, such as the all-new SGL-point-geometry with patented gashing, a unique flute design, and a best-in-class coating into one tool, the B21*SGL drill is the ultimate high-volume production tool.

Features and Benefits

New SGL Point Design

- Improved web thinning and patented gashing, which migrates in a straight cutting edge, enables high cutting parameters (feeds).
- Creates controlled chips, which lead to a reliable performance.
- Improved centring capabilities for better positioning accuracy and improved hole quality.

Unique Flute Design

- Large chip-flute cross-section and small web diameter improve the chip evacuation and the capability to drill deeper holes in difficult-to-machine materials.
- The highly-polished surface ensures superior chip evacuation, even when low-pressure coolant is applied.

New KCMS15™ Beyond Grade

- A monolayer PVD AlTiN-coated fine-grain carbide with superior surface finish.
- First choice for stainless steel and high-temperature resistant materials for longer tool life.
- The coating offers high hardness and excellent abrasive and adhesive wear resistance, as well as enhanced high-temperature properties, increasing its applicability, also, to MQL machining of steel.

Specifically for stainless steel applications.

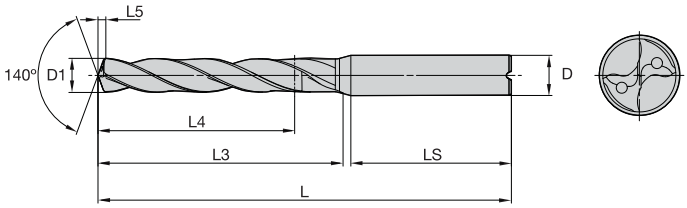


Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- High step diameter ratios and very complex step drill geometries are not recommended for austenitic stainless steel.
- Using Kennametal slim line hydraulic chucks is recommended if workpiece contours need to be bypassed.





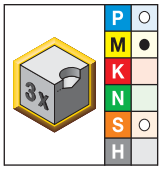


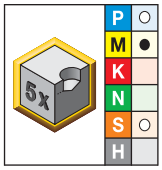


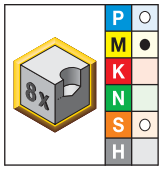
For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

beyond

B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D





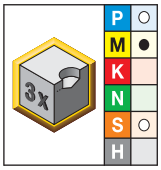


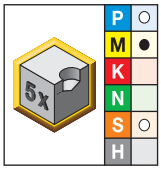
● first choice
○ alternate choice

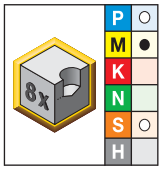
short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	D1 diameter in	L5	LS	D
B210Z02500SGL	–	–	2,500	.0984	0,4	28	3
B210A03000SGL	B211A03000SGL	B212A03000SGL	3,000	.1181	0,4	36	6
B210A03048SGL	B211A03048SGL	–	3,048	.1200	0,5	36	6
–	B211A03100SGL	–	3,100	.1220	0,5	36	6
B210A03175SGL	B211A03175SGL	B212A03175SGL	3,175	.1250	0,5	36	6
B210A03200SGL	B211A03200SGL	B212A03200SGL	3,200	.1260	0,5	36	6
B210A03264SGL	–	B212A03264SGL	3,264	.1285	0,5	36	6
B210A03300SGL	B211A03300SGL	B212A03300SGL	3,300	.1299	0,5	36	6
B210A03400SGL	B211A03400SGL	–	3,400	.1339	0,5	36	6
B210A03455SGL	B211A03455SGL	B212A03455SGL	3,455	.1360	0,5	36	6
B210A03500SGL	B211A03500SGL	B212A03500SGL	3,500	.1378	0,5	36	6
–	B211A03571SGL	B212A03571SGL	3,571	.1406	0,5	36	6
–	B211A03600SGL	–	3,600	.1417	0,5	36	6
–	B211A03658SGL	B212A03658SGL	3,658	.1440	0,5	36	6
–	B211A03700SGL	B212A03700SGL	3,700	.1457	0,5	36	6
B210A03700SGL	–	–	3,700	.1457	0,6	36	6
–	B211A03734SGL	–	3,734	.1470	0,6	36	6
B210A03800SGL	B211A03800SGL	B212A03800SGL	3,800	.1496	0,6	36	6
–	B211A03861SGL	–	3,861	.1520	0,6	36	6
–	B211A03900SGL	–	3,900	.1535	0,6	36	6
B210A04000SGL	B211A04000SGL	B212A04000SGL	4,000	.1575	0,6	36	6
–	B211A04039SGL	B212A04039SGL	4,039	.1590	0,6	36	6
B210A04100SGL	B211A04100SGL	B212A04100SGL	4,100	.1614	0,6	36	6
B210A04200SGL	B211A04200SGL	B212A04200SGL	4,200	.1654	0,6	36	6
–	B211A04217SGL	–	4,217	.1660	0,6	36	6
B210A04300SGL	B211A04300SGL	B212A04300SGL	4,300	.1693	0,6	36	6
–	B211A04366SGL	B212A04366SGL	4,366	.1719	0,6	36	6
B210A04366SGL	–	–	4,366	.1719	0,7	36	6
–	B211A04400SGL	–	4,400	.1732	0,7	36	6
B210A04500SGL	B211A04500SGL	B212A04500SGL	4,500	.1772	0,7	36	6
–	B211A04600SGL	–	4,600	.1811	0,7	36	6
B210A04700SGL	B211A04700SGL	B212A04700SGL	4,700	.1850	0,7	36	6

(continued)

(B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D — continued)





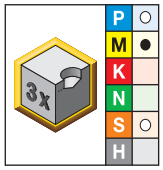


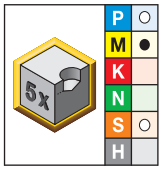
● first choice
○ alternate choice

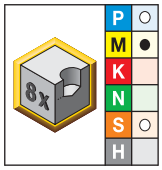
short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	D1 diameter in	L5	LS	D
–	B211A04763SGL	–	4,763	.1875	0,7	36	6
B210A04800SGL	B211A04800SGL	B212A04800SGL	4,800	.1890	0,7	36	6
–	B211A04852SGL	B212A04852SGL	4,852	.1910	0,7	36	6
B210A04900SGL	B211A04900SGL	–	4,900	.1929	0,7	36	6
B210A05000SGL	B211A05000SGL	B212A05000SGL	5,000	.1969	0,7	36	6
B210A05100SGL	B211A05100SGL	B212A05100SGL	5,100	.2008	0,8	36	6
B210A05106SGL	B211A05106SGL	–	5,106	.2010	0,8	36	6
B210A05159SGL	B211A05159SGL	–	5,159	.2031	0,8	36	6
B210A05200SGL	B211A05200SGL	B212A05200SGL	5,200	.2047	0,8	36	6
B210A05300SGL	B211A05300SGL	–	5,300	.2087	0,8	36	6
B210A05400SGL	B211A05400SGL	–	5,400	.2126	0,8	36	6
B210A05500SGL	B211A05500SGL	B212A05500SGL	5,500	.2165	0,8	36	6
–	B211A05558SGL	–	5,558	.2188	0,8	36	6
–	B211A05600SGL	–	5,600	.2205	0,8	36	6
B210A05616SGL	–	–	5,616	.2211	0,8	36	6
–	B211A05700SGL	–	5,700	.2244	0,8	36	6
B210A05800SGL	B211A05800SGL	B212A05800SGL	5,800	.2283	0,9	36	6
–	B211A05900SGL	–	5,900	.2323	0,9	36	6
B210A05954SGL	B211A05954SGL	–	5,954	.2344	0,9	36	6
B210A06000SGL	B211A06000SGL	B212A06000SGL	6,000	.2362	0,9	36	6
B210A06100SGL	B211A06100SGL	–	6,100	.2402	0,9	36	8
B210A06200SGL	B211A06200SGL	–	6,200	.2441	0,9	36	8
B210A06300SGL	B211A06300SGL	–	6,300	.2480	0,9	36	8
B210A06350SGL	B211A06350SGL	B212A06350SGL	6,350	.2500	0,9	36	8
–	B211A06400SGL	–	6,400	.2520	0,9	36	8
B210A06400SGL	–	–	6,400	.2520	1,0	36	8
B210A06500SGL	B211A06500SGL	B212A06500SGL	6,500	.2559	1,0	36	8
–	B211A06600SGL	–	6,600	.2598	1,0	36	8
–	B211A06630SGL	B212A06630SGL	6,630	.2610	1,0	36	8
B210A06700SGL	B211A06700SGL	–	6,700	.2638	1,0	36	8
B210A06800SGL	B211A06800SGL	B212A06800SGL	6,800	.2677	1,0	36	8
B210A06900SGL	B211A06900SGL	–	6,900	.2717	1,0	36	8
B210A07000SGL	B211A07000SGL	B212A07000SGL	7,000	.2756	1,0	36	8
B210A07100SGL	B211A07100SGL	–	7,100	.2795	1,1	36	8
B210A07145SGL	–	–	7,145	.2813	1,1	36	8
–	B211A07200SGL	–	7,200	.2835	1,1	36	8
–	B211A07300SGL	–	7,300	.2874	1,1	36	8
B210A07400SGL	B211A07400SGL	–	7,400	.2913	1,1	36	8
B210A07500SGL	B211A07500SGL	–	7,500	.2953	1,1	36	8
–	–	B212A07500SGL	7,500	.2953	1,1	74	8
–	B211A07600SGL	–	7,600	.2992	1,1	36	8
–	B211A07700SGL	–	7,700	.3031	1,1	36	8
B210A07800SGL	B211A07800SGL	B212A07800SGL	7,800	.3071	1,2	36	8
–	B211A07900SGL	–	7,900	.3110	1,2	36	8
B210A07938SGL	B211A07938SGL	–	7,938	.3125	1,2	36	8
B210A08000SGL	B211A08000SGL	B212A08000SGL	8,000	.3150	1,2	36	8
B210A08100SGL	B211A08100SGL	–	8,100	.3189	1,2	40	10
B210A08200SGL	B211A08200SGL	–	8,200	.3228	1,2	40	10
B210A08400SGL	B211A08400SGL	B212A08400SGL	8,400	.3307	1,2	40	10
B210A08433SGL	–	–	8,433	.3320	1,3	40	10
B210A08500SGL	B211A08500SGL	B212A08500SGL	8,500	.3346	1,3	40	10
B210A08600SGL	B211A08600SGL	–	8,600	.3386	1,3	40	10

(continued)

(B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D — continued)





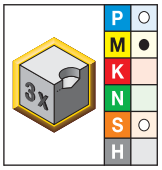


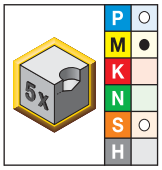
● first choice
○ alternate choice

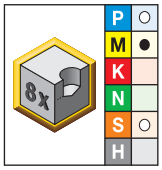
short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	D1 diameter in	L5	LS	D
B210A08700SGL	–	–	8,700	.3425	1,3	40	10
B210A08800SGL	B211A08800SGL	B212A08800SGL	8,800	.3465	1,3	40	10
–	B211A08900SGL	–	8,900	.3504	1,3	40	10
B210A09000SGL	B211A09000SGL	B212A09000SGL	9,000	.3543	1,3	40	10
B210A09093SGL	–	–	9,093	.3580	1,4	40	10
–	B211A09100SGL	–	9,100	.3583	1,3	40	10
–	B211A09200SGL	–	9,200	.3622	1,4	40	10
–	B211A09300SGL	–	9,300	.3661	1,4	40	10
–	B211A09400SGL	–	9,400	.3701	1,4	40	10
B210A09500SGL	B211A09500SGL	B212A09500SGL	9,500	.3740	1,4	40	10
–	B211A09525SGL	–	9,525	.3750	1,4	40	10
–	B211A09600SGL	–	9,600	.3780	1,4	40	10
B210A09700SGL	B211A09700SGL	–	9,700	.3819	1,4	40	10
B210A09800SGL	B211A09800SGL	–	9,800	.3858	1,5	40	10
–	B211A09900SGL	–	9,900	.3898	1,5	40	10
B210A09921SGL	–	–	9,921	.3906	1,5	40	10
B210A10000SGL	B211A10000SGL	B212A10000SGL	10,000	.3937	1,5	40	10
–	B211A10100SGL	–	10,100	.3976	1,5	45	12
B210A10200SGL	B211A10200SGL	B212A10200SGL	10,200	.4016	1,5	45	12
–	B211A10300SGL	–	10,300	.4055	1,5	45	12
B210A10400SGL	B211A10400SGL	–	10,400	.4094	1,5	45	12
B210A10500SGL	B211A10500SGL	B212A10500SGL	10,500	.4134	1,6	45	12
–	B211A10700SGL	–	10,700	.4213	1,6	45	12
B210A10716SGL	–	–	10,716	.4219	1,6	45	12
B210A10800SGL	B211A10800SGL	–	10,800	.4252	1,6	45	12
B210A11000SGL	B211A11000SGL	B212A11000SGL	11,000	.4331	1,6	45	12
–	B211A11100SGL	–	11,100	.4370	1,6	45	12
–	B211A11113SGL	–	11,113	.4375	1,6	45	12
B210A11200SGL	B211A11200SGL	–	11,200	.4409	1,7	45	12
–	B211A11400SGL	–	11,400	.4488	1,7	45	12
B210A11500SGL	B211A11500SGL	–	11,500	.4528	1,7	45	12
B210A11509SGL	–	–	11,509	.4531	1,7	45	12
–	B211A11700SGL	–	11,700	.4606	1,7	45	12
–	B211A11800SGL	B212A11800SGL	11,800	.4646	1,7	45	12
B210A12000SGL	B211A12000SGL	B212A12000SGL	12,000	.4724	1,8	45	12
–	B211A12100SGL	–	12,100	.4764	1,8	45	14
B210A12200SGL	B211A12200SGL	–	12,200	.4803	1,8	45	14
–	B211A12300SGL	–	12,300	.4843	1,8	45	14
B210A12304SGL	–	–	12,304	.4844	1,8	45	14
B210A12500SGL	B211A12500SGL	B212A12500SGL	12,500	.4921	1,9	45	14
B210A12700SGL	B211A12700SGL	–	12,700	.5000	1,9	45	14
B210A12800SGL	B211A12800SGL	–	12,800	.5039	1,9	45	14
–	B211A12900SGL	–	12,900	.5079	1,9	45	14
B210A13000SGL	B211A13000SGL	B212A13000SGL	13,000	.5118	1,9	45	14
–	B211A13100SGL	–	13,100	.5157	1,9	45	14
–	B211A13200SGL	–	13,200	.5197	2,0	45	14
–	B211A13300SGL	–	13,300	.5236	2,0	45	14
B210A13495SGL	–	–	13,495	.5313	2,0	45	14
B210A13500SGL	B211A13500SGL	B212A13500SGL	13,500	.5315	2,0	45	14
–	B211A13800SGL	–	13,800	.5433	2,0	45	14
B210A14000SGL	B211A14000SGL	B212A14000SGL	14,000	.5512	2,1	45	14
B210A14100SGL	B211A14100SGL	–	14,100	.5551	2,1	48	16

(continued)

(B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D — continued)







● first choice
○ alternate choice

short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	D1 diameter in	L5	LS	D
B210A14200SGL	–	–	14,200	.5591	2,1	48	16
–	B211A14300SGL	–	14,300	.5630	2,1	48	16
–	B211A14400SGL	–	14,400	.5669	2,1	48	16
–	B211A14500SGL	–	14,500	.5709	2,1	48	16
B210A14500SGL	–	–	14,500	.5709	2,2	48	16
–	B211A14600SGL	–	14,600	.5748	2,2	48	16
–	B211A14800SGL	–	14,800	.5827	2,2	48	16
B210A15000SGL	B211A15000SGL	–	15,000	.5906	2,2	48	16
–	B211A15100SGL	–	15,100	.5945	2,2	48	16
–	B211A15300SGL	–	15,300	.6024	2,3	48	16
B210A15500SGL	B211A15500SGL	–	15,500	.6102	2,3	48	16
–	B211A15700SGL	–	15,700	.6181	2,3	48	16
B210A15875SGL	B211A15875SGL	–	15,875	.6250	2,4	48	16
B210A16000SGL	B211A16000SGL	–	16,000	.6299	2,4	48	16
–	B211A16100SGL	–	16,100	.6339	2,4	48	18
B210A16129SGL	–	–	16,129	.6350	2,4	48	18
B210A16500SGL	B211A16500SGL	–	16,500	.6496	2,4	48	18
B210A16670SGL	–	–	16,670	.6563	2,5	48	18
B210A17000SGL	B211A17000SGL	–	17,000	.6693	2,5	48	18
B210A17500SGL	B211A17500SGL	–	17,500	.6890	2,6	48	18
–	B211A17700SGL	–	17,700	.6969	2,6	48	18
B210A18000SGL	B211A18000SGL	–	18,000	.7087	2,7	48	18
B210A18500SGL	B211A18500SGL	–	18,500	.7283	2,7	50	20
–	B211A19000SGL	–	19,000	.7480	2,8	50	20
B210A19050SGL	–	–	19,050	.7500	2,8	50	20
–	B211A19159SGL	–	19,159	.7543	2,8	50	20
–	B211A19300SGL	–	19,300	.7598	2,9	50	20
B210A19500SGL	–	–	19,500	.7677	2,9	50	20
B210A20000SGL	–	–	20,000	.7874	3,0	50	20
–	B211A20500SGL	–	20,500	.8071	3,0	50	20

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

HP Drills • B21_SGL Series • Grade KCMS15 • Through Coolant • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate per Rev								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	110	**160**	210	mm/r	0,05–0,13	0,08–0,19	0,11–0,24	0,14–0,30	0,16–0,35	0,18–0,39	0,20–0,46	0,23–0,51
	2	130	**170**	210	mm/r	0,05–0,13	0,08–0,17	0,11–0,20	0,14–0,24	0,16–0,28	0,18–0,32	0,20–0,37	0,23–0,41
	3	110	**150**	190	mm/r	0,08–0,13	0,12–0,19	0,14–0,24	0,17–0,30	0,20–0,35	0,22–0,39	0,26–0,46	0,29–0,51
	4	80	**120**	150	mm/r	0,08–0,12	0,11–0,18	0,12–0,23	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
	5	60	**80**	90	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,14–0,24	0,16–0,26
	6	70	**120**	170	mm/r	0,05–0,11	0,08–0,14	0,11–0,17	0,13–0,21	0,15–0,24	0,17–0,27	0,19–0,33	0,22–0,36
M	1	60	**80**	90	mm/r	0,05–0,14	0,06–0,15	0,08–0,17	0,10–0,19	0,12–0,21	0,13–0,22	0,16–0,25	0,18–0,27
	2	50	**70**	90	mm/r	0,05–0,14	0,06–0,15	0,08–0,17	0,10–0,19	0,12–0,21	0,13–0,22	0,16–0,25	0,18–0,27
	3	50	**60**	80	mm/r	0,05–0,14	0,06–0,15	0,08–0,17	0,10–0,19	0,12–0,21	0,13–0,22	0,16–0,25	0,18–0,27
S	1	10	**20**	30	mm/r	0,03–0,08	0,04–0,09	0,05–0,11	0,05–0,11	0,08–0,14	0,11–0,16	0,14–0,19	0,16–0,21
	2	10	**20**	30	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,11	0,08–0,14	0,11–0,16	0,14–0,19	0,16–0,21
	3	20	**30**	40	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,11	0,08–0,14	0,11–0,16	0,14–0,19	0,16–0,21
	4	30	**40**	50	mm/r	0,03–0,04	0,04–0,05	0,06–0,08	0,08–0,10	0,11–0,13	0,13–0,15	0,14–0,18	0,16–0,20

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Kennametal offers world-class products and services globally. Our distributors know us, and more importantly, they know you. They know better than anyone in the industry how to put the global power of Kennametal to work for you — in your industry, in your region, and for your business.

HP Beyond™ Drills for Steel

Primary Application

B221_HP series solid carbide drills offer the highest metal removal rates and longest tool life in steel and iron materials when dry cutting or using external flood coolant. Dry drilling up to 5 x D possible.

B224_HP series solid carbide drills are ideal for super high-speed drilling of unalloyed and alloyed steel. Achieve 100% higher cutting speed without compromising tool life. Operate these drills with standard through coolant or MQL.

By combining unique Kennametal technologies, such as the HP-point, flute geometry, and a new Beyond grade technology into one tool, the B22_HP Beyond is the ultimate high-volume production tool.

Features and Benefits

HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centring capabilities.

Unique Flute Design

- Improved chip evacuation in dry and mid L/D drilling operations.
- Better hole surface quality.

KCPK15™ Beyond Grade

- The grade is a multilayer, TiAlN-based coating with high hot hardness. High cutting speeds enable use in MQL applications.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant is applied.
- The average metal removal rate and tool life performance improved dramatically (10–30%).

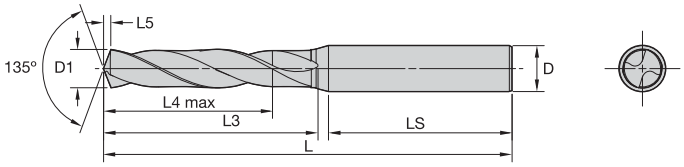
B22_HP Beyond™ drills are the ultimate high-volume production tool.



Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- For holes deeper than 5 x D, internal coolant is recommended.
- Using Kennametal slim line hydraulic chucks together with standard B22_HP is recommended if workpiece contours need to be bypassed.



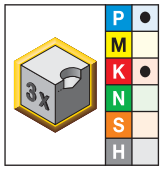


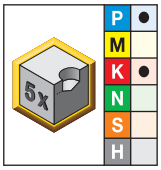


For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

beyond

B221/B222_HP • ~3 x D/~5 x D



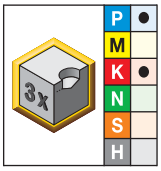


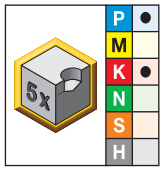
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	L5	LS	D
B221A03000HP	B222A03000HP	3,000	.1181	0,6	36	6
B221A03048HP	B222A03048HP	3,048	.1200	0,6	36	6
B221A03100HP	–	3,100	.1220	0,6	36	6
B221A03175HP	B222A03175HP	3,175	.1250	0,6	36	6
B221A03200HP	–	3,200	.1260	0,6	36	6
B221A03264HP	B222A03264HP	3,264	.1285	0,6	36	6
B221A03300HP	B222A03300HP	3,300	.1299	0,6	36	6
B221A03400HP	–	3,400	.1339	0,6	36	6
B221A03455HP	B222A03455HP	3,455	.1360	0,7	36	6
B221A03500HP	B222A03500HP	3,500	.1378	0,7	36	6
B221A03571HP	B222A03571HP	3,571	.1406	0,7	36	6
B221A03600HP	–	3,600	.1417	0,7	36	6
B221A03700HP	B222A03700HP	3,700	.1457	0,7	36	6
B221A03734HP *	–	3,734	.1470	0,7	36	6
B221A03800HP	B222A03800HP	3,800	.1496	0,7	36	6
B221A03900HP	–	3,900	.1535	0,7	36	6
B221A03970HP	B222A03970HP	3,970	.1563	0,7	36	6
B221A04000HP	B222A04000HP	4,000	.1575	0,8	36	6
B221A04039HP	–	4,039	.1590	0,8	36	6
B221A04090HP	–	4,090	.1610	0,8	36	6
B221A04100HP	–	4,100	.1614	0,8	36	6
B221A04200HP	B222A04200HP	4,200	.1654	0,8	36	6
B221A04217HP *	–	4,217	.1660	0,8	36	6
B221A04300HP	–	4,300	.1693	0,8	36	6
B221A04366HP	B222A04366HP	4,366	.1719	0,8	36	6
B221A04400HP	–	4,400	.1732	0,8	36	6
B221A04500HP	B222A04500HP	4,500	.1772	0,8	36	6
B221A04600HP	B222A04600HP	4,600	.1811	0,9	36	6
B221A04623HP *	–	4,623	.1820	0,9	36	6
B221A04700HP	–	4,700	.1850	0,9	36	6
B221A04763HP	B222A04763HP	4,763	.1875	0,9	36	6
B221A04800HP	B222A04800HP	4,800	.1890	0,9	36	6
B221A04852HP	–	4,852	.1910	0,9	36	6
B221A04900HP	–	4,900	.1929	0,9	36	6
B221A05000HP	B222A05000HP	5,000	.1969	0,9	36	6
B221A05100HP	B222A05100HP	5,100	.2008	1,0	36	6

(continued)

(B221/B222_HP • ~3 x D/~5 x D — continued)



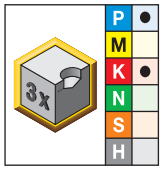


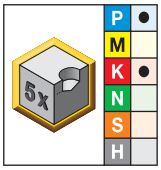
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	L5	LS	D
B221A05106HP	B222A05106HP	5,106	.2010	1,0	36	6
B221A05159HP	B222A05159HP	5,159	.2031	1,0	36	6
B221A05200HP	–	5,200	.2047	1,0	36	6
B221A05300HP	–	5,300	.2087	1,0	36	6
B221A05400HP	–	5,400	.2126	1,0	36	6
B221A05410HP *	B222A05410HP *	5,410	.2130	1,0	36	6
B221A05500HP	B222A05500HP	5,500	.2165	1,0	36	6
B221A05558HP	B222A05558HP *	5,558	.2188	1,0	36	6
B221A05600HP	–	5,600	.2205	1,1	36	6
B221A05616HP *	–	5,616	.2211	1,1	36	6
B221A05700HP	–	5,700	.2244	1,1	36	6
B221A05800HP	B222A05800HP	5,800	.2283	1,1	36	6
B221A05900HP	–	5,900	.2323	1,1	36	6
–	B222A05954HP	5,954	.2344	1,1	36	6
B221A06000HP	B222A06000HP	6,000	.2362	1,1	36	6
B221A06100HP	–	6,100	.2402	1,1	36	8
B221A06200HP	–	6,200	.2441	1,2	36	8
B221A06300HP	–	6,300	.2480	1,2	36	8
B221A06350HP	B222A06350HP	6,350	.2500	1,2	36	8
B221A06400HP	–	6,400	.2520	1,2	36	8
B221A06500HP	B222A06500HP	6,500	.2559	1,2	36	8
B221A06528HP	B222A06528HP	6,528	.2570	1,2	36	8
B221A06600HP	–	6,600	.2598	1,2	36	8
B221A06630HP *	–	6,630	.2610	1,2	36	8
B221A06700HP	B222A06700HP	6,700	.2638	1,3	36	8
B221A06746HP	B222A06746HP	6,746	.2656	1,3	36	8
B221A06800HP	B222A06800HP	6,800	.2677	1,3	36	8
B221A06900HP	–	6,900	.2717	1,3	36	8
B221A07000HP	B222A07000HP	7,000	.2756	1,3	36	8
B221A07100HP	–	7,100	.2795	1,3	36	8
B221A07145HP *	B222A07145HP	7,145	.2813	1,3	36	8
B221A07200HP	–	7,200	.2835	1,3	36	8
B221A07300HP	–	7,300	.2874	1,4	36	8
B221A07400HP	–	7,400	.2913	1,4	36	8
B221A07500HP	B222A07500HP	7,500	.2953	1,4	36	8
B221A07541HP *	B222A07541HP	7,541	.2969	1,4	36	8
B221A07600HP *	–	7,600	.2992	1,4	36	8
B221A07700HP	–	7,700	.3031	1,4	36	8
B221A07800HP	B222A07800HP	7,800	.3071	1,5	36	8
B221A07900HP	–	7,900	.3110	1,5	36	8
B221A07938HP	B222A07938HP	7,938	.3125	1,5	36	8
B221A08000HP	B222A08000HP	8,000	.3150	1,5	36	8
B221A08100HP	–	8,100	.3189	1,5	40	10
B221A08200HP	B222A08200HP	8,200	.3228	1,5	40	10
B221A08300HP	–	8,300	.3268	1,6	40	10
B221A08334HP	B222A08334HP	8,334	.3281	1,6	40	10
B221A08400HP	–	8,400	.3307	1,6	40	10
B221A08433HP *	B222A08433HP	8,433	.3320	1,6	40	10
B221A08500HP	B222A08500HP	8,500	.3346	1,6	40	10
B221A08600HP	–	8,600	.3386	1,6	40	10
B221A08700HP	–	8,700	.3425	1,6	40	10
B221A08733HP *	B222A08733HP	8,733	.3438	1,6	40	10

(continued)

(B221/B222_HP • ~3 x D/~5 x D — continued)



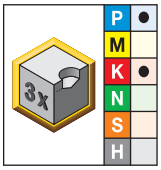


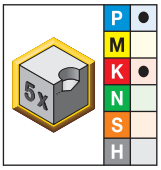
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	L5	LS	D
B221A08800HP	B222A08800HP	8,800	.3465	1,6	40	10
B221A08900HP	–	8,900	.3504	1,7	40	10
B221A09000HP	B222A09000HP	9,000	.3543	1,7	40	10
B221A09100HP	–	9,100	.3583	1,7	40	10
B221A09129HP	B222A09129HP	9,129	.3594	1,7	40	10
B221A09200HP	–	9,200	.3622	1,7	40	10
B221A09300HP	B222A09300HP	9,300	.3661	1,7	40	10
B221A09347HP	–	9,347	.3680	1,7	40	10
B221A09400HP	–	9,400	.3701	1,8	40	10
B221A09500HP	B222A09500HP	9,500	.3740	1,8	40	10
B221A09525HP	B222A09525HP	9,525	.3750	1,8	40	10
B221A09600HP	–	9,600	.3780	1,8	40	10
B221A09700HP	–	9,700	.3819	1,8	40	10
B221A09800HP	B222A09800HP	9,800	.3858	1,8	40	10
B221A09900HP	–	9,900	.3898	1,8	40	10
B221A09921HP	B222A09921HP	9,921	.3906	1,9	40	10
B221A10000HP	B222A10000HP	10,000	.3937	1,9	40	10
B221A10100HP	–	10,100	.3976	1,9	45	12
B221A10200HP	B222A10200HP	10,200	.4016	1,9	45	12
B221A10300HP	–	10,300	.4055	1,9	45	12
B221A10320HP	B222A10320HP	10,320	.4063	1,9	45	12
B221A10400HP	–	10,400	.4094	1,9	45	12
B221A10500HP	B222A10500HP	10,500	.4134	2,0	45	12
B221A10600HP	–	10,600	.4173	2,0	45	12
B221A10700HP	–	10,700	.4213	2,0	45	12
B221A10716HP	B222A10716HP	10,716	.4219	2,0	45	12
B221A10800HP	B222A10800HP	10,800	.4252	2,0	45	12
B221A10900HP *	–	10,900	.4291	2,0	45	12
B221A11000HP	B222A11000HP	11,000	.4331	2,1	45	12
B221A11100HP	–	11,100	.4370	2,1	45	12
B221A11113HP	B222A11113HP	11,113	.4375	2,1	45	12
B221A11200HP	–	11,200	.4409	2,1	45	12
B221A11300HP	–	11,300	.4449	2,1	45	12
B221A11400HP	–	11,400	.4488	2,1	45	12
B221A11500HP	B222A11500HP	11,500	.4528	2,1	45	12
B221A11509HP *	B222A11509HP	11,509	.4531	2,1	45	12
B221A11600HP *	–	11,600	.4567	2,2	45	12
B221A11700HP	–	11,700	.4606	2,2	45	12
B221A11800HP	–	11,800	.4646	2,2	45	12
B221A11900HP	–	11,900	.4685	2,2	45	12
B221A11908HP	B222A11908HP	11,908	.4688	2,2	45	12
B221A12000HP	B222A12000HP	12,000	.4724	2,2	45	12
B221A12100HP	–	12,100	.4764	2,3	45	14
B221A12200HP	–	12,200	.4803	2,3	45	14
B221A12300HP	–	12,300	.4843	2,3	45	14
–	B222A12304HP	12,304	.4844	2,3	45	14
B221A12400HP	–	12,400	.4882	2,3	45	14
B221A12500HP	B222A12500HP *	12,500	.4921	2,3	45	14
B221A12600HP	–	12,600	.4961	2,3	45	14
B221A12700HP	B222A12700HP	12,700	.5000	2,4	45	14
B221A12800HP	–	12,800	.5039	2,4	45	14
B221A12900HP	–	12,900	.5079	2,4	45	14

(continued)

(B221/B222_HP • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	L5	LS	D
B221A13000HP	B222A13000HP	13,000	.5118	2,4	45	14
B221A13100HP	–	13,100	.5157	2,4	45	14
B221A13200HP	–	13,200	.5197	2,5	45	14
B221A13300HP	–	13,300	.5236	2,5	45	14
B221A13500HP	B222A13500HP	13,500	.5315	2,5	45	14
B221A13600HP	–	13,600	.5354	2,5	45	14
B221A13700HP	–	13,700	.5394	2,6	45	14
B221A13800HP	–	13,800	.5433	2,6	45	14
B221A13891HP	–	13,891	.5469	2,6	45	14
B221A14000HP	B222A14000HP	14,000	.5512	2,6	45	14
B221A14100HP	–	14,100	.5551	2,6	48	16
B221A14200HP	–	14,200	.5591	2,6	48	16
B221A14288HP	B222A14288HP	14,288	.5625	2,7	48	16
B221A14300HP	–	14,300	.5630	2,7	48	16
B221A14400HP	–	14,400	.5669	2,7	48	16
B221A14500HP	B222A14500HP	14,500	.5709	2,7	48	16
B221A14600HP	–	14,600	.5748	2,7	48	16
B221A14684HP *	–	14,684	.5781	2,7	48	16
B221A14700HP	–	14,700	.5787	2,7	48	16
B221A14800HP	–	14,800	.5827	2,8	48	16
B221A14900HP	–	14,900	.5866	2,8	48	16
B221A15000HP	B222A15000HP	15,000	.5906	2,8	48	16
B221A15083HP	–	15,083	.5938	2,8	48	16
B221A15100HP	–	15,100	.5945	2,8	48	16
B221A15200HP	–	15,200	.5984	2,8	48	16
B221A15300HP	–	15,300	.6024	2,8	48	16
B221A15400HP *	–	15,400	.6063	2,9	48	16
B221A15479HP	–	15,479	.6094	2,9	48	16
B221A15500HP	B222A15500HP	15,500	.6102	2,9	48	16
B221A15600HP	–	15,600	.6142	2,9	48	16
B221A15700HP	–	15,700	.6181	2,9	48	16
B221A15800HP	–	15,800	.6220	2,9	48	16
B221A15875HP	B222A15875HP	15,875	.6250	3,0	48	16
B221A15900HP *	–	15,900	.6260	3,0	48	16
B221A16000HP	B222A16000HP	16,000	.6299	3,0	48	16
B221A16500HP	B222A16500HP	16,500	.6496	3,1	48	18
B221A17000HP	B222A17000HP	17,000	.6693	3,2	48	18
B221A17463HP	B222A17463HP	17,463	.6875	3,2	48	18
B221A17500HP	B222A17500HP	17,500	.6890	3,3	48	18
B221A17700HP	–	17,700	.6969	3,3	48	18
B221A18000HP	B222A18000HP	18,000	.7087	3,3	48	18
B221A18500HP	B222A18500HP *	18,500	.7283	3,4	50	20
B221A19000HP	B222A19000HP	19,000	.7480	3,5	50	20
B221A19050HP	B222A19050HP	19,050	.7500	3,5	50	20
B221A19500HP	–	19,500	.7677	3,6	50	20
B221A20000HP	B222A20000HP	20,000	.7874	3,7	50	20
B221A20500HP	–	20,500	.8071	3,8	50	20
B221A21000HP	–	21,000	.8268	3,9	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

HP Drills • B221_HP, B222_HP Series • Grade KCPK15™ • Flood Coolant • Drill Diameters 3–20mm • Metric



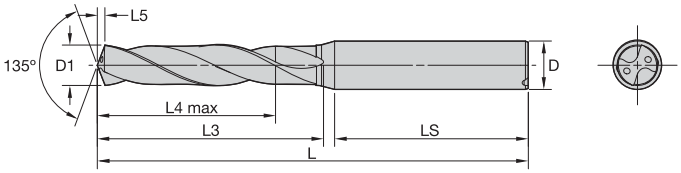
Material Group		Cutting Speed — vc Range — m/min				Metric Recommended Feed Rate (fz) by Diameter							
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	80	**110**	170	mm/r	0,06–0,14	0,06–0,14	0,07–0,20	0,08–0,25	0,09–0,30	0,12–0,36	0,18–0,42	0,21–0,49
	1	70	**110**	150	mm/r	0,07–0,16	0,07–0,17	0,08–0,24	0,09–0,29	0,09–0,35	0,12–0,42	0,25–0,50	0,33–0,58
	2	90	**120**	160	mm/r	0,07–0,15	0,07–0,17	0,12–0,23	0,14–0,31	0,16–0,33	0,20–0,40	0,25–0,50	0,31–0,58
	3	60	**90**	120	mm/r	0,09–0,16	0,09–0,17	0,14–0,24	0,15–0,33	0,19–0,35	0,24–0,44	0,27–0,50	0,34–0,60
	4	50	**80**	120	mm/r	0,08–0,16	0,08–0,17	0,13–0,25	0,16–0,33	0,17–0,33	0,21–0,44	0,24–0,50	0,30–0,60
	6	50	**80**	120	mm/r	0,06–0,11	0,07–0,13	0,09–0,17	0,13–0,24	0,15–0,24	0,18–0,30	0,23–0,40	0,28–0,49
K	1	70	**100**	120	mm/r	0,11–0,21	0,09–0,18	0,14–0,28	0,16–0,37	0,20–0,40	0,22–0,45	0,28–0,58	0,36–0,71
	2	70	**120**	120	mm/r	0,11–0,19	0,09–0,16	0,14–0,23	0,16–0,32	0,19–0,32	0,22–0,37	0,28–0,47	0,36–0,60
	3	50	**90**	130	mm/r	0,08–0,17	0,07–0,14	0,12–0,25	0,13–0,27	0,16–0,29	0,18–0,39	0,25–0,48	0,29–0,58

HP Drills • B221HP, B222HP Series • Grade KCPK15™ • Dry Applications • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc Range — m/min				Metric Recommended Feed Rate (fz) by Diameter							
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	**90**	140	mm/r	0,06–0,10	0,06–0,12	0,11–0,18	0,14–0,24	0,17–0,30	0,21–0,36	0,29–0,43	0,36–0,59
	1	60	**90**	120	mm/r	0,07–0,12	0,07–0,14	0,13–0,21	0,17–0,28	0,20–0,35	0,25–0,42	0,34–0,50	0,42–0,69
	2	60	**90**	120	mm/r	0,07–0,13	0,07–0,14	0,13–0,21	0,17–0,28	0,20–0,35	0,25–0,42	0,34–0,50	0,42–0,69
	3	60	**80**	90	mm/r	0,05–0,07	0,07–0,13	0,11–0,19	0,14–0,21	0,18–0,28	0,21–0,33	0,28–0,42	0,36–0,53
	4	60	**80**	90	mm/r	0,08–0,12	0,11–0,18	0,12–0,23	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
	6	60	**80**	90	mm/r	0,05–0,07	0,07–0,13	0,11–0,19	0,14–0,21	0,18–0,28	0,21–0,33	0,28–0,42	0,36–0,53



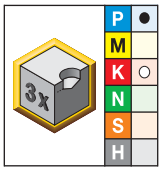


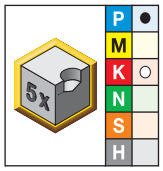


For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

beyond

B224/B225_HP • ~3 x D/~5 x D



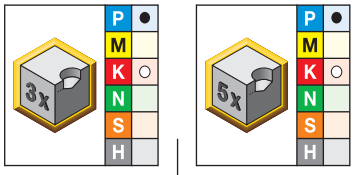


● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	L5	LS	D
B224A03000HP	B225A03000HP	3,000	.1181	0,6	36	6
B224A03048HP	B225A03048HP	3,048	.1200	0,6	36	6
B224A03100HP	B225A03100HP	3,100	.1220	0,6	36	6
B224A03175HP	B225A03175HP	3,175	.1250	0,6	36	6
B224A03200HP	B225A03200HP	3,200	.1260	0,6	36	6
B224A03264HP *	B225A03264HP	3,264	.1285	0,6	36	6
B224A03300HP	B225A03300HP	3,300	.1299	0,6	36	6
B224A03400HP	B225A03400HP	3,400	.1339	0,6	36	6
B224A03455HP	B225A03455HP	3,455	.1360	0,7	36	6
B224A03500HP	B225A03500HP	3,500	.1378	0,7	36	6
–	B225A03571HP	3,571	.1406	0,7	36	6
B224A03600HP	B225A03600HP	3,600	.1417	0,7	36	6
B224A03658HP	–	3,658	.1440	0,7	36	6
B224A03700HP *	B225A03700HP	3,700	.1457	0,7	36	6
B224A03734HP *	–	3,734	.1470	0,7	36	6
–	B225A03797HP	3,797	.1495	0,7	36	6
B224A03800HP	B225A03800HP	3,800	.1496	0,7	36	6
B224A03900HP	B225A03900HP	3,900	.1535	0,7	36	6
B224A03970HP	B225A03970HP	3,970	.1563	0,7	36	6
B224A04000HP	B225A04000HP	4,000	.1575	0,8	36	6
B224A04039HP *	–	4,039	.1590	0,8	36	6
B224A04090HP	–	4,090	.1610	0,8	36	6
B224A04100HP	B225A04100HP	4,100	.1614	0,8	36	6
B224A04200HP	B225A04200HP	4,200	.1654	0,8	36	6
B224A04217HP *	–	4,217	.1660	0,8	36	6
–	B225A04300HP	4,300	.1693	0,8	36	6
B224A04366HP	B225A04366HP	4,366	.1719	0,8	36	6
–	B225A04400HP	4,400	.1732	0,8	36	6
B224A04496HP	B225A04496HP	4,496	.1770	0,8	36	6
–	B225A04500HP	4,500	.1772	0,8	36	6
–	B225A04600HP	4,600	.1811	0,9	36	6
B224A04623HP	–	4,623	.1820	0,9	36	6
B224A04700HP *	B225A04700HP	4,700	.1850	0,9	36	6
B224A04763HP	B225A04763HP	4,763	.1875	0,9	36	6
–	B225A04800HP	4,800	.1890	0,9	36	6
B224A04852HP	–	4,852	.1910	0,9	36	6

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)

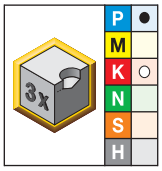


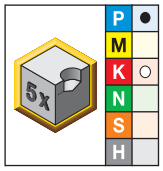
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	L5	LS	D
–	B225A04900HP	4,900	.1929	0,9	36	6
B224A05000HP	B225A05000HP	5,000	.1969	0,9	36	6
B224A05050HP	–	5,050	.1988	0,9	36	6
B224A05100HP	B225A05100HP	5,100	.2008	1,0	36	6
B224A05106HP	B225A05106HP	5,106	.2010	1,0	36	6
B224A05159HP	B225A05159HP	5,159	.2031	1,0	36	6
–	B225A05200HP	5,200	.2047	1,0	36	6
–	B225A05300HP	5,300	.2087	1,0	36	6
–	B225A05400HP	5,400	.2126	1,0	36	6
B224A05410HP	B225A05410HP	5,410	.2130	1,0	36	6
B224A05500HP	B225A05500HP	5,500	.2165	1,0	36	6
B224A05558HP	B225A05558HP	5,558	.2188	1,0	36	6
B224A05600HP	B225A05600HP	5,600	.2205	1,1	36	6
B224A05616HP *	–	5,616	.2211	1,1	36	6
–	B225A05700HP	5,700	.2244	1,1	36	6
B224A05791HP	B225A05791HP	5,791	.2280	1,1	36	6
–	B225A05800HP	5,800	.2283	1,1	36	6
–	B225A05900HP	5,900	.2323	1,1	36	6
B224A05944HP *	B225A05944HP	5,944	.2340	1,1	36	6
B224A05954HP *	B225A05954HP	5,954	.2344	1,1	36	6
B224A06000HP	B225A06000HP	6,000	.2362	1,1	36	6
–	B225A06100HP	6,100	.2402	1,1	36	8
–	B225A06200HP	6,200	.2441	1,2	36	8
–	B225A06300HP	6,300	.2480	1,2	36	8
B224A06350HP	B225A06350HP	6,350	.2500	1,2	36	8
–	B225A06400HP	6,400	.2520	1,2	36	8
B224A06500HP	B225A06500HP	6,500	.2559	1,2	36	8
B224A06528HP *	B225A06528HP	6,528	.2570	1,2	36	8
–	B225A06600HP	6,600	.2598	1,2	36	8
B224A06630HP	–	6,630	.2610	1,2	36	8
B224A06700HP *	B225A06700HP	6,700	.2638	1,3	36	8
B224A06746HP *	B225A06746HP	6,746	.2656	1,3	36	8
B224A06800HP	B225A06800HP	6,800	.2677	1,3	36	8
–	B225A06900HP	6,900	.2717	1,3	36	8
B224A06909HP	B225A06909HP	6,909	.2720	1,3	36	8
B224A07000HP	B225A07000HP	7,000	.2756	1,3	36	8
–	B225A07100HP	7,100	.2795	1,3	36	8
B224A07145HP	B225A07145HP	7,145	.2813	1,3	36	8
–	B225A07200HP	7,200	.2835	1,3	36	8
–	B225A07300HP	7,300	.2874	1,4	36	8
B224A07366HP *	B225A07366HP	7,366	.2900	1,4	36	8
B224A07400HP	B225A07400HP	7,400	.2913	1,4	36	8
B224A07500HP	B225A07500HP	7,500	.2953	1,4	36	8
B224A07541HP	B225A07541HP	7,541	.2969	1,4	36	8
–	B225A07600HP	7,600	.2992	1,4	36	8
–	B225A07700HP	7,700	.3031	1,4	36	8
–	B225A07800HP	7,800	.3071	1,5	36	8
–	B225A07900HP	7,900	.3110	1,5	36	8
B224A07938HP	B225A07938HP	7,938	.3125	1,5	36	8
B224A08000HP	B225A08000HP	8,000	.3150	1,5	36	8
–	B225A08100HP	8,100	.3189	1,5	40	10
B224A08200HP	B225A08200HP	8,200	.3228	1,5	40	10

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)



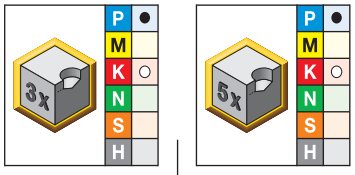


● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	L5	LS	D
–	B225A08300HP	8,300	.3268	1,6	40	10
B224A08334HP	B225A08334HP	8,334	.3281	1,6	40	10
–	B225A08400HP	8,400	.3307	1,6	40	10
B224A08433HP	B225A08433HP	8,433	.3320	1,6	40	10
B224A08500HP	B225A08500HP	8,500	.3346	1,6	40	10
–	B225A08600HP	8,600	.3386	1,6	40	10
B224A08700HP	B225A08700HP	8,700	.3425	1,6	40	10
B224A08733HP	B225A08733HP	8,733	.3438	1,6	40	10
B224A08800HP	B225A08800HP	8,800	.3465	1,6	40	10
B224A08839HP *	B225A08839HP	8,839	.3480	1,7	40	10
–	B225A08900HP	8,900	.3504	1,7	40	10
B224A09000HP	B225A09000HP	9,000	.3543	1,7	40	10
B224A09093HP *	B225A09093HP	9,093	.3580	1,7	40	10
–	B225A09100HP	9,100	.3583	1,7	40	10
B224A09129HP	B225A09129HP	9,129	.3594	1,7	40	10
–	B225A09200HP	9,200	.3622	1,7	40	10
–	B225A09300HP	9,300	.3661	1,7	40	10
–	B225A09347HP	9,347	.3680	1,7	40	10
B224A09400HP	B225A09400HP	9,400	.3701	1,8	40	10
B224A09500HP	B225A09500HP	9,500	.3740	1,8	40	10
B224A09525HP	B225A09525HP	9,525	.3750	1,8	40	10
–	B225A09600HP	9,600	.3780	1,8	40	10
–	B225A09700HP	9,700	.3819	1,8	40	10
–	B225A09800HP	9,800	.3858	1,8	40	10
–	B225A09900HP	9,900	.3898	1,8	40	10
B224A09921HP *	B225A09921HP	9,921	.3906	1,9	40	10
B224A10000HP	B225A10000HP	10,000	.3937	1,9	40	10
–	B225A10100HP	10,100	.3976	1,9	45	12
B224A10200HP	B225A10200HP	10,200	.4016	1,9	45	12
B224A10300HP	B225A10300HP	10,300	.4055	1,9	45	12
B224A10320HP	B225A10320HP	10,320	.4063	1,9	45	12
B224A10400HP	B225A10400HP	10,400	.4094	1,9	45	12
B224A10500HP	B225A10500HP	10,500	.4134	2,0	45	12
–	B225A10600HP	10,600	.4173	2,0	45	12
–	B225A10700HP	10,700	.4213	2,0	45	12
B224A10716HP	B225A10716HP	10,716	.4219	2,0	45	12
B224A10800HP	B225A10800HP	10,800	.4252	2,0	45	12
–	B225A10900HP	10,900	.4291	2,0	45	12
B224A11000HP	B225A11000HP	11,000	.4331	2,1	45	12
–	B225A11100HP	11,100	.4370	2,1	45	12
B224A11113HP	B225A11113HP	11,113	.4375	2,1	45	12
–	B225A11200HP	11,200	.4409	2,1	45	12
–	B225A11300HP	11,300	.4449	2,1	45	12
–	B225A11400HP	11,400	.4488	2,1	45	12
B224A11500HP	B225A11500HP	11,500	.4528	2,1	45	12
B224A11509HP	B225A11509HP	11,509	.4531	2,1	45	12
–	B225A11600HP	11,600	.4567	2,2	45	12
–	B225A11700HP	11,700	.4606	2,2	45	12
–	B225A11800HP	11,800	.4646	2,2	45	12
–	B225A11900HP	11,900	.4685	2,2	45	12
B224A11908HP	B225A11908HP	11,908	.4688	2,2	45	12
B224A12000HP	B225A12000HP	12,000	.4724	2,2	45	12

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)

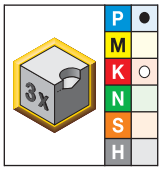


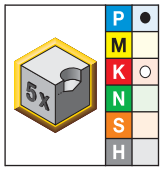
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	L5	LS	D
–	B225A12100HP	12,100	.4764	2,3	45	14
–	B225A12200HP	12,200	.4803	2,3	45	14
B224A12300HP	B225A12300HP	12,300	.4843	2,3	45	14
B224A12304HP *	B225A12304HP	12,304	.4844	2,3	45	14
–	B225A12400HP	12,400	.4882	2,3	45	14
B224A12500HP	B225A12500HP	12,500	.4921	2,3	45	14
–	B225A12600HP	12,600	.4961	2,3	45	14
B224A12700HP	B225A12700HP	12,700	.5000	2,4	45	14
B224A12800HP *	B225A12800HP	12,800	.5039	2,4	45	14
–	B225A12900HP	12,900	.5079	2,4	45	14
B224A13000HP	B225A13000HP	13,000	.5118	2,4	45	14
B224A13096HP *	–	13,096	.5156	2,4	45	14
B224A13100HP	B225A13100HP	13,100	.5157	2,4	45	14
–	B225A13200HP	13,200	.5197	2,5	45	14
–	B225A13300HP	13,300	.5236	2,5	45	14
–	B225A13400HP	13,400	.5276	2,5	45	14
B224A13495HP	B225A13495HP	13,495	.5313	2,5	45	14
B224A13500HP	B225A13500HP	13,500	.5315	2,5	45	14
–	B225A13600HP	13,600	.5354	2,5	45	14
–	B225A13700HP	13,700	.5394	2,6	45	14
–	B225A13800HP	13,800	.5433	2,6	45	14
B224A13891HP	B225A13891HP *	13,891	.5469	2,6	45	14
–	B225A13900HP	13,900	.5472	2,6	45	14
B224A14000HP	B225A14000HP	14,000	.5512	2,6	45	14
–	B225A14100HP	14,100	.5551	2,6	48	16
B224A14200HP *	B225A14200HP	14,200	.5591	2,6	48	16
B224A14288HP	B225A14288HP	14,288	.5625	2,7	48	16
–	B225A14300HP	14,300	.5630	2,7	48	16
–	B225A14400HP	14,400	.5669	2,7	48	16
B224A14500HP	B225A14500HP	14,500	.5709	2,7	48	16
–	B225A14600HP	14,600	.5748	2,7	48	16
B224A14684HP	B225A14684HP *	14,684	.5781	2,7	48	16
–	B225A14700HP	14,700	.5787	2,7	48	16
–	B225A14800HP	14,800	.5827	2,8	48	16
–	B225A14900HP *	14,900	.5866	2,8	48	16
–	B225A15000HP	15,000	.5906	2,8	48	16
B224A15083HP *	B225A15083HP *	15,083	.5938	2,8	48	16
–	B225A15100HP	15,100	.5945	2,8	48	16
–	B225A15200HP	15,200	.5984	2,8	48	16
–	B225A15300HP	15,300	.6024	2,8	48	16
–	B225A15400HP	15,400	.6063	2,9	48	16
–	B225A15479HP *	15,479	.6094	2,9	48	16
B224A15500HP	B225A15500HP	15,500	.6102	2,9	48	16
B224A15600HP	B225A15600HP	15,600	.6142	2,9	48	16
–	B225A15700HP	15,700	.6181	2,9	48	16
–	B225A15800HP	15,800	.6220	2,9	48	16
B224A15875HP	B225A15875HP	15,875	.6250	3,0	48	16
–	B225A15900HP *	15,900	.6260	3,0	48	16
B224A16000HP	B225A16000HP	16,000	.6299	3,0	48	16
–	B225A16100HP	16,100	.6339	3,0	48	18
B224A16500HP	B225A16500HP	16,500	.6496	3,1	48	18
–	B225A16670HP	16,670	.6563	3,1	48	18

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	L5	LS	D
B224A17000HP	B225A17000HP	17,000	.6693	3,2	48	18
B224A17463HP	B225A17463HP	17,463	.6875	3,2	48	18
B224A17500HP	B225A17500HP	17,500	.6890	3,3	48	18
–	B225A17700HP	17,700	.6969	3,3	48	18
B224A18000HP	B225A18000HP	18,000	.7087	3,3	48	18
–	B225A18500HP	18,500	.7283	3,4	50	20
B224A19000HP	B225A19000HP	19,000	.7480	3,5	50	20
B224A19050HP *	B225A19050HP	19,050	.7500	3,5	50	20
–	B225A19200HP	19,200	.7559	3,6	50	20
–	B225A19250HP	19,250	.7579	3,6	50	20
–	B225A19300HP	19,300	.7598	3,6	50	20
–	B225A19500HP	19,500	.7677	3,6	50	20
B224A20000HP	B225A20000HP	20,000	.7874	3,7	50	20
–	B225A20500HP	20,500	.8071	3,8	50	20
–	B225A21000HP	21,000	.8268	3,9	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Application Data

HP Drills • B224_HP, B225_HP Series • Grade KCPK15™ • Through Coolant or MQL (Minimum Quantity Lubricant) • Drill Diameters 3–20mm • Metric





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	140	**240**	290	mm/r	0,08–0,15	0,09–0,18	0,12–0,21	0,14–0,29	0,15–0,33	0,17–0,37	0,19–0,43	0,22–0,49
	1	130	**240**	290	mm/r	0,09–0,18	0,11–0,21	0,14–0,25	0,16–0,34	0,18–0,39	0,20–0,43	0,22–0,51	0,26–0,58
	2	190	**230**	270	mm/r	0,09–0,18	0,11–0,21	0,14–0,25	0,16–0,34	0,18–0,39	0,20–0,43	0,26–0,51	0,32–0,58
	3	130	**160**	190	mm/r	0,10–0,18	0,12–0,21	0,14–0,26	0,16–0,34	0,19–0,39	0,24–0,46	0,27–0,51	0,34–0,60
	4	110	**150**	170	mm/r	0,07–0,16	0,09–0,18	0,14–0,26	0,16–0,34	0,17–0,36	0,22–0,45	0,25–0,52	0,30–0,60
	5	60	**80**	90	mm/r	0,06–0,14	0,08–0,16	0,10–0,20	0,14–0,25	0,16–0,28	0,18–0,32	0,22–0,40	0,26–0,48
	6	110	**150**	190	mm/r	0,07–0,13	0,11–0,16	0,12–0,20	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
K	1	120	**150**	200	mm/r	0,08–0,11	0,14–0,20	0,20–0,28	0,25–0,35	0,29–0,40	0,32–0,43	0,36–0,50	0,40–0,55
	2	80	**120**	160	mm/r	0,08–0,11	0,13–0,17	0,19–0,26	0,23–0,30	0,25–0,36	0,30–0,40	0,34–0,46	0,37–0,50
	3	60	**80**	120	mm/r	0,07–0,10	0,10–0,14	0,15–0,21	0,19–0,26	0,22–0,30	0,24–0,33	0,28–0,38	0,30–0,41

YPC Beyond™ Solid Carbide Drills with Through Coolant for Iron Materials

beyond

Primary Application

The B25_YPC series solid carbide drills are specifically engineered to deliver best-in-class hole quality and longest tool life in cast iron, ductile iron, CGI, and ADI. Operate these drills with standard through coolant or MQL.

The B25_YPC Beyond solid carbide drill combines unique Kennametal technologies, such as the Y-TECH™ flute spacing, the HP-point geometry, the KCK10™ Beyond grade, and the latest, proprietary post-coat treatment technology into one tool.

Features and Benefits

Y-TECH Technology with Uneven Flute-to-Flute Angle

- Unbalanced forces by design avoid chipping on margin lands.

Three-Margin Lands

- Reduce pendulum motion by directing forces towards third margin for superior hole accuracy (cylindricity, constant diameter, hole straightness).

New HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centring capabilities.
- Highest possible feed rates.

Corner Chamfer

- Avoids breakout when drilling through holes in grey iron.
- Significantly increases tool life at elevated speeds and feeds.

KCK10 Beyond Grade

- The grade contains multiple layers of PVD coating offering outstanding wear resistance for the drilling of cast irons.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant or MQL is applied.

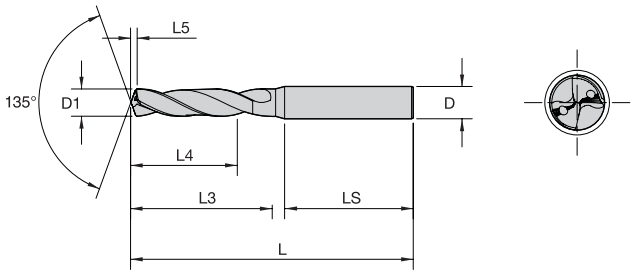
Y-TECH™ technology for superior hole quality.



Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- Using Kennametal slim line hydraulic chucks together with standard B25_YPC is recommended if workpiece contours need to be bypassed.



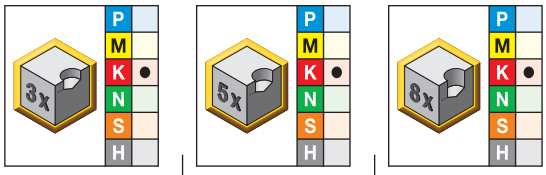




beyond

For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D



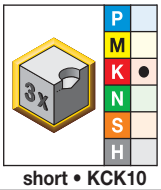
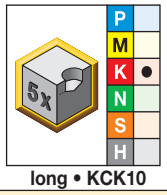
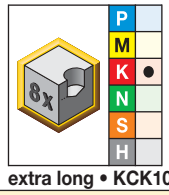
● first choice
○ alternate choice

short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	D1 diameter in	L5	LS	D
B254A03000YPC	B255A03000YPC	B256A03000YPC	3,000	.1181	0,9	36	6
B254A03048YPC *	B255A03048YPC	–	3,048	.1200	0,9	36	6
–	B255A03175YPC *	B256A03175YPC	3,175	.1250	0,9	36	6
B254A03200YPC	B255A03200YPC	–	3,200	.1260	0,9	36	6
–	B255A03250YPC	–	3,250	.1280	0,9	36	6
–	–	B256A03264YPC	3,264	.1285	0,9	36	6
B254A03300YPC *	B255A03300YPC	–	3,300	.1299	0,9	36	6
–	B255A03400YPC *	–	3,400	.1339	1,0	36	6
B254A03454YPC *	–	–	3,454	.1360	1,0	36	6
B254A03500YPC	B255A03500YPC *	B256A03500YPC	3,500	.1378	1,0	36	6
B254A03600YPC *	B255A03600YPC *	–	3,600	.1417	1,0	36	6
–	B255A03700YPC	B256A03700YPC *	3,700	.1457	1,0	36	6
–	B255A03797YPC	–	3,797	.1495	1,1	36	6
B254A03800YPC *	B255A03800YPC	B256A03800YPC *	3,800	.1496	1,1	36	6
B254A03861YPC *	B255A03861YPC *	–	3,861	.1520	1,1	36	6
–	B255A03970YPC *	–	3,970	.1563	1,1	36	6
B254A04000YPC	B255A04000YPC	B256A04000YPC	4,000	.1575	1,1	36	6
B254A04039YPC	B255A04039YPC	–	4,039	.1590	1,1	36	6
B254A04100YPC	B255A04100YPC	B256A04100YPC	4,100	.1614	1,1	36	6
B254A04200YPC	B255A04200YPC	B256A04200YPC	4,200	.1654	1,2	36	6
–	B255A04217YPC	–	4,217	.1660	1,2	36	6
–	B255A04300YPC	B256A04300YPC *	4,300	.1693	1,2	36	6
–	B255A04366YPC *	B256A04366YPC *	4,366	.1719	1,2	36	6
B254A04500YPC	B255A04500YPC	B256A04500YPC	4,500	.1772	1,2	36	6
B254A04572YPC	B255A04572YPC	–	4,572	.1800	1,3	36	6
–	B255A04600YPC *	–	4,600	.1811	1,3	36	6
–	–	B256A04623YPC	4,623	.1820	1,3	36	6
–	B255A04700YPC *	B256A04700YPC	4,700	.1850	1,3	36	6
B254A04763YPC *	–	–	4,763	.1875	1,3	36	6
B254A04800YPC	B255A04800YPC	B256A04800YPC	4,800	.1890	1,3	36	6
–	–	B256A04852YPC *	4,852	.1910	1,3	36	6
–	B255A04900YPC *	–	4,900	.1929	1,3	36	6
B254A05000YPC	B255A05000YPC	B256A05000YPC	5,000	.1969	1,4	36	6
B254A05055YPC	B255A05055YPC	–	5,055	.1990	1,4	36	6
B254A05100YPC	B255A05100YPC	B256A05100YPC	5,100	.2008	1,4	36	6
B254A05106YPC *	–	–	5,106	.2010	1,4	36	6
–	B255A05159YPC *	–	5,159	.2031	1,4	36	6
–	B255A05200YPC	B256A05200YPC *	5,200	.2047	1,4	36	6
–	B255A05250YPC	–	5,250	.2067	1,4	36	6
B254A05300YPC *	B255A05300YPC *	–	5,300	.2087	1,4	36	6

(continued)

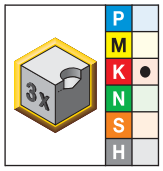
(B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D — continued)

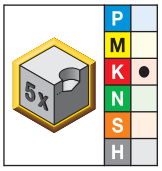
● first choice
○ alternate choice

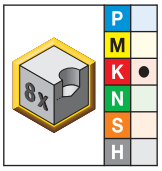
 short • KCK10	 long • KCK10	 extra long • KCK10	D1 diameter mm	D1 diameter in	L5	LS	D
–	B255A05400YPC *	–	5,400	.2126	1,5	36	6
–	B255A05410YPC *	–	5,410	.2130	1,5	36	6
B254A05500YPC *	B255A05500YPC	B256A05500YPC	5,500	.2165	1,5	36	6
B254A05558YPC *	B255A05558YPC *	–	5,558	.2188	1,5	36	6
–	B255A05600YPC	B256A05600YPC	5,600	.2205	1,5	36	6
–	B255A05700YPC *	–	5,700	.2244	1,5	36	6
B254A05791YPC	B255A05791YPC *	–	5,791	.2280	1,6	36	6
B254A05800YPC	B255A05800YPC	B256A05800YPC	5,800	.2283	1,6	36	6
–	–	B256A05900YPC	5,900	.2323	1,6	36	6
B254A06000YPC	B255A06000YPC	B256A06000YPC	6,000	.2362	1,6	36	6
B254A06100YPC *	B255A06100YPC *	–	6,100	.2402	1,6	36	8
B254A06200YPC *	B255A06200YPC	B256A06200YPC	6,200	.2441	1,7	36	8
–	B255A06300YPC	–	6,300	.2480	1,7	36	8
–	B255A06350YPC *	B256A06350YPC	6,350	.2500	1,7	36	8
–	B255A06400YPC	B256A06400YPC	6,400	.2520	1,7	36	8
B254A06500YPC *	B255A06500YPC	B256A06500YPC	6,500	.2559	1,7	36	8
B254A06528YPC	–	–	6,528	.2570	1,7	36	8
B254A06600YPC *	B255A06600YPC	B256A06600YPC *	6,600	.2598	1,8	36	8
–	B255A06630YPC	–	6,630	.2610	1,8	36	8
B254A06700YPC *	B255A06700YPC *	B256A06700YPC *	6,700	.2638	1,8	36	8
B254A06746YPC *	B255A06746YPC	–	6,746	.2656	1,8	36	8
B254A06800YPC	B255A06800YPC	B256A06800YPC	6,800	.2677	1,8	36	8
B254A06900YPC *	B255A06900YPC	–	6,900	.2717	1,8	36	8
–	B255A06909YPC *	–	6,909	.2720	1,8	36	8
B254A07000YPC	B255A07000YPC	B256A07000YPC	7,000	.2756	1,9	36	8
B254A07100YPC *	–	–	7,100	.2795	1,9	36	8
–	B255A07145YPC *	–	7,145	.2813	1,9	36	8
–	B255A07200YPC	–	7,200	.2835	1,9	36	8
–	–	B256A07300YPC *	7,300	.2874	1,9	36	8
B254A07366YPC *	–	–	7,366	.2900	1,9	36	8
–	B255A07400YPC	–	7,400	.2913	2,0	36	8
B254A07493YPC *	B255A07493YPC *	–	7,493	.2950	2,0	36	8
B254A07500YPC	B255A07500YPC *	B256A07500YPC	7,500	.2953	2,0	36	8
–	B255A07541YPC	–	7,541	.2969	2,0	36	8
B254A07600YPC *	B255A07600YPC *	B256A07600YPC	7,600	.2992	2,0	36	8
–	B255A07700YPC	–	7,700	.3031	2,0	36	8
B254A07800YPC	B255A07800YPC	B256A07800YPC	7,800	.3071	2,1	36	8
–	B255A07900YPC	–	7,900	.3110	2,1	36	8
B254A07938YPC	B255A07938YPC	–	7,938	.3125	2,1	36	8
B254A08000YPC	B255A08000YPC	B256A08000YPC	8,000	.3150	2,1	36	8
B254A08100YPC	B255A08100YPC *	–	8,100	.3189	2,1	40	10
B254A08200YPC	B255A08200YPC	B256A08200YPC	8,200	.3228	2,1	40	10
–	B255A08300YPC	B256A08300YPC	8,300	.3268	2,2	40	10
B254A08334YPC *	–	–	8,334	.3281	2,2	40	10
B254A08400YPC	–	–	8,400	.3307	2,2	40	10
B254A08433YPC *	B255A08433YPC	–	8,433	.3320	2,2	40	10
B254A08500YPC	B255A08500YPC	B256A08500YPC	8,500	.3346	2,2	40	10
B254A08600YPC	B255A08600YPC	B256A08600YPC	8,600	.3386	2,2	40	10
B254A08700YPC	B255A08700YPC	B256A08700YPC *	8,700	.3425	2,3	40	10
B254A08800YPC	B255A08800YPC	B256A08800YPC	8,800	.3465	2,3	40	10
B254A08839YPC *	B255A08839YPC *	–	8,839	.3480	2,3	40	10
–	B255A08900YPC *	–	8,900	.3504	2,3	40	10
B254A09000YPC	B255A09000YPC	B256A09000YPC	9,000	.3543	2,3	40	10
–	B255A09093YPC *	–	9,093	.3580	2,4	40	10
B254A09100YPC *	B255A09100YPC	B256A09100YPC	9,100	.3583	2,4	40	10
–	B255A09129YPC *	–	9,129	.3594	2,4	40	10
B254A09200YPC	B255A09200YPC *	–	9,200	.3622	2,4	40	10
–	B255A09300YPC	B256A09300YPC	9,300	.3661	2,4	40	10
–	–	B256A09347YPC	9,347	.3680	2,4	40	10
B254A09400YPC *	B255A09400YPC	–	9,400	.3701	2,4	40	10

(continued)

(B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D — continued)





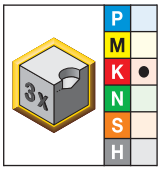


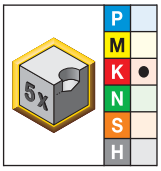
● first choice
○ alternate choice

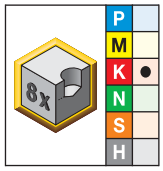
short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	D1 diameter in	L5	LS	D
B254A09500YPC	B255A09500YPC	B256A09500YPC	9,500	.3740	2,5	40	10
B254A09525YPC *	B255A09525YPC *	–	9,525	.3750	2,5	40	10
–	B255A09600YPC	B256A09600YPC	9,600	.3780	2,5	40	10
–	B255A09700YPC	B256A09700YPC *	9,700	.3819	2,5	40	10
B254A09800YPC	B255A09800YPC *	B256A09800YPC	9,800	.3858	2,5	40	10
B254A09921YPC *	B255A09921YPC	–	9,921	.3906	2,6	40	10
B254A10000YPC	B255A10000YPC	B256A10000YPC	10,000	.3937	2,6	40	10
B254A10200YPC	B255A10200YPC	B256A10200YPC	10,200	.4016	2,6	45	12
B254A10262YPC	B255A10262YPC *	–	10,262	.4040	2,6	45	12
B254A10300YPC	B255A10300YPC	B256A10300YPC	10,300	.4055	2,6	45	12
B254A10320YPC	B255A10320YPC *	–	10,320	.4063	2,7	45	12
–	B255A10400YPC *	B256A10400YPC	10,400	.4094	2,7	45	12
B254A10490YPC *	–	–	10,490	.4130	2,7	45	12
B254A10500YPC	B255A10500YPC	B256A10500YPC	10,500	.4134	2,7	45	12
–	B255A10600YPC	–	10,600	.4173	2,7	45	12
B254A10700YPC	–	B256A10700YPC	10,700	.4213	2,7	45	12
–	B255A10716YPC	–	10,716	.4219	2,7	45	12
B254A10800YPC	B255A10800YPC	B256A10800YPC	10,800	.4252	2,8	45	12
–	B255A10900YPC *	–	10,900	.4291	2,8	45	12
B254A11000YPC	B255A11000YPC	B256A11000YPC	11,000	.4331	2,8	45	12
B254A11100YPC *	B255A11100YPC	–	11,100	.4370	2,8	45	12
B254A11113YPC *	B255A11113YPC	–	11,113	.4375	2,8	45	12
B254A11200YPC	B255A11200YPC	B256A11200YPC	11,200	.4409	2,9	45	12
–	–	B256A11300YPC *	11,300	.4449	2,9	45	12
B254A11500YPC	B255A11500YPC	B256A11500YPC	11,500	.4528	2,9	45	12
–	–	B256A11600YPC	11,600	.4567	3,0	45	12
–	B255A11700YPC	–	11,700	.4606	3,0	45	12
B254A11800YPC	B255A11800YPC	B256A11800YPC	11,800	.4646	3,0	45	12
–	B255A11900YPC	B256A11900YPC	11,900	.4685	3,0	45	12
B254A11908YPC *	B255A11908YPC *	–	11,908	.4688	3,0	45	12
B254A12000YPC	B255A12000YPC	B256A12000YPC	12,000	.4724	3,1	45	12
–	B255A12100YPC	–	12,100	.4764	3,1	45	14
B254A12200YPC	B255A12200YPC	B256A12200YPC	12,200	.4803	3,1	45	14
–	B255A12251YPC	–	12,251	.4823	3,1	45	14
–	B255A12300YPC *	B256A12300YPC	12,300	.4843	3,1	45	14
B254A12304YPC *	B255A12304YPC *	–	12,304	.4844	3,1	45	14
–	–	B256A12400YPC *	12,400	.4882	3,1	45	14
B254A12500YPC	B255A12500YPC	B256A12500YPC	12,500	.4921	3,2	45	14
–	B255A12700YPC	B256A12700YPC	12,700	.5000	3,2	45	14
B254A12800YPC	–	B256A12800YPC	12,800	.5039	3,2	45	14
B254A13000YPC	B255A13000YPC	B256A13000YPC	13,000	.5118	3,3	45	14
–	B255A13096YPC *	B256A13096YPC	13,096	.5156	3,3	45	14
B254A13100YPC	–	–	13,100	.5157	3,3	45	14
B254A13200YPC	–	B256A13200YPC	13,200	.5197	3,3	45	14
–	B255A13495YPC	B256A13495YPC	13,495	.5313	3,4	45	14
B254A13500YPC	B255A13500YPC	B256A13500YPC	13,500	.5315	3,4	45	14
–	–	B256A13700YPC	13,700	.5394	3,5	45	14
B254A13800YPC	–	B256A13800YPC	13,800	.5433	3,5	45	14
B254A13891YPC *	–	B256A13891YPC *	13,891	.5469	3,5	45	14
B254A14000YPC	B255A14000YPC	B256A14000YPC	14,000	.5512	3,5	45	14
B254A14100YPC *	B255A14100YPC *	–	14,100	.5551	3,6	48	16
B254A14288YPC	B255A14288YPC	–	14,288	.5625	3,6	48	16
B254A14500YPC	B255A14500YPC	B256A14500YPC	14,500	.5709	3,6	48	16
–	B255A14600YPC *	–	14,600	.5748	3,7	48	16
–	B255A14684YPC	B256A14684YPC *	14,684	.5781	3,7	48	16
B254A14800YPC	–	B256A14800YPC	14,800	.5827	3,7	48	16
B254A15000YPC	B255A15000YPC	B256A15000YPC	15,000	.5906	3,8	48	16
–	B255A15083YPC	B256A15083YPC *	15,083	.5938	3,8	48	16
B254A15200YPC	–	B256A15200YPC	15,200	.5984	3,8	48	16
B254A15250YPC *	B255A15250YPC	–	15,250	.6004	3,8	48	16

(continued)

(B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D — continued)







● first choice
○ alternate choice

short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	D1 diameter in	L5	LS	D
–	–	B256A15300YPC	15,300	.6024	3,8	48	16
B254A15400YPC	B255A15400YPC *	–	15,400	.6063	3,9	48	16
B254A15500YPC	B255A15500YPC *	B256A15500YPC	15,500	.6102	3,9	48	16
B254A15800YPC	B255A15800YPC	B256A15800YPC *	15,800	.6220	4,0	48	16
–	B255A15875YPC *	–	15,875	.6250	4,0	48	16
B254A16000YPC	B255A16000YPC	B256A16000YPC	16,000	.6299	4,0	48	16
–	B255A16300YPC	B256A16300YPC	16,300	.6417	4,1	48	18
B254A16500YPC	B255A16500YPC	B256A16500YPC	16,500	.6496	4,1	48	18
B254A16670YPC *	B255A16670YPC	–	16,670	.6563	4,2	48	18
B254A16800YPC	B255A16800YPC	B256A16800YPC	16,800	.6614	4,2	48	18
B254A17000YPC	B255A17000YPC	B256A17000YPC	17,000	.6693	4,2	48	18
–	B255A17200YPC *	–	17,200	.6772	4,3	48	18
B254A17463YPC *	B255A17463YPC	–	17,463	.6875	4,3	48	18
B254A17500YPC	B255A17500YPC	B256A17500YPC	17,500	.6890	4,3	48	18
B254A17800YPC	B255A17800YPC	B256A17800YPC	17,800	.7008	4,4	48	18
B254A17859YPC *	B255A17859YPC	–	17,859	.7031	4,4	48	18
B254A18000YPC	B255A18000YPC	B256A18000YPC	18,000	.7087	4,5	48	18
B254A18200YPC *	–	–	18,200	.7165	4,5	50	20
B254A18258YPC *	B255A18258YPC	B256A18258YPC *	18,258	.7188	4,5	50	20
B254A18500YPC *	B255A18500YPC	B256A18500YPC	18,500	.7283	4,6	50	20
B254A18800YPC	B255A18800YPC	B256A18800YPC	18,800	.7402	4,7	50	20
B254A19000YPC	B255A19000YPC	B256A19000YPC	19,000	.7480	4,7	50	20
B254A19050YPC *	–	–	19,050	.7500	4,7	50	20
–	B255A19500YPC	B256A19500YPC	19,500	.7677	4,8	50	20
–	B255A19700YPC	–	19,700	.7756	4,9	50	20
B254A19800YPC	B255A19800YPC	B256A19800YPC	19,800	.7795	4,9	50	20
B254A20000YPC	B255A20000YPC	B256A20000YPC	20,000	.7874	4,9	50	20
–	B255A20500YPC	–	20,500	.8071	5,1	50	20
B254A20638YPC *	B255A20638YPC	B256A20638YPC	20,638	.8125	5,1	50	20
B254A21000YPC *	B255A21000YPC *	–	21,000	.8268	5,2	50	20
B254A22000YPC	B255A22000YPC	B256A22000YPC	22,000	.8661	5,4	50	20
B254A22225YPC *	B255A22225YPC *	B256A22225YPC *	22,225	.8750	5,5	56	25
B254A23416YPC	B255A23416YPC *	–	23,416	.9219	5,7	56	25
–	B255A24000YPC *	–	24,000	.9449	5,9	56	25
B254A25000YPC *	B255A25000YPC *	–	25,000	.9843	6,1	56	25
–	–	B256A25004YPC *	25,004	.9844	6,1	56	25

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Application Data

YPC Drills • B25_YPC • Grade KCK10™ • Through Coolant • Drill Diameters 3–20mm • Metric





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K	1	130	**160**	210	mm/r	0,12–0,22	0,14–0,25	0,16–0,32	0,22–0,44	0,30–0,46	0,34–0,50	0,38–0,62	0,42–0,74
	2	90	**130**	180	mm/r	0,12–0,22	0,14–0,25	0,16–0,32	0,22–0,44	0,30–0,46	0,34–0,50	0,38–0,62	0,42–0,74
	3	70	**90**	130	mm/r	0,11–0,17	0,12–0,22	0,22–0,34	0,24–0,46	0,26–0,48	0,28–0,50	0,30–0,62	0,34–0,74

SE 4-Margin Drills with Through Coolant for Steel

High-performance platform for mid-L/D applications in steel.



Primary Application

B256 series solid carbide drills are the high-performance platform for mid-L/D applications in steel that require high accuracy and consistent hole straightness combined with excellent metal removal rates and long tool life.

Features and Benefits

SE Drill-Point Design

- Sculptured edge enables high feed rates.



Four-Margin Lands

- Improves hole straightness.
- Improves hole alignment when drilling through cross holes.

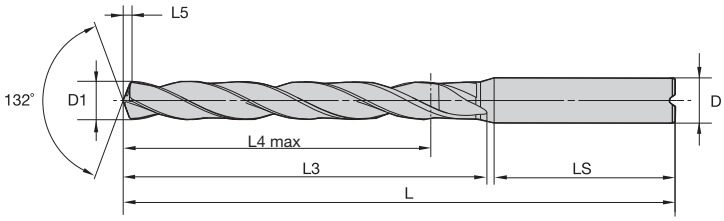
KC7315™ Grade

- Multilayer, TiAlN-based coating with high hot hardness allows 30% higher cutting speeds and constant tool life.
- Optimised tool surface finish ensures chip evacuation when drilling deeper holes.

Customisation

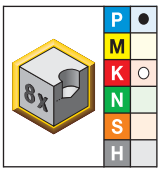
- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- For follow-up operations, such as machining screw holes in connecting rods, the point angle of the step drill for the screw head should be adjusted.







B256 • ~8 x D



● first choice
○ alternate choice

extra long • KC7315	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B256A05000	5,000	.1969	94	56	48	1,0	36	6
B256A05100	5,100	.2008	94	56	48	1,0	36	6
B256A05500	5,500	.2165	94	56	48	1,1	36	6
B256A05800	5,800	.2283	94	56	48	1,2	36	6
B256A06000	6,000	.2362	94	56	48	1,2	36	6
B256A06500	6,500	.2559	105	67	57	1,3	36	8
B256A06800	6,800	.2677	105	67	57	1,4	36	8
B256A07000	7,000	.2756	105	67	57	1,4	36	8
B256A07800	7,800	.3071	110	72	61	1,6	36	8
B256A08000	8,000	.3150	110	72	61	1,6	36	8
B256A08400	8,400	.3307	122	80	68	1,7	40	10
B256A08500	8,500	.3346	122	80	68	1,7	40	10
B256A08800	8,800	.3465	122	80	68	1,8	40	10
B256A09000	9,000	.3543	122	80	68	1,8	40	10
B256A09500	9,500	.3740	122	80	68	1,9	40	10
B256A10000	10,000	.3937	122	80	68	2,0	40	10
B256A10200	10,200	.4016	141	94	79	2,0	45	12
B256A10500	10,500	.4134	141	94	79	2,1	45	12
B256A11000	11,000	.4331	141	94	79	2,2	45	12
B256A11800	11,800	.4646	141	94	79	2,3	45	12
B256A12000	12,000	.4724	141	94	79	2,4	45	12
B256A12500	12,500	.4921	155	108	91	2,5	45	14
B256A13000	13,000	.5118	155	108	91	2,6	45	14
B256A13500	13,500	.5315	155	108	91	2,7	45	14
B256A14000	14,000	.5512	155	108	91	2,8	45	14
B256A15000	15,000	.5906	171	121	101	3,0	48	16
B256A16000	16,000	.6299	171	121	101	3,2	48	16

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

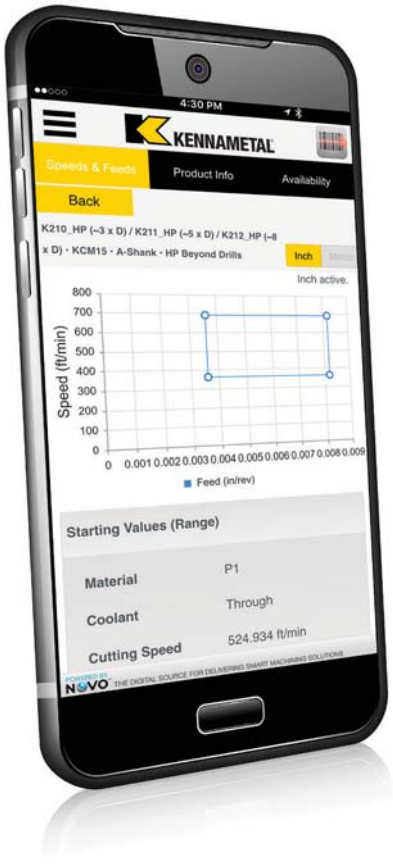
SE Drills • B256 Series • Grade KC7315™ • Through Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	130	**145**	200	mm/r	0,07–0,09	0,08–0,13	0,09–0,13	0,11–0,16	0,11–0,19	0,13–0,23	0,15–0,28	0,19–0,31
	1	120	**145**	175	mm/r	0,08–0,11	0,09–0,15	0,11–0,15	0,13–0,19	0,13–0,22	0,15–0,27	0,18–0,33	0,22–0,37
	2	80	**100**	120	mm/r	0,08–0,11	0,08–0,13	0,09–0,17	0,15–0,21	0,16–0,25	0,18–0,33	0,22–0,42	0,26–0,50
	3	80	**90**	120	mm/r	0,08–0,11	0,09–0,15	0,11–0,15	0,13–0,19	0,13–0,22	0,15–0,27	0,18–0,33	0,22–0,37
	4	60	**70**	80	mm/r	0,06–0,09	0,07–0,13	0,09–0,13	0,11–0,15	0,11–0,17	0,13–0,22	0,15–0,27	0,17–0,30
K	1	120	**150**	200	mm/r	0,08–0,11	0,14–0,20	0,20–0,28	0,25–0,35	0,29–0,40	0,32–0,43	0,36–0,50	0,40–0,55
	2	80	**120**	160	mm/r	0,08–0,11	0,13–0,17	0,19–0,26	0,23–0,30	0,25–0,36	0,30–0,40	0,34–0,46	0,37–0,50
	3	60	**80**	120	mm/r	0,07–0,10	0,10–0,14	0,15–0,21	0,19–0,26	0,22–0,30	0,24–0,33	0,28–0,38	0,30–0,41

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



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HP Beyond™ 4-Margin Long-Length Drills with Through Coolant

beyond

Primary Application

B269_HP series solid carbide drills are 12 x D, long-length drills, closing the gap between 8 x D drill (B256_SE) and 15 x D (B271_HP). They are designed for deep-hole applications without pilot drill in steel, cast iron, and stainless steel materials. Operate these drills with standard through coolant or MQL. The drills have a standard A-shank according to DIN 6535 HA (round cylindrical with 2mm steps).

Features and Benefits

Four-Margin Lands

- Improves hole straightness.
- Improves hole alignment when drilling through cross holes or inclined exits.

HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centring capabilities.
- Eliminates the need for pilot drilling.

Unique Flute Design

- Drastically improved chip evacuation.
- Better hole surface quality.

KCPK15™ Beyond Grade

- The grade is a multilayer, TiAlN-based coating with high hot hardness. It enables highest cutting speeds and enables the use in MQL applications.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant is applied.

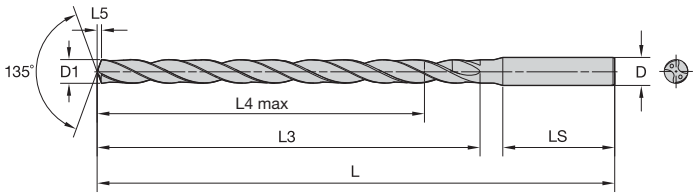
Designed for deep-hole applications without pilot drill.



Customisation

- Intermediate diameters available as engineered solutions.
- Length variations and step drills available as engineered solutions.

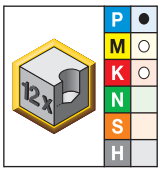






beyond

B269_HP • ~12 x D

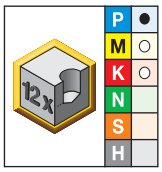


● first choice
○ alternate choice

extra long • KCPK15	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B269A02400KMG	2,400	.0945	75	42	35	0,5	28	4
B269A02500KMG	2,500	.0984	75	42	35	0,5	28	4
B269A02600KMG	2,600	.1024	75	42	35	0,5	28	4
B269A02800KMG	2,800	.1102	75	43	36	0,6	28	4
B269A02900KMG	2,900	.1142	75	43	36	0,6	28	4
B269A03000HP	3,000	.1181	93	52	44	0,6	36	6
B269A03175HP	3,175	.1250	93	52	44	0,6	36	6
B269A03264HP	3,264	.1285	93	53	44	0,6	36	6
B269A03300HP	3,300	.1299	93	53	44	0,6	36	6
B269A03400HP *	3,400	.1339	93	53	44	0,6	36	6
B269A03500HP	3,500	.1378	93	53	44	0,7	36	6
B269A03600HP	3,600	.1417	93	54	45	0,7	36	6
B269A03700HP	3,700	.1457	93	54	45	0,7	36	6
B269A03800HP	3,800	.1496	107	65	55	0,7	36	6
B269A03970HP	3,970	.1563	107	66	56	0,7	36	6
B269A04000HP	4,000	.1575	107	66	56	0,8	36	6
B269A04100HP	4,100	.1614	107	66	55	0,8	36	6
B269A04200HP	4,200	.1654	107	67	56	0,8	36	6
B269A04300HP	4,300	.1693	107	67	56	0,8	36	6
B269A04500HP	4,500	.1772	107	67	56	0,8	36	6
B269A04550HP	4,550	.1791	107	68	57	0,9	36	6
B269A04600HP	4,600	.1811	107	68	57	0,9	36	6
B269A04700HP	4,700	.1850	107	68	57	0,9	36	6
B269A04763HP	4,763	.1875	125	82	69	0,9	36	6
B269A04800HP	4,800	.1890	125	82	69	0,9	36	6
B269A05000HP	5,000	.1969	125	83	70	0,9	36	6
B269A05100HP	5,100	.2008	125	83	70	1,0	36	6
B269A05200HP	5,200	.2047	125	83	70	1,0	36	6
B269A05300HP	5,300	.2087	125	84	71	1,0	36	6
B269A05410HP	5,410	.2130	125	84	71	1,0	36	6
B269A05500HP	5,500	.2165	125	84	71	1,0	36	6
B269A05558HP	5,558	.2188	125	84	71	1,0	36	6

(continued)

(B269_HP • ~12 x D — continued)

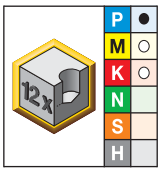


● first choice
○ alternate choice

extra long • KCPK15	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B269A05600HP	5,600	.2205	125	85	72	1,1	36	6
B269A05700HP	5,700	.2244	125	85	72	1,1	36	6
B269A05800HP	5,800	.2283	125	85	71	1,1	36	6
B269A06000HP	6,000	.2362	125	86	72	1,1	36	6
B269A06100HP	6,100	.2402	139	97	82	1,1	36	8
B269A06200HP	6,200	.2441	139	97	82	1,2	36	8
B269A06350HP	6,350	.2500	139	98	83	1,2	36	8
B269A06400HP	6,400	.2520	139	98	83	1,2	36	8
B269A06500HP	6,500	.2559	139	98	83	1,2	36	8
B269A06528HP	6,528	.2570	139	98	83	1,2	36	8
B269A06600HP	6,600	.2598	139	99	84	1,2	36	8
B269A06746HP	6,746	.2656	139	99	83	1,3	36	8
B269A06800HP	6,800	.2677	139	99	83	1,3	36	8
B269A06909HP	6,909	.2720	139	100	84	1,3	36	8
B269A07000HP	7,000	.2756	139	100	84	1,3	36	8
B269A07145HP	7,145	.2813	153	111	94	1,3	36	8
B269A07500HP	7,500	.2953	153	112	95	1,4	36	8
B269A07541HP	7,541	.2969	153	112	95	1,4	36	8
B269A07700HP	7,700	.3031	153	113	96	1,4	36	8
B269A07800HP	7,800	.3071	153	113	95	1,5	36	8
B269A07938HP	7,938	.3125	153	114	96	1,5	36	8
B269A08000HP	8,000	.3150	153	114	96	1,5	36	8
B269A08100HP	8,100	.3189	185	136	116	1,5	40	10
B269A08200HP	8,200	.3228	185	136	116	1,5	40	10
B269A08334HP	8,334	.3281	185	137	117	1,6	40	10
B269A08433HP	8,433	.3320	185	137	117	1,6	40	10
B269A08500HP	8,500	.3346	185	137	117	1,6	40	10
B269A08600HP	8,600	.3386	185	138	118	1,6	40	10
B269A08700HP	8,700	.3425	185	138	118	1,6	40	10
B269A08733HP	8,733	.3438	185	138	117	1,6	40	10
B269A09000HP	9,000	.3543	185	139	118	1,7	40	10
B269A09100HP	9,100	.3583	185	139	118	1,7	40	10
B269A09129HP *	9,129	.3594	185	139	118	1,7	40	10
B269A09500HP	9,500	.3740	185	140	119	1,8	40	10
B269A09525HP	9,525	.3750	185	140	119	1,8	40	10
B269A09800HP	9,800	.3858	185	141	119	1,8	40	10
B269A09921HP	9,921	.3906	185	142	120	1,9	40	10
B269A10000HP	10,000	.3937	185	142	120	1,9	40	10
B269A10200HP	10,200	.4016	218	164	140	1,9	45	12
B269A10300HP	10,300	.4055	218	165	141	1,9	45	12
B269A10320HP	10,320	.4063	218	165	141	1,9	45	12
B269A10400HP	10,400	.4094	218	165	141	1,9	45	12
B269A10500HP	10,500	.4134	218	165	141	2,0	45	12
B269A10716HP	10,716	.4219	218	166	142	2,0	45	12
B269A10800HP	10,800	.4252	218	166	141	2,0	45	12
B269A11000HP	11,000	.4331	218	167	142	2,1	45	12
B269A11113HP	11,113	.4375	218	167	142	2,1	45	12
B269A11200HP	11,200	.4409	218	167	142	2,1	45	12

(continued)

(B269_HP • ~12 x D — continued)



● first choice
○ alternate choice

extra long • KCPK15	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B269A11500HP	11,500	.4528	218	168	143	2,1	45	12
B269A11800HP	11,800	.4646	218	169	143	2,2	45	12
B269A12000HP	12,000	.4724	218	170	144	2,2	45	12
B269A12100HP	12,100	.4764	246	192	164	2,3	45	14
B269A12200HP	12,200	.4803	246	192	164	2,3	45	14
B269A12304HP	12,304	.4844	246	193	165	2,3	45	14
B269A12500HP	12,500	.4921	246	193	165	2,3	45	14
B269A12700HP	12,700	.5000	246	194	166	2,4	45	14
B269A13000HP	13,000	.5118	246	195	166	2,4	45	14
B269A13100HP	13,100	.5157	246	195	166	2,4	45	14
B269A13500HP	13,500	.5315	246	196	167	2,5	45	14
B269A13800HP *	13,800	.5433	246	197	168	2,6	45	14
B269A14000HP	14,000	.5512	246	198	168	2,6	45	14
B269A14100HP *	14,100	.5551	277	220	188	2,6	48	16
B269A14288HP	14,288	.5625	277	220	188	2,7	48	16
B269A14500HP	14,500	.5709	277	221	189	2,7	48	16
B269A14600HP *	14,600	.5748	277	221	189	2,7	48	16
B269A14684HP	14,684	.5781	277	222	190	2,7	48	16
B269A15000HP	15,000	.5906	277	223	190	2,8	48	16
B269A15200HP *	15,200	.5984	277	223	190	2,8	48	16
B269A15500HP	15,500	.6102	277	224	191	2,9	48	16
B269A15875HP	15,875	.6250	277	225	192	3,0	48	16
B269A16000HP	16,000	.6299	277	226	192	3,0	48	16
B269A16500HP	16,500	.6496	305	249	213	3,1	48	18
B269A17000HP	17,000	.6693	305	250	214	3,2	48	18
B269A17100HP	17,100	.6732	305	251	214	3,2	48	18
B269A17463HP	17,463	.6875	305	252	215	3,2	48	18
B269A17500HP	17,500	.6890	305	252	215	3,3	48	18
B269A17600HP *	17,600	.6929	305	252	215	3,3	48	18
B269A18000HP	18,000	.7087	305	253	216	3,3	48	18
B269A18500HP	18,500	.7283	334	277	237	3,4	50	20
B269A18600HP *	18,600	.7323	334	277	237	3,5	50	20
B269A19000HP	19,000	.7480	334	278	238	3,5	50	20
B269A19050HP	19,050	.7500	334	279	239	3,5	50	20
B269A19500HP	19,500	.7677	334	280	239	3,6	50	20
B269A20000HP	20,000	.7874	334	281	240	3,7	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

HP Drills • B269_HP Series • Grade KCPK15™ • Through Coolant • Drill Diameters 3–20mm • Metric





Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	110	**140**	170	mm/r	0,10–0,14	0,12–0,20	0,14–0,20	0,17–0,25	0,25–0,28	0,20–0,35	0,23–0,43	0,28–0,48
	1	100	**140**	150	mm/r	0,12–0,17	0,14–0,23	0,17–0,23	0,20–0,29	0,29–0,33	0,23–0,41	0,27–0,50	0,33–0,56
	2	70	**100**	110	mm/r	0,12–0,17	0,12–0,20	0,14–0,26	0,23–0,32	0,24–0,38	0,27–0,50	0,33–0,63	0,39–0,75
	3	70	**90**	110	mm/r	0,12–0,17	0,14–0,23	0,17–0,23	0,20–0,29	0,29–0,33	0,23–0,41	0,27–0,50	0,33–0,56
	4	60	**70**	90	mm/r	0,09–0,14	0,11–0,20	0,14–0,20	0,17–0,23	0,17–0,26	0,20–0,33	0,23–0,41	0,26–0,45
	5	60	**80**	90	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,14–0,24	0,16–0,26
	6	80	**150**	160	mm/r	0,07–0,13	0,11–0,11	0,12–0,20	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
M	1	50	**60**	80	mm/r	0,04–0,08	0,06–0,13	0,08–0,16	0,10–0,18	0,12–0,20	0,13–0,22	0,15–0,24	0,18–0,28
	2	40	**50**	80	mm/r	0,04–0,08	0,06–0,13	0,08–0,16	0,10–0,18	0,12–0,20	0,13–0,22	0,15–0,24	0,18–0,28
	3	40	**50**	70	mm/r	0,03–0,07	0,05–0,10	0,06–0,14	0,08–0,16	0,10–0,18	0,12–0,20	0,14–0,22	0,16–0,26
K	1	90	**150**	150	mm/r	0,10–0,15	0,14–0,20	0,20–0,30	0,22–0,36	0,26–0,42	0,30–0,45	0,36–0,59	0,40–0,72
	2	80	**120**	120	mm/r	0,10–0,15	0,14–0,20	0,20–0,30	0,22–0,36	0,26–0,42	0,30–0,45	0,36–0,59	0,40–0,72
	3	80	**80**	140	mm/r	0,11–0,15	0,15–0,21	0,22–0,32	0,22–0,39	0,26–0,45	0,28–0,50	0,30–0,60	0,34–0,72

Beyond™ HP Solid Carbide Deep-Hole Drills

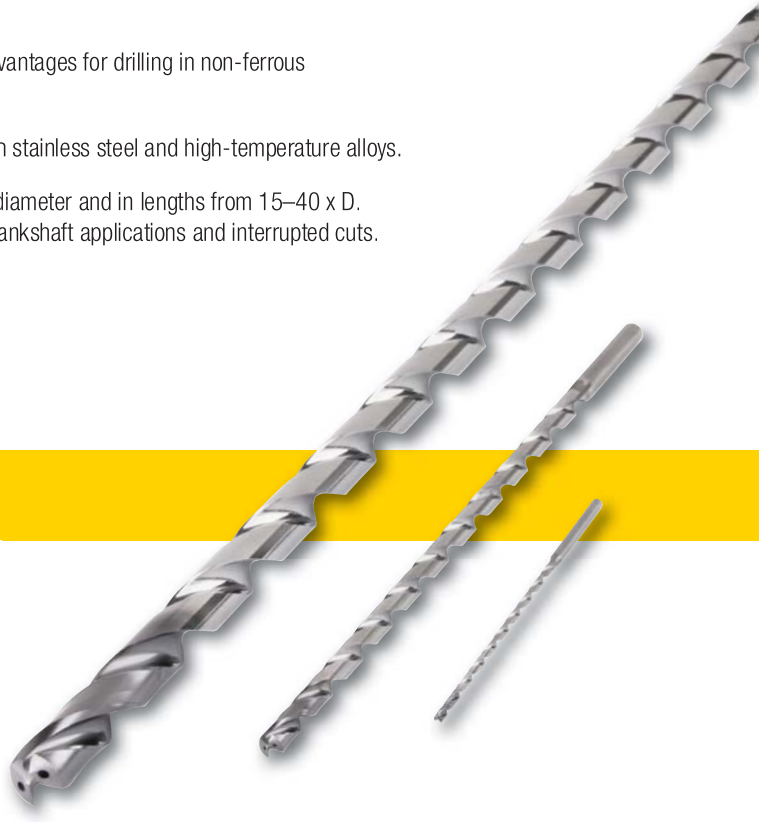
Primary Application

B27_HPG Series Solid Carbide Drills, made of the KCPK20™ grade, are the optimum platform for drilling holes up to 40 x D deep in steel and cast iron. The B27_HPG series drills deep holes up to 4x faster than conventional HSS and gun drills. The application of MQL is possible.

The B27_HPS in the new uncoated KN25™ grade offers the same advantages for drilling in non-ferrous materials, such as aluminium, copper, and brass.

The all new B27_SGL series is designed specifically for applications in stainless steel and high-temperature alloys.

The standard series is available from 2,383–16mm (.0938–.6299") diameter and in lengths from 15–40 x D. KMH-point geometry is available as a semi-standard, especially for crankshaft applications and interrupted cuts. Longer drills up to 550mm (21.65") are available as custom solution.



Features and Benefits

HP Drill-Point Design

- Low thrust.
- Excellent centring capabilities.
- Highest possible feed rates.

Four-Margin Lands

- Improves hole straightness.
- Improves hole alignment when drilling through cross holes.

Unique Flute Design

- The highly polished surface ensures superior chip evacuation even when low-pressure coolant or MQL is applied.
- Drastically improved chip evacuation.
- Better hole surface quality.

KCPK20 Grade (B27_HPG)

- An AlCrN-TiAlN based coating on the head of the drill provides outstanding wear resistance.
- New ultra-fine-grain carbide ensures process reliability at high feed rates.



Solid carbide deep-hole drills run up to 4x faster than conventional HSS and gun drills.

KN25™ Grade (B27_HPS)

- Sharp cutting edge enables higher tool life in aluminium and other non-ferrous materials.
- The uncoated grade helps to prevent built-up edge in drilling aluminium and high-temp alloys.

New KCMS20 Grade (B27_SGL)

- Monolayer PVD AlTiN coated ultra-fine grain carbide with superior surface finish.
- First choice for deep hole drilling of stainless steel and high-temperature resistant materials. Due to the coatings enhanced high temperature properties, this grade can also be applied for MQL applications in steel.

Customisation

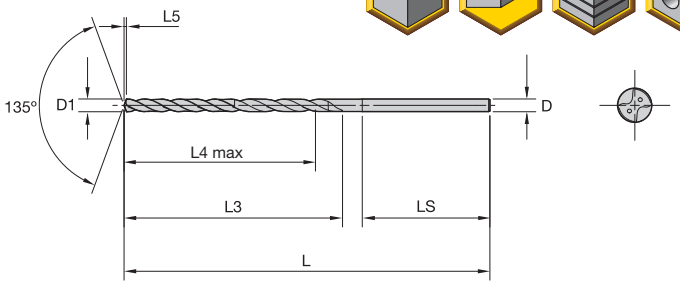
- Intermediate diameters available as semi-standards.
- Length variations, including even longer versions up to 550mm (21.65"), available as custom solutions.
- One-shot drilling of deep holes with a small step is possible.
- Maximum 2mm (.08") step range. Consult the custom solutions department for specific applications.
- Excellent surface finish and concentricity.







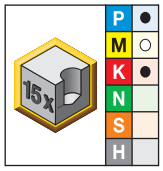


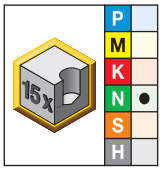


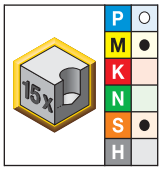
For information on L5, see B224_HP drills or B210_SGL drills.



B271Z_HPG/HPS/SGL • 15 x D





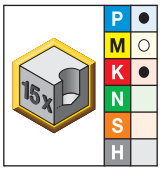


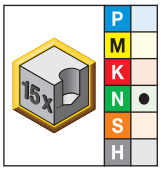
● first choice
○ alternate choice

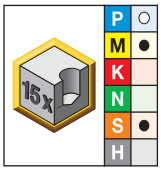
KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B271Z02383KMG	B271Z02383KMS	–	2,383	.0938	86	51	44	30	3
–	B271Z02400KMS	–	2,400	.0945	86	51	44	30	3
–	B271Z02439KMS	–	2,439	.0960	86	51	44	30	3
–	B271Z02489KMS	–	2,489	.0980	86	51	44	30	3
B271Z02500KMG	B271Z02500KMS	B271Z02500SGL	2,500	.0984	86	51	44	30	3
–	B271Z02578KMS	–	2,578	.1015	86	51	44	30	3
–	B271Z02600KMS	–	2,600	.1024	86	51	44	30	3
B271Z02642KMG	–	–	2,642	.1040	86	51	44	30	3
B271Z02705KMG	–	–	2,705	.1065	86	52	45	30	3
B271Z02779KMG	B271Z02779KMS *	–	2,779	.1094	86	52	45	30	3
–	B271Z02800KMS	–	2,800	.1102	86	52	45	30	3
B271Z02820KMG *	B271Z02820KMS *	–	2,820	.1110	86	52	45	30	3
–	B271Z02870KMS *	–	2,870	.1130	86	52	45	30	3
–	B271Z02900KMS	–	2,900	.1142	86	52	45	30	3
–	B271Z02947KMS *	–	2,947	.1160	86	52	45	30	3
B271Z03000HPG	B271Z03000HPS	B271Z03000SGL	3,000	.1181	86	52	45	30	3
B271Z03175HPG	B271Z03175HPS	B271Z03175SGL	3,175	.1250	105	67	58	32	4
B271Z03200HPG	B271Z03200HPS	–	3,200	.1260	105	67	58	32	4
B271Z03500HPG	B271Z03500HPS	B271Z03500SGL	3,500	.1378	105	68	59	32	4
B271Z03600HPG	–	–	3,600	.1417	105	68	59	32	4
B271Z03700HPG	–	–	3,700	.1457	105	69	60	32	4
B271Z03970HPG	B271Z03970HPS *	B271Z03970SGL	3,970	.1563	105	70	60	32	4
B271Z04000HPG	B271Z04000HPS	B271Z04000SGL	4,000	.1575	105	70	60	32	4
B271Z04500HPG	B271Z04500HPS	B271Z04500SGL	4,500	.1772	124	85	74	34	5
B271Z04623HPG	–	–	4,623	.1820	124	86	75	34	5
B271Z04763HPG	B271Z04763HPS	B271Z04763SGL	4,763	.1875	124	86	75	34	5
B271Z04800HPG	–	–	4,800	.1890	124	86	75	34	5
–	–	B271Z04800SGL	4,800	.1890	124	86	75	34	5
B271Z05000HPG	B271Z05000HPS	B271Z05000SGL	5,000	.1969	124	87	75	34	5
B271Z05060HPG	–	–	5,060	.1992	143	101	88	36	6
B271Z05260HPG	–	–	5,260	.2071	143	102	89	36	6
B271Z05410HPG	–	–	5,410	.2130	143	102	89	36	6
B271Z05500HPG	B271Z05500HPS	B271Z05500SGL	5,500	.2165	143	102	89	36	6
B271Z05558HPG	–	–	5,558	.2188	143	102	89	36	6
–	–	B271Z05558SGL	5,558	.2188	143	102	89	36	6
B271Z05800HPG	–	–	5,800	.2283	143	103	89	36	6
B271Z05900HPG	–	–	5,900	.2323	143	103	89	36	6
B271Z06000HPG	B271Z06000HPS	B271Z06000SGL	6,000	.2362	143	104	90	36	6
B271Z06200HPG	B271Z06200HPS	–	6,200	.2441	162	118	103	38	7
B271Z06350HPG	B271Z06350HPS	B271Z06350SGL	6,350	.2500	162	119	104	38	7

(continued)

(B271Z_HPG/HPS/SGL • 15 x D — continued)





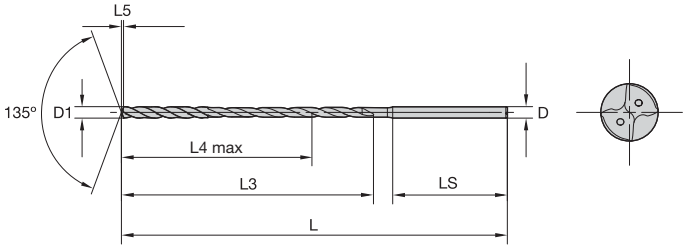


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B271Z06500HPG	B271Z06500HPS	B271Z06500SGL	6,500	.2559	162	119	104	38	7
B271Z06528HPG	—	—	6,528	.2570	162	119	104	38	7
B271Z06746HPG	B271Z06746HPS	B271Z06746SGL	6,746	.2656	162	120	104	38	7
B271Z06909HPG	—	—	6,909	.2720	162	121	105	38	7
B271Z07000HPG	B271Z07000HPS	B271Z07000SGL	7,000	.2756	162	121	105	38	7
B271Z07145HPG	B271Z07145HPS	B271Z07145SGL	7,145	.2813	181	135	118	40	8
B271Z07500HPG	B271Z07500HPS	B271Z07500SGL	7,500	.2953	181	136	119	40	8
B271Z07541HPG *	—	—	7,541	.2969	181	136	119	40	8
B271Z07938HPG	—	B271Z07938SGL	7,938	.3125	181	138	120	40	8
B271Z08000HPG	B271Z08000HPS	B271Z08000SGL	8,000	.3150	181	138	120	40	8
B271Z08200HPG	—	—	8,200	.3228	200	152	133	42	9
B271Z08334HPG	—	—	8,334	.3281	200	153	134	42	9
B271Z08500HPG	B271Z08500HPS	B271Z08500SGL	8,500	.3346	200	153	134	42	9
B271Z08733HPG	B271Z08733HPS	—	8,733	.3438	200	154	134	42	9
—	—	B271Z08733SGL	8,733	.3438	200	154	134	42	9
B271Z09000HPG	B271Z09000HPS	B271Z09000SGL	9,000	.3543	200	155	135	42	9
B271Z09100HPG	—	—	9,100	.3583	219	169	148	44	10
B271Z09200HPG *	—	—	9,200	.3622	219	169	148	44	10
B271Z09500HPG	B271Z09500HPS	—	9,500	.3740	219	170	149	44	10
B271Z09525HPG	B271Z09525HPS	B271Z09525SGL	9,525	.3750	219	170	149	44	10
B271Z09750HPG	—	—	9,750	.3839	219	171	149	44	10
B271Z10000HPG	B271Z10000HPS	B271Z10000SGL	10,000	.3937	219	172	150	44	10
B271Z10200HPG	B271Z10200HPS	—	10,200	.4016	238	186	163	46	11
—	—	B271Z10320SGL	10,320	.4063	238	187	164	46	11
B271Z10500HPG	B271Z10500HPS	B271Z10500SGL	10,500	.4134	238	187	164	46	11
B271Z10716HPG	—	—	10,716	.4219	238	188	165	46	11
—	B271Z10720HPS	—	10,720	.4220	238	188	165	46	11
B271Z10800HPG	—	—	10,800	.4252	238	188	164	46	11
B271Z11000HPG	B271Z11000HPS	B271Z11000SGL	11,000	.4331	238	189	165	46	11
—	—	B271Z11113SGL	11,113	.4375	257	203	178	48	12
B271Z11500HPG	B271Z11500HPS	B271Z11500SGL	11,500	.4528	257	204	179	48	12
B271Z12000HPG	B271Z12000HPS	B271Z12000SGL	12,000	.4724	257	206	180	48	12
B271Z12500HPG	B271Z12500HPS	—	12,500	.4921	276	221	194	50	13
B271Z12700HPG	B271Z12700HPS	B271Z12700SGL	12,700	.5000	276	222	195	50	13
B271Z13000HPG	B271Z13000HPS	—	13,000	.5118	276	223	195	50	13
B271Z13500HPG	B271Z13500HPS	—	13,500	.5315	295	238	209	52	14
B271Z14000HPG	B271Z14000HPS	B271Z14000SGL	14,000	.5512	295	240	210	52	14
B271Z14288HPG	—	—	14,288	.5625	314	255	224	54	15
—	B271Z14290HPS	—	14,290	.5626	314	255	224	54	15
B271Z14500HPG	—	B271Z14500SGL	14,500	.5709	314	255	224	54	15
B271Z15000HPG	—	B271Z15000SGL	15,000	.5906	314	257	225	54	15
B271Z15300HPG	—	—	15,300	.6024	333	272	239	56	16
—	B271Z15500HPS	—	15,500	.6102	333	272	239	56	16
—	B271Z15870HPS	—	15,870	.6248	333	273	240	56	16
B271Z15875HPG	—	—	15,875	.6250	333	273	240	56	16
B271Z16000HPG	B271Z16000HPS	B271Z16000SGL	16,000	.6299	333	274	240	56	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

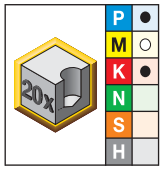


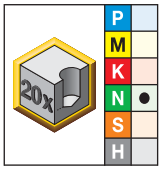


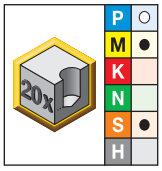
For information on L5, see B224_HP drills or B210_SGL drills.



B272Z_HPG/HPS/SGL • 20 x D







● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B272Z02383KMG	B272Z02383KMS	–	2,383	.0938	101	63	56	30	3
B272Z02400KMG	B272Z02400KMS *	–	2,400	.0945	101	63	56	30	3
–	B272Z02439KMS	–	2,439	.0960	101	63	56	30	3
B272Z02489KMG	B272Z02489KMS *	–	2,489	.0980	101	63	56	30	3
B272Z02500KMG	B272Z02500KMS	B272Z02500SGL	2,500	.0984	101	63	56	30	3
B272Z02779KMG	–	–	2,779	.1094	101	66	59	30	3
–	B272Z02800KMS	–	2,800	.1102	101	66	59	30	3
–	B272Z02947KMS *	–	2,947	.1160	101	67	60	30	3
B272Z03000HPG	B272Z03000HPS	B272Z03000SGL	3,000	.1181	101	67	60	30	3
B272Z03175HPG	B272Z03175HPS	B272Z03175SGL	3,175	.1250	125	83	74	32	4
B272Z03300HPG	B272Z03300HPS	–	3,300	.1299	125	84	75	32	4
B272Z03500HPG	B272Z03500HPS	B272Z03500SGL	3,500	.1378	125	86	77	32	4
B272Z03850HPG	–	–	3,850	.1516	125	88	79	32	4
B272Z03970HPG	B272Z03970HPS	B272Z03970SGL	3,970	.1563	125	89	79	32	4
B272Z04000HPG	B272Z04000HPS	B272Z04000SGL	4,000	.1575	125	90	80	32	4
B272Z04500HPG	B272Z04500HPS	B272Z04500SGL	4,500	.1772	149	108	97	34	5
B272Z04623HPG	–	–	4,623	.1820	149	109	98	34	5
B272Z04763HPG	B272Z04763HPS	B272Z04763SGL	4,763	.1875	149	110	99	34	5
–	–	B272Z04800SGL	4,800	.1890	149	110	99	34	5
B272Z05000HPG	B272Z05000HPS	B272Z05000SGL	5,000	.1969	149	112	100	34	5
B272Z05200HPG	–	–	5,200	.2047	173	127	114	36	6
B272Z05260HPG	–	–	5,260	.2071	173	128	115	36	6
B272Z05410HPG	–	–	5,410	.2130	173	129	116	36	6
B272Z05500HPG	B272Z05500HPS	B272Z05500SGL	5,500	.2165	173	130	117	36	6
B272Z05558HPG	–	–	5,558	.2188	173	130	117	36	6
–	–	B272Z05558SGL	5,558	.2188	173	130	117	36	6
B272Z05800HPG	–	B272Z05800SGL	5,800	.2283	173	132	118	36	6
B272Z06000HPG	B272Z06000HPS	B272Z06000SGL	6,000	.2362	173	134	120	36	6
B272Z06200HPG	B272Z06200HPS	–	6,200	.2441	197	149	134	38	7
B272Z06350HPG	B272Z06350HPS	B272Z06350SGL	6,350	.2500	197	151	136	38	7
–	B272Z06400HPS *	–	6,400	.2520	197	151	136	38	7
B272Z06500HPG	B272Z06500HPS	B272Z06500SGL	6,500	.2559	197	152	137	38	7
B272Z06528HPG	–	–	6,528	.2570	197	152	137	38	7
B272Z06746HPG	B272Z06746HPS	B272Z06746SGL	6,746	.2656	197	154	138	38	7
B272Z06800HPG	–	–	6,800	.2677	197	154	138	38	7
B272Z06909HPG	–	–	6,909	.2720	197	155	139	38	7

(continued)

(B272Z_HPG/HPS/SGL • 20 x D — continued)





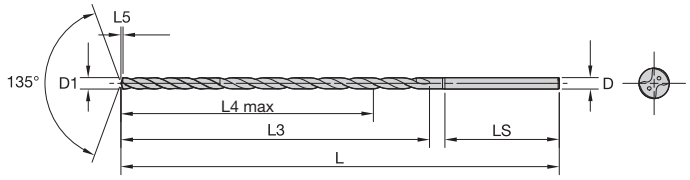


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B272Z07000HPG	B272Z07000HPS	B272Z07000SGL	7,000	.2756	197	156	140	38	7
B272Z07145HPG	B272Z07145HPS	B272Z07145SGL	7,145	.2813	221	171	154	40	8
B272Z07200HPG *	–	–	7,200	.2835	221	171	154	40	8
B272Z07500HPG	B272Z07500HPS	B272Z07500SGL	7,500	.2953	221	174	157	40	8
B272Z07541HPG *	–	–	7,541	.2969	221	174	157	40	8
B272Z07938HPG	–	B272Z07938SGL	7,938	.3125	221	177	159	40	8
B272Z08000HPG	B272Z08000HPS	B272Z08000SGL	8,000	.3150	221	178	160	40	8
B272Z08334HPG *	–	–	8,334	.3281	245	194	175	42	9
B272Z08433HPG	–	–	8,433	.3320	245	195	176	42	9
B272Z08500HPG	B272Z08500HPS	B272Z08500SGL	8,500	.3346	245	196	177	42	9
B272Z08733HPG	B272Z08733HPS	–	8,733	.3438	245	198	178	42	9
–	–	B272Z08733SGL	8,733	.3438	245	198	178	42	9
B272Z09000HPG	B272Z09000HPS	B272Z09000SGL	9,000	.3543	245	200	180	42	9
B272Z09100HPG *	–	–	9,100	.3583	269	215	194	44	10
B272Z09500HPG	–	–	9,500	.3740	269	218	197	44	10
B272Z09525HPG	B272Z09525HPS	B272Z09525SGL	9,525	.3750	269	218	197	44	10
B272Z09750HPG	B272Z09750HPS	–	9,750	.3839	269	220	198	44	10
B272Z10000HPG	B272Z10000HPS	B272Z10000SGL	10,000	.3937	269	222	200	44	10
B272Z10200HPG	B272Z10200HPS	–	10,200	.4016	293	237	214	46	11
–	–	B272Z10320SGL	10,320	.4063	293	238	215	46	11
B272Z10500HPG	B272Z10500HPS	B272Z10500SGL	10,500	.4134	293	240	217	46	11
B272Z10716HPG	–	–	10,716	.4219	293	242	219	46	11
–	–	B272Z10716SGL	10,716	.4219	293	242	219	46	11
–	B272Z10720HPS	–	10,720	.4220	293	242	219	46	11
B272Z11000HPG	B272Z11000HPS	B272Z11000SGL	11,000	.4331	293	244	220	46	11
–	–	B272Z11113SGL	11,113	.4375	317	259	234	48	12
B272Z11500HPG	B272Z11500HPS	B272Z11500SGL	11,500	.4528	317	262	237	48	12
B272Z11800HPG	–	–	11,800	.4646	317	264	238	48	12
B272Z12000HPG	B272Z12000HPS	B272Z12000SGL	12,000	.4724	317	266	240	48	12
B272Z12500HPG	B272Z12500HPS	B272Z12500SGL	12,500	.4921	341	284	257	50	13
B272Z12700HPG	B272Z12700HPS	B272Z12700SGL	12,700	.5000	341	285	258	50	13
B272Z13000HPG	B272Z13000HPS	B272Z13000SGL	13,000	.5118	341	288	260	50	13
B272Z13100HPG	–	–	13,100	.5157	365	302	273	52	14
B272Z13500HPG	B272Z13500HPS	–	13,500	.5315	365	306	277	52	14
B272Z14000HPG	B272Z14000HPS	B272Z14000SGL	14,000	.5512	365	310	280	52	14
B272Z14500HPG	B272Z14500HPS	B272Z14500SGL	14,500	.5709	389	328	297	54	15
B272Z15000HPG	B272Z15000HPS	B272Z15000SGL	15,000	.5906	389	332	300	54	15
B272Z15500HPG	B272Z15500HPS	B272Z15500SGL	15,500	.6102	413	350	317	56	16
–	B272Z15870HPS	–	15,870	.6248	413	353	320	56	16
B272Z15875HPG	–	–	15,875	.6250	413	353	320	56	16
B272Z16000HPG	B272Z16000HPS	B272Z16000SGL	16,000	.6299	413	354	320	56	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

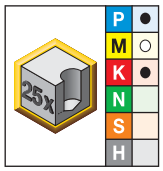


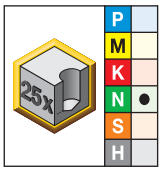


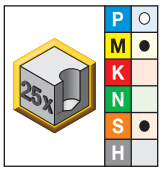
For information on L5, see B224_HP drills or B210_SGL drills.



B273Z_HPG/HPS/SGL • 25 x D





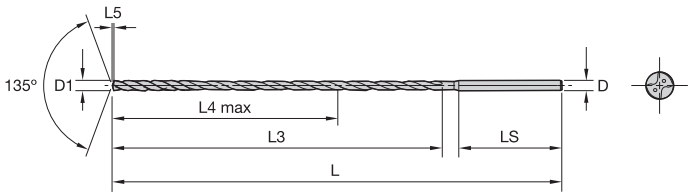


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B273Z02383KMG	B273Z02383KMS	–	2,383	.0938	116	74	67	30	3
–	B273Z02439KMS *	–	2,439	.0960	116	75	68	30	3
B273Z02500KMG	–	B273Z02500SGL	2,500	.0984	116	76	69	30	3
B273Z02600KMG *	–	–	2,600	.1024	116	77	70	30	3
–	B273Z02779KMS *	–	2,779	.1094	116	80	73	30	3
–	B273Z02800KMS *	–	2,800	.1102	116	80	73	30	3
–	B273Z02820KMS *	–	2,820	.1110	116	80	73	30	3
–	B273Z02870KMS *	–	2,870	.1130	116	81	74	30	3
–	B273Z02947KMS *	–	2,947	.1160	116	82	75	30	3
B273Z03000HPG	B273Z03000HPS	B273Z03000SGL	3,000	.1181	116	82	75	30	3
B273Z03175HPG	B273Z03175HPS	B273Z03175SGL	3,175	.1250	145	99	90	32	4
B273Z03500HPG *	B273Z03500HPS	B273Z03500SGL	3,500	.1378	145	103	94	32	4
B273Z04000HPG	B273Z04000HPS	B273Z04000SGL	4,000	.1575	145	110	100	32	4
B273Z04500HPG *	B273Z04500HPS *	B273Z04500SGL	4,500	.1772	174	130	119	34	5
B273Z05000HPG	B273Z05000HPS	B273Z05000SGL	5,000	.1969	174	137	125	34	5
B273Z05100HPG *	–	–	5,100	.2008	203	152	139	36	6
B273Z05500HPG	B273Z05500HPS	B273Z05500SGL	5,500	.2165	203	157	144	36	6
B273Z05800HPG *	–	–	5,800	.2283	203	161	147	36	6
B273Z06000HPG	B273Z06000HPS	B273Z06000SGL	6,000	.2362	203	164	150	36	6
B273Z06350HPG	B273Z06350HPS	–	6,350	.2500	232	182	167	38	7
B273Z06500HPG *	B273Z06500HPS	B273Z06500SGL	6,500	.2559	232	184	169	38	7
B273Z06746HPG	B273Z06746HPS *	–	6,746	.2656	232	187	171	38	7
B273Z07000HPG	B273Z07000HPS *	B273Z07000SGL	7,000	.2756	232	191	175	38	7
B273Z07500HPG	–	–	7,500	.2953	261	211	194	40	8
B273Z08000HPG	B273Z08000HPS	B273Z08000SGL	8,000	.3150	261	218	200	40	8
B273Z08500HPG	B273Z08500HPS *	B273Z08500SGL	8,500	.3346	290	238	219	42	9
B273Z08733HPG	B273Z08733HPS *	–	8,733	.3438	290	241	221	42	9
B273Z09000HPG	–	B273Z09000SGL	9,000	.3543	290	245	225	42	9
–	B273Z09525HPS *	–	9,525	.3750	319	266	245	44	10
B273Z10000HPG	B273Z10000HPS	B273Z10000SGL	10,000	.3937	319	272	250	44	10
B273Z10200HPG	–	–	10,200	.4016	348	288	265	46	11
B273Z10500HPG	B273Z10500HPS	–	10,500	.4134	348	292	269	46	11
B273Z11000HPG	B273Z11000HPS	B273Z11000SGL	11,000	.4331	348	299	275	46	11
B273Z11500HPG	B273Z11500HPS	–	11,500	.4528	377	319	294	48	12
B273Z12000HPG	B273Z12000HPS	B273Z12000SGL	12,000	.4724	377	326	300	48	12
B273Z12500HPG	B273Z12500HPS	–	12,500	.4921	406	346	319	50	13
B273Z12700HPG	–	–	12,700	.5000	406	349	322	50	13
B273Z13000HPG	B273Z13000HPS	B273Z13000SGL	13,000	.5118	406	353	325	50	13
–	B273Z13100HPS	–	13,100	.5157	435	368	339	52	14
B273Z13500HPG	–	B273Z13500SGL	13,500	.5315	435	373	344	52	14
B273Z14000HPG	B273Z14000HPS	B273Z14000SGL	14,000	.5512	435	380	350	52	14
B273Z14288HPG	–	–	14,288	.5625	464	397	366	54	15
–	B273Z14290HPS	–	14,290	.5626	464	397	366	54	15
B273Z14500HPG	B273Z14500HPS	–	14,500	.5709	464	400	369	54	15
B273Z15000HPG	–	B273Z15000SGL	15,000	.5906	464	407	375	54	15
B273Z16000HPG	B273Z16000HPS	B273Z16000SGL	16,000	.6299	493	434	400	56	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

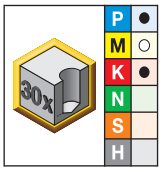


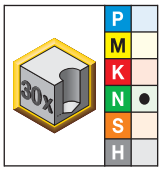


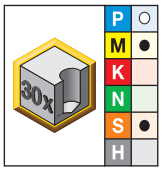
For information on L5, see B224_HP drills or B210_SGL drills.



B274Z_HPG/HPS/SGL • 30 x D





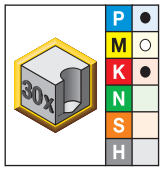


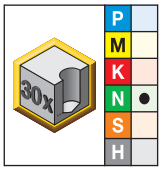
● first choice
○ alternate choice

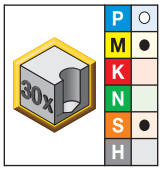
KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B274Z02383KMG	B274Z02383KMS	–	2,383	.0938	131	86	79	30	3
–	B274Z02400KMS	–	2,400	.0945	131	87	80	30	3
–	B274Z02439KMS *	–	2,439	.0960	131	87	80	30	3
B274Z02500KMG	B274Z02500KMS	B274Z02500SGL	2,500	.0984	131	88	81	30	3
B274Z02600KMG	B274Z02600KMS	–	2,600	.1024	131	90	83	30	3
–	B274Z02642KMS *	–	2,642	.1040	131	91	84	30	3
–	B274Z02779KMS *	–	2,779	.1094	131	94	87	30	3
B274Z02800KMG	B274Z02800KMS *	–	2,800	.1102	131	94	87	30	3
–	B274Z02870KMS *	–	2,870	.1130	131	95	88	30	3
–	B274Z02900KMS *	–	2,900	.1142	131	96	89	30	3
–	B274Z02947KMS *	–	2,947	.1160	131	97	90	30	3
B274Z03000HPG	B274Z03000HPS	B274Z03000SGL	3,000	.1181	131	97	90	30	3
B274Z03175HPG	B274Z03175HPS	B274Z03175SGL	3,175	.1250	165	115	106	32	4
B274Z03500HPG	B274Z03500HPS	B274Z03500SGL	3,500	.1378	165	121	112	32	4
B274Z03970HPG	–	B274Z03970SGL	3,970	.1563	165	129	119	32	4
B274Z04000HPG	B274Z04000HPS	B274Z04000SGL	4,000	.1575	165	130	120	32	4
B274Z04300HPG	–	–	4,300	.1693	199	149	138	34	5
B274Z04500HPG	B274Z04500HPS	B274Z04500SGL	4,500	.1772	199	153	142	34	5
B274Z04763HPG	–	B274Z04763SGL	4,763	.1875	199	157	146	34	5
B274Z05000HPG	B274Z05000HPS	B274Z05000SGL	5,000	.1969	199	162	150	34	5
B274Z05100HPG *	–	B274Z05100SGL	5,100	.2008	233	178	165	36	6
B274Z05500HPG	B274Z05500HPS *	B274Z05500SGL	5,500	.2165	233	185	172	36	6
–	–	B274Z05558SGL	5,558	.2188	233	186	173	36	6
B274Z05700HPG *	–	–	5,700	.2244	233	188	175	36	6
B274Z06000HPG	B274Z06000HPS	B274Z06000SGL	6,000	.2362	233	194	180	36	6
B274Z06350HPG	B274Z06350HPS	B274Z06350SGL	6,350	.2500	267	214	199	38	7
B274Z06500HPG	B274Z06500HPS	B274Z06500SGL	6,500	.2559	267	217	202	38	7
–	B274Z06746HPS *	B274Z06746SGL	6,746	.2656	267	221	205	38	7
B274Z06800HPG	–	–	6,800	.2677	267	222	206	38	7
B274Z07000HPG	B274Z07000HPS	B274Z07000SGL	7,000	.2756	267	226	210	38	7
–	–	B274Z07145SGL	7,145	.2813	301	242	225	40	8
–	–	B274Z07500SGL	7,500	.2953	301	249	232	40	8

(continued)

(B274Z_HPG/HPS/SGL • 30 x D — continued)





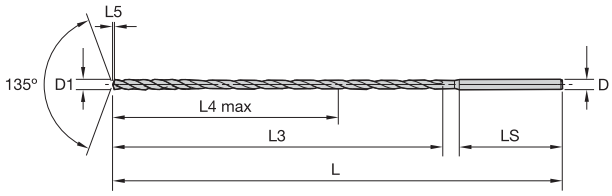


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B274Z07700HPG *	—	—	7,700	.3031	301	252	235	40	8
B274Z07938HPG	—	B274Z07938SGL	7,938	.3125	301	257	239	40	8
B274Z08000HPG	B274Z08000HPS	B274Z08000SGL	8,000	.3150	301	258	240	40	8
B274Z08334HPG	—	—	8,334	.3281	335	278	259	42	9
B274Z08500HPG	B274Z08500HPS	B274Z08500SGL	8,500	.3346	335	281	262	42	9
B274Z08700HPG	—	—	8,700	.3425	335	284	264	42	9
—	B274Z08733HPS *	—	8,733	.3438	335	285	265	42	9
—	—	B274Z08733SGL	8,733	.3438	335	285	265	42	9
B274Z09000HPG	B274Z09000HPS *	B274Z09000SGL	9,000	.3543	335	290	270	42	9
—	—	B274Z09129SGL	9,129	.3594	369	306	285	44	10
B274Z09525HPG	B274Z09525HPS *	B274Z09525SGL	9,525	.3750	369	313	292	44	10
B274Z10000HPG	B274Z10000HPS	B274Z10000SGL	10,000	.3937	369	322	300	44	10
B274Z10200HPG	B274Z10200HPS	—	10,200	.4016	403	339	316	46	11
B274Z10500HPG *	—	B274Z10500SGL	10,500	.4134	403	345	322	46	11
B274Z10716HPG	—	—	10,716	.4219	403	349	326	46	11
B274Z11000HPG	B274Z11000HPS	B274Z11000SGL	11,000	.4331	403	354	330	46	11
B274Z11500HPG	B274Z11500HPS	B274Z11500SGL	11,500	.4528	437	377	352	48	12
B274Z11800HPG	—	—	11,800	.4646	437	382	356	48	12
B274Z12000HPG	B274Z12000HPS	B274Z12000SGL	12,000	.4724	437	386	360	48	12
B274Z12500HPG	B274Z12500HPS	—	12,500	.4921	471	409	382	50	13
B274Z12700HPG	—	B274Z12700SGL	12,700	.5000	471	412	385	50	13
B274Z13000HPG	B274Z13000HPS	B274Z13000SGL	13,000	.5118	471	418	390	50	13
B274Z13500HPG	B274Z13500HPS	B274Z13500SGL	13,500	.5315	505	441	412	52	14
B274Z14000HPG	B274Z14000HPS	B274Z14000SGL	14,000	.5512	505	450	420	52	14
B274Z15000HPG	B274Z15000HPS	B274Z15000SGL	15,000	.5906	539	482	450	54	15

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



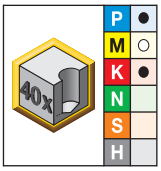


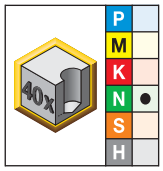
For information on L5, see B224_HP drills or B210_SGL drills.

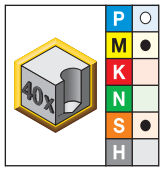


beyond

B275Z_HPG/HPS/SGL • 40 x D







● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B275Z02500KMG	B275Z02500KMS	B275Z02500SGL	2,500	.0984	161	113	106	30	3
B275Z03000KMG	B275Z03000HPS	B275Z03000SGL	3,000	.1181	161	127	120	30	3
B275Z03175HPG	B275Z03175HPS	B275Z03175SGL	3,175	.1250	205	146	137	32	4
B275Z03500HPG	B275Z03500HPS	B275Z03500SGL	3,500	.1378	205	156	147	32	4
B275Z03571HPG	B275Z03571HPS	B275Z03571SGL	3,571	.1406	205	158	149	32	4
B275Z03970HPG	B275Z03970HPS	B275Z03970SGL	3,970	.1563	205	169	159	32	4
B275Z04000HPG	B275Z04000HPS	B275Z04000SGL	4,000	.1575	205	170	160	32	4
B275Z04200HPG	B275Z04200HPS	B275Z04200SGL	4,200	.1654	249	189	178	34	5
–	B275Z04500HPS	B275Z04500SGL	4,500	.1772	249	198	187	34	5
B275Z04763HPG	B275Z04763HPS	B275Z04763SGL	4,763	.1875	249	205	194	34	5
B275Z05000HPG	B275Z05000HPS	B275Z05000SGL	5,000	.1969	249	212	200	34	5
B275Z05500HPG	B275Z05500HPS	B275Z05500SGL	5,500	.2165	293	240	227	36	6
B275Z05558HPG	B275Z05558HPS	B275Z05558SGL	5,558	.2188	293	241	228	36	6
B275Z06000HPG	B275Z06000HPS	B275Z06000SGL	6,000	.2362	293	254	240	36	6
B275Z06350HPG	B275Z06350HPS	B275Z06350SGL	6,350	.2500	337	278	263	38	7
B275Z06500HPG	B275Z06500HPS	B275Z06500SGL	6,500	.2559	337	282	267	38	7
B275Z06800HPG	B275Z06800HPS	B275Z06800SGL	6,800	.2677	337	290	274	38	7
B275Z07000HPG	B275Z07000HPS	B275Z07000SGL	7,000	.2756	337	296	280	38	7
B275Z07145HPG	B275Z07145HPS	B275Z07145SGL	7,145	.2813	381	314	297	40	8
B275Z07500HPG	B275Z07500HPS	B275Z07500SGL	7,500	.2953	381	324	307	40	8
B275Z07938HPG	B275Z07938HPS	B275Z07938SGL	7,938	.3125	381	336	318	40	8
B275Z08000HPG	B275Z08000HPS	B275Z08000SGL	8,000	.3150	381	338	320	40	8
–	B275Z08500HPS	B275Z08500SGL	8,500	.3346	425	366	347	42	9
B275Z08733HPG	B275Z08733HPS	B275Z08733SGL	8,733	.3438	425	372	352	42	9
B275Z09000HPG	B275Z09000HPS	B275Z09000SGL	9,000	.3543	425	380	360	42	9
B275Z09525HPG	B275Z09525HPS	B275Z09525SGL	9,525	.3750	469	408	387	44	10
B275Z10000HPG	B275Z10000HPS	B275Z10000SGL	10,000	.3937	469	422	400	44	10
B275Z10200HPG	B275Z10200HPS	B275Z10200SGL	10,200	.4016	513	441	418	46	11
B275Z10320HPG	B275Z10320HPS	B275Z10320SGL	10,320	.4063	513	445	422	46	11
B275Z11000HPG	B275Z11000HPS	B275Z11000SGL	11,000	.4331	513	464	440	46	11

Tolerance • Metric

nominal size range	D1 HPG/SGL tolerance h7	D1 HPS tolerance h8	D tolerance h6
1–3	0,000/-0,010	0,000/-0,014	0,000/-0,006
>3–6	0,000/-0,012	0,000/-0,018	0,000/-0,008
>6–10	0,000/-0,015	0,000/-0,022	0,000/-0,009
>10–18	0,000/-0,018	0,000/-0,027	0,000/-0,011

Deep-Hole Drills • B27_HPG Series • Grade KCPK20™ • Through Coolant • Drill Diameters 3–16mm • Metric





Material Group		Cutting Speed – vc Range – m/min			Metric Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0
P	0	100	**100**	125	mm/r	0,13–0,15	0,14–0,16	0,15–0,21	0,19–0,26	0,21–0,31	0,26–0,36	0,30–0,41	0,34–0,46
	1	90	**100**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	2	90	**100**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	3	80	**95**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	4	80	**90**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	5	60	**80**	90	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,12–0,22	0,14–0,24
	6	110	**150**	190	mm/r	0,07–0,13	0,09–0,15	0,12–0,20	0,15–0,28	0,17–0,33	0,19–0,37	0,20–0,40	0,22–0,43
M	1	40	**50**	60	mm/r	0,04–0,08	0,06–0,12	0,08–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18	0,14–0,19
	2	30	**40**	50	mm/r	0,04–0,08	0,06–0,10	0,08–0,13	0,09–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18
	3	30	**40**	50	mm/r	0,04–0,07	0,06–0,10	0,08–0,13	0,09–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18
K	1	80	**100**	120	mm/r	0,15–0,19	0,17–0,20	0,19–0,26	0,24–0,32	0,27–0,40	0,32–0,45	0,38–0,52	0,45–0,59
	2	80	**90**	100	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	3	60	**90**	120	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54

Deep-Hole Drills • B27_HPS Series • Grade KN25™ • Through Coolant • Drill Diameters 3–16mm • Metric



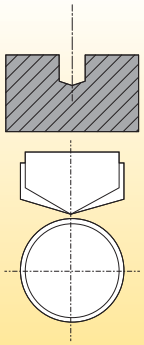


Material Group		Cutting Speed – vc Range – m/min			Metric Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0
N	1	120	**200**	300	mm/r	0,12–0,17	0,13–0,18	0,15–0,24	0,19–0,29	0,26–0,35	0,31–0,40	0,35–0,45	0,41–0,51
	2	120	**170**	300	mm/r	0,13–0,18	0,14–0,19	0,16–0,25	0,20–0,30	0,28–0,37	0,33–0,42	0,38–0,48	0,44–0,54
	3	100	**150**	300	mm/r	0,13–0,18	0,14–0,19	0,16–0,25	0,20–0,30	0,28–0,37	0,33–0,42	0,38–0,48	0,44–0,54
	4	80	**200**	300	mm/r	0,03–0,05	0,03–0,06	0,03–0,06	0,04–0,06	0,05–0,07	0,05–0,08	0,05–0,08	0,06–0,09

Deep Hole Drills • B27_SGL Series • Grade KCMS20 • Through Coolant • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate per Rev								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0
P	5	60	**80**	90	mm/r	0,03–0,06	0,04–0,06	0,05–0,06	0,05–0,09	0,08–0,13	0,11–0,16	0,12–0,17	0,14–0,18
	6	70	**120**	170	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20	0,18–0,22	0,20–0,24
M	1	40	**50**	60	mm/r	0,05–0,08	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15
	2	30	**40**	50	mm/r	0,05–0,08	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15
	3	30	**40**	50	mm/r	0,05–0,08	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15
S	1	20	**30**	40	mm/r	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15	0,13–0,16	0,14–0,17	0,15–0,18	0,16–0,19
	2	20	**30**	40	mm/r	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15	0,13–0,16	0,14–0,17	0,15–0,18	0,16–0,19
	3	20	**30**	40	mm/r	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15	0,13–0,16	0,14–0,17	0,15–0,18	0,16–0,19
	4	20	**30**	40	mm/r	0,09–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18	0,14–0,19	0,15–0,20	0,16–0,21

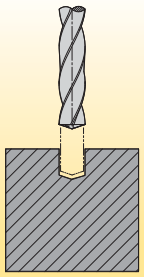


1) Pilot Drill Hole — IMPORTANT!

- The point angle of the pilot drill must be greater than the one of following deep-hole drill to protect its cutting corners.
- The diameter size of the pilot drill must be greater than the one of the deep-hole drill to enable easy fit and protect margin lands. The required difference in diameter is covered by design with the different position of tolerance.
- Drill Ø = nominal Ø up to nominal +0,010mm (+.0004").
- Depth of pilot hole: minimum 2 x D.
- Deeper pilot holes are preferable.

Recommendations:

- Use a conical (B976_) or split-point drill to pilot (do not use a HP, TX, GOdrill™ or any competitive drill).
- Check the pilot drill for wear, which can lead to premature wear on the B27_ cutting edge and possibly catastrophic failure.
- B976_ and B977_KC7315 drills with a 140° point angle are recommended. B978_ is not recommended as the point angle is 135°.
- B70_ Flat Bottom Drill with a point angle of 180° is the alternate choice, especially on inclined entries, such as on crankshafts.

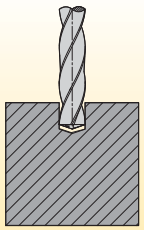


2) Feed B27_ into Pilot Hole

- Max 500 RPM and recommended feed rate; no rapid traverse.
- Run anti-clockwise, especially in horizontal applications to protect the cutting edge, when entering the pilot hole.
- Depth: 1mm (.039") above the bottom of pilot hole.

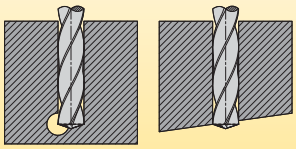
Recommendations:

- Reduce cutting speed to minimise imbalances in machine spindle/adaptor!



3) Drill Hole

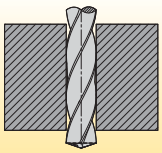
Cutting Parameters: Start recommended speed and feed rate at 1mm (.039") from the bottom of the pilot hole, clockwise.



Recommendations:

- DO NOT PECK OR DWELL up to 30 x D!
- With long-chipping steel materials, it may be necessary to increase feed rate by 10–20% to provide optimal chip control.
- For long-chipping aluminium materials, it may be necessary to decrease feed rate and increase speed.
- Reduce feed rate on angled exits and crossholes by 50–60%.

HP feed recommendations are usually higher than with competitive SC drills!



4) Drill Retraction

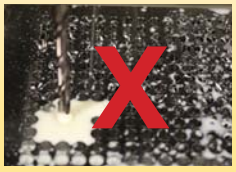
Cutting Parameters: 50–500 RPM and feed rate 2–6 m/min.

Recommendations:

To achieve the best tool performance, we recommend using the deep-hole drill with a hydraulic chuck.

Reduce cutting speed to minimise imbalances in machine spindle/adaptor!





5) Vertical Applications

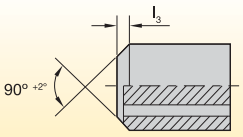
- If the pilot holes are close to each other, chips can fall into the neighboring hole.
- Do not enter a pilot hole that might contain chips with a deep hole drill to avoid chip jamming, wear, or breakage.
- If required holes are close to each other, use smart drilling strategies, make sure the pilot holes are getting properly cleaned, or switch to horizontal drilling.

Horizontal drilling process preferred for optimum chip evacuation



6) Coolant

- For increased stability, the coolant channels of the B27_ are smaller than on typical Kennametal drills.
- Steady supply of coolant delivered to the cutting edges necessary. If coolant supply is not steady or is unequal through both channels, check:
  - — Coolant filtering system.
  - — Sealing of adaptor/spindle.
  - — Chips blocking the coolant hole on the drill shank.
- Make sure that the coolant supply reaches the cutting edge before drilling begins.
- Pressure by diameter: <5mm 40–50 bar maximum; >5mm 25 bar minimum.



MQL back end according to DIN 69090-3

7) Minimal Quantity Lubrication

- On MQL applications, make sure that the coolant is directly supplied from the chuck into the back end of the drill shank (without gap) to avoid leakage.
- Pressure should be between 1–10 bar depending on coolant hole size.
- Spray contains an amount of oil less than 50 ml/h.
- If required, the shank can be even optimised for MQL applications with enlarged 90° chamfer instead of 40°.



8) Shanks

- Other than normal SC drills, B27_ series have a “Z” shank, increasing with 1mm steps.
- For drills with uneven shank size, use reduction sleeves to adapt the shank to the customer's toolholder.
- The clamping force is better with increasing diameter.
- If required, DIN-shanks (even, 2mm steps) are available as custom solutions.

Achieve the best tool performance with hydraulic chucks.

	12mm hydraulic reducer sleeve		20mm hydraulic reducer sleeve		25mm hydraulic reducer sleeve		32mm hydraulic reducer sleeve		.500" hydraulic reducer sleeve		.750" hydraulic reducer sleeve	
D1	order number	catalogue number	order number	catalogue number	order number	catalogue number	order number	catalogue number	order number	catalogue number	order number	catalogue number
3	3026450	12MHC030M	3026648	20MHC030M	3026662	25MHC030M	–	–	2248993	50HC030M	2248995	75HC030M
4	3026451	12MHC040M	3026649	20MHC040M	3026663	25MHC040M	–	–	1606050	50HC040M	2248996	75HC040M
5	3026452	12MHC050M	3026650	20MHC050M	3026664	25MHC050M	–	–	2248994	50HC050M	2248997	75HC050M
6	3026643	12MHC060M	3026651	20MHC060M	3026665	25MHC060M	3026675	32MHC060M	1606061	50HC060M	1093271	75HC060M
7	3026644	12MHC070M	3026652	20MHC070M	3026666	25MHC070M	3026676	32MHC070M	–	–	–	–
8	3026645	12MHC080M	3026653	20MHC080M	3026667	25MHC080M	3026677	32MHC080M	1606062	50HC080M	1093272	75HC080M
9	3026646	12MHC090M	3026654	20MHC090M	3026668	25MHC090M	3026678	32MHC090M	–	–	–	–
10	3026647	12MHC100M	3026655	20MHC100M	3026669	25MHC100M	3026679	32MHC100M	1606064	50HC100M	1093273	75HC100M
11	–	–	3026656	20MHC110M	–	–	3026680	32MHC110M	–	–	–	–
12	–	–	3026657	20MHC120M	3026669	25MHC120M	3026681	32MHC120M	–	–	1093524	75HC120M
13	–	–	3026658	20MHC130M	–	–	3026682	32MHC130M	–	–	–	–
14	–	–	3026659	20MHC140M	3026671	25MHC140M	3026683	32MHC140M	–	–	1093525	75HC140M
15	–	–	3026660	20MHC150M	–	–	3026684	32MHC150M	–	–	–	–
16	–	–	3026661	20MHC160M	3026672	25MHC160M	3026685	32MHC160M	–	–	1093526	75HC160M

HPS Beyond™ Drills for Aluminium Machining with MQL

Primary Application

B28_HPS series solid carbide drills offer the highest metal removal rates and longest tool life in aluminium and other non-ferrous materials when MQL is applied. These drills can also be used with standard through coolant.

By combining the HP-Point geometry and the new KN15™ Beyond grade with the new Kennametal polishing technology and unique flute design into one tool, the B28_HPS is the ultimate production tool for aluminium workpiece applications — even when compared to PCD solutions. This drill family is a differentiated high-end and high-performance alternative to commoditized conventional carbide or PCD straight-fluted drills.

Features and Benefits

HPS Drill-Point Design

- Sharp cutting edge enables higher tool life in aluminium and other non-ferrous materials.
- Low cutting forces and less built-up edge.
- HP-point enables high feed rates by progressive rake angle and excellent centring capabilities.

Enlarged Flute Design

- Enables fast chip evacuation and high metal removal rates.

KN15 Beyond Grade

- The highly polished surface ensures superior chip evacuation, even when MQL coolant is applied.
- Specified, uncoated 9% Co fine-grain carbide.

“D” Shank Optimised for MQL Applications

- Enlarged chamfer on back end according to DIN 69090-3 (round cylindrical for MQL) to ensure optimum coolant flow without leakage.

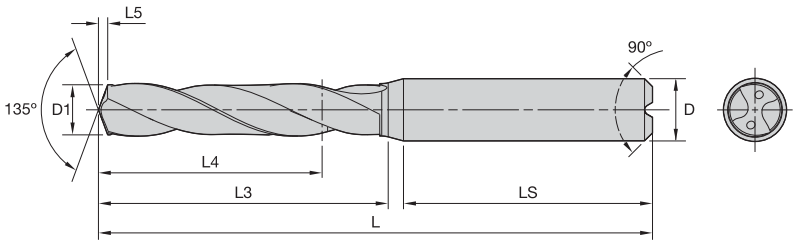
Much more cost-effective compared to PCD-tipped drills.



Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- Using Kennametal MQL chucks together with standard B28_HPS is recommended.
- Optional coatings available for applications in aluminium with Si>9%, based on TiB_2 and DLC.

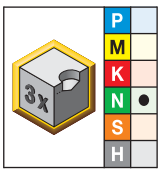


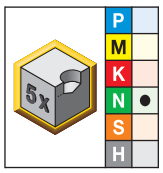


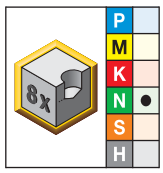


For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B284/B285/B286_HPS • ~3 x D/~5 x D/~8 x D





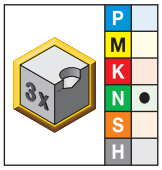


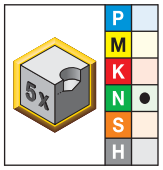
● first choice
○ alternate choice

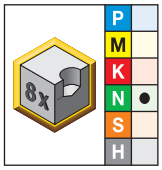
short • KN15	long • KN15	extra long • KN15	D1 diameter mm	D1 diameter in	L5	LS	D
B284D03000HPS	B285D03000HPS	B286D03000HPS	3,000	.1181	0,6	36	6
B284D03100HPS	B285D03100HPS	B286D03100HPS	3,100	.1220	0,6	36	6
B284D03175HPS	B285D03175HPS	B286D03175HPS	3,175	.1250	0,6	36	6
B284D03200HPS	B285D03200HPS	B286D03200HPS	3,200	.1260	0,6	36	6
B284D03264HPS	B285D03264HPS	B286D03264HPS	3,264	.1285	0,6	36	6
B284D03300HPS	B285D03300HPS	B286D03300HPS	3,300	.1299	0,6	36	6
B284D03455HPS	B285D03455HPS	B286D03455HPS	3,455	.1360	0,6	36	6
B284D03500HPS	B285D03500HPS	B286D03500HPS	3,500	.1378	0,6	36	6
B284D03571HPS	B285D03571HPS	B286D03571HPS	3,571	.1406	0,7	36	6
B284D03700HPS	B285D03700HPS	B286D03700HPS	3,700	.1457	0,7	36	6
B284D03734HPS	B285D03734HPS	B286D03734HPS	3,734	.1470	0,7	36	6
B284D03900HPS	B285D03900HPS	B286D03900HPS	3,900	.1535	0,7	36	6
B284D03970HPS	B285D03970HPS	B286D03970HPS	3,970	.1563	0,7	36	6
B284D04000HPS	B285D04000HPS	B286D04000HPS	4,000	.1575	0,7	36	6
B284D04039HPS	B285D04039HPS	B286D04039HPS	4,039	.1590	0,7	36	6
B284D04100HPS	B285D04100HPS	B286D04100HPS	4,100	.1614	0,8	36	6
B284D04200HPS	B285D04200HPS	B286D04200HPS	4,200	.1654	0,8	36	6
B284D04305HPS	B285D04305HPS	B286D04305HPS	4,305	.1695	0,8	36	6
B284D04366HPS	–	–	4,366	.1719	0,8	36	6
B284D04400HPS	B285D04400HPS	B286D04400HPS	4,400	.1732	0,8	36	6
B284D04500HPS	B285D04500HPS	B286D04500HPS	4,500	.1772	0,8	36	6
B284D04600HPS	B285D04600HPS	B286D04600HPS	4,600	.1811	0,8	36	6
B284D04700HPS	B285D04700HPS	B286D04700HPS	4,700	.1850	0,9	36	6
B284D04763HPS	B285D04763HPS	B286D04763HPS	4,763	.1875	0,9	36	6
B284D04800HPS	B285D04800HPS	B286D04800HPS	4,800	.1890	0,9	36	6
B284D04900HPS	B285D04900HPS	B286D04900HPS	4,900	.1929	0,9	36	6
B284D05000HPS	B285D05000HPS	B286D05000HPS	5,000	.1969	0,9	36	6
B284D05100HPS	B285D05100HPS	B286D05100HPS	5,100	.2008	0,9	36	6
B284D05106HPS	B285D05106HPS	B286D05106HPS	5,106	.2010	0,9	36	6
B284D05159HPS	B285D05159HPS	B286D05159HPS	5,159	.2031	1,0	36	6
B284D05200HPS	B285D05200HPS	B286D05200HPS	5,200	.2047	1,0	36	6
B284D05300HPS	B285D05300HPS	B286D05300HPS	5,300	.2087	1,0	36	6
B284D05400HPS	B285D05400HPS	B286D05400HPS	5,400	.2126	1,0	36	6
B284D05410HPS	B285D05410HPS	B286D05410HPS	5,410	.2130	1,0	36	6
B284D05500HPS	B285D05500HPS	B286D05500HPS	5,500	.2165	1,0	36	6
B284D05558HPS	B285D05558HPS	B286D05558HPS	5,558	.2188	1,0	36	6

(continued)

(B284/B285/B286_HPS • ~3 x D/~5 x D/~8 x D — continued)





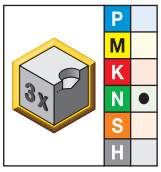


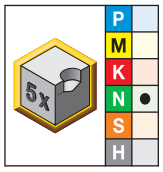
● first choice
○ alternate choice

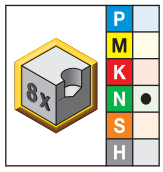
short • KN15	long • KN15	extra long • KN15	D1 diameter mm	D1 diameter in	L5	LS	D
B284D05600HPS	B285D05600HPS	B286D05600HPS	5,600	.2205	1,0	36	6
B284D05791HPS	B285D05791HPS	B286D05791HPS	5,791	.2280	1,1	36	6
B284D05800HPS	–	–	5,800	.2283	1,1	36	6
B284D05954HPS	–	–	5,954	.2344	1,1	36	6
B284D06000HPS	B285D06000HPS	B286D06000HPS	6,000	.2362	1,1	36	6
B284D06200HPS	B285D06200HPS	B286D06200HPS	6,200	.2441	1,1	36	8
B284D06300HPS	B285D06300HPS	B286D06300HPS	6,300	.2480	1,2	36	8
B284D06350HPS	B285D06350HPS	B286D06350HPS	6,350	.2500	1,2	36	8
B284D06400HPS	B285D06400HPS	B286D06400HPS	6,400	.2520	1,2	36	8
B284D06500HPS	B285D06500HPS	B286D06500HPS	6,500	.2559	1,2	36	8
B284D06528HPS	B285D06528HPS	B286D06528HPS	6,528	.2570	1,2	36	8
B284D06600HPS	B285D06600HPS	B286D06600HPS	6,600	.2598	1,2	36	8
B284D06630HPS	B285D06630HPS	B286D06630HPS	6,630	.2610	1,2	36	8
B284D06700HPS	B285D06700HPS	B286D06700HPS	6,700	.2638	1,2	36	8
B284D06746HPS	B285D06746HPS	B286D06746HPS	6,746	.2656	1,2	36	8
B284D06800HPS	B285D06800HPS	B286D06800HPS	6,800	.2677	1,3	36	8
B284D06900HPS	B285D06900HPS	B286D06900HPS	6,900	.2717	1,3	36	8
B284D07000HPS	B285D07000HPS	B286D07000HPS	7,000	.2756	1,3	36	8
B284D07145HPS	B285D07145HPS	B286D07145HPS	7,145	.2813	1,3	36	8
B284D07300HPS	B285D07300HPS	B286D07300HPS	7,300	.2874	1,3	36	8
B284D07400HPS	B285D07400HPS	B286D07400HPS	7,400	.2913	1,4	36	8
B284D07500HPS	–	–	7,500	.2953	1,4	36	8
B284D07541HPS	B285D07541HPS	B286D07541HPS	7,541	.2969	1,4	36	8
B284D07600HPS	B285D07600HPS	B286D07600HPS	7,600	.2992	1,4	36	8
B284D07700HPS	B285D07700HPS	B286D07700HPS	7,700	.3031	1,4	36	8
–	B285D07800HPS	–	7,800	.3071	1,4	36	8
B284D07938HPS	B285D07938HPS	B286D07938HPS	7,938	.3125	1,5	36	8
B284D08000HPS	B285D08000HPS	B286D08000HPS	8,000	.3150	1,5	36	8
B284D08334HPS	B285D08334HPS	B286D08334HPS	8,334	.3281	1,5	40	10
B284D08400HPS	B285D08400HPS	B286D08400HPS	8,400	.3307	1,6	40	10
B284D08433HPS	B285D08433HPS	B286D08433HPS	8,433	.3320	1,6	40	10
B284D08500HPS	B285D08500HPS	B286D08500HPS	8,500	.3346	1,6	40	10
B284D08700HPS	B285D08700HPS	B286D08700HPS	8,700	.3425	1,6	40	10
B284D08733HPS	B285D08733HPS	B286D08733HPS	8,733	.3438	1,6	40	10
B284D08800HPS	B285D08800HPS	B286D08800HPS	8,800	.3465	1,6	40	10
B284D08900HPS	B285D08900HPS	B286D08900HPS	8,900	.3504	1,6	40	10
B284D09000HPS	B285D09000HPS	B286D09000HPS	9,000	.3543	1,7	40	10
B284D09100HPS	B285D09100HPS	B286D09100HPS	9,100	.3583	1,7	40	10
B284D09129HPS	B285D09129HPS	B286D09129HPS	9,129	.3594	1,7	40	10
B284D09300HPS	B285D09300HPS	B286D09300HPS	9,300	.3661	1,7	40	10
B284D09400HPS	B285D09400HPS	B286D09400HPS	9,400	.3701	1,7	40	10
B284D09500HPS	B285D09500HPS	B286D09500HPS	9,500	.3740	1,8	40	10
B284D09525HPS	B285D09525HPS	B286D09525HPS	9,525	.3750	1,8	40	10
B284D09900HPS	B285D09900HPS	B286D09900HPS	9,900	.3898	1,8	40	10
B284D09921HPS	B285D09921HPS	B286D09921HPS	9,921	.3906	1,8	40	10
B284D10000HPS	B285D10000HPS	B286D10000HPS	10,000	.3937	1,8	40	10
B284D10100HPS	B285D10100HPS	B286D10100HPS	10,100	.3976	1,9	45	12
B284D10200HPS	B285D10200HPS	B286D10200HPS	10,200	.4016	1,9	45	12
B284D10300HPS	B285D10300HPS	B286D10300HPS	10,300	.4055	1,9	45	12
B284D10320HPS	B285D10320HPS	B286D10320HPS	10,320	.4063	1,9	45	12
B284D10500HPS	B285D10500HPS	B286D10500HPS	10,500	.4134	1,9	45	12
B284D10600HPS	B285D10600HPS	B286D10600HPS	10,600	.4173	2,0	45	12

(continued)

(B284/B285/B286_HPS • ~3 x D/~5 x D/~8 x D — continued)







● first choice
○ alternate choice

short • KN15	long • KN15	extra long • KN15	D1 diameter mm	D1 diameter in	L5	LS	D
B284D10716HPS	B285D10716HPS	B286D10716HPS	10,716	.4219	2,0	45	12
B284D10800HPS	B285D10800HPS	B286D10800HPS	10,800	.4252	2,0	45	12
B284D11000HPS	B285D11000HPS	B286D11000HPS	11,000	.4331	2,0	45	12
B284D11100HPS	B285D11100HPS	B286D11100HPS	11,100	.4370	2,0	45	12
B284D11113HPS	B285D11113HPS	B286D11113HPS	11,113	.4375	2,1	45	12
B284D11200HPS	B285D11200HPS	B286D11200HPS	11,200	.4409	2,1	45	12
B284D11300HPS	B285D11300HPS	B286D11300HPS	11,300	.4449	2,1	45	12
B284D11400HPS	B285D11400HPS	B286D11400HPS	11,400	.4488	2,1	45	12
B284D11500HPS	B285D11500HPS	B286D11500HPS	11,500	.4528	2,1	45	12
B284D11509HPS	B285D11509HPS	B286D11509HPS	11,509	.4531	2,1	45	12
B284D11800HPS	B285D11800HPS	B286D11800HPS	11,800	.4646	2,2	45	12
B284D11908HPS	B285D11908HPS	B286D11908HPS	11,908	.4688	2,2	45	12
B284D12000HPS	B285D12000HPS	B286D12000HPS	12,000	.4724	2,2	45	12
B284D12304HPS	B285D12304HPS	B286D12304HPS	12,304	.4844	2,3	45	14
B284D12500HPS	B285D12500HPS	B286D12500HPS	12,500	.4921	2,3	45	14
B284D12600HPS	B285D12600HPS	B286D12600HPS	12,600	.4961	2,3	45	14
B284D12700HPS	B285D12700HPS	B286D12700HPS	12,700	.5000	2,3	45	14
B284D13000HPS	B285D13000HPS	B286D13000HPS	13,000	.5118	2,4	45	14
B284D13096HPS	B285D13096HPS	B286D13096HPS	13,096	.5156	2,4	45	14
B284D13100HPS	B285D13100HPS	B286D13100HPS	13,100	.5157	2,4	45	14
B284D13300HPS	B285D13300HPS	B286D13300HPS	13,300	.5236	2,5	45	14
B284D13400HPS	B285D13400HPS	B286D13400HPS	13,400	.5276	2,5	45	14
B284D13500HPS	B285D13500HPS	B286D13500HPS	13,500	.5315	2,5	45	14
B284D14000HPS	B285D14000HPS	B286D14000HPS	14,000	.5512	2,6	45	14
B284D14200HPS	B285D14200HPS	B286D14200HPS	14,200	.5591	2,6	48	16
B284D14288HPS	B285D14288HPS	B286D14288HPS	14,288	.5625	2,6	48	16
B284D14500HPS	B285D14500HPS	B286D14500HPS	14,500	.5709	2,7	48	16
B284D14684HPS	B285D14684HPS	B286D14684HPS	14,684	.5781	2,7	48	16
B284D15000HPS	B285D15000HPS	B286D15000HPS	15,000	.5906	2,8	48	16
B284D15083HPS	B285D15083HPS	B286D15083HPS	15,083	.5938	2,8	48	16
B284D15100HPS	B285D15100HPS	B286D15100HPS	15,100	.5945	2,8	48	16
B284D15300HPS	B285D15300HPS	B286D15300HPS	15,300	.6024	2,8	48	16
B284D15400HPS	B285D15400HPS	B286D15400HPS	15,400	.6063	2,8	48	16
B284D15875HPS	B285D15875HPS	B286D15875HPS	15,875	.6250	2,9	48	16
B284D16000HPS	B285D16000HPS	B286D16000HPS	16,000	.6299	3,0	48	16
B284D16500HPS	B285D16500HPS	B286D16500HPS	16,500	.6496	3,0	48	18
B284D16670HPS	B285D16670HPS	B286D16670HPS	16,670	.6563	3,1	48	18
B284D16800HPS	B285D16800HPS	B286D16800HPS	16,800	.6614	3,1	48	18
B284D16900HPS	B285D16900HPS	B286D16900HPS	16,900	.6654	3,1	48	18
B284D17000HPS	B285D17000HPS	B286D17000HPS	17,000	.6693	3,1	48	18
B284D17300HPS	B285D17300HPS	B286D17300HPS	17,300	.6811	3,2	48	18
B284D17463HPS	B285D17463HPS	B286D17463HPS	17,463	.6875	3,2	48	18
B284D17500HPS	B285D17500HPS	B286D17500HPS	17,500	.6890	3,2	48	18
B284D17859HPS	B285D17859HPS	B286D17859HPS	17,859	.7031	3,3	48	18
B284D18000HPS	B285D18000HPS	B286D18000HPS	18,000	.7087	3,3	48	18
B284D19000HPS	B285D19000HPS	B286D19000HPS	19,000	.7480	3,5	50	20
B284D19050HPS	B285D19050HPS	B286D19050HPS	19,050	.7500	3,5	50	20
B284D20000HPS	B285D20000HPS	B286D20000HPS	20,000	.7874	3,7	50	20

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

HP Drills • B28_HPS Series • Grade KN15™ • MQL and Through Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	120	**230**	450	mm/r	0,13–0,25	0,14–0,29	0,17–0,35	0,21–0,42	0,27–0,50	0,33–0,57	0,37–0,69	0,43–0,82
	2	120	**220**	350	mm/r	0,14–0,23	0,15–0,28	0,17–0,34	0,22–0,39	0,29–0,46	0,34–0,54	0,39–0,67	0,45–0,80
	3	100	**180**	400	mm/r	0,13–0,20	0,14–0,21	0,16–0,27	0,20–0,33	0,28–0,40	0,33–0,45	0,38–0,60	0,44–0,68
	4	100	**130**	300	mm/r	0,10–0,18	0,12–0,20	0,14–0,26	0,16–0,30	0,18–0,34	0,20–0,38	0,24–0,42	0,28–0,46

Y-TECH™ Drills with Through Coolant for Difficult-to-Machine Materials

Primary Application

The B29_YPL series solid carbide drills are specifically engineered to drill stainless steel, high-temp alloys, and difficult-to-machine materials.

Y-TECH drills deliver best-in-class hole quality and longest tool life in these difficult-to-machine workpiece materials. Operate these drills with standard through coolant.

Features and Benefits

YPL Drill-Point Design

- Ensures good centring and chip formation.
- No jamming of chips and enables easy reconditioning.

Uneven Flute-to-Flute Angle

- Unbalanced forces by design eliminate chipping on margin lands.

Three-Margin Lands

- Reduce pendulum motion by directing forces towards third margin, which results in superior hole accuracy (cylindricity, constant diameter, and hole straightness).

KC7315™ Grade

- A multilayer, TiAlN-based coating with high hot hardness enables higher cutting speeds and outstanding wear resistance.
- Optimised surface finish of the tool ensures chip evacuation in high-speed drilling applications.

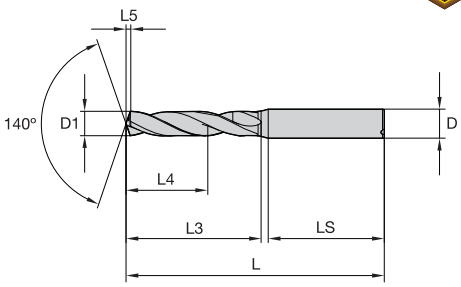
Y-TECH™ drills deliver best-in-class hole quality.

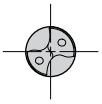


Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- Using Kennametal slim line hydraulic chucks together with standard B29_YPL is recommended if workpiece contours need to be bypassed.



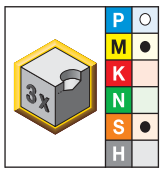


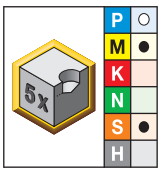




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B291/B292_YPL • ~3 x D/~5 x D



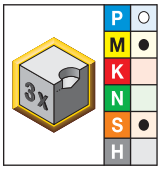


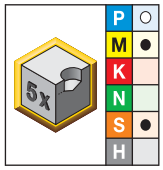
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B291A03000YPL	B292A03000YPL	3,000	.1181	0,6	36	6
B291A03100YPL	B292A03100YPL	3,100	.1220	0,6	36	6
B291A03175YPL	B292A03175YPL	3,175	.1250	0,6	36	6
B291A03200YPL	B292A03200YPL	3,200	.1260	0,6	36	6
B291A03300YPL	B292A03300YPL	3,300	.1299	0,7	36	6
B291A03400YPL	B292A03400YPL	3,400	.1339	0,7	36	6
B291A03454YPL	–	3,454	.1360	0,7	36	6
B291A03500YPL	B292A03500YPL	3,500	.1378	0,7	36	6
B291A03600YPL	B292A03600YPL	3,600	.1417	0,7	36	6
B291A03700YPL	B292A03700YPL	3,700	.1457	0,7	36	6
B291A03800YPL	B292A03800YPL	3,800	.1496	0,8	36	6
B291A03900YPL	B292A03900YPL *	3,900	.1535	0,8	36	6
B291A03970YPL	B292A03970YPL	3,970	.1563	0,8	36	6
B291A04000YPL	B292A04000YPL	4,000	.1575	0,8	36	6
B291A04100YPL	B292A04100YPL	4,100	.1614	0,8	36	6
–	B292A04200YPL	4,200	.1654	0,8	36	6
B291A04300YPL	B292A04300YPL	4,300	.1693	0,8	36	6
B291A04400YPL	–	4,400	.1732	0,9	36	6
B291A04500YPL	B292A04500YPL	4,500	.1772	0,9	36	6
–	B292A04700YPL	4,700	.1850	0,9	36	6
B291A04763YPL	B292A04763YPL	4,763	.1875	0,9	36	6
B291A04800YPL	B292A04800YPL	4,800	.1890	0,9	36	6
B291A04851YPL	B292A04851YPL	4,851	.1910	0,9	36	6
B291A04900YPL	–	4,900	.1929	0,9	36	6
B291A04915YPL	B292A04915YPL	4,915	.1935	1,0	36	6
B291A05000YPL	B292A05000YPL	5,000	.1969	1,0	36	6
B291A05100YPL	B292A05100YPL	5,100	.2008	1,0	36	6
B291A05200YPL	B292A05200YPL	5,200	.2047	1,0	36	6
B291A05410YPL	B292A05410YPL	5,410	.2130	1,1	36	6
B291A05500YPL	B292A05500YPL	5,500	.2165	1,1	36	6
–	B292A05558YPL	5,558	.2188	1,1	36	6
B291A05600YPL	B292A05600YPL	5,600	.2205	1,1	36	6
–	B292A05800YPL	5,800	.2283	1,1	36	6
B291A05900YPL	–	5,900	.2323	1,1	36	6
B291A06000YPL	B292A06000YPL	6,000	.2362	1,2	36	6
B291A06200YPL	B292A06200YPL	6,200	.2441	1,2	36	8

(continued)

(B291/B292_YPL • ~3 x D/~5 x D — continued)



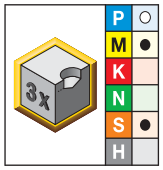


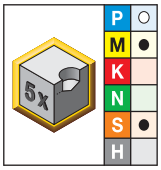
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B291A06350YPL	B292A06350YPL	6,350	.2500	1,2	36	8
B291A06500YPL	B292A06500YPL	6,500	.2559	1,3	36	8
–	B292A06528YPL	6,528	.2570	1,3	36	8
–	B292A06600YPL	6,600	.2598	1,3	36	8
–	B292A06746YPL	6,746	.2656	1,3	36	8
B291A06747YPL	–	6,747	.2656	1,3	36	8
B291A06800YPL	B292A06800YPL	6,800	.2677	1,3	36	8
–	B292A06900YPL	6,900	.2717	1,3	36	8
B291A07000YPL	B292A07000YPL	7,000	.2756	1,4	36	8
–	B292A07100YPL	7,100	.2795	1,4	36	8
B291A07144YPL	–	7,144	.2813	1,4	36	8
–	B292A07145YPL	7,145	.2813	1,4	36	8
B291A07200YPL	B292A07200YPL	7,200	.2835	1,4	36	8
–	B292A07400YPL	7,400	.2913	1,4	36	8
B291A07500YPL	B292A07500YPL *	7,500	.2953	1,4	36	8
–	B292A07600YPL	7,600	.2992	1,5	36	8
–	B292A07900YPL	7,900	.3110	1,5	36	8
B291A07938YPL	B292A07938YPL	7,938	.3125	1,5	36	8
B291A08000YPL	B292A08000YPL	8,000	.3150	1,5	36	8
–	B292A08100YPL	8,100	.3189	1,6	40	10
–	B292A08200YPL	8,200	.3228	1,6	40	10
B291A08334YPL	B292A08334YPL *	8,334	.3281	1,6	40	10
–	B292A08433YPL	8,433	.3320	1,6	40	10
B291A08500YPL	B292A08500YPL	8,500	.3346	1,6	40	10
B291A08600YPL	B292A08600YPL	8,600	.3386	1,7	40	10
B291A08733YPL	B292A08733YPL	8,733	.3438	1,7	40	10
B291A08800YPL	B292A08800YPL	8,800	.3465	1,7	40	10
B291A08900YPL *	B292A08900YPL	8,900	.3504	1,7	40	10
B291A09000YPL	B292A09000YPL	9,000	.3543	1,7	40	10
B291A09129YPL	–	9,129	.3594	1,8	40	10
–	B292A09130YPL	9,130	.3594	1,8	40	10
–	B292A09200YPL	9,200	.3622	1,8	40	10
B291A09300YPL	–	9,300	.3661	1,8	40	10
–	B292A09347YPL	9,347	.3680	1,8	40	10
B291A09500YPL	B292A09500YPL	9,500	.3740	1,8	40	10
B291A09525YPL	B292A09525YPL	9,525	.3750	1,8	40	10
–	B292A09600YPL	9,600	.3780	1,8	40	10
B291A09700YPL	B292A09700YPL	9,700	.3819	1,9	40	10
B291A09800YPL	B292A09800YPL	9,800	.3858	1,9	40	10
B291A10000YPL	B292A10000YPL	10,000	.3937	1,9	40	10
–	B292A10100YPL	10,100	.3976	1,9	45	12
B291A10200YPL	B292A10200YPL	10,200	.4016	2,0	45	12
B291A10320YPL	B292A10320YPL	10,320	.4063	2,0	45	12
B291A10500YPL	B292A10500YPL	10,500	.4134	2,0	45	12
B291A10716YPL	B292A10716YPL	10,716	.4219	2,0	45	12
B291A11000YPL	B292A11000YPL	11,000	.4331	2,1	45	12
–	B292A11112YPL	11,112	.4375	2,1	45	12
B291A11113YPL	–	11,113	.4375	2,1	45	12
B291A11500YPL	B292A11500YPL *	11,500	.4528	2,2	45	12
B291A11509YPL	B292A11509YPL	11,509	.4531	2,2	45	12
B291A11800YPL	–	11,800	.4646	2,2	45	12
B291A11908YPL	B292A11908YPL	11,908	.4688	2,3	45	12

(continued)

(B291/B292_YPL • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B291A12000YPL	B292A12000YPL	12,000	.4724	2,3	45	12
B291A12300YPL	–	12,300	.4843	2,3	45	14
–	B292A12304YPL	12,304	.4844	2,3	45	14
B291A12500YPL	B292A12500YPL	12,500	.4921	2,4	45	14
B291A12700YPL	B292A12700YPL	12,700	.5000	2,4	45	14
B291A12900YPL	–	12,900	.5079	2,5	45	14
B291A13000YPL	B292A13000YPL	13,000	.5118	2,5	45	14
–	B292A13500YPL	13,500	.5315	2,6	45	14
B291A13800YPL	–	13,800	.5433	2,6	45	14
–	B292A13900YPL *	13,900	.5472	2,6	45	14
B291A14000YPL	B292A14000YPL	14,000	.5512	2,7	45	14
–	B292A14200YPL *	14,200	.5591	2,7	48	16
B291A14288YPL	B292A14288YPL	14,288	.5625	2,7	48	16
B291A14500YPL	B292A14500YPL	14,500	.5709	2,8	48	16
B291A15000YPL	B292A15000YPL	15,000	.5906	2,8	48	16
–	B292A15500YPL	15,500	.6102	2,9	48	16
–	B292A15600YPL	15,600	.6142	3,0	48	16
B291A15800YPL	–	15,800	.6220	3,0	48	16
B291A15875YPL	B292A15875YPL	15,875	.6250	3,0	48	16
B291A16000YPL	B292A16000YPL *	16,000	.6299	3,0	48	16
B291A16100YPL *	–	16,100	.6339	3,1	48	18
–	B292A16500YPL *	16,500	.6496	3,1	48	18
B291A17000YPL	B292A17000YPL *	17,000	.6693	3,2	48	18
B291A17463YPL	B292A17463YPL	17,463	.6875	3,3	48	18
B291A17500YPL *	B292A17500YPL *	17,500	.6890	3,3	48	18
B291A17900YPL *	–	17,900	.7047	3,4	48	18
B291A18000YPL	B292A18000YPL *	18,000	.7087	3,4	48	18
–	B292A18500YPL *	18,500	.7283	3,5	50	20
–	B292A19000YPL *	19,000	.7480	3,6	50	20
B291A19050YPL *	B292A19050YPL	19,050	.7500	3,6	50	20
B291A19800YPL	–	19,800	.7795	3,7	50	20
–	B292A20000YPL	20,000	.7874	3,8	50	20
–	B292A20500YPL *	20,500	.8071	3,9	50	20
–	B292A21000YPL *	21,000	.8268	4,0	50	20

NOTE: YPL drills are designed specifically for high-temp alloys, duplex stainless steels, and other difficult-to-machine materials.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Y-TECH™ Drill • B29_YPL Series • Grade KC7315™ • Through Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	5	45	65	80	mm/r	0,04–0,08	0,06–0,09	0,07–0,12	0,09–0,16	0,11–0,19	0,13–0,21	0,15–0,26	0,18–0,30
	6	50	60	90	mm/r	0,04–0,06	0,04–0,07	0,06–0,10	0,10–0,15	0,09–0,16	0,11–0,20	0,13–0,24	0,16–0,28
M	1	40	50	60	mm/r	0,07–0,11	0,08–0,12	0,13–0,17	0,14–0,21	0,14–0,21	0,17–0,23	0,19–0,25	0,22–0,27
	2	40	50	80	mm/r	0,07–0,11	0,07–0,12	0,08–0,17	0,13–0,21	0,14–0,22	0,17–0,23	0,19–0,25	0,22–0,27
	3	40	50	70	mm/r	0,04–0,06	0,04–0,07	0,04–0,07	0,05–0,08	0,06–0,09	0,06–0,10	0,06–0,10	0,07–0,11
S	1	15	20	30	mm/r	0,06–0,08	0,06–0,08	0,07–0,10	0,10–0,13	0,11–0,14	0,12–0,16	0,14–0,19	0,17–0,22
	2	20	20	30	mm/r	0,05–0,07	0,05–0,07	0,06–0,08	0,08–0,11	0,09–0,12	0,10–0,13	0,12–0,16	0,14–0,18
	3	25	30	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12
	4	30	30	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12
H	1	10	20	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11

TX Drills with Through Coolant for Close Tolerance Holes

Primary Application

B411 solid carbide drills have an X-shaped, free-cutting 130° point design and are designed for grey cast iron, nodular iron, and non-ferrous and aluminium alloy materials. Best suited for high-quality, close tolerance holes that require a very good surface finish.

Features and Benefits

Two Cutting Edges with Straight Flutes

- Precise shape of the hole even if used as platform for complex step drills.
- Can run into cored holes.

X-Shaped Drill Point

- Excellent centring capabilities.

Four-Margin Land Design

- Second set of cutting margin lands improves the surface quality.
- Achieve tight diameter tolerances.
- Can run through cross holes and exit on inclined surfaces.

Wear-Resistant Carbide KF1 Grade

- Long tool life in abrasive materials, such as cast iron and aluminium die-cast alloys.
- The uncoated grade KF1 helps to prevent built-up edge in drilling aluminium.

Best suited for high-quality, close tolerance holes that require a very good surface finish.

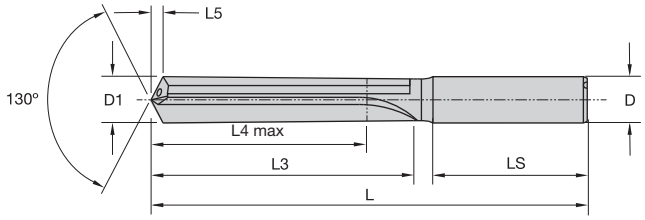


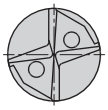
Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- Coated grades available for other material applications, such as cast iron.



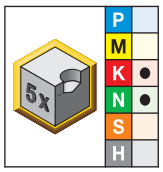








B411 • ~5 x D

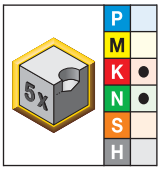


● first choice
○ alternate choice

KF1	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B411A03200	3,200	.1260	66	28	23	0,7	36	6
B411A03300	3,300	.1299	66	28	23	0,8	36	6
B411A03800	3,800	.1496	74	36	29	0,9	36	6
B411A04000	4,000	.1575	74	36	29	0,9	36	6
B411A04200	4,200	.1654	74	36	29	1,0	36	6
B411A04500	4,500	.1772	74	36	29	1,0	36	6
B411A04600	4,600	.1811	74	36	29	1,1	36	6
B411A04650	4,650	.1831	74	36	29	1,1	36	6
B411A04800	4,800	.1890	82	44	35	1,1	36	6
B411A04900	4,900	.1929	82	44	35	1,1	36	6
B411A05000	5,000	.1969	82	44	35	1,2	36	6
B411A05100	5,100	.2008	82	44	35	1,2	36	6
B411A05200	5,200	.2047	82	44	35	1,2	36	6
B411A05500	5,500	.2165	82	44	35	1,3	36	6
B411A05550	5,550	.2185	82	44	35	1,3	36	6
B411A05600	5,600	.2205	82	44	35	1,2	36	6
B411A05800	5,800	.2283	82	44	35	1,4	36	6
B411A06000	6,000	.2362	82	44	35	1,4	36	6
B411A06100	6,100	.2402	91	53	43	1,3	36	8
B411A06300	6,300	.2480	91	53	43	1,5	36	8
B411A06400	6,400	.2520	91	53	43	1,5	36	8
B411A06500	6,500	.2559	91	53	43	1,5	36	8
B411A06600	6,600	.2598	91	53	43	1,5	36	8
B411A06800	6,800	.2677	91	53	43	1,6	36	8
B411A07000	7,000	.2756	91	53	43	1,6	36	8
B411A07400	7,400	.2913	91	53	43	1,7	36	8
B411A07500	7,500	.2953	91	53	43	1,7	36	8
B411A07700 *	7,700	.3031	91	53	43	1,7	36	8
B411A07800	7,800	.3071	91	53	43	1,8	36	8
B411A08000	8,000	.3150	91	53	43	1,9	36	8
B411A08400	8,400	.3307	103	61	49	2,0	40	10
B411A08500	8,500	.3346	103	61	49	2,0	40	10
B411A08700	8,700	.3425	103	61	49	1,9	40	10
B411A08800	8,800	.3465	103	61	49	1,9	40	10
B411A09000	9,000	.3543	103	61	49	2,1	40	10
B411A09300	9,300	.3661	103	61	49	2,2	40	10

(continued)

(B411 • ~5 x D — continued)



● first choice
○ alternate choice

KF1	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B411A09500	9,500	.3740	103	61	49	2,2	40	10
B411A09800	9,800	.3858	103	61	49	2,3	40	10
B411A10000	10,000	.3937	103	61	49	2,3	40	10
B411A10200	10,200	.4016	118	71	56	2,4	45	12
B411A10500	10,500	.4134	118	71	56	2,4	45	12
B411A11000	11,000	.4331	118	71	56	2,6	45	12
B411A11200	11,200	.4409	118	71	56	2,6	45	12
B411A11500	11,500	.4528	118	71	56	2,7	45	12
B411A11800	11,800	.4646	118	71	56	2,8	45	12
B411A12000	12,000	.4724	118	71	56	2,8	45	12
B411A12500	12,500	.4921	124	77	60	2,9	45	14
B411A13000	13,000	.5118	124	77	60	3,0	45	14
B411A13500	13,500	.5315	124	77	60	3,1	45	14
B411A13800	13,800	.5433	124	77	60	3,2	45	14
B411A14000	14,000	.5512	124	77	60	3,3	45	14
B411A14500	14,500	.5709	133	83	63	3,4	48	16
B411A15000	15,000	.5906	133	83	63	3,5	48	16
B411A15500	15,500	.6102	133	83	63	3,6	48	16
B411A16000	16,000	.6299	133	83	63	3,7	48	16
B411A16500	16,500	.6496	143	93	71	3,8	48	18
B411A17000	17,000	.6693	143	93	71	4,0	48	18
B411A17500	17,500	.6890	143	93	71	4,1	48	18
B411A18000	18,000	.7087	143	93	71	4,2	48	18
B411A19000	19,000	.7480	153	101	77	4,4	50	20
B411A19500	19,500	.7677	153	101	77	4,5	50	20
B411A20000	20,000	.7874	153	101	77	4,7	50	20
B411A21000	21,000	.8268	167	114	85	4,9	50	20
B411A22000	22,000	.8661	167	114	85	5,1	50	20
B411A23000	23,000	.9055	184	126	98	5,4	56	25
B411A24000	24,000	.9449	184	126	98	5,6	56	25
B411A25000	25,000	.9843	184	126	98	5,8	56	25

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance k6	D tolerance h6
>3–6	0,001/0,009	0,000/-0,008
>6–10	0,001/0,010	0,000/-0,009
>10–18	0,001/0,012	0,000/-0,011
>18–25,4	0,002/0,015	0,000/-0,013

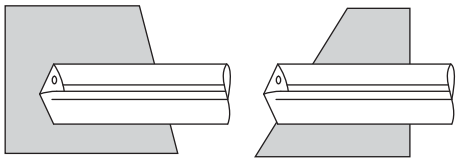
TX Drills • B411 Series • Grade KF1 • Through Coolant • Drill Diameters 3–25mm • Metric



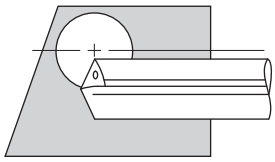
Material Group		Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate (f) by Diameter									
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	25,4
K	1	115	**120**	140	mm/r	0,11–0,20	0,12–0,24	0,15–0,28	0,18–0,33	0,20–0,38	0,23–0,44	0,30–0,53	0,34–0,65	0,40–0,76
N	1	100	**250**	450	mm/r	0,12–0,25	0,13–0,29	0,16–0,35	0,20–0,42	0,26–0,50	0,32–0,57	0,36–0,69	0,42–0,82	0,59–0,96
N	2	200	**250**	300	mm/r	0,13–0,21	0,14–0,26	0,16–0,32	0,20–0,37	0,27–0,44	0,32–0,52	0,38–0,64	0,44–0,78	0,60–0,96
N	3	100	**150**	300	mm/r	0,11–0,18	0,12–0,20	0,15–0,24	0,18–0,30	0,20–0,38	0,23–0,44	0,30–0,53	0,34–0,65	0,40–0,76
N	4	100	**170**	250	mm/r	0,10–0,16	0,12–0,20	0,14–0,26	0,16–0,28	0,18–0,32	0,20–0,36	0,22–0,40	0,24–0,44	0,28–0,50

TX Drill Applications

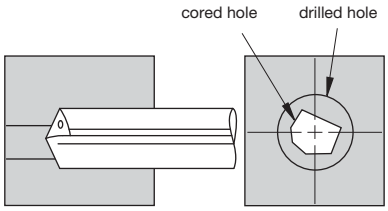
The excellent stability of the TX drill enables it to be used for drilling through inclined planes, intersecting holes, and cored holes:



inclined planes



intersecting holes



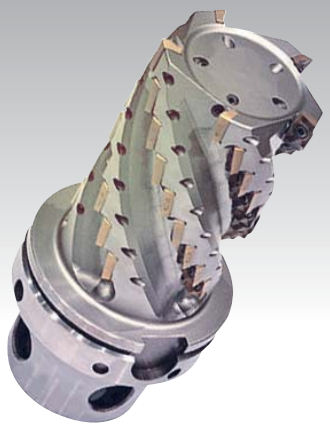
cored holes

Engineered Solutions

You Won't Find These Solutions in a Catalogue

Kennametal engineered solutions pinpoint and address specific needs of customers, workpiece materials, or workpiece configurations. Solutions include standard products, custom designs, and old-fashioned process know-how that can only come from many decades of tooling expertise.

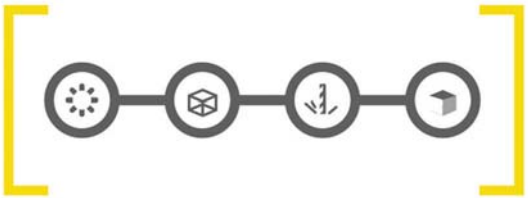
They are the result of coordinated global resources and are available anywhere in the world, no matter how small or large the project.



MANUFACTURING PROCESS

We Look at the Entire Production Process, Not Just Portions of It

From the machine tool to the last stop in production, we can optimise the manufacturing process throughout every step. The result is low implementation time and costs, and rapid return on investment.



SPF Drills for CFRP Composite Materials

Designed to machine carbon fibre-reinforced polymers.



Primary Application

B53_ SPF series solid carbide drills offer a material-specific design and grade to machine carbon fibre-reinforced polymer (CFRP) composite materials by minimising delamination and increasing tool life.

Features and Benefits

SPF Drill-Point Design

- Special 90° point angle increases centring capability.
- Low thrust and improved hole quality.



Unique Geometry

- Combination of point design, substrate, and coating provides longer tool life and requires substantially less cutting force.

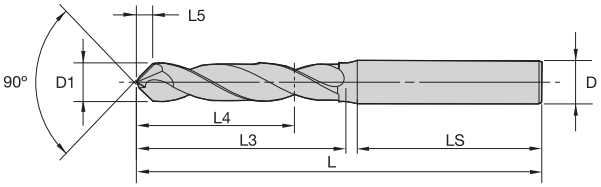
KDF400™ Grade

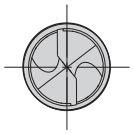
- CVD multilayer diamond coating provides more wear resistance and reduced friction, increasing tool life and improving chip flow.

Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.



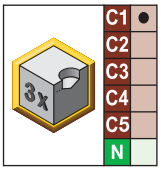


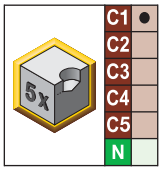




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B531/B532_SPF • ~3 x D/~5 x D





● first choice
○ alternate choice

short • KDF400	long • KDF400	D1 diameter mm	D1 diameter in	L5	LS	D
B531A03200SPF	B532A03200SPF *	3,200	.1260	1,5	36	6
B531A03300SPF	B532A03300SPF *	3,300	.1299	1,5	36	6
B531A03600SPF	B532A03600SPF *	3,600	.1417	1,6	36	6
B531A04000SPF	–	4,000	.1575	1,8	36	6
B531A04366SPF *	B532A04366SPF *	4,366	.1719	2,0	36	6
B531A04851SPF	B532A04851SPF *	4,851	.1910	2,2	36	6
B531A04864SPF	–	4,864	.1915	2,2	36	6
B531A05100SPF *	B532A05100SPF	5,100	.2008	2,3	36	6
B531A05200SPF *	B532A05200SPF *	5,200	.2047	2,4	36	6
B531A06000SPF	B532A06000SPF	6,000	.2362	2,7	36	6
B531A06375SPF	B532A06375SPF *	6,375	.2510	2,9	36	8
B531A06400SPF	B532A06400SPF *	6,400	.2520	2,9	36	8
B531A06500SPF	B532A06500SPF *	6,500	.2559	3,0	36	8
–	B532A06700SPF *	6,700	.2638	3,0	36	8
–	B532A07200SPF	7,200	.2835	3,3	36	8
B531A07938SPF	B532A07938SPF *	7,938	.3125	3,6	36	8
B531A09550SPF	–	9,550	.3760	4,3	40	10
B531A09563SPF	B532A09563SPF *	9,563	.3765	4,3	40	10
B531A11125SPF *	–	11,125	.4380	5,1	45	12
B531A12725SPF	B532A12725SPF *	12,725	.5010	5,8	45	14

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminium
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminium/Titanium

Application Data

SPF Drills • B53_ Series • Grade KDF400™ • Dry Applications • Drill Diameters 3–12mm • Metric





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0
C	1	90	120	150	mm/r	0,03–0,20	0,03–0,20	0,03–0,20	0,03–0,20	0,03–0,20	0,03–0,20

Drills for Machining of CFRP-Metal Stack Materials

Primary Application

The all new stack drill tackles CFRP-metal stack material drilling operations in diameter ranges of 4,763–15,875mm (3/16–5/8"). The drill can be applied in all combinations of stacks: CFRP-Ti-Al as well as CFRP-Ti, CFRP-Al, and also straight Ti or Al. Operate these drills with standard through coolant, MQL, or even dry.

The new Kennametal B55_DAL solid carbide drill provides excellent hole quality in combination with extended tool life, especially for customers in the aerospace industry who require the best hole quality and cost savings in an increasing number of applications with CFRP-Ti-stack materials.

The new Kennametal PDC251_ drill provides outstanding wear resistance and tool life. Thanks to the PCD tip, the PDC251_ drill withstands the most abrasive CFRP materials with high-fibre content. It is available in diameter ranges of 4,763–12,7mm (3/16–1/2"). Best performance is achieved with automated rigid machining devices. Additionally, multiple regrinds are possible.

Features and Benefits

Double-Angle Point Design

- Sharp cutting edge to cleanly cut CFRPs as top layer in CFRP-metal stacks.
- Bur-free when exiting metal side of stack.
- Excellent centring capabilities.

KN15™ Beyond™ Grade

- The highly polished surface ensures superior chip evacuation, even when MQL coolant is applied.
- The grade is a specified, uncoated 9% Co fine-grain carbide.

KD1415™ Grade

- Polycrystalline diamond grade for high wear resistance.
- Sufficient toughness for Ti- or Al-metal layers.



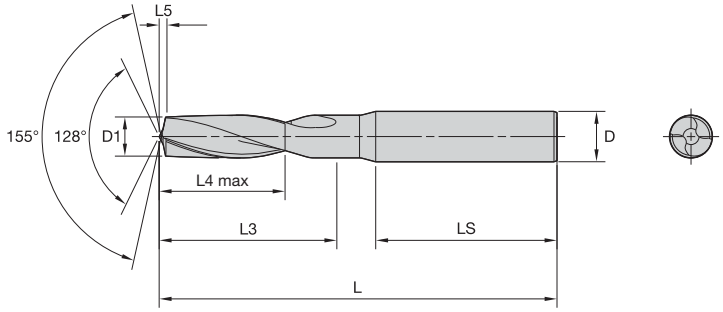
k6 Tolerance

- The drill diameter is ground to a k6 tolerance and can achieve hole tolerances of H8.

Customisation

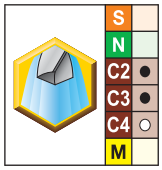
- Intermediate diameters available as semi-standards.
- Length variations and step drills, as well as shank variations, available as custom solutions for carbide and PCD versions.
- A four-margin land design for increased stability is available as semi-standard B54_DAL.







B551A_DAL • ~3 x D



● first choice
○ alternate choice

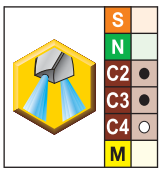
short • KN15	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B551A04763DAL *	4,763	.1875	66	28	20	0,8	36	6
B551A06350DAL	6,350	.2500	79	34	24	1,1	36	8
B551A07938DAL	7,938	.3125	79	41	29	1,4	36	8
B551A09525DAL	9,525	.3750	89	47	35	1,7	40	10
B551A11113DAL *	11,113	.4375	102	55	40	2,0	45	12
B551A12700DAL *	12,700	.5000	107	60	43	2,3	45	14
B551A14288DAL *	14,288	.5625	115	65	45	2,5	48	16
B551A15875DAL *	15,875	.6250	115	65	45	2,8	48	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

DAL Drills • CFRP-Ti-Stacks • Through Coolant



B556A_DAL • ~3 x D



● first choice
○ alternate choice

short • KN15	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B556A04763DAL *	4,763	.1875	66	28	20	0,8	36	6
B556A04826DAL	4,826	.1900	66	28	20	0,9	36	6
B556A06350DAL	6,350	.2500	79	34	24	1,1	36	8
B556A06375DAL *	6,375	.2510	79	34	24	1,1	36	8
B556A07938DAL	7,938	.3125	79	41	29	1,4	36	8
B556A09525DAL *	9,525	.3750	89	47	35	1,7	40	10
B556A11113DAL *	11,113	.4375	102	55	40	2,0	45	12
B556A12700DAL *	12,700	.5000	107	60	43	2,3	45	14
B556A14288DAL *	14,288	.5625	115	65	45	2,5	48	16
B556A15875DAL *	15,875	.6250	115	65	45	2,8	48	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Stack Drill • B551/B541 Series • Grade KN15™ • Dry • Drill Diameters 3–20mm • Metric



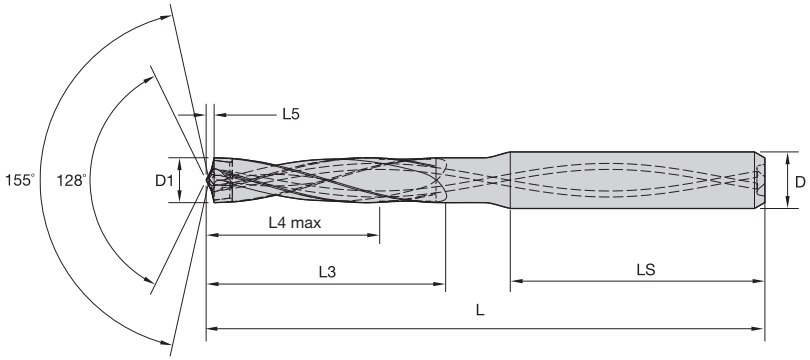
Material Group		Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	80	120	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	10	15	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23

Stack Drill • B556/B546 Series • Grade KN15 • Through Coolant • Drill Diameters 3–20mm • Metric



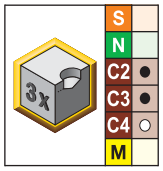
Material Group		Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	120	150	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	25	50	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23







PCD Twist Drill • PDC251 Series • ~3 x D



● first choice
○ alternate choice

KD1415	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
PDC251A04763DA	4,7630	0.188	66	28	20	0,8	36	6
PDC251A06350DA	6,3500	0.250	79	34	24	1,1	36	8
PDC251A07938DA *	7,9380	0.313	79	41	29	1,4	36	8
PDC251A09525DA *	9,5250	0.375	89	47	35	1,7	40	10
PDC251A11113DA *	11,1130	0.438	102	55	40	2,0	45	12
PDC251A12700DA *	12,7000	0.500	107	60	43	2,3	45	14

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance k6	D tolerance h6
>3–6	0,001/0,009	0,000/-0,008
>6–10	0,001/0,010	0,000/-0,009
>10–18	0,001/0,012	0,000/-0,011
>18–25,4	0,002/0,015	0,000/-0,013

C2	CFRP/Aluminium
C3	CFRP/Titanium
C4	CFRP/Stainless Steel

Stack Drill • PDC25 Series • Grade KD1415™ • Dry • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	80	120	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	10	15	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23

Stack Drill • PDC251 Series • Grade KD1415 • Through Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	120	150	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	25	50	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23

FB Drills with Through Coolant for Flat-Bottom Applications

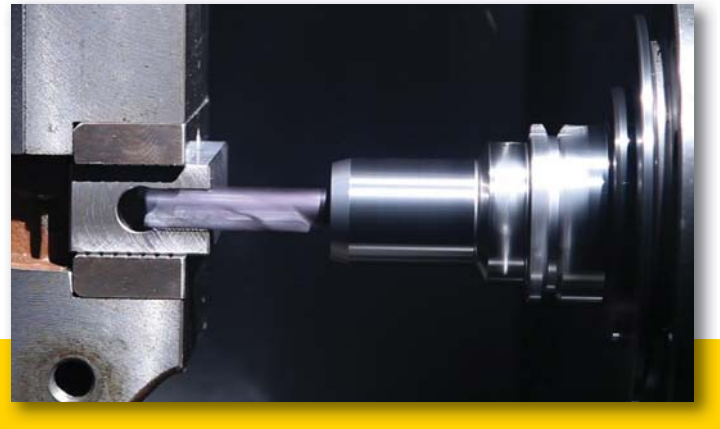
Primary Application

B707_FB series solid carbide drills are productivity tools that combine two operations in one:

1) Eliminate the 180° end mill in flat-bottom drilling or when preparing an inclined or curved surface for drilling.

2) After full cylindrical engagement, the drill runs at normal solid carbide drilling parameters.

The B707_FBS Series with the new uncoated KN15™ grade now offers the same advantages for drilling in non-ferrous materials, such as aluminium, copper, and brass. The 707_FBL Series is designed for applications in stainless steel and high-temperature alloys.



Features and Benefits

Unique FB Drill-Point Design

- Two effective cutting edges over centre enable high feed rates.
- Creates a true flat-bottom hole from O.D. to centre.
- Four-margin land design improves hole straightness and roundness and provides good alignment, even when drilling cross holes.

Straight Cutting Edge

- Guarantees a true 180° hole ground.
- Rake angle correction improves chip control.

KC7315™ Grade on B707_FBG

- Enables high drill-like penetration rates and superior tool life in steel and iron materials.

KN15 Grade on B707_FBS

- The uncoated grade prevents built-up edge reducing the risk of fracture.
- The highly polished surfaces ensure superior chip evacuation even when low-pressure coolant or MQL is applied.

KCMS15™ Grade on B707_FBL

- AlTiN-based PVD coating for the demands of stainless steels.
- Edge preparation with a light hone.

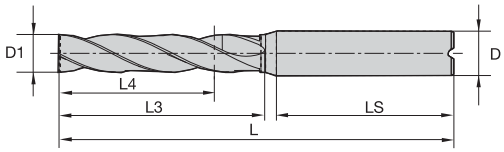
Productivity tools that combine two operations in one.

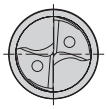


Customisation

- Intermediate diameters available as semi-standards.
- Length variations available as semi-standard:
  - B706_ 1.5 x D
  - B708_ 5 x D
  - B709_ 8 x D
- Other length variations and step drills are available as engineered solutions.

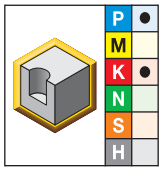


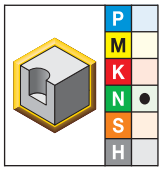


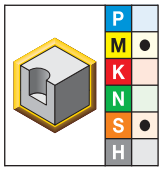




B707_FBG/FBS/FBL • ~3 x D





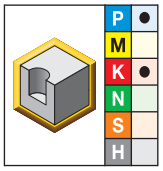


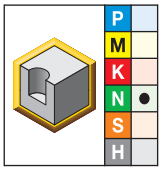
● first choice
○ alternate choice

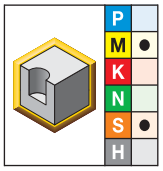
B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B707A03000FBG	B707A03000FBS	B707A03000FBL	3,000	.1181	62	20	14	36	6
B707A03175FBG	B707A03175FBS	B707A03175FBL	3,175	.1250	62	20	14	36	6
B707A03500FBG	B707A03500FBS	B707A03500FBL	3,500	.1378	62	20	14	36	6
B707A03700FBG	–	–	3,700	.1457	62	20	14	36	6
–	–	B707A03800FBL	3,800	.1496	66	24	17	36	6
B707A03970FBG	–	–	3,970	.1563	66	24	17	36	6
B707A04000FBG	B707A04000FBS	B707A04000FBL	4,000	.1575	66	24	17	36	6
B707A04200FBG	B707A04200FBS	–	4,200	.1654	66	24	17	36	6
B707A04400FBG	B707A04400FBS	B707A04400FBL	4,400	.1732	66	24	17	36	6
B707A04500FBG	B707A04500FBS	B707A04500FBL	4,500	.1772	66	24	17	36	6
B707A04763FBG	–	–	4,763	.1875	66	28	20	36	6
B707A04800FBG	B707A04800FBS	B707A04800FBL	4,800	.1890	66	28	20	36	6
B707A04900FBG	B707A04900FBS *	–	4,900	.1929	66	28	20	36	6
B707A05000FBG	B707A05000FBS	B707A05000FBL	5,000	.1969	66	28	20	36	6
B707A05200FBG	–	–	5,200	.2047	66	28	20	36	6
B707A05560FBG	B707A05560FBS	B707A05560FBL	5,560	.2189	66	28	20	36	6
B707A05800FBG	–	–	5,800	.2283	66	28	20	36	6
B707A05900FBG	B707A05900FBS	B707A05900FBL	5,900	.2323	66	28	20	36	6
B707A06000FBG	B707A06000FBS	B707A06000FBL	6,000	.2362	66	28	20	36	6
B707A06100FBG	–	–	6,100	.2402	79	34	24	36	8
B707A06350FBG	B707A06350FBS	B707A06350FBL	6,350	.2500	79	34	24	36	8
B707A06500FBG	B707A06500FBS	B707A06500FBL	6,500	.2559	79	34	24	36	8
B707A06800FBG	B707A06800FBS	B707A06800FBL	6,800	.2677	79	34	24	36	8
B707A07000FBG	B707A07000FBS	B707A07000FBL	7,000	.2756	79	34	24	36	8
B707A07145FBG	–	–	7,145	.2813	79	41	29	36	8
–	B707A07400FBS	–	7,400	.2913	79	41	29	36	8
B707A07500FBG	B707A07500FBS	B707A07500FBL	7,500	.2953	79	41	29	36	8
B707A07800FBG	–	–	7,800	.3071	79	41	29	36	8
B707A07938FBG	B707A07938FBS	B707A07938FBL	7,938	.3125	79	41	29	36	8
B707A08000FBG	B707A08000FBS	B707A08000FBL	8,000	.3150	79	41	29	36	8
B707A08334FBG	–	–	8,334	.3281	89	47	35	40	10
B707A08500FBG	B707A08500FBS	B707A08500FBL	8,500	.3346	89	47	35	40	10

(continued)

(B707_FBG/FBS/FBL • ~3 x D — continued)







● first choice
○ alternate choice

B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B707A08800FBG	B707A08800FBS	B707A08800FBL	8,800	.3465	89	47	35	40	10
B707A09000FBG	B707A09000FBS	B707A09000FBL	9,000	.3543	89	47	35	40	10
B707A09129FBG	–	–	9,129	.3594	89	47	35	40	10
B707A09500FBG	B707A09500FBS	B707A09500FBL	9,500	.3740	89	47	35	40	10
B707A09525FBG	B707A09525FBS	B707A09525FBL	9,525	.3750	89	47	35	40	10
B707A09800FBG	–	–	9,800	.3858	89	47	35	40	10
B707A10000FBG	B707A10000FBS	B707A10000FBL	10,000	.3937	89	47	35	40	10
B707A10200FBG	–	–	10,200	.4016	102	55	40	45	12
B707A10320FBG	B707A10320FBS	B707A10320FBL	10,320	.4063	102	55	40	45	12
B707A10500FBG	B707A10500FBS	B707A10500FBL	10,500	.4134	102	55	40	45	12
B707A10600FBG	–	–	10,600	.4173	102	55	40	45	12
B707A10800FBG	–	–	10,800	.4252	102	55	40	45	12
B707A11000FBG	B707A11000FBS	B707A11000FBL	11,000	.4331	102	55	40	45	12
B707A11111FBG	B707A11111FBS	B707A11111FBL	11,111	.4374	102	55	40	45	12
B707A11350FBG	–	–	11,350	.4469	102	55	40	45	12
B707A11509FBG	B707A11509FBS	B707A11509FBL	11,509	.4531	102	55	40	45	12
B707A11570FBG	B707A11570FBS *	B707A11570FBL	11,570	.4555	102	55	40	45	12
B707A11700FBG	B707A11700FBS	B707A11700FBL	11,700	.4606	102	55	40	45	12
B707A11800FBG	B707A11800FBS	B707A11800FBL	11,800	.4646	102	55	40	45	12
B707A11908FBG	–	–	11,908	.4688	102	55	40	45	12
B707A12000FBG	B707A12000FBS	B707A12000FBL	12,000	.4724	102	55	40	45	12
B707A12100FBG	B707A12100FBS	B707A12100FBL	12,100	.4764	107	60	43	45	14
B707A12500FBG	B707A12500FBS	B707A12500FBL *	12,500	.4921	107	60	43	45	14
B707A12600FBG *	–	–	12,600	.4961	107	60	43	45	14
B707A12700FBG	B707A12700FBS	B707A12700FBL	12,700	.5000	107	60	43	45	14
B707A12800FBG	B707A12800FBS	B707A12800FBL	12,800	.5039	107	60	43	45	14
B707A13000FBG	B707A13000FBS	B707A13000FBL	13,000	.5118	107	60	43	45	14
B707A13500FBG	B707A13500FBS	B707A13500FBL	13,500	.5315	107	60	43	45	14
B707A14000FBG	B707A14000FBS	B707A14000FBL	14,000	.5512	107	60	43	45	14
B707A14288FBG	B707A14288FBS	B707A14288FBL	14,288	.5625	115	65	45	48	16
B707A14500FBG	B707A14500FBS	B707A14500FBL	14,500	.5709	115	65	45	48	16
B707A15000FBG	B707A15000FBS	B707A15000FBL	15,000	.5906	115	65	45	48	16
B707A15250FBG	B707A15250FBS	B707A15250FBL *	15,250	.6004	115	65	45	48	16
B707A15500FBG	B707A15500FBS	B707A15500FBL	15,500	.6102	115	65	45	48	16
B707A15875FBG	B707A15875FBS	B707A15875FBL	15,875	.6250	115	65	45	48	16
B707A16000FBG	B707A16000FBS	B707A16000FBL	16,000	.6299	115	65	45	48	16
B707A16500FBG	B707A16500FBS	B707A16500FBL	16,500	.6496	123	73	51	48	18
B707A17000FBG	B707A17000FBS	B707A17000FBL	17,000	.6693	123	73	51	48	18
B707A17463FBG	–	–	17,463	.6875	123	73	51	48	18
B707A17500FBG	B707A17500FBS	B707A17500FBL	17,500	.6890	123	73	51	48	18
–	–	B707A17900FBL	17,900	.7047	123	73	51	48	18
B707A18000FBG	B707A18000FBS	B707A18000FBL	18,000	.7087	123	73	51	48	18
B707A18500FBG	–	–	18,500	.7283	131	79	55	50	20
B707A19000FBG	B707A19000FBS	B707A19000FBL *	19,000	.7480	131	79	55	50	20
B707A19050FBG	B707A19050FBS	B707A19050FBL *	19,050	.7500	131	79	55	50	20
B707A20000FBG	B707A20000FBS	B707A20000FBL	20,000	.7874	131	79	55	50	20
B707A21000FBG	B707A21000FBS	B707A21000FBL	21,000	.8268	141	86	60	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Flat-Bottom Drills • B707_FBG Series • Grade KC7315™ • Through Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	100	**133**	170	mm/r	0,06–0,14	0,10–0,17	0,09–0,20	0,11–0,25	0,18–0,28	0,14–0,31	0,16–0,37	0,19–0,42
	1	100	**133**	170	mm/r	0,07–0,16	0,12–0,20	0,10–0,23	0,13–0,29	0,21–0,33	0,17–0,37	0,19–0,44	0,22–0,49
	2	130	**150**	180	mm/r	0,07–0,13	0,10–0,16	0,16–0,19	0,13–0,23	0,18–0,27	0,17–0,30	0,19–0,35	0,22–0,39
	3	80	**106**	130	mm/r	0,09–0,16	0,13–0,20	0,13–0,23	0,16–0,24	0,20–0,31	0,21–0,37	0,25–0,44	0,28–0,46
	4	70	**98**	130	mm/r	0,08–0,16	0,12–0,19	0,11–0,22	0,14–0,27	0,21–0,31	0,18–0,35	0,21–0,41	0,24–0,46
	6	70	**98**	130	mm/r	0,07–0,12	0,10–0,14	0,10–0,16	0,12–0,20	0,16–0,23	0,16–0,26	0,18–0,31	0,21–0,34
K	1	70	**85**	100	mm/r	0,09–0,17	0,13–0,21	0,12–0,25	0,15–0,31	0,23–0,35	0,20–0,39	0,23–0,46	0,26–0,52
	2	100	**113**	130	mm/r	0,09–0,15	0,12–0,18	0,12–0,21	0,15–0,26	0,21–0,30	0,20–0,33	0,23–0,39	0,26–0,44
	3	70	**105**	140	mm/r	0,07–0,13	0,10–0,16	0,11–0,19	0,13–0,23	0,18–0,27	0,17–0,30	0,20–0,35	0,22–0,37

Flat-Bottom Drills • B707_FBS Series • Grade KN15™ • Through Coolant • Drill Diameters 3–20mm • Metric



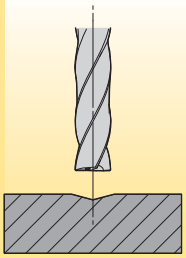
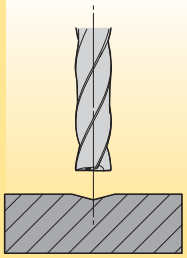
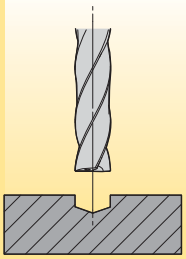
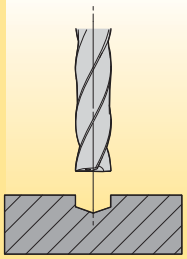
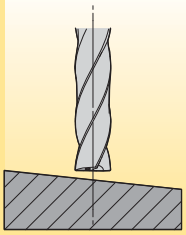
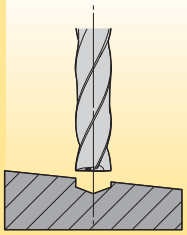
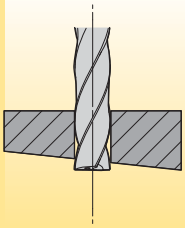
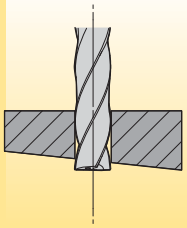
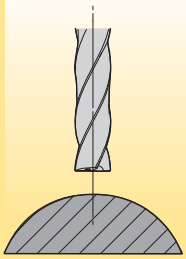
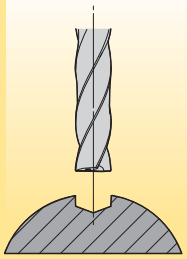
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	120	**260**	400	mm/r	0,07–0,20	0,08–0,22	0,13–0,34	0,14–0,40	0,15–0,44	0,17–0,46	0,19–0,50	0,22–0,58
	2	120	**250**	280	mm/r	0,08–0,20	0,08–0,22	0,09–0,34	0,14–0,40	0,15–0,44	0,19–0,46	0,21–0,50	0,24–0,58
	3	100	**200**	260	mm/r	0,08–0,15	0,08–0,16	0,09–0,22	0,15–0,26	0,16–0,30	0,20–0,37	0,22–0,42	0,26–0,46
	4	60	**150**	200	mm/r	0,03–0,05	0,03–0,06	0,03–0,06	0,04–0,06	0,05–0,07	0,05–0,08	0,05–0,08	0,06–0,09

Flat-Bottom Drills • B707_FBL Series • Grade KCMS15™ • Through Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	5	45	**50**	60	mm/r	0,04–0,08	0,05–0,09	0,06–0,12	0,09–0,15	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,24
	6	40	**50**	60	mm/r	0,03–0,06	0,04–0,07	0,04–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20
M	1	40	**50**	60	mm/r	0,04–0,08	0,05–0,09	0,06–0,12	0,09–0,15	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,24
	2	40	**50**	80	mm/r	0,06–0,11	0,07–0,11	0,08–0,16	0,12–0,20	0,13–0,21	0,16–0,22	0,18–0,24	0,21–0,26
	3	40	**55**	70	mm/r	0,03–0,04	0,03–0,05	0,04–0,06	0,04–0,07	0,05–0,08	0,06–0,10	0,07–0,11	0,08–0,12
S	1	20	**25**	30	mm/r	0,06–0,08	0,06–0,08	0,07–0,10	0,10–0,13	0,10–0,14	0,12–0,16	0,14–0,19	0,17–0,22
	2	10	**20**	30	mm/r	0,05–0,07	0,05–0,07	0,06–0,08	0,08–0,11	0,09–0,12	0,10–0,13	0,12–0,16	0,14–0,18
	3	30	**35**	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12
	4	30	**35**	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12

The B707_FBG drill eliminates the traditional two-step process to create a flat-bottom hole using a drill and an end mill and can perform the operation 25–40% faster. It also eliminates the two-step process of using an end mill to pre-machine a flat on the workpiece material for inclined surfaces.

Workpiece Application	B707A..FBG Standard Length	B708/B709A..FBG Custom Long Length
• Tapped hole with lead chamfer larger than FBG diameter.	 No feed reduction.	 50% feed reduction.
• Nominal diameter pilot required.	 Rough or hardened surfaces. No feed reduction.	 Pilot on all surfaces. No feed reduction.
• >6° angled entrances.	 Reduce feed by 30% until full diameter, or use pilot.	 Pilot with short FBG on all surfaces. No feed reduction.
• Angled exits.	 30% feed reduction.	 30% feed reduction.
• Round surfaces.	 Reduce feed by 30% until full diameter, or use pilot.	 Pilot with short FBG on all surfaces. No feed reduction.

HP Beyond™ Step Drills with Through Coolant for Steel and Iron

Primary Application

Most tapped holes require a chamfer. The B731_HP and B732_HP step drills offer a one-pass solution in steels and irons in traditional tap sizes to reduce cycle time and increase productivity. An extensive range of step drills are available to cover taps products by Kennametal.

Features and Benefits

HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centring capabilities.

Unique Flute Design

- Drastically improved chip evacuation.
- Better hole surface quality.

KCPK15™ Beyond Grade

- The grade is a multilayer, TiAlN-based coating with high hot hardness. High cutting speeds enable usage in MQL applications.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant is applied.
- Improves average metal removal rate and tool life by 10–20%.

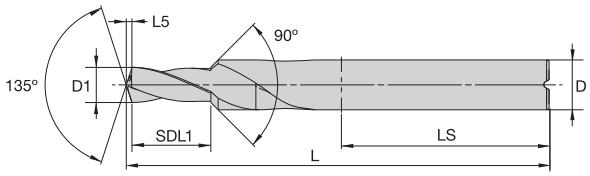
Drill and chamfer in one shot before tapping.

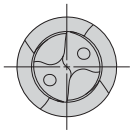


Customisation

- Intermediate diameters available as semi-standards.
- Using Kennametal Slim Line Hydraulic Chucks together is recommended if workpiece contours need to be bypassed.

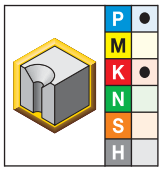








B731_HP • Short



● first choice
○ alternate choice

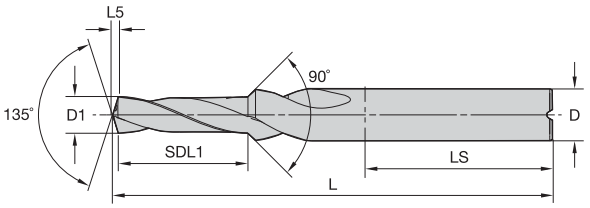
short • KCPK15	D1 diameter mm	D1 diameter in	L	SDL1	L5	LS	D
B731A03734HP	3,734	.1470	66	10	0,7	36	6
B731A04200HP	4,200	.1654	66	12	0,8	36	6
B731A04496HP	4,496	.1770	79	13	0,9	36	8
B731A05000HP	5,000	.1969	79	13	0,9	36	8
B731A05106HP	5,106	.2010	79	15	1,0	36	8
B731A05410HP	5,410	.2130	79	16	1,0	36	8
B731A06528HP	6,528	.2570	89	17	1,2	40	10
B731A06800HP	6,800	.2677	89	16	1,3	40	10
B731A06909HP	6,909	.2720	89	18	1,3	40	10
B731A07938HP	7,938	.3125	89	19	1,5	45	12
B731A08433HP	8,433	.3320	102	21	1,6	45	12
B731A08500HP	8,500	.3346	102	19	1,6	45	12
B731A09921HP	9,921	.3906	107	23	1,9	45	14
B731A10200HP	10,200	.4016	107	22	1,9	45	14
B731A10500HP	10,500	.4134	107	22	2,0	45	14
B731A10716HP	10,716	.4219	107	27	2,0	45	14
B731A12000HP	12,000	.4724	115	27	2,2	48	16
B731A12304HP *	12,304	.4844	115	28	2,3	48	16
B731A12500HP	12,500	.4921	115	27	2,3	48	16
B731A13096HP	13,096	.5156	115	31	2,4	48	16
B731A13495HP	13,495	.5313	123	32	2,5	48	18
B731A14000HP	14,000	.5512	123	29	2,6	48	18
B731A16670HP *	16,670	.6563	131	38	3,1	50	20
B731A17463HP	17,463	.6875	131	40	3,2	50	20
B731A19446HP *	19,446	.7656	153	43	3,6	56	25

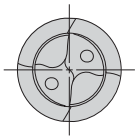
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

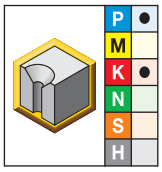








B732_HP • Long



● first choice
○ alternate choice

long • KCPK15	D1 diameter mm	D1 diameter in	L	SDL1	L5	LS	D
B732A03734HP	3,734	.1470	66	16	0,7	36	6
B732A04200HP	4,200	.1654	66	17	0,8	36	6
B732A04496HP	4,496	.1770	79	17	0,9	36	8
B732A05000HP	5,000	.1969	79	20	0,9	36	8
B732A05106HP	5,106	.2010	79	20	1,0	36	8
B732A05410HP *	5,410	.2130	79	21	1,0	36	8
B732A06528HP	6,528	.2570	89	24	1,2	40	10
B732A06800HP	6,800	.2677	89	25	1,3	40	10
B732A06909HP	6,909	.2720	89	25	1,3	40	10
B732A07938HP	7,938	.3125	102	27	1,5	45	12
B732A08433HP	8,433	.3320	102	29	1,6	45	12
B732A08500HP	8,500	.3346	102	30	1,6	45	12
B732A09921HP *	9,921	.3906	107	33	1,9	45	14
B732A10200HP	10,200	.4016	107	35	1,9	45	14
B732A10500HP	10,500	.4134	107	35	2,0	45	14
B732A10716HP	10,716	.4219	107	37	2,0	45	14
B732A12000HP	12,000	.4724	115	40	2,2	48	16
B732A12500HP *	12,500	.4921	115	40	2,3	48	16
B732A13096HP *	13,096	.5156	123	44	2,4	48	16
B732A13495HP *	13,495	.5313	123	45	2,5	48	18
B732A14000HP	14,000	.5512	123	43	2,6	48	18
B732A16670HP	16,670	.6563	141	55	3,1	50	20
B732A17463HP	17,463	.6875	141	58	3,2	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

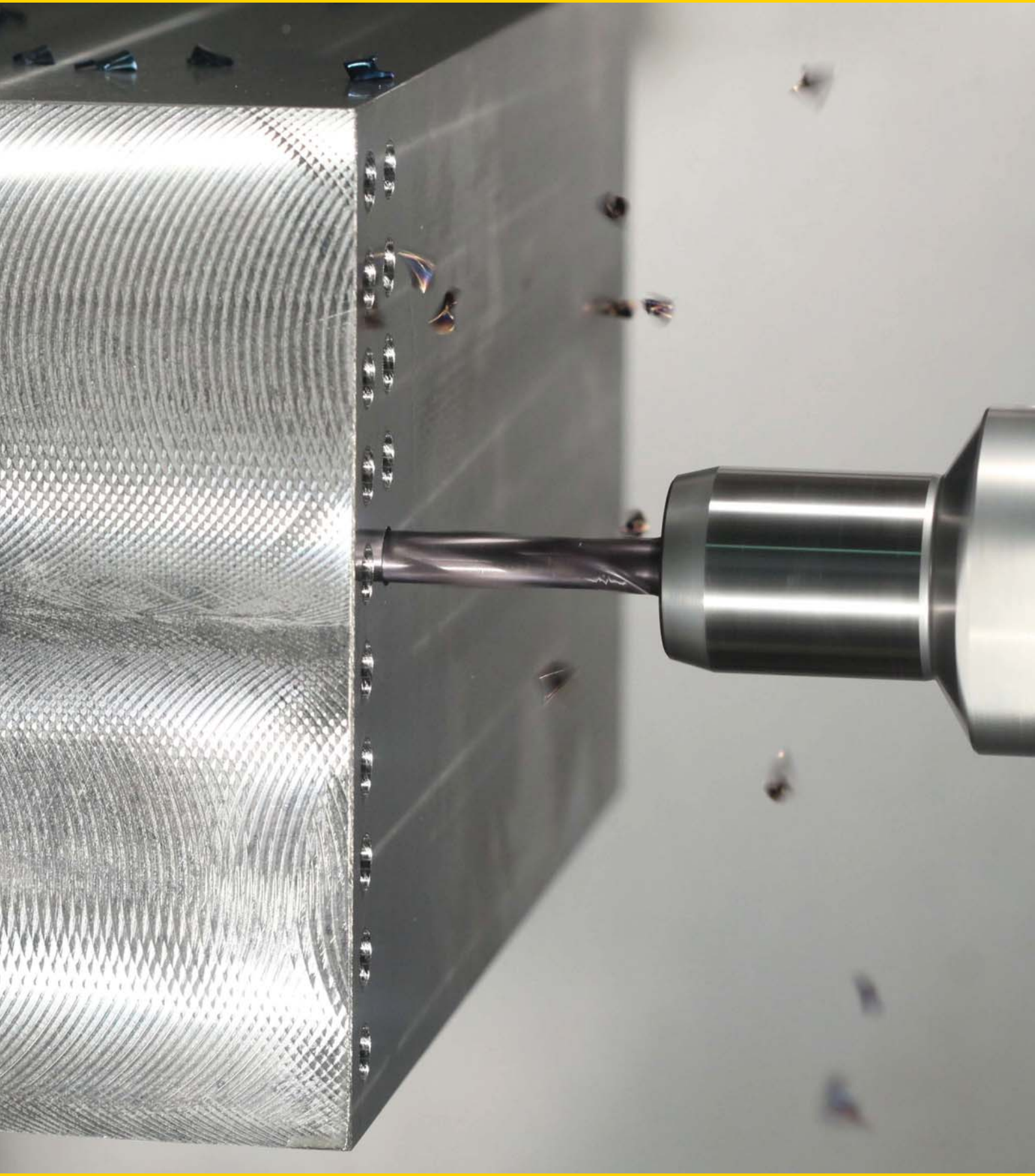
nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

HP Step Drills • B73_HP Series • Grade KCPK15™ • Through Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	150	**240**	270	mm/r	0,06–0,14	0,08–0,18	0,09–0,20	0,12–0,26	0,14–0,30	0,15–0,33	0,17–0,39	0,20–0,43
	1	140	**220**	240	mm/r	0,07–0,17	0,09–0,21	0,11–0,24	0,14–0,30	0,16–0,35	0,18–0,39	0,20–0,46	0,24–0,50
	2	180	**210**	240	mm/r	0,07–0,14	0,09–0,17	0,11–0,20	0,14–0,24	0,16–0,28	0,18–0,32	0,20–0,37	0,24–0,43
	3	120	**150**	180	mm/r	0,09–0,17	0,12–0,21	0,14–0,24	0,17–0,30	0,20–0,35	0,22–0,39	0,26–0,46	0,29–0,50
	4	100	**140**	180	mm/r	0,08–0,17	0,11–0,20	0,12–0,23	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,45
	6	140	**150**	180	mm/r	0,07–0,13	0,09–0,15	0,11–0,17	0,13–0,21	0,15–0,24	0,17–0,27	0,19–0,33	0,21–0,36
K	1	140	**160**	180	mm/r	0,09–0,18	0,12–0,22	0,13–0,26	0,16–0,33	0,19–0,37	0,21–0,41	0,24–0,48	0,27–0,51
	2	100	**150**	200	mm/r	0,09–0,16	0,12–0,19	0,13–0,22	0,16–0,27	0,19–0,32	0,21–0,35	0,24–0,41	0,27–0,45
	3	100	**140**	180	mm/r	0,07–0,14	0,09–0,17	0,12–0,20	0,14–0,24	0,16–0,28	0,18–0,32	0,21–0,37	0,24–0,39

KENNAMETAL®



New KMH Drills for Hard Materials

Primary Application

The all-new KMH solid carbide drills are engineered for hard material applications up to 65 HRC. The B94_drill series without through coolant is specifically designed to machine hardened and surface-hardened materials using flood coolant. With its 145° point angle, it is also perfectly suited as a pilot drill for the B95_drill series with through coolant and 140° point for deeper applications.

Both series come with an increased core to strengthen the drill, feature a curved cutting edge with corner chamfer to avoid chipping on the margin lands and increased tool life in these challenging materials.

Features and Benefits

New KMH Point Design

- Curved cutting edge with corner chamfer for maximum corner stability in hard materials.
- Avoids chipping on cutting edge and pre-mature wear.
- Also works well in applications with heavily-interrupted cuts using the make-to-order four-margin version.

Special Flute Design

- Strong web to increase the strength of the drill in tough applications with short chips.
- B94_ series with 15° helix angle to maximise stability in applications above 54 HRC.
- B95_ series with 30° helix angle to improve chip evacuation in higher length-to-diameter ratios.

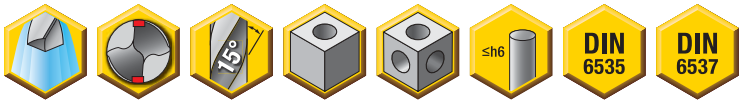
New KCH10 and KCH15 Grades

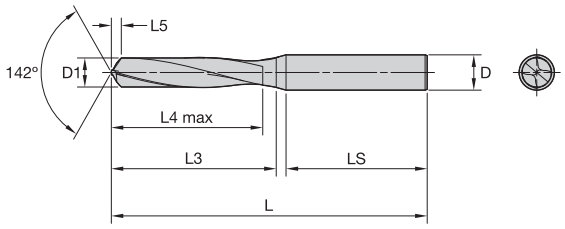
- KCH10 on B94_ series consists of a special fine-grain carbide substrate with higher hardness.
- KCH15 on B95_ series, with its higher toughness, supports edge strength at increased rake angles, which are applied to improve chip evacuation in higher L/D ratios.
- Both series carry a high temperature and shock resistance AlTiN coating for machining hardened materials to increase tool life.



Customisation

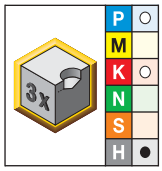
- Intermediate diameters available as semi-standards.
- Four margin land designs also available as semi-standards.
- Length variations and step drills available as custom solutions.
- High step diameter ratios and very complex step drill geometries are not recommended for hard materials.







B941A • ~3 x D

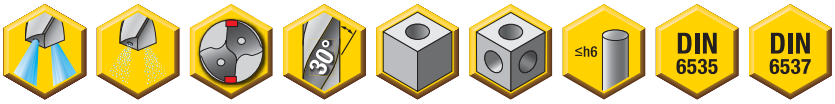


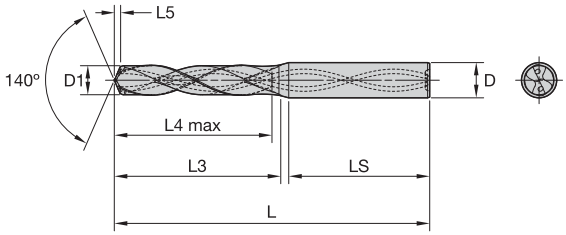
● first choice
○ alternate choice

short • KCH10	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B941Z02500	2,500	.0984	50	16	11	0,5	28	3
B941A03000	3,000	.1181	62	20	14	0,6	36	6
B941A03300	3,300	.1299	62	20	14	0,6	36	6
B941A03400	3,400	.1339	62	20	14	0,6	36	6
B941A03500	3,500	.1378	62	20	14	0,6	36	6
B941A04000	4,000	.1575	66	24	17	0,7	36	6
B941A04200	4,200	.1654	66	24	17	0,8	36	6
B941A04300	4,300	.1693	66	24	17	0,8	36	6
B941A04500	4,500	.1772	66	24	17	0,8	36	6
B941A05000	5,000	.1969	66	28	20	0,9	36	6
B941A05100	5,100	.2008	66	28	20	0,9	36	6
B941A05200	5,200	.2047	66	28	20	0,9	36	6
B941A05500	5,500	.2165	66	28	20	1,0	36	6
B941A05600	5,600	.2205	66	28	20	1,0	36	6
B941A06000	6,000	.2362	66	28	20	1,1	36	6
B941A06900	6,900	.2717	79	34	24	1,3	36	8
B941A07000	7,000	.2756	79	34	24	1,3	36	8
B941A07100	7,100	.2795	79	41	29	1,3	36	8
B941A08000	8,000	.3150	79	41	29	1,4	36	8
B941A08500	8,500	.3346	89	47	35	1,5	40	10
B941A08600	8,600	.3386	89	47	35	1,6	40	10
B941A09000	9,000	.3543	89	47	35	1,6	40	10
B941A10000	10,000	.3937	89	47	35	1,8	40	10
B941A10200	10,200	.4016	102	55	40	1,8	45	12
B941A10400	10,400	.4094	102	55	40	1,9	45	12
B941A10500	10,500	.4134	102	55	40	1,9	45	12
B941A11100	11,100	.4370	102	55	40	2,0	45	12
B941A12000	12,000	.4724	102	55	40	2,1	45	12
B941A14000	14,000	.5512	107	60	43	2,5	45	14

Tolerance • Metric

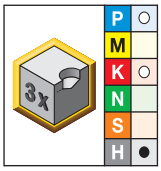
nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013







B951A • ~3 x D

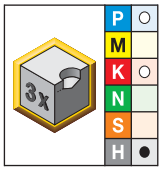


● first choice
○ alternate choice

short • KCH15	D1 diameter mm	in	fraction	L	L3	L4 max	L5	LS	D
B951A03000	3,000	.1181	–	62	20	14	0,6	36	6
B951A03175	3,175	.1250	1/8	62	20	14	0,6	36	6
B951A03454	3,454	.1360	–	62	20	14	0,7	36	6
B951A03500	3,500	.1378	–	62	20	14	0,7	36	6
B951A03800	3,800	.1496	–	66	24	17	0,8	36	6
B951A04000	4,000	.1575	–	66	24	17	0,8	36	6
B951A04100	4,100	.1614	–	66	24	17	0,8	36	6
B951A04200	4,200	.1654	–	66	24	17	0,9	36	6
B951A04300	4,300	.1693	–	66	24	17	0,9	36	6
B951A04500	4,500	.1772	–	66	24	17	0,9	36	6
B951A04800	4,800	.1890	–	66	28	20	1,0	36	6
B951A04900	4,900	.1929	–	66	28	20	1,0	36	6
B951A05000	5,000	.1969	–	66	28	20	1,0	36	6
B951A05500	5,500	.2165	–	66	28	20	1,1	36	6
B951A05800	5,800	.2283	–	66	28	20	1,2	36	6
B951A06000	6,000	.2362	–	66	28	20	1,2	36	6
B951A06350	6,350	.2500	1/4	79	34	24	1,3	36	8
B951A06500	6,500	.2559	–	79	34	24	1,3	36	8
B951A06800	6,800	.2677	–	79	34	24	1,4	36	8
B951A07000	7,000	.2756	–	79	34	24	1,4	36	8
B951A08000	8,000	.3150	–	79	41	29	1,6	36	8
B951A08500	8,500	.3346	–	89	47	35	1,7	40	10
B951A09000	9,000	.3543	–	89	47	35	1,8	40	10
B951A09500	9,500	.3740	–	89	47	35	1,9	40	10
B951A09800	9,800	.3858	–	89	47	35	1,9	40	10
B951A10000	10,000	.3937	–	89	47	35	2,0	40	10
B951A10200	10,200	.4016	–	102	55	40	2,0	45	12
B951A10500	10,500	.4134	–	102	55	40	2,1	45	12

(continued)

(B951A • ~3 x D — continued)



● first choice
○ alternate choice

short • KCH15	D1 diameter mm	in	fraction	L	L3	L4 max	L5	LS	D
B951A10800	10,800	.4252	—	118	71	56	2,1	45	12
B951A11000	11,000	.4331	—	118	71	56	2,2	45	12
B951A11500	11,500	.4528	—	118	71	56	2,3	45	12
B951A11800	11,800	.4646	—	102	55	40	2,3	45	12
B951A12000	12,000	.4724	—	102	55	40	2,4	45	12
B951A12500	12,500	.4921	—	107	60	43	2,5	45	14
B951A12700	12,700	.5000	1/2	107	60	43	2,5	45	14
B951A12800	12,800	.5039	—	107	60	43	2,5	45	14
B951A13000	13,000	.5118	—	107	60	43	2,6	45	14
B951A13500	13,500	.5315	—	107	60	43	2,7	45	14
B951A14000	14,000	.5512	—	107	60	43	2,8	45	14
B951A14500	14,500	.5709	—	115	65	45	2,9	48	16
B951A15500	15,500	.6102	—	115	65	45	3,1	48	16
B951A16000	16,000	.6299	—	133	83	63	3,2	48	16

Application Data

KMH Drill • B94_Series • Grade KCH10 • Flood Coolant • Metric





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	4	50	**70**	100	mm/r	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	40	**50**	70	mm/r	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	6	30	**40**	60	mm/r	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
K	1	80	**130**	150	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,06	0,38–0,47
	2	70	**110**	100	mm/r	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**110**	120	mm/r	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
H	1	20	**30**	40	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	15	**30**	40	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	15	**25**	35	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	15	**20**	30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

KMH Drill • B95_Series • Grade KCH15 • Through Coolant • Metric



Material Group		Cutting Speed – vc Range – m/min			Metric Recommended Feed Rate per Rev								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	4	50	**70**	100	mm/r	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	50	**60**	80	mm/r	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	6	40	**50**	70	mm/r	0,05–0,08	0,06–0,10	0,08–0,14	0,10–0,18	0,13–0,22	0,14–0,24	0,18–0,32	0,23–0,41
K	1	80	**130**	170	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,06	0,38–0,47
	2	90	**110**	120	mm/r	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**110**	130	mm/r	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
H	1	20	**35**	45	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	15	**30**	45	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	15	**25**	40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	15	**20**	35	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

Kenna Universal™ Drills

Primary Application

Kenna Universal Drills (B96/B97_ Series) are engineered to deliver superior performance in steel, cast iron, and stainless steel applications making it ideal for small- and medium-sized shops. The universal application profile reduces tool change times and the number of drills in inventory. Covering a large spectrum of off-the-shelf diameters and a broad range of applications makes Kenna Universal Drills an excellent alternative to other high-performance products.

The B976Z series is available from 2,383–3mm making it the first standard offering in less than 3mm. This extended diameter offering covers all common tap drill sizes, including an expanded selection of wire, fractional, and letter sizes.

The new B967 series satisfies the demand for non-coolant drills up to 5 x D for applications with flood coolant or dry.

Use as Pilot Drill

- Ideal point angle and tolerance make the Kenna Universal drill the preferred pilot drill for B27_ series solid carbide deep-hole drills.

Features and Benefits

Kenna Universal Drill-Point Design

- Low thrust. Works well on a variety of machines.
- Excellent centring capabilities.
- Easy to regrind.

Four-Margin Land Design

- Improves hole straightness and roundness.
- Provides good alignment and stability in tough drilling applications — even when drilling through cross holes.

KC7315™ Grade

- A multilayer, TiAlN-based coating with high hot hardness enables 30% higher cutting speeds and constant tool life.
- Surface finish ensures chip evacuation when drilling deep holes.

Universal application profile, problem solver, and pilot drill.

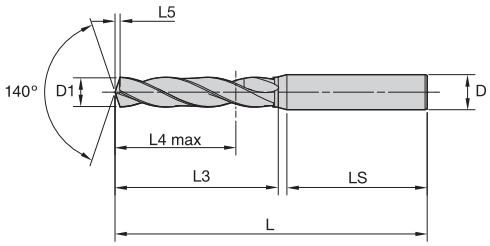


Customisation

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.





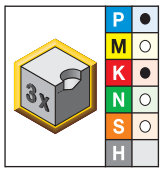


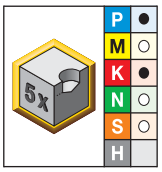




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B966A/B967A • ~3 x D/~5 x D



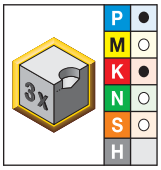


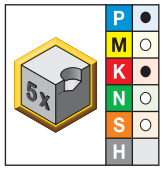
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B966A03000	B967A03000	3,000	.1181	0,5	36	6
B966A03100	B967A03100	3,100	.1220	0,5	36	6
B966A03200	B967A03200	3,200	.1260	0,5	36	6
B966A03300	B967A03300	3,300	.1299	0,5	36	6
B966A03400	–	3,400	.1339	0,6	36	6
B966A03500	B967A03500	3,500	.1378	0,6	36	6
B966A03600	–	3,600	.1417	0,6	36	6
B966A03700	–	3,700	.1457	0,6	36	6
B966A03800	B967A03800	3,800	.1496	0,6	36	6
B966A03900	–	3,900	.1535	0,6	36	6
B966A03960	–	3,960	.1559	0,7	36	6
B966A04000	B967A04000	4,000	.1575	0,7	36	6
B966A04100	–	4,100	.1614	0,7	36	6
B966A04200	B967A04200	4,200	.1654	0,7	36	6
B966A04300	B967A04300	4,300	.1693	0,7	36	6
B966A04400	–	4,400	.1732	0,7	36	6
B966A04500	B967A04500	4,500	.1772	0,7	36	6
B966A04600	–	4,600	.1811	0,8	36	6
B966A04700	–	4,700	.1850	0,8	36	6
B966A04800	B967A04800	4,800	.1890	0,8	36	6
B966A04900	–	4,900	.1929	0,8	36	6
B966A05000	B967A05000	5,000	.1969	0,8	36	6
B966A05040	–	5,040	.1984	0,8	36	6
B966A05100	B967A05100	5,100	.2008	0,8	36	6
B966A05200	B967A05200	5,200	.2047	0,9	36	6
B966A05300	–	5,300	.2087	0,9	36	6
B966A05400	–	5,400	.2126	0,9	36	6
B966A05500	B967A05500	5,500	.2165	0,9	36	6
B966A05600	–	5,600	.2205	0,9	36	6
B966A05700	–	5,700	.2244	1,0	36	6
B966A05800	B967A05800	5,800	.2283	1,0	36	6
B966A05900	–	5,900	.2323	1,0	36	6
B966A06000	B967A06000	6,000	.2362	1,0	36	6
B966A06050	–	6,050	.2382	1,0	36	8
B966A06100	B967A06100	6,100	.2402	1,0	36	8
B966A06200	–	6,200	.2441	1,0	36	8

(continued)

(B966A/B967A • ~3 x D/~5 x D — continued)



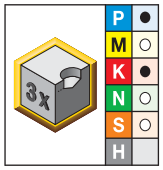


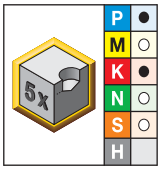
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B966A06300	–	6,300	.2480	1,1	36	8
B966A06350	–	6,350	.2500	1,1	36	8
B966A06400	–	6,400	.2520	1,1	36	8
B966A06500	B967A06500	6,500	.2559	1,1	36	8
B966A06600	B967A06600	6,600	.2598	1,1	36	8
B966A06700	B967A06700	6,700	.2638	1,1	36	8
B966A06800	B967A06800	6,800	.2677	1,1	36	8
B966A06900	–	6,900	.2717	1,2	36	8
B966A07000	B967A07000	7,000	.2756	1,2	36	8
B966A07100	–	7,100	.2795	1,2	36	8
B966A07200	–	7,200	.2835	1,2	36	8
B966A07300	–	7,300	.2874	1,2	36	8
B966A07400	B967A07400	7,400	.2913	1,3	36	8
B966A07500	B967A07500	7,500	.2953	1,3	36	8
B966A07600	–	7,600	.2992	1,3	36	8
B966A07700	–	7,700	.3031	1,3	36	8
B966A07800	B967A07800	7,800	.3071	1,3	36	8
B966A07900	–	7,900	.3110	1,3	36	8
B966A08000	B967A08000	8,000	.3150	1,4	36	8
B966A08100	B967A08100	8,100	.3189	1,4	40	10
B966A08200	–	8,200	.3228	1,4	40	10
B966A08300	–	8,300	.3268	1,4	40	10
B966A08400	–	8,400	.3307	1,4	40	10
B966A08500	B967A08500	8,500	.3346	1,4	40	10
B966A08600	B967A08600	8,600	.3386	1,5	40	10
B966A08700	B967A08700	8,700	.3425	1,5	40	10
B966A08800	B967A08800	8,800	.3465	1,5	40	10
B966A08900	–	8,900	.3504	1,5	40	10
B966A09000	B967A09000	9,000	.3543	1,5	40	10
B966A09100	–	9,100	.3583	1,5	40	10
B966A09200	–	9,200	.3622	1,6	40	10
B966A09300	B967A09300	9,300	.3661	1,6	40	10
B966A09400	–	9,400	.3701	1,6	40	10
B966A09500	B967A09500	9,500	.3740	1,6	40	10
B966A09600	–	9,600	.3780	1,6	40	10
B966A09700	–	9,700	.3819	1,7	40	10
B966A09800	B967A09800	9,800	.3858	1,7	40	10
B966A09900	–	9,900	.3898	1,7	40	10
B966A10000	B967A10000	10,000	.3937	1,7	40	10
B966A10100	–	10,100	.3976	1,7	45	12
B966A10200	B967A10200	10,200	.4016	1,7	45	12
B966A10300	–	10,300	.4055	1,8	45	12
B966A10400	–	10,400	.4094	1,8	45	12
B966A10500	B967A10500	10,500	.4134	1,8	45	12
B966A10600	–	10,600	.4173	1,8	45	12
B966A10700	B967A10700	10,700	.4213	1,8	45	12
B966A10800	B967A10800	10,800	.4252	1,8	45	12
B966A10900	–	10,900	.4291	1,9	45	12
B966A11000	B967A11000	11,000	.4331	1,9	45	12
B966A11100	–	11,100	.4370	1,9	45	12
B966A11200	–	11,200	.4409	1,9	45	12
B966A11300	B967A11300	11,300	.4449	1,9	45	12

(continued)

(B966A/B967A • ~3 x D/~5 x D — continued)





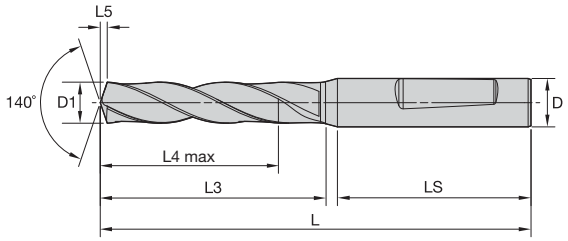
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B966A11400	–	11,400	.4488	2,0	45	12
B966A11500	**B967A11500**	11,500	.4528	2,0	45	12
B966A11600	–	11,600	.4567	2,0	45	12
B966A11700	–	11,700	.4606	2,0	45	12
B966A11800	**B967A11800**	11,800	.4646	2,0	45	12
B966A11900	–	11,900	.4685	2,0	45	12
B966A12000	**B967A12000**	12,000	.4724	2,1	45	12
B966A12100	–	12,100	.4764	2,1	45	14
B966A12200	–	12,200	.4803	2,1	45	14
B966A12300	–	12,300	.4843	2,1	45	14
B966A12400	–	12,400	.4882	2,1	45	14
B966A12500	**B967A12500**	12,500	.4921	2,1	45	14
B966A12600	–	12,600	.4961	2,2	45	14
B966A12700	**B967A12700**	12,700	.5000	2,2	45	14
B966A12800	**B967A12800**	12,800	.5039	2,2	45	14
B966A12900	–	12,900	.5079	2,2	45	14
B966A13000	**B967A13000**	13,000	.5118	2,2	45	14
B966A13100	–	13,100	.5157	2,3	45	14
B966A13200	–	13,200	.5197	2,3	45	14
B966A13300	–	13,300	.5236	2,3	45	14
B966A13400	–	13,400	.5276	2,3	45	14
B966A13500	**B967A13500**	13,500	.5315	2,3	45	14
B966A13700	–	13,700	.5394	2,4	45	14
B966A14000	**B967A14000**	14,000	.5512	2,4	45	14
B966A14200	–	14,200	.5591	2,5	48	16
B966A14300	–	14,300	.5630	2,5	48	16
B966A14500	**B967A14500**	14,500	.5709	2,5	48	16
B966A14700	–	14,700	.5787	2,5	48	16
B966A14800	–	14,800	.5827	2,6	48	16
B966A15000	**B967A15000**	15,000	.5906	2,6	48	16
–	**B967A15300**	15,300	.6024	2,6	48	16
B966A15500	**B967A15500**	15,500	.6102	2,7	48	16
B966A15700	–	15,700	.6181	2,7	48	16
B966A16000	**B967A16000**	16,000	.6299	2,8	48	16
B966A16500	**B967A16500**	16,500	.6496	2,9	48	18
B966A17000	–	17,000	.6693	2,9	48	18
B966A17500	–	17,500	.6890	3,0	48	18
B966A18000	–	18,000	.7087	3,1	48	18
B966A20000	–	20,000	.7874	3,5	50	20

Tolerance • Metric

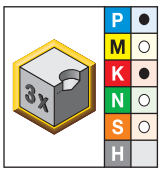
nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013







B966F • ~3 x D

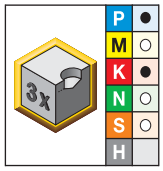


● first choice
○ alternate choice

short • KC7315	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B966F03000	3,000	.1181	62	20	14	0,5	36	6
B966F03300	3,300	.1299	62	20	14	0,5	36	6
B966F03400	3,400	.1339	62	20	14	0,6	36	6
B966F03500	3,500	.1378	62	20	14	0,6	36	6
B966F03600 *	3,600	.1417	62	20	14	0,6	36	6
B966F04000	4,000	.1575	66	24	17	0,7	36	6
B966F04200	4,200	.1654	66	24	17	0,7	36	6
B966F05000	5,000	.1969	66	28	20	0,8	36	6
B966F05100 *	5,100	.2008	66	28	20	0,8	36	6
B966F05300 *	5,300	.2087	66	28	20	0,9	36	6
B966F05500	5,500	.2165	66	28	20	0,9	36	6
B966F05600 *	5,600	.2205	66	28	20	0,9	36	6
B966F06000	6,000	.2362	66	28	20	1,0	36	6
B966F06300	6,300	.2480	79	34	24	1,1	36	8
B966F06400	6,400	.2520	79	34	24	1,1	36	8
B966F06500	6,500	.2559	79	34	24	1,1	36	8
B966F06700 *	6,700	.2638	79	34	24	1,1	36	8
B966F06800	6,800	.2677	79	34	24	1,1	36	8
B966F07000	7,000	.2756	79	34	24	1,2	36	8
B966F07100 *	7,100	.2795	79	41	29	1,2	36	8
B966F07300 *	7,300	.2874	79	41	29	1,2	36	8
B966F07400 *	7,400	.2913	79	41	29	1,3	36	8
B966F07600 *	7,600	.2992	79	41	29	1,3	36	8
B966F08000	8,000	.3150	79	41	29	1,4	36	8
B966F08200	8,200	.3228	89	47	35	1,4	40	10
B966F08400	8,400	.3307	89	47	35	1,4	40	10
B966F08500	8,500	.3346	89	47	35	1,4	40	10
B966F09000	9,000	.3543	89	47	35	1,5	40	10
B966F09100	9,100	.3583	89	47	35	1,5	40	10
B966F09500	9,500	.3740	89	47	35	1,6	40	10
B966F10000	10,000	.3937	89	47	35	1,7	40	10
B966F10200	10,200	.4016	102	55	40	1,7	45	12
B966F10400	10,400	.4094	102	55	40	1,8	45	12
B966F10500	10,500	.4134	102	55	40	1,8	45	12
B966F10600	10,600	.4173	102	55	40	1,8	45	12
B966F10700	10,700	.4213	102	55	40	1,8	45	12

(continued)

(B966F • ~3 x D — continued)



● first choice
○ alternate choice

short • KC7315	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B966F10800	10,800	.4252	102	55	40	1,8	45	12
B966F11000	11,000	.4331	102	55	40	1,9	45	12
B966F11800	11,800	.4646	102	55	40	2,0	45	12
B966F12000	12,000	.4724	102	55	40	2,1	45	12
B966F12100 *	12,100	.4764	107	60	43	2,1	45	14
B966F12200	12,200	.4803	107	60	43	2,1	45	14
B966F12500	12,500	.4921	107	60	43	2,1	45	14
B966F12700	12,700	.5000	107	60	43	2,2	45	14
B966F13000	13,000	.5118	107	60	43	2,2	45	14
B966F13500 *	13,500	.5315	107	60	43	2,3	45	14
B966F14000	14,000	.5512	107	60	43	2,4	45	14
B966F14500	14,500	.5709	115	65	45	2,5	48	16
B966F15000	15,000	.5906	115	65	45	2,6	48	16
B966F16000	16,000	.6299	115	65	45	2,8	48	16
B966F16500	16,500	.6496	123	73	51	2,9	48	18
B966F17000	17,000	.6693	123	73	51	2,9	48	18
B966F17500 *	17,500	.6890	123	73	51	3,0	48	18
B966F18000	18,000	.7087	123	73	51	3,1	48	18

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

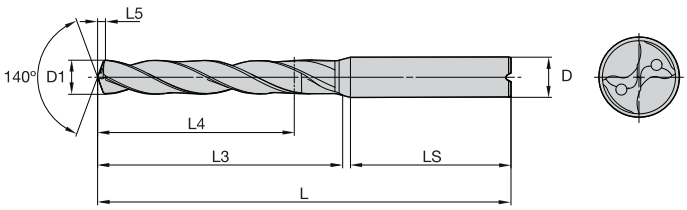
nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Kenna Universal™ Drills • B966, B967 Series • Grade KC7315™ • Flood Coolant • Drill Diameters 3–20mm • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	**90**	115	mm/r	0,05–0,11	0,08–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	60	**70**	100	mm/r	0,06–0,13	0,09–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	80	**90**	100	mm/r	0,06–0,13	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	50	**70**	90	mm/r	0,07–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	**70**	100	mm/r	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	40	**50**	70	mm/r	0,06–0,12	0,08–0,14	0,10–0,18	0,12–0,22	0,16–0,26	0,18–0,28	0,22–0,36	0,26–0,42
	6	30	**40**	60	mm/r	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	30	**40**	50	mm/r	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	40	**50**	60	mm/r	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	30	**40**	50	mm/r	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	**130**	170	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,06	0,38–0,47
	2	90	**110**	120	mm/r	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**110**	130	mm/r	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
N	1	90	**230**	270	mm/r	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	**220**	270	mm/r	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	**180**	225	mm/r	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	**130**	270	mm/r	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	20	**25**	30	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	**20**	30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	20	**25**	40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	20	**25**	50	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

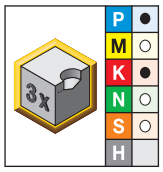


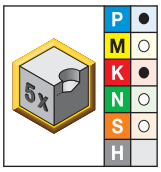




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B976A/B977A • ~3 x D/~5 x D



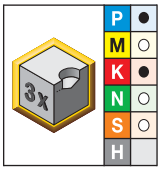


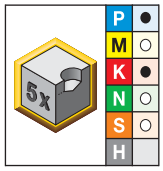
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B976Z02383	–	2,383	.0938	0,4	28	3
B976Z02400	–	2,400	.0945	0,4	28	3
B976Z02439	–	2,439	.0960	0,4	28	3
B976Z02489	–	2,489	.0980	0,4	28	3
B976Z02500	–	2,500	.0984	0,4	28	3
B976Z02578	–	2,578	.1015	0,4	28	3
B976Z02600	–	2,600	.1024	0,4	28	3
B976Z02642	–	2,642	.1040	0,4	28	3
B976Z02705	–	2,705	.1065	0,4	28	3
B976Z02779	–	2,779	.1094	0,4	28	3
B976Z02800	–	2,800	.1102	0,5	28	3
B976Z02820	–	2,820	.1110	0,5	28	3
B976Z02870	–	2,870	.1130	0,5	28	3
B976Z02900	–	2,900	.1142	0,5	28	3
B976Z02947 *	–	2,947	.1160	0,5	28	3
B976A03000	B977A03000	3,000	.1181	0,5	36	6
B976A03100	B977A03100	3,100	.1220	0,5	36	6
B976A03175	B977A03175	3,175	.1250	0,5	36	6
B976A03180	–	3,180	.1252	0,5	36	6
B976A03200	B977A03200	3,200	.1260	0,5	36	6
–	B977A03250	3,250	.1280	0,5	36	6
B976A03300	B977A03300	3,300	.1299	0,5	36	6
–	B977A03400	3,400	.1339	0,6	36	6
B976A03454	B977A03454	3,454	.1360	0,6	36	6
B976A03500	B977A03500	3,500	.1378	0,6	36	6
B976A03600	B977A03600	3,600	.1417	0,6	36	6
B976A03700	B977A03700	3,700	.1457	0,6	36	6
B976A03734	B977A03734	3,734	.1470	0,6	36	6
B976A03797	B977A03797	3,797	.1495	0,6	36	6
B976A03800	B977A03800	3,800	.1496	0,6	36	6
B976A03900	B977A03900	3,900	.1535	0,6	36	6
B976A03970	B977A03970	3,970	.1563	0,7	36	6
B976A04000	B977A04000	4,000	.1575	0,7	36	6
B976A04039	B977A04039	4,039	.1590	0,7	36	6
B976A04100	B977A04100	4,100	.1614	0,7	36	6
B976A04200	B977A04200	4,200	.1654	0,7	36	6

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



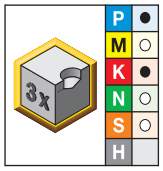


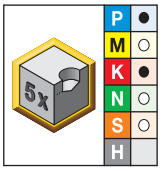
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B976A04300	B977A04300	4,300	.1693	0,7	36	6
B976A04366	B977A04366	4,366	.1719	0,7	36	6
–	B977A04400	4,400	.1732	0,7	36	6
B976A04496	B977A04496	4,496	.1770	0,7	36	6
B976A04500	B977A04500	4,500	.1772	0,7	36	6
–	B977A04580	4,580	.1803	0,8	36	6
B976A04600	B977A04600	4,600	.1811	0,8	36	6
B976A04620	–	4,620	.1819	0,8	36	6
–	B977A04623	4,623	.1820	0,8	36	6
–	B977A04650	4,650	.1831	0,8	36	6
B976A04700	B977A04700	4,700	.1850	0,8	36	6
B976A04763	B977A04763	4,763	.1875	0,8	36	6
B976A04800	B977A04800	4,800	.1890	0,8	36	6
B976A04900	B977A04900	4,900	.1929	0,8	36	6
B976A05000	B977A05000	5,000	.1969	0,8	36	6
B976A05100	B977A05100	5,100	.2008	0,8	36	6
B976A05106	B977A05106	5,106	.2010	0,8	36	6
B976A05200	B977A05200	5,200	.2047	0,9	36	6
B976A05250	–	5,250	.2067	0,9	36	6
B976A05300	B977A05300	5,300	.2087	0,9	36	6
B976A05400	B977A05400	5,400	.2126	0,9	36	6
B976A05410	B977A05410	5,410	.2130	0,9	36	6
B976A05500	B977A05500	5,500	.2165	0,9	36	6
B976A05530	–	5,530	.2177	0,9	36	6
B976A05558	B977A05558	5,558	.2188	0,9	36	6
B976A05575	–	5,575	.2195	0,9	36	6
B976A05600	B977A05600	5,600	.2205	0,9	36	6
B976A05700	B977A05700	5,700	.2244	1,0	36	6
B976A05791	B977A05791	5,791	.2280	1,0	36	6
B976A05800	B977A05800	5,800	.2283	1,0	36	6
–	B977A05900	5,900	.2323	1,0	36	6
B976A05944	B977A05944	5,944	.2340	1,0	36	6
B976A06000	B977A06000	6,000	.2362	1,0	36	6
B976A06100	B977A06100	6,100	.2402	1,0	36	8
–	B977A06150	6,150	.2421	1,0	36	8
B976A06200	B977A06200	6,200	.2441	1,0	36	8
–	B977A06300	6,300	.2480	1,1	36	8
B976A06350	B977A06350	6,350	.2500	1,1	36	8
–	B977A06400	6,400	.2520	1,1	36	8
B976A06500	B977A06500	6,500	.2559	1,1	36	8
B976A06528	B977A06528	6,528	.2570	1,1	36	8
B976A06530	–	6,530	.2571	1,1	36	8
B976A06600	B977A06600	6,600	.2598	1,1	36	8
B976A06700	B977A06700	6,700	.2638	1,1	36	8
B976A06746	–	6,746	.2656	1,1	36	8
B976A06750	–	6,750	.2657	1,1	36	8
B976A06800	B977A06800	6,800	.2677	1,1	36	8
B976A06900	B977A06900	6,900	.2717	1,2	36	8
B976A06909	B977A06909	6,909	.2720	1,2	36	8
B976A07000	B977A07000	7,000	.2756	1,2	36	8
B976A07100	B977A07100	7,100	.2795	1,2	36	8
B976A07145	B977A07145	7,145	.2813	1,2	36	8

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



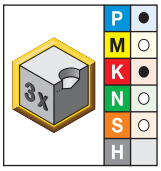


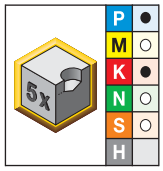
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B976A07200	B977A07200	7,200	.2835	1,2	36	8
B976A07300	B977A07300	7,300	.2874	1,2	36	8
B976A07366	B977A07366	7,366	.2900	1,2	36	8
B976A07400	B977A07400	7,400	.2913	1,3	36	8
B976A07500	B977A07500	7,500	.2953	1,3	36	8
B976A07541	B977A07541	7,541	.2969	1,3	36	8
B976A07600	B977A07600	7,600	.2992	1,3	36	8
B976A07700	B977A07700	7,700	.3031	1,3	36	8
B976A07800	B977A07800	7,800	.3071	1,3	36	8
B976A07900	B977A07900	7,900	.3110	1,3	36	8
B976A07938	B977A07938	7,938	.3125	1,3	36	8
B976A08000	B977A08000	8,000	.3150	1,4	36	8
B976A08020	B977A08020	8,020	.3157	1,4	40	10
B976A08100	B977A08100	8,100	.3189	1,4	40	10
B976A08200	B977A08200	8,200	.3228	1,4	40	10
B976A08300	B977A08300	8,300	.3268	1,4	40	10
B976A08334	B977A08334	8,334	.3281	1,4	40	10
–	B977A08400	8,400	.3307	1,4	40	10
B976A08430	–	8,430	.3319	1,4	40	10
B976A08433	B977A08433	8,433	.3320	1,4	40	10
B976A08500	B977A08500	8,500	.3346	1,4	40	10
B976A08600	B977A08600	8,600	.3386	1,5	40	10
B976A08700	B977A08700	8,700	.3425	1,5	40	10
B976A08733	B977A08733	8,733	.3438	1,5	40	10
B976A08800	B977A08800	8,800	.3465	1,5	40	10
B976A08839	B977A08839	8,839	.3480	1,5	40	10
–	B977A08900	8,900	.3504	1,5	40	10
B976A09000	B977A09000	9,000	.3543	1,5	40	10
B976A09093	B977A09093	9,093	.3580	1,5	40	10
B976A09100	B977A09100	9,100	.3583	1,5	40	10
B976A09129	B977A09129	9,129	.3594	1,6	40	10
B976A09200	B977A09200	9,200	.3622	1,6	40	10
B976A09300	B977A09300	9,300	.3661	1,6	40	10
–	B977A09347	9,347	.3680	1,6	40	10
B976A09400	B977A09400	9,400	.3701	1,6	40	10
B976A09500	B977A09500	9,500	.3740	1,6	40	10
B976A09525	B977A09525	9,525	.3750	1,6	40	10
B976A09600	B977A09600	9,600	.3780	1,6	40	10
B976A09700	B977A09700	9,700	.3819	1,7	40	10
–	B977A09746	9,746	.3837	1,7	40	10
B976A09750	–	9,750	.3839	1,7	40	10
B976A09800	B977A09800	9,800	.3858	1,7	40	10
–	B977A09900	9,900	.3898	1,7	40	10
B976A09921	B977A09921	9,921	.3906	1,7	40	10
B976A10000	B977A10000	10,000	.3937	1,7	40	10
–	B977A10100	10,100	.3976	1,7	45	12
B976A10200	B977A10200	10,200	.4016	1,7	45	12
B976A10262	B977A10262	10,262	.4040	1,8	45	12
B976A10300	B977A10300	10,300	.4055	1,8	45	12
B976A10320	B977A10320	10,320	.4063	1,8	45	12
B976A10400	B977A10400	10,400	.4094	1,8	45	12
B976A10500	B977A10500	10,500	.4134	1,8	45	12

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



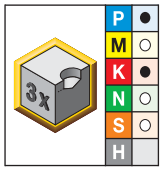


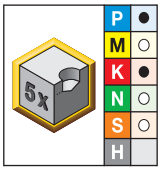
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B976A10600	B977A10600	10,600	.4173	1,8	45	12
B976A10700	B977A10700	10,700	.4213	1,8	45	12
B976A10716	B977A10716	10,716	.4219	1,8	45	12
B976A10800	B977A10800	10,800	.4252	1,8	45	12
–	B977A10900	10,900	.4291	1,9	45	12
B976A11000	B977A11000	11,000	.4331	1,9	45	12
–	B977A11100	11,100	.4370	1,9	45	12
B976A11113	B977A11113	11,113	.4375	1,9	45	12
B976A11200	B977A11200	11,200	.4409	1,9	45	12
B976A11300	B977A11300	11,300	.4449	1,9	45	12
–	B977A11400	11,400	.4488	2,0	45	12
B976A11500	B977A11500	11,500	.4528	2,0	45	12
B976A11509	B977A11509	11,509	.4531	2,0	45	12
B976A11600	B977A11600	11,600	.4567	2,0	45	12
B976A11700	B977A11700	11,700	.4606	2,0	45	12
B976A11800	B977A11800	11,800	.4646	2,0	45	12
–	B977A11900	11,900	.4685	2,0	45	12
B976A11908	B977A11908	11,908	.4688	2,0	45	12
B976A12000	B977A12000	12,000	.4724	2,1	45	12
–	B977A12100	12,100	.4764	2,1	45	14
–	B977A12200	12,200	.4803	2,1	45	14
B976A12300	B977A12300	12,300	.4843	2,1	45	14
B976A12304	B977A12304	12,304	.4844	2,1	45	14
–	B977A12400	12,400	.4882	2,1	45	14
B976A12500	B977A12500	12,500	.4921	2,1	45	14
–	B977A12600	12,600	.4961	2,2	45	14
B976A12700	B977A12700	12,700	.5000	2,2	45	14
B976A12800	B977A12800	12,800	.5039	2,2	45	14
–	B977A12900	12,900	.5079	2,2	45	14
B976A13000	B977A13000	13,000	.5118	2,2	45	14
–	B977A13096	13,096	.5156	2,3	45	14
–	B977A13100	13,100	.5157	2,3	45	14
–	B977A13200	13,200	.5197	2,3	45	14
B976A13300	B977A13300	13,300	.5236	2,3	45	14
B976A13495	B977A13495	13,495	.5313	2,3	45	14
B976A13500	B977A13500	13,500	.5315	2,3	45	14
B976A13700	B977A13700	13,700	.5394	2,4	45	14
–	B977A13800	13,800	.5433	2,4	45	14
B976A14000	B977A14000	14,000	.5512	2,4	45	14
B976A14100	B977A14100	14,100	.5551	2,4	48	16
B976A14200	B977A14200	14,200	.5591	2,5	48	16
B976A14288	B977A14288	14,288	.5625	2,5	48	16
B976A14500	B977A14500	14,500	.5709	2,5	48	16
–	B977A14600	14,600	.5748	2,5	48	16
B976A14700	B977A14700	14,700	.5787	2,5	48	16
–	B977A14900	14,900	.5866	2,6	48	16
B976A15000	B977A15000	15,000	.5906	2,6	48	16
–	B977A15100	15,100	.5945	2,6	48	16
–	B977A15200	15,200	.5984	2,6	48	16
–	B977A15300	15,300	.6024	2,6	48	16
B976A15500	B977A15500	15,500	.6102	2,7	48	16
–	B977A15700	15,700	.6181	2,7	48	16

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



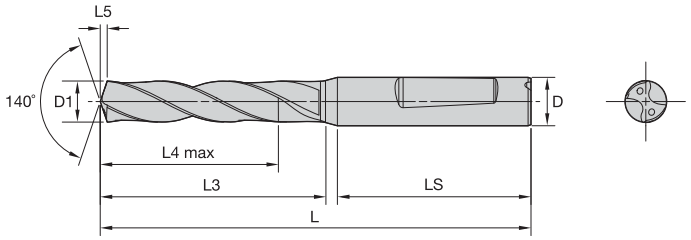


● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
–	B977A15800	15,800	.6220	2,7	48	16
B976A15875	B977A15875	15,875	.6250	2,7	48	16
–	B977A15900	15,900	.6260	2,8	48	16
B976A16000	B977A16000	16,000	.6299	2,8	48	16
–	B977A16078	16,078	.6330	2,8	48	18
B976A16200	B977A16200	16,200	.6378	2,8	48	18
–	B977A16300	16,300	.6417	2,8	48	18
–	B977A16400	16,400	.6457	2,8	48	18
B976A16500	B977A16500	16,500	.6496	2,9	48	18
–	B977A16600	16,600	.6535	2,9	48	18
B976A16670	B977A16670	16,670	.6563	2,9	48	18
–	B977A16700	16,700	.6575	2,9	48	18
B976A16800	–	16,800	.6614	2,9	48	18
B976A17000	B977A17000	17,000	.6693	2,9	48	18
B976A17100	–	17,100	.6732	3,0	48	18
B976A17463	B977A17463	17,463	.6875	3,0	48	18
B976A17500	B977A17500	17,500	.6890	3,0	48	18
–	B977A17700	17,700	.6969	3,1	48	18
B976A18000	B977A18000	18,000	.7087	3,1	48	18
–	B977A18400	18,400	.7244	3,2	50	20
B976A18500	B977A18500	18,500	.7283	3,2	50	20
–	B977A18600	18,600	.7323	3,2	50	20
–	B977A18800	18,800	.7402	3,3	50	20
B976A19000	B977A19000	19,000	.7480	3,3	50	20
B976A19050	B977A19050	19,050	.7500	3,3	50	20
–	B977A19200	19,200	.7559	3,3	50	20
–	B977A19253	19,253	.7580	3,3	50	20
–	B977A19446	19,446	.7656	3,4	50	20
B976A19500	B977A19500	19,500	.7677	3,4	50	20
B976A19700	B977A19700	19,700	.7756	3,4	50	20
B976A19840 *	B977A19840	19,840	.7811	3,5	50	20
B976A20000	B977A20000	20,000	.7874	3,5	50	20
–	B977A21000	21,000	.8268	3,7	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

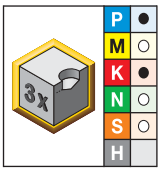


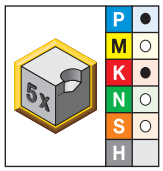




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B976F/B977F • ~3 x D/~5 x D



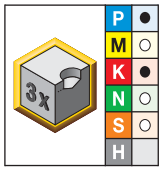


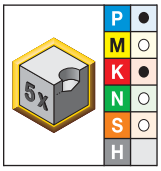
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B976F03000	B977F03000	3,000	.1181	0,5	36	6
–	B977F03100	3,100	.1220	0,5	36	6
–	B977F03200	3,200	.1260	0,5	36	6
–	B977F03300	3,300	.1299	0,5	36	6
–	B977F03400	3,400	.1339	0,6	36	6
–	B977F03500	3,500	.1378	0,6	36	6
–	B977F03600	3,600	.1417	0,6	36	6
–	B977F03700	3,700	.1457	0,6	36	6
–	B977F03800	3,800	.1496	0,6	36	6
B976F03900 *	B977F03900	3,900	.1535	0,6	36	6
–	B977F04000	4,000	.1575	0,7	36	6
–	B977F04100	4,100	.1614	0,7	36	6
B976F04200 *	B977F04200	4,200	.1654	0,7	36	6
–	B977F04300	4,300	.1693	0,7	36	6
B976F04500 *	B977F04500	4,500	.1772	0,7	36	6
–	B977F04550	4,550	.1791	0,8	36	6
B976F04600 *	B977F04600	4,600	.1811	0,8	36	6
–	B977F04650	4,650	.1831	0,8	36	6
–	B977F04700	4,700	.1850	0,8	36	6
–	B977F04800	4,800	.1890	0,8	36	6
–	B977F04900	4,900	.1929	0,8	36	6
–	B977F05000	5,000	.1969	0,8	36	6
B976F05000	–	5,000	.1969	1,4	36	6
B976F05100 *	B977F05100	5,100	.2008	0,8	36	6
B976F05200 *	B977F05200	5,200	.2047	0,9	36	6
–	B977F05300	5,300	.2087	0,9	36	6
–	B977F05400	5,400	.2126	0,9	36	6
B976F05500	B977F05500	5,500	.2165	0,9	36	6
–	B977F05550	5,550	.2185	0,9	36	6
–	B977F05558	5,558	.2188	0,9	36	6
B976F05600	B977F05600	5,600	.2205	0,9	36	6
–	B977F05700	5,700	.2244	1,0	36	6

(continued)

(B976F/B977F • ~3 x D/~5 x D — continued)



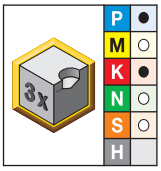


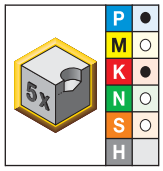
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B976F05800	B977F05800	5,800	.2283	1,0	36	6
–	B977F05900	5,900	.2323	1,0	36	6
B976F06000	B977F06000	6,000	.2362	1,0	36	6
–	B977F06100	6,100	.2402	1,0	36	8
–	B977F06200	6,200	.2441	1,0	36	8
B976F06300	–	6,300	.2480	1,1	36	8
B976F06400	B977F06400	6,400	.2520	1,1	36	8
–	B977F06500	6,500	.2559	1,1	36	8
–	B977F06600	6,600	.2598	1,1	36	8
–	B977F06700	6,700	.2638	1,1	36	8
B976F06800	B977F06800	6,800	.2677	1,1	36	8
–	B977F06900	6,900	.2717	1,2	36	8
B976F07000	B977F07000	7,000	.2756	1,2	36	8
B976F07100	B977F07100	7,100	.2795	1,2	36	8
–	B977F07400	7,400	.2913	1,3	36	8
–	B977F07500	7,500	.2953	1,3	36	8
B976F07800	B977F07800	7,800	.3071	1,3	36	8
B976F08000	B977F08000	8,000	.3150	1,4	36	8
–	B977F08100	8,100	.3189	1,4	40	10
–	B977F08200	8,200	.3228	1,4	40	10
B976F08300 *	–	8,300	.3268	1,4	40	10
B976F08500	B977F08500	8,500	.3346	1,4	40	10
B976F08600 *	B977F08600	8,600	.3386	1,5	40	10
B976F08700	B977F08700	8,700	.3425	1,5	40	10
B976F08800 *	B977F08800	8,800	.3465	1,5	40	10
B976F09000	B977F09000	9,000	.3543	1,5	40	10
–	B977F09100	9,100	.3583	1,5	40	10
–	B977F09300	9,300	.3661	1,6	40	10
–	B977F09500	9,500	.3740	1,6	40	10
–	B977F09800	9,800	.3858	1,7	40	10
–	B977F09900	9,900	.3898	1,7	40	10
B976F10000	B977F10000	10,000	.3937	1,7	40	10
–	B977F10100 *	10,100	.3976	1,7	45	12
B976F10200	B977F10200	10,200	.4016	1,7	45	12
–	B977F10300	10,300	.4055	1,8	45	12
–	B977F10400	10,400	.4094	1,8	45	12
B976F10500 *	B977F10500	10,500	.4134	1,8	45	12
B976F10700 *	B977F10700	10,700	.4213	1,8	45	12
B976F10800	B977F10800	10,800	.4252	1,8	45	12
B976F11000	B977F11000	11,000	.4331	1,9	45	12
–	B977F11200	11,200	.4409	1,9	45	12
–	B977F11500	11,500	.4528	2,0	45	12
B976F11700	B977F11700	11,700	.4606	2,0	45	12
–	B977F11800	11,800	.4646	2,0	45	12
B976F12000	B977F12000	12,000	.4724	2,1	45	12
B976F12500	B977F12500	12,500	.4921	2,1	45	14
B976F12700 *	B977F12700	12,700	.5000	2,2	45	14
B976F13000	B977F13000	13,000	.5118	2,2	45	14

(continued)

(B976F/B977F • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

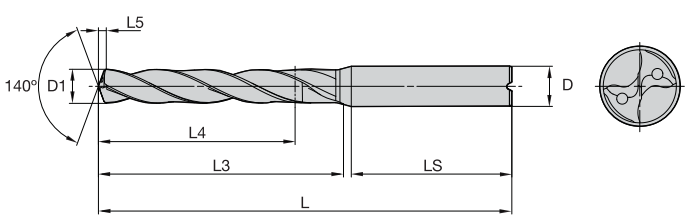
short • KC7315	long • KC7315	D1 diameter mm	D1 diameter in	L5	LS	D
B976F13500	**B977F13500**	13,500	.5315	2,3	45	14
B976F13700 *	–	13,700	.5394	2,4	45	14
–	**B977F13800** *	13,800	.5433	2,4	45	14
B976F14000	**B977F14000**	14,000	.5512	2,4	45	14
–	**B977F14200**	14,200	.5591	2,5	48	16
B976F14500 *	**B977F14500**	14,500	.5709	2,5	48	16
B976F15000	**B977F15000**	15,000	.5906	2,6	48	16
–	**B977F15200**	15,200	.5984	2,6	48	16
B976F15400	–	15,400	.6063	2,7	48	16
–	**B977F15500**	15,500	.6102	2,7	48	16
–	**B977F15700**	15,700	.6181	2,7	48	16
–	**B977F15800**	15,800	.6220	2,7	48	16
B976F16000	**B977F16000**	16,000	.6299	2,8	48	16
B976F16500	**B977F16500**	16,500	.6496	2,9	48	18
B976F17000	**B977F17000**	17,000	.6693	2,9	48	18
B976F17500	**B977F17500**	17,500	.6890	3,0	48	18
B976F18000	**B977F18000**	18,000	.7087	3,1	48	18
B976F18500	**B977F18500**	18,500	.7283	3,2	50	20
–	**B977F19000**	19,000	.7480	3,3	50	20
–	**B977F19500**	19,500	.7677	3,4	50	20
–	**B977F20000**	20,000	.7874	3,5	50	20
–	**B977F21000**	21,000	.8268	3,7	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

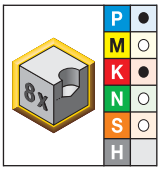
nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013







B978A • ~8 x D

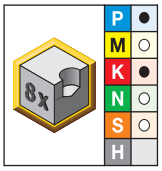


● first choice
○ alternate choice

extra long • KC7315	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B978A03000	3,000	.1181	78	40	33	0,6	36	6
B978A03300	3,300	.1299	78	40	33	0,7	36	6
B978A03400	3,400	.1339	78	40	33	0,7	36	6
B978A03600	3,600	.1417	78	40	33	0,7	36	6
B978A03700	3,700	.1457	78	40	33	0,8	36	6
B978A03800	3,800	.1496	87	49	41	0,8	36	6
B978A03970	3,970	.1563	87	49	41	0,8	36	6
B978A04000	4,000	.1575	87	49	41	0,8	36	6
B978A04200	4,200	.1654	87	49	41	0,9	36	6
B978A04500	4,500	.1772	87	49	41	0,9	36	6
B978A04600	4,600	.1811	87	49	41	0,9	36	6
B978A04763	4,763	.1875	94	56	48	1,0	36	6
B978A04800	4,800	.1890	94	56	48	1,0	36	6
B978A05000	5,000	.1969	94	56	48	1,0	36	6
B978A05100	5,100	.2008	94	56	48	1,1	36	6
B978A05200	5,200	.2047	94	56	48	1,1	36	6
B978A05300	5,300	.2087	94	56	48	1,1	36	6
B978A05500	5,500	.2165	94	56	48	1,1	36	6
B978A05558	5,558	.2188	94	56	48	1,2	36	6
B978A05600	5,600	.2205	94	56	48	1,2	36	6
B978A05700	5,700	.2244	94	56	48	1,2	36	6
B978A05800	5,800	.2283	94	56	48	1,2	36	6
B978A05900	5,900	.2323	94	56	48	1,2	36	6
B978A06000	6,000	.2362	94	56	48	1,2	36	6
B978A06100	6,100	.2402	105	67	57	1,3	36	8
B978A06200	6,200	.2441	105	67	57	1,3	36	8
B978A06300	6,300	.2480	105	67	57	1,3	36	8
B978A06350	6,350	.2500	105	67	57	1,3	36	8
B978A06400	6,400	.2520	105	67	57	1,3	36	8
B978A06500	6,500	.2559	105	67	57	1,4	36	8
B978A06600	6,600	.2598	105	67	57	1,4	36	8
B978A06700	6,700	.2638	105	67	57	1,4	36	8
B978A06746	6,746	.2656	105	67	57	1,4	36	8
B978A06800	6,800	.2677	105	67	57	1,4	36	8
B978A07000	7,000	.2756	105	67	57	1,5	36	8
B978A07145	7,145	.2813	110	72	61	1,5	36	8

(continued)

(B978A • ~8 x D — continued)

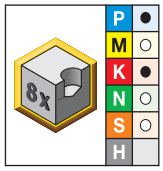


● first choice
○ alternate choice

extra long • KC7315	D1 diameter mm	in	L	L3	L4 max	L5	LS	D
B978A07400	7,400	.2913	110	72	61	1,6	36	8
B978A07500	7,500	.2953	110	72	61	1,6	36	8
B978A07541	7,541	.2969	110	72	61	1,6	36	8
B978A07700	7,700	.3031	110	72	61	1,6	36	8
B978A07800	7,800	.3071	110	72	61	1,6	36	8
B978A07938	7,938	.3125	110	72	61	1,7	36	8
B978A08000	8,000	.3150	110	72	61	1,7	36	8
B978A08100	8,100	.3189	122	80	68	1,7	40	10
B978A08200	8,200	.3228	122	80	68	1,7	40	10
B978A08334	8,334	.3281	122	80	68	1,8	40	10
B978A08500	8,500	.3346	122	80	68	1,8	40	10
B978A08600	8,600	.3386	122	80	68	1,8	40	10
B978A08700	8,700	.3425	122	80	68	1,8	40	10
B978A08733	8,733	.3438	122	80	68	1,8	40	10
B978A08800	8,800	.3465	122	80	68	1,9	40	10
B978A09000	9,000	.3543	122	80	68	1,9	40	10
B978A09100	9,100	.3583	122	80	68	1,9	40	10
B978A09129	9,129	.3594	122	80	68	1,9	40	10
B978A09300	9,300	.3661	122	80	68	2,0	40	10
B978A09500	9,500	.3740	122	80	68	2,0	40	10
B978A09525	9,525	.3750	122	80	68	2,0	40	10
B978A09700	9,700	.3819	122	80	68	2,0	40	10
B978A09750	9,750	.3839	122	80	68	2,1	40	10
B978A09800	9,800	.3858	122	80	68	2,1	40	10
B978A09900	9,900	.3898	122	80	68	2,1	40	10
B978A09921	9,921	.3906	122	80	68	2,1	40	10
B978A10000	10,000	.3937	122	80	68	2,1	40	10
B978A10100	10,100	.3976	141	94	79	2,1	45	12
B978A10200	10,200	.4016	141	94	79	2,2	45	12
B978A10300	10,300	.4055	141	94	79	2,2	45	12
B978A10320	10,320	.4063	141	94	79	2,2	45	12
B978A10500	10,500	.4134	141	94	79	2,2	45	12
B978A10716	10,716	.4219	141	94	79	2,3	45	12
B978A10800	10,800	.4252	141	94	79	2,3	45	12
B978A11000	11,000	.4331	141	94	79	2,3	45	12
B978A11113	11,113	.4375	141	94	79	2,4	45	12
B978A11200	11,200	.4409	141	94	79	2,4	45	12
B978A11300	11,300	.4449	141	94	79	2,4	45	12
B978A11400	11,400	.4488	141	94	79	2,4	45	12
B978A11500	11,500	.4528	141	94	79	2,4	45	12
B978A11509	11,509	.4531	141	94	79	2,4	45	12
B978A11700	11,700	.4606	141	94	79	2,5	45	12
B978A11800	11,800	.4646	141	94	79	2,5	45	12
B978A11908	11,908	.4688	141	94	79	2,5	45	12
B978A12000	12,000	.4724	141	94	79	2,5	45	12
B978A12304 *	12,304	.4844	155	108	91	2,6	45	14
B978A12500	12,500	.4921	155	108	91	2,7	45	14
B978A12700	12,700	.5000	155	108	91	2,7	45	14

(continued)

(B978A • ~8 x D — continued)



● first choice
○ alternate choice

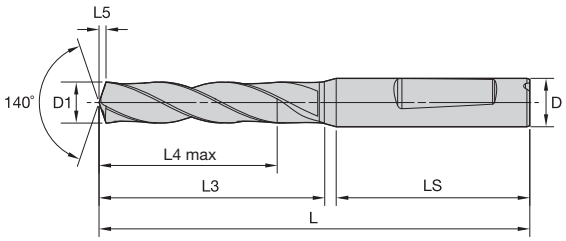
extra long • KC7315	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B978A12800	12,800	.5039	155	108	91	2,7	45	14
B978A13000	13,000	.5118	155	108	91	2,8	45	14
B978A13100	13,100	.5157	155	108	91	2,8	45	14
B978A13500	13,500	.5315	155	108	91	2,9	45	14
B978A14000	14,000	.5512	155	108	91	3,0	45	14
B978A14288	14,288	.5625	171	121	101	3,0	48	16
B978A14500	14,500	.5709	171	121	101	3,1	48	16
B978A15000	15,000	.5906	171	121	101	3,2	48	16
B978A15100	15,100	.5945	171	121	101	3,2	48	16
B978A15200	15,200	.5984	171	121	101	3,2	48	16
B978A15300	15,300	.6024	171	121	101	3,3	48	16
B978A15500	15,500	.6102	171	121	101	3,3	48	16
B978A15800	15,800	.6220	171	121	101	3,4	48	16
B978A15875	15,875	.6250	171	121	101	3,4	48	16
B978A16000	16,000	.6299	171	121	101	3,4	48	16
B978A16078	16,078	.6330	185	135	113	3,4	48	18
B978A16200	16,200	.6378	185	135	113	3,5	48	18
B978A16500	16,500	.6496	185	135	113	3,5	48	18
B978A17000	17,000	.6693	185	135	113	3,6	48	18
B978A17463	17,463	.6875	185	135	113	3,7	48	18
B978A17500	17,500	.6890	185	135	113	3,7	48	18
B978A18000	18,000	.7087	185	135	113	3,9	48	18
B978A18500	18,500	.7283	200	148	124	4,0	50	20
B978A19000	19,000	.7480	200	148	124	4,1	50	20
B978A19050 *	19,050	.7500	200	148	124	4,1	50	20
B978A19253 *	19,253	.7580	200	148	124	4,1	50	20
B978A19500 *	19,500	.7677	200	148	124	4,2	50	20
B978A19800	19,800	.7795	200	148	124	4,2	50	20
B978A19840	19,840	.7811	200	148	124	4,3	50	20
B978A20000	20,000	.7874	200	148	124	4,3	50	20

NOTE: The point angle on B978 series is 132°.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

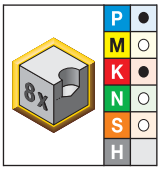
nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013







B978F • ~8 x D



● first choice
○ alternate choice

extra long • KC7315	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B978F03600	3,600	.1417	78	40	33	0,7	36	6
B978F04700 *	4,700	.1850	87	49	41	1,0	36	6
B978F05000	5,000	.1969	94	56	48	1,0	36	6
B978F06800	6,800	.2677	105	67	57	1,4	36	8
B978F07000	7,000	.2756	105	67	57	1,5	36	8
B978F07400 *	7,400	.2913	110	72	61	1,6	36	8
B978F07500	7,500	.2953	110	72	61	1,6	36	8
B978F08500	8,500	.3346	122	80	68	1,8	40	10
B978F09000	9,000	.3543	122	80	68	1,9	40	10
B978F09500	9,500	.3740	122	80	68	2,0	40	10
B978F10200	10,200	.4016	141	94	79	2,2	45	12
B978F12000	12,000	.4724	141	94	79	2,5	45	12
B978F12500 *	12,500	.4921	155	108	91	2,7	45	14
B978F13000	13,000	.5118	155	108	91	2,8	45	14
B978F14000	14,000	.5512	155	108	91	3,0	45	14
B978F14500 *	14,500	.5709	171	121	101	3,1	48	16
B978F15000	15,000	.5906	171	121	101	3,2	48	16
B978F16000	16,000	.6299	171	121	101	3,4	48	16
B978F17000 *	17,000	.6693	185	135	113	3,6	48	18
B978F17500	17,500	.6890	185	135	113	3,7	48	18
B978F18000 *	18,000	.7087	185	135	113	3,9	48	18
B978F20000 *	20,000	.7874	200	148	124	4,3	50	20

NOTE: The point angle on B978 series is 132°.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Kenna Universal™ Drills • B97_Series • Grade KC7315™ • Through Coolant • Drill Diameters 2–20mm • Metric

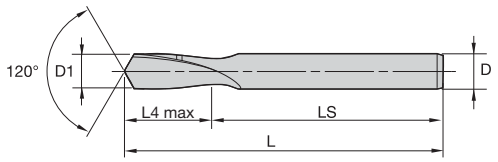




Material Group		Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate (f) by Diameter									
		min	Starting Value	max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	80	**120**	160	mm/r	0,04–0,10	0,06–0,12	0,07–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	70	**100**	140	mm/r	0,05–0,12	0,07–0,14	0,08–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	90	**120**	140	mm/r	0,05–0,12	0,07–0,14	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	60	**80**	100	mm/r	0,06–0,13	0,08–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	**80**	100	mm/r	0,06–0,13	0,07–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	50	**60**	80	mm/r	0,06–0,12	0,08–0,13	0,10–0,15	0,12–0,19	0,16–0,24	0,20–0,27	0,24–0,30	0,28–0,38	0,32–0,44
	6	40	**50**	70	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,08–0,14	0,10–0,18	0,13–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	30	**40**	50	mm/r	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	40	**50**	60	mm/r	0,03–0,07	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	30	**40**	50	mm/r	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	**120**	170	mm/r	0,09–0,17	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	2	80	**110**	140	mm/r	0,11–0,15	0,12–0,16	0,13–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**100**	130	mm/r	0,07–0,15	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60
N	1	90	**230**	315	mm/r	0,06–0,13	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	**225**	270	mm/r	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	**180**	270	mm/r	0,11–0,14	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	**135**	180	mm/r	0,06–0,12	0,08–0,16	0,01–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	10	**25**	30	mm/r	0,02–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	**20**	25	mm/r	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	10	**25**	30	mm/r	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	10	**25**	40	mm/r	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

KENNAMETAL®









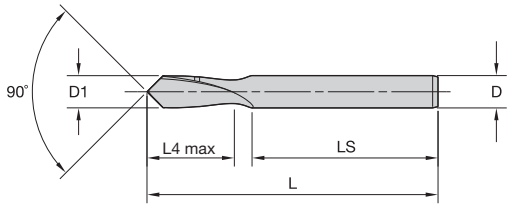
B501 • 120°



● first choice
○ alternate choice

D1 diameter

B501 • K10	mm	in	L	L4 max	LS	D
B501Z04000	4,000	.1575	54	7	33	6
B501Z06000	6,000	.2362	54	9	33	6
B501Z10000	10,000	.3937	66	12	45	10
B501Z12000	12,000	.4724	73	14	52	12







B505 • 90°



● first choice
○ alternate choice

D1 diameter

B505 • K10	mm	in	L	L4 max	LS	D
B505Z04000	4,000	.1575	54	7	33	4
B505Z06000	6,000	.2362	54	9	33	6
B505Z08000	8,000	.3150	58	11	37	8
B505Z10000	10,000	.3937	66	12	40	10
B505Z12000	12,000	.4724	73	14	52	12
B505Z16000	16,000	.6299	82	16	61	16
B505Z20000	20,000	.7874	92	18	71	20

Tolerance • Metric

D1	tolerance h8	tolerance h6
>3-6	0,000/-0,018	0,000/-0,008
>6-10	0,000/-0,022	0,000/-0,009
>10-18	0,000/-0,027	0,000/-0,011

Non-Coolant Spot Drills • B50_ Series • Grade K10 • Dry and Flood Coolant Drill • Diameters 3–20mm • Metric





Material Group		Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	50	**65**	100	mm/r	0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	1	40	**55**	80	mm/r	0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	2	40	**55**	80	mm/r	0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	3	40	**55**	80	mm/r	0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	4	40	**55**	80	mm/r	0,05–0,08	0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,22	0,16–0,24
	5	30	**40**	60	mm/r	0,03–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,10–0,14	0,12–0,18	0,14–0,20
	6	30	**40**	60	mm/r	0,03–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,10–0,14	0,12–0,18	0,14–0,20
M	1	30	**35**	50	mm/r	0,04–0,07	0,05–0,09	0,06–0,11	0,80–0,13	0,09–0,15	0,10–0,17	0,11–0,20	0,12–0,23
	2	30	**40**	50	mm/r	0,03–0,05	0,04–0,08	0,05–0,09	0,06–0,10	0,07–0,12	0,08–0,14	0,09–0,17	0,10–0,20
	3	25	**30**	40	mm/r	0,03–0,05	0,04–0,08	0,05–0,09	0,06–0,10	0,07–0,12	0,08–0,14	0,09–0,17	0,10–0,20
K	1	60	**90**	120	mm/r	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22	0,18–0,26	0,20–0,30
	2	60	**80**	100	mm/r	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22	0,18–0,26	0,20–0,30
	3	60	**90**	120	mm/r	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22	0,18–0,26	0,20–0,30
N	1	90	**230**	270	mm/r	0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
	2	90	**220**	270	mm/r	0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
	3	90	**180**	225	mm/r	0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
	4	90	**130**	270	mm/r	0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
S	1	20	**25**	30	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20
	2	10	**20**	30	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20
	3	20	**25**	40	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20
	4	20	**25**	50	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20



Modular Drills

Introduction **H2–H5**

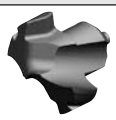
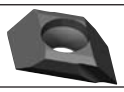
KenTIP FS **H6–H23**

KenTIP **H24–H37**

KSEM **H38–H77**

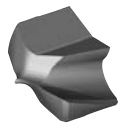
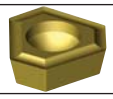
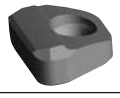
Tube Sheet Grooving Tool H74–H77

KSEM PLUS **H78–H106**

modular drills with internal coolant channel		grade/series	standard* ● first choice ○ alternate choice P	M	K	N	S	H	hole tolerance	standard range diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
KenTIP™ FS For smaller diameters. Easy front clamping and disposable inserts.												
	**KenTIP FS inserts**	**KCP15A HPG**	●		○				IT9–IT11	6,00–26,00	.2362–1.0236	—
		KC7410 HPC			●							
		KCMS15 HPL		●								
	**KenTIP FS bodies**	**SS SF SCF**	—						—	6,00≤Ø<9,50	.2362≤Ø<.3740	1.5–12 x D
										9,50≤Ø<11,00	.3740≤Ø<.4331	
										11,00≤Ø<12,50	.4331≤Ø<.4921	
										12,50≤Ø<14,00	.4921≤Ø<.5512	
										14,00≤Ø<15,50	.5512≤Ø<.6102	
										15,50≤Ø<16,50	.6102≤Ø<.6496	
										16,50≤Ø<20,00	.6496≤Ø<.7874	
										20,00≤Ø<21,00	.7874≤Ø<.8268	SCF shank only
										21,00≤Ø<26,00	.8268≤Ø<1.0236	
KenTIP™												
	**KenTIP inserts**	**KCP15 HP**	●		○				IT9–IT11	7,94–27,99	.3125–1.1020	—
		KCPM45™ FEG	●	○	○					7,94–27,99	.3125–.7874	
	**FAS chamfering inserts**	**KC7014 FAS-GD**	○	○	○	●	○			Made-to-order toolholders required. Also available for KenTIP FS.		
		KC7215 FAS-GD	●	○	●	○	●					
	**CFM tangential chamfering and counterboring**	**KCU40 CFM-HP**	●	○	○	●	●					
	**KenTIP bodies**	**SS SCF**	—						—	7,94≤Ø<9,50	.3125≤Ø<.3740	1.5–12 x D
										9,50≤Ø<11,00	.3740≤Ø<.4331	
										11,00≤Ø<12,50	.4331≤Ø<.4921	
										12,50≤Ø<14,00	.4921≤Ø<.5512	
										14,00≤Ø<15,50	.5512≤Ø<.6102	
										15,50≤Ø<16,50	.6102≤Ø<.6496	
										16,50≤Ø<20,50	.6496≤Ø<.8071	
										20,50≤Ø<21,00	.8071≤Ø<.8268	
										21,00≤Ø<27,99	.8268≤Ø<1.1020	

■ Standard Product
□ Engineered Solutions

engineered solution range / diameter range			coolant	drilling	inclined exit	stacked plates	flat bottom	countersinking	counterboring	cross hole	2 flute 2 margin cooled	2 flute 4 margin cooled	corner chamfer	plain shank ≤H6	Whistle Notch 2°	WD shank	flat shank	SSF shank	KM™ shank	HSK shank	page(s)
D1 mm min–max	**D1 inch min–max**	**max drilling depth**																			
KenTIP™ FS For smaller diameters. Easy front clamping and disposable inserts. *(continued)*																					
6,00–26,00	.2362–1.0236	—		■	■	■		□	□	■	■	□	□								H8
			■	■	■			□	□	■		■	■								
			■	■	■			□	□	■	■	□	□								
6,00≤Ø<9,50	.2362≤Ø<.3740	12 x D	■					□	□					■	□	□	■	□	□	□	H16
9,50≤Ø<11,00	.3740≤Ø<.4331	13 x D	■					□	□					■	□	□	■	□	□	□	
11,00≤Ø<12,50	.4331≤Ø<.4921	14 x D	■					□	□					■	□	□	■	□	□	□	
12,50≤Ø<14,00	.4921≤Ø<.5512	15 x D	■					□	□					■	□	□	■	□	□	□	
14,00≤Ø<15,50	.5512≤Ø<.6102	16 x D	■					□	□					■	□	□	■	□	□	□	
15,50≤Ø<16,50	.6102≤Ø<.6496	17 x D	■					□	□					■	□	□	■	□	□	□	
16,50≤Ø<20,00	.6496≤Ø<.7874	18 x D	■					□	□					■	□	□	■	□	□	□	
20,00≤Ø<21,00	.7874≤Ø<.8268	20 x D	■					□	□					■	□	□	■	□	□	□	
21,00≤Ø<26,00	.8268≤Ø<1.0236	550mm	■					□	□					■	□	□	■	□	□	□	
KenTIP™ *(continued)*																					
7,94–27,99	.3125–1.1020	—		■	□						■	□	□								H26
				■	■			■	■	■	□	■	■								
12,50–36,01	.4921–1.4177							■													H33
								■													
10,00–31,20	.3937–1.2283							■	■												H34
7,94≤Ø<9,50	.3125≤Ø<.3740	12 x D	■					□**	□					■	□	□	■	□	□	□	H31
9,50≤Ø<11,00	.3740≤Ø<.4331	13 x D	■					□**	□					■	□	□	■	□	□	□	
11,00≤Ø<12,50	.5424≤Ø<.4921	14 x D	■					□**	□					■	□	□	■	□	□	□	
12,50≤Ø<14,00	.4921≤Ø<.5512	15 x D	■					□**	□					■	□	□	■	□	□	□	
14,00≤Ø<15,00	.5512≤Ø<.6102	16 x D	■					□**	□					■	□	□	■	□	□	□	
15,50≤Ø<16,50	.6102≤Ø<.6496	17 x D	■					□**	□					■	□	□	■	□	□	□	
16,50≤Ø<20,50	.6496≤Ø<.8070	18 x D	■					□**	□					■	□	□	■	□	□	□	
20,50≤Ø<21,00	.8070≤Ø<.8267	20 x D	■					□**	□					■	□	□	■	□	□	□	
21,00≤Ø<28,00	.8267≤Ø<1.1024	550mm	■					□**	□					■	□	□	■	□	□	□	

modular drills with internal coolant channel		grade/series	standard* ● first choice ○ alternate choice P	M	K	N	S	H	hole tolerance	standard range diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
KSEM™ For larger diameters. Very robust pocket and regrindable inserts.												
	KSEM inserts	KC7315 HP/HPG	●		○				IT9–IT11	12,50–40,00	.4921–1.5748	—
		KCPM45 HPG	●	○						12,50–40,00	.4921–1.5748	
		KC7410 HPCCL			●					12,70–40,00	.5000–1.5748	
		KC7320 HPL		●						12,50–40,00	.4921–1.5748	
		KCMS35 SPL	○	●		○	●			12,50–40,00	.4921–1.5748	
		KCPM45 FEG	●	○	○		○			16,00–40,00	.6230–1.5748	
		KC7135 PC	●		●					12,50–40,00	.4921–1.5748	
	chamfering inserts	KC7015 TPGX-GD		●		○				12,50–40,00	.4921–1.5748	—
		KC7140 TPGX-GD	●	○	○	●	○					
		KC7315™ TPGX-GD	○	○	●	○	●					
	KSEM bodies	WN (Metric), SS (inch), SSF (inch)	—						—	12,50≤Ø<16,50	.4921≤Ø<.6496	1–10 x D (SSF only up to 8 x D) (WN only up to Ø32mm)
										16,50≤Ø<20,00	.6496≤Ø<.7874	
										20,00≤Ø≤32,00	.7874≤Ø≤1.2598	
		WD (Metric)	—						—	32,00<Ø≤40,00	1.2598<Ø≤1.5748	1–5 x D
		WN, SSF with chamfer	—						—	12,50≤Ø<16,50	.4921≤Ø<.6496	1 x D
										16,50≤Ø<20,00	.6496≤Ø<.7874	
										20,00≤Ø≤32,00	.7874<Ø≤1.2598	
		WD, SSF with chamfer	—						—	32,00<Ø≤40,00	1.2598<Ø<1.5748	1 x D
KSEM PLUS™ High-performance drilling for the largest diameters.												
	KSEM PLUS heads	A1 style							IT9–IT11	28,00<Ø≤101,40	1.1020<Ø≤4.0000	—
		B1 style										
	KSEM PLUS centre inserts	KSEMP KC7315 HPG	●	●	○	○	○			13,00–40,00 mm PDD reference only		
		KSEM KC7410 HPCCL			●							
		KSEM KC7135 PC		●								
	DFR™ inserts	KCU25 DFR-GD	●	○	●	○	○			DFR inserts for A1 Heads with FDS28		—
		KCU40 DFR-GD	●	○	○	○	●			28,00–31,00	1.1024–1.2204	
		KC7140 DFR-MD	●	●	○	○	○					
		KC7225 DFR-LD	○	○	●	●	○					
	DFT™ inserts	KCU25 DFT-HP	●	○	●	○	○			DFT inserts for A1 Heads FDS32 and above		
		KCU40 DFT-HP	●	○	○	○	●			31,75–101,40	1.2500–4.0000	
		KCU40 DFC-DS	●	○		○	○					
		KC7140 DFT-MD	●	●	○	○	○					
	DFC™ inserts (B1 Heads)	KCU25 DFC-HP	●	○	●	○	○			DFC inserts for B1 Heads, all FDS sizes		
		KCU40 DFC-HP	●	○	○	○	●			28,00–101,40	1.1024–4.0000	
		KCU40 DFC-DS	●	○		○	○					
		KC7140 DFC-MD	●	●	○	○	○					
	DPA guide pads (B1 Heads)	KCU40 DPA	—							Available for all standard B1 Head Diameters		
	KSEM PLUS bodies	WD (Metric)	—						—	28,00≤Ø≤70,00	1.1024≤Ø≤2.7560	1.5–10 x D
		SSF (Inch)								70,00≤Ø≤101,40	2.7560≤Ø≤4.0000	1.5–5 x D

* Apart from our standard drills, we can offer you a wide variety of special coating solutions and edge preparations to fulfill all your needs. If a specific drill is not suitable for your workpiece material, please contact our **Engineered Solutions Department**.

■ Standard Product
□ Engineered Solutions

engineered solution range / diameter range			coolant	drilling	inclined exit	stacked plates	flat bottom	countersinking	counterboring	cross hole	2 flute 2 margin cooled	2 flute 4 margin cooled	corner chamfer	plain shank ≤H6	Whistle Notch 2°	WD shank	flat shank	SSF shank	KM™ shank	HSK shank	page(s)
D1 mm min–max	D1 inch min–max	max drilling depth																			
KSEM™ For larger diameters. Very robust pocket and regrindable inserts. *(continued)*																					
12,50–40,00	.4921–1.5748	—		■	■	■					■	□	□								H40
				■	■	■				■	■	□	□								
				■	■	■					■	□	■								
				■	■						■	□	□								
				■	■	■				■	■	□	□								
				■	■	■	■	■	■	■	□	■	■								
				■	■	■					■	□	■								
12,50–40,00	.4921–1.5748	—						■													H63
								■													
								■													
12,50≤Ø<16,50	.4921≤Ø<.6496	15 x D	■					□	□	□				■	■	□	□	■	□	□	H58
16,50≤Ø<20,00	.6496≤Ø<.7874	18 x D	■					□	□	□				■	■	□	□	■	□	□	
20,00≤Ø≤40,00	.7874≤Ø≤1.5748	20 x D	■					□	□	□				■	■	□	□	■	□	□	
32,00<Ø≤40,00	1.2598<Ø≤1.5748	20 x D (max 800mm)	■					□	□	□				□	□	■	□	□	□	□	
12,50≤Ø<16,50	.4921≤Ø<.6496	chamfer step drills available as custom solutions in various lengths	■					■	□	□				□	■	□	□	□	□	□	
16,50≤Ø<20,00	.6496≤Ø<.7874		■					■	□	□				□	■	□	□	□	□	□	
20,00≤Ø≤32,00	.7874≤Ø≤1.2598		■					■	□	□				□	■	□	□	■	□	□	
32,00<Ø≤40,00	1.2598<Ø≤1.5748		■					■	□	□				□		■	□	■	□	□	
KSEM PLUS™ High-performance drilling for the largest diameters. *(continued)*																					
28,00<Ø≤127,00	1.1020<Ø≤5.0000	—	■	■			□	□	□		■	□ (DPA)									H91
			■	■	■	■	□	□	□	■		■									
13,00–40,00 mm PDD reference only																					H87
DFR inserts for A1 Heads with FDS28																					H89
28,00≤Ø<31,75	1.1024≤Ø<1.2500																				
DFT inserts for A1 Heads FDS32 and above																					H88
31,75≤Ø≤127,00	1.2500≤Ø≤5.0000																				
DFC inserts for B1 Heads, all FDS sizes																					H90
28,00≤Ø≤127,00	1.1024≤Ø≤5.0000																				
DPA are supporting various solutions				■	■	■	□			■											H90
28,00≤Ø≤127,00	1.1020≤Ø≤5.0000	3–20 x D (max 1250mm)	■					□	□	□				□		■	□	■	□	□	H102

** Alternative chamfering solutions are available in combination with SEFAS™ or BF; see page I1.
Please use this table for orientation purposes only. Detailed information on available products (inserts, toolholders, etc.) can be found on the indicated pages of this catalogue.

KenTIP™ FS

The Perfect Fusion of a Solid Carbide and an Indexable Drill

The new modular drill KenTIP FS covers more applications and provides better performance than any other modular system, delivering substantial cost savings and process simplifications on your shop floor.

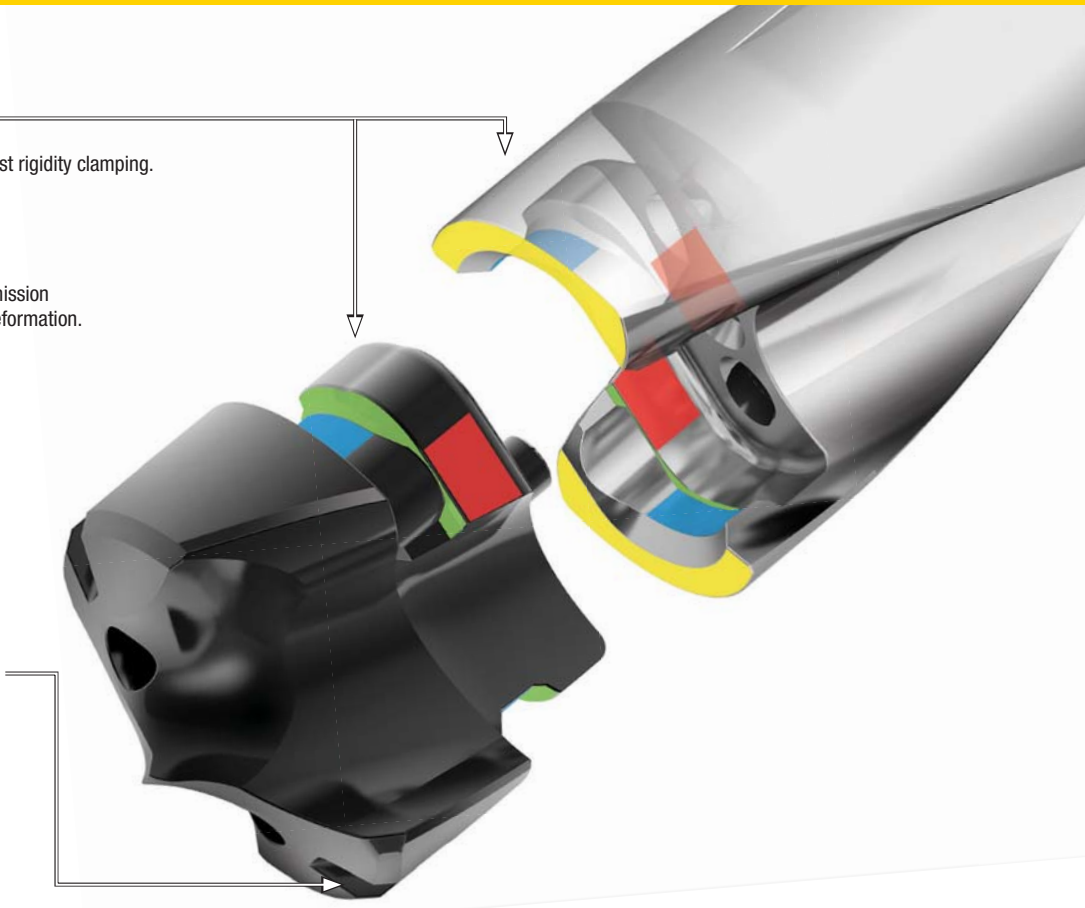
3-point geometries, 3 high-performance grades, 3 different shank styles.
This modular drilling system covers a 6–26mm diameter range.
Up to 12 x D drilling depths.
Applicable in steel, stainless steel, and cast iron.

Intelligent Interface

- Taper interface uniquely designed for highest rigidity clamping.
- Retention lock prevents insert pullout.
- Large bearing surface positioned for transmission of highest torsional loads without pocket deformation.
- Large face contact surface.

Maximum performance and long tool life, even in unstable conditions.

Quick Release
Every drill body comes with a KenTIP smart wrench. Insert exchange in the machine becomes easy and saves idle time. And that saves money.



Recycling Instead of Reconditioning
KenTIP™ FS provides the same stable and repeatable performance with every new insert. Lower your operational expenses with less tooling inventory and simplified processes. Recoup cost by providing your used carbide inserts to our recycling service.

Fast Flow
Large, ultra-high polished chip flutes guarantee hassle-free chip evacuation, enhancing tool life and performance.

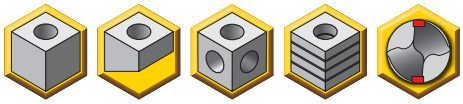
Multi-Coolant
Coolant delivery to the drill point and to the rake face for guaranteed coolant delivery where it is needed.

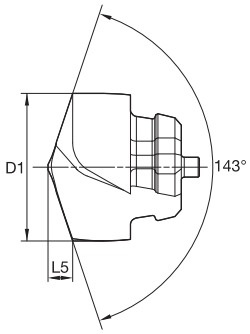
Unique Point Geometries
3 material-specific, self-centering point designs enable excellent hole quality and optimum tool performance.



Full Solid Carbide Front
KenTIP FS inserts cover the entire front part of the drill. The coupling is completely protected from chip flow and contact with workpiece.

- HPG-point geometry for steels.
- Great positioning and centring capabilities for drilling without precentring, even in deeper holes.
- KCP15A™ is an AlTiN PVD monolayer coating.
- Enhanced thermal stability.
- Excellent balance between toughness and wear resistance.
- Without internal coolant.

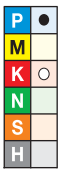




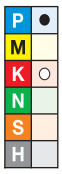


HPG Geometry

KenTIP FS Inserts • HPG KCP15A • No Internal Coolant Channels



KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS06000HPGM	6,000	.2362	1,370	.0539	A
KTFSS06100HPGM	6,100	.2402	1,380	.0543	A
KTFSS06200HPGM	6,200	.2441	1,400	.0551	A
KTFSS06300HPGM	6,300	.2480	1,440	.0567	B
KTFSS06350HPGM	6,350	.2500	1,450	.0571	B
KTFSS06400HPGM *	6,400	.2520	1,450	.0571	B
KTFSS06500HPGM	6,500	.2559	1,470	.0579	B
KTFSS06530HPGM	6,530	.2571	1,480	.0583	B
KTFSS06600HPGM	6,600	.2598	1,490	.0587	C
KTFSS06629HPGM *	6,629	.2610	1,500	.0591	C
KTFSS06700HPGM	6,700	.2638	1,510	.0594	C
KTFSS06746HPGM	6,746	.2656	1,520	.0598	C
KTFSS06800HPGM	6,800	.2677	1,530	.0602	C
KTFSS06900HPGM *	6,900	.2717	1,540	.0606	C
KTFSS06909HPGM	6,909	.2720	1,540	.0606	C
KTFSS07000HPGM	7,000	.2756	1,590	.0626	D
KTFSS07100HPGM *	7,100	.2795	1,610	.0634	D
KTFSS07145HPGM	7,145	.2813	1,610	.0634	D
KTFSS07200HPGM *	7,200	.2835	1,620	.0638	D
KTFSS07366HPGM	7,366	.2900	1,650	.0650	D
KTFSS07400HPGM	7,400	.2913	1,660	.0654	D
KTFSS07500HPGM	7,500	.2953	1,680	.0661	E
KTFSS07541HPGM	7,541	.2969	1,690	.0665	E
KTFSS07600HPGM *	7,600	.2992	1,700	.0669	E
KTFSS07700HPGM *	7,700	.3031	1,710	.0673	E
KTFSS07800HPGM *	7,800	.3071	1,730	.0681	E
KTFSS07900HPGM *	7,900	.3110	1,750	.0689	E
KTFSS07938HPGM	7,938	.3125	1,750	.0689	E
KTFSS08000HPGM	8,000	.3150	1,800	.0709	F
KTFSS08100HPGM	8,100	.3189	1,820	.0717	F
KTFSS08164HPGM	8,164	.3214	1,830	.0720	F
KTFSS08204HPGM	8,204	.3230	1,840	.0724	F
KTFSS08300HPGM	8,300	.3268	1,850	.0728	F
KTFSS08334HPGM	8,334	.3281	1,860	.0732	F
KTFSS08400HPGM	8,400	.3307	1,870	.0736	F
KTFSS08433HPGM	8,433	.3320	1,870	.0736	F
KTFSS08500HPGM	8,500	.3346	1,890	.0744	G
KTFSS08600HPGM	8,600	.3386	1,910	.0752	G
KTFSS08611HPGM *	8,611	.3390	1,910	.0752	G
KTFSS08700HPGM	8,700	.3425	1,920	.0756	G

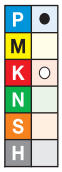


● first choice
○ alternate choice

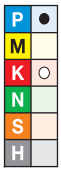
KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS08733HPGM	8,732	.3438	1,930	.0760	G
KTFSS08800HPGM	8,800	.3465	1,940	.0764	G
KTFSS08839HPGM *	8,839	.3480	1,950	.0768	G
KTFSS08900HPGM *	8,900	.3504	1,960	.0772	G
KTFSS09000HPGM	9,000	.3543	2,010	.0791	H
KTFSS09093HPGM *	9,093	.3580	2,030	.0799	H
KTFSS09100HPGM	9,100	.3583	2,030	.0799	H
KTFSS09129HPGM *	9,129	.3594	2,030	.0799	H
KTFSS09200HPGM	9,200	.3622	2,040	.0803	H
KTFSS09300HPGM	9,300	.3661	2,060	.0811	H
KTFSS09347HPGM	9,347	.3680	2,070	.0815	H
KTFSS09400HPGM	9,400	.3701	2,080	.0819	H
KTFSS09500HPGM	9,500	.3740	2,100	.0827	I
KTFSS09525HPGM	9,525	.3750	2,110	.0831	I
KTFSS09558HPGM	9,558	.3763	2,110	.0831	I
KTFSS09600HPGM	9,600	.3780	2,120	.0835	I
KTFSS09700HPGM	9,700	.3819	2,130	.0839	I
KTFSS09800HPGM	9,800	.3858	2,150	.0846	I
KTFSS09900HPGM	9,900	.3898	2,170	.0854	I
KTFSS09921HPGM	9,921	.3906	2,170	.0854	I
KTFSS10000HPGM	10,000	.3937	2,220	.0874	J
KTFSS10023HPGM *	10,023	.3946	2,220	.0874	J
KTFSS10084HPGM *	10,084	.3970	2,230	.0878	J
KTFSS10100HPGM	10,100	.3976	2,240	.0882	J
KTFSS10200HPGM	10,200	.4016	2,250	.0886	J
KTFSS10262HPGM *	10,262	.4040	2,260	.0890	J
KTFSS10300HPGM	10,300	.4055	2,270	.0894	J
KTFSS10320HPGM	10,320	.4063	2,270	.0894	J
KTFSS10400HPGM	10,400	.4094	2,290	.0902	J
KTFSS10490HPGM	10,490	.4130	2,300	.0906	J
KTFSS10500HPGM	10,500	.4134	2,310	.0909	K
KTFSS10600HPGM	10,600	.4173	2,330	.0917	K
KTFSS10700HPGM	10,700	.4213	2,340	.0921	K
KTFSS10716HPGM	10,716	.4219	2,350	.0925	K
KTFSS10800HPGM	10,800	.4252	2,360	.0929	K
KTFSS10900HPGM	10,900	.4291	2,380	.0937	K
KTFSS11000HPGM	11,000	.4331	2,430	.0957	L
KTFSS11100HPGM	11,100	.4370	2,450	.0965	L
KTFSS11113HPGM	11,112	.4375	2,450	.0965	L
KTFSS11200HPGM	11,200	.4409	2,460	.0969	L

(continued)

(KenTIP FS Inserts • HPG KCP15A™ • No Internal Coolant Channels — continued)



KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS11300HPGM	11,300	.4449	2,480	.0976	L
KTFSS11400HPGM	11,400	.4488	2,500	.0984	L
KTFSS11500HPGM	11,500	.4528	2,520	.0992	M
KTFSS11509HPGM	11,509	.4531	2,520	.0992	M
KTFSS11600HPGM	11,600	.4567	2,540	.1000	M
KTFSS11700HPGM	11,700	.4606	2,550	.1004	M
KTFSS11800HPGM	11,800	.4646	2,570	.1012	M
KTFSS11900HPGM	11,900	.4685	2,590	.1020	M
KTFSS11908HPGM	11,908	.4688	2,590	.1020	M
KTFSS12000HPGM	12,000	.4724	2,640	.1039	N
KTFSS12100HPGM	12,100	.4764	2,650	.1043	N
KTFSS12200HPGM	12,200	.4803	2,670	.1051	N
KTFSS12304HPGM	12,304	.4844	2,690	.1059	N
KTFSS12400HPGM	12,400	.4882	2,700	.1063	N
KTFSS12474HPGM	12,474	.4911	2,720	.1071	N
KTFSS12500HPGM	12,500	.4921	2,730	.1075	O
KTFSS12600HPGM	12,600	.4961	2,740	.1079	O
KTFSS12700HPGM	12,700	.5000	2,760	.1087	O
KTFSS12800HPGM	12,800	.5039	2,780	.1094	O
KTFSS12900HPGM	12,900	.5079	2,790	.1098	O
KTFSS13000HPGM	13,000	.5118	2,850	.1122	P
KTFSS13096HPGM	13,096	.5156	2,860	.1126	P
KTFSS13200HPGM	13,200	.5197	2,880	.1134	P
KTFSS13280HPGM	13,280	.5228	2,890	.1138	P
KTFSS13300HPGM	13,300	.5236	2,900	.1142	P
KTFSS13380HPGM	13,380	.5268	2,910	.1146	P
KTFSS13400HPGM	13,400	.5276	2,910	.1146	P
KTFSS13492HPGM	13,492	.5312	2,930	.1154	P
KTFSS13500HPGM	13,500	.5315	2,930	.1154	Q
KTFSS13600HPGM	13,600	.5354	2,950	.1161	Q
KTFSS13700HPGM	13,700	.5394	2,970	.1169	Q
KTFSS13800HPGM	13,800	.5433	2,980	.1173	Q
KTFSS13891HPGM	13,891	.5469	3,000	.1181	Q
KTFSS13896HPGM *	13,896	.5471	3,000	.1181	Q
KTFSS13940HPGM	13,940	.5488	3,010	.1185	Q
KTFSS14000HPGM	14,000	.5512	3,050	.1201	R
KTFSS14100HPGM	14,100	.5551	3,070	.1209	R
KTFSS14200HPGM	14,200	.5591	3,090	.1217	R
KTFSS14288HPGM	14,288	.5625	3,100	.1220	R
KTFSS14300HPGM	14,300	.5630	3,100	.1220	R
KTFSS14400HPGM	14,400	.5669	3,120	.1228	R
KTFSS14500HPGM	14,500	.5709	3,140	.1236	S
KTFSS14600HPGM	14,600	.5748	3,160	.1244	S
KTFSS14666HPGM *	14,666	.5774	3,170	.1248	S
KTFSS14684HPGM	14,684	.5781	3,170	.1248	S
KTFSS14700HPGM	14,700	.5787	3,170	.1248	S
KTFSS14800HPGM	14,800	.5827	3,190	.1256	S
KTFSS14900HPGM *	14,900	.5866	3,210	.1264	S
KTFSS15000HPGM	15,000	.5906	3,260	.1283	T
KTFSS15083HPGM	15,082	.5938	3,270	.1287	T
KTFSS15100HPGM	15,100	.5945	3,280	.1291	T
KTFSS15200HPGM	15,200	.5984	3,290	.1295	T
KTFSS15300HPGM	15,300	.6024	3,310	.1303	T
KTFSS15380HPGM	15,380	.6055	3,320	.1307	T
KTFSS15400HPGM	15,400	.6063	3,330	.1311	T
KTFSS15479HPGM	15,479	.6094	3,340	.1315	T



● first choice
○ alternate choice

KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS15500HPGM	15,500	.6102	3,340	.1315	T
KTFSS15600HPGM	15,600	.6142	3,360	.1323	T
KTFSS15700HPGM	15,700	.6181	3,380	.1331	T
KTFSS15800HPGM	15,800	.6220	3,390	.1335	T
KTFSS15875HPGM	15,875	.6250	3,410	.1343	T
KTFSS15900HPGM *	15,900	.6260	3,410	.1343	T
KTFSS16000HPGM	16,000	.6299	3,480	.1370	U
KTFSS16027HPGM *	16,027	.6310	3,490	.1374	U
KTFSS16080HPGM *	16,080	.6331	3,490	.1374	U
KTFSS16100HPGM	16,100	.6339	3,500	.1378	U
KTFSS16104HPGM	16,104	.6340	3,500	.1378	U
KTFSS16200HPGM	16,200	.6378	3,510	.1382	U
KTFSS16271HPGM	16,271	.6406	3,530	.1390	U
KTFSS16300HPGM	16,300	.6417	3,530	.1390	U
KTFSS16400HPGM	16,400	.6457	3,550	.1398	U
KTFSS16500HPGM	16,500	.6496	3,570	.1406	U
KTFSS16600HPGM	16,600	.6535	3,580	.1409	U
KTFSS16670HPGM	16,670	.6563	3,590	.1413	U
KTFSS16700HPGM	16,700	.6575	3,600	.1417	U
KTFSS16800HPGM	16,800	.6614	3,620	.1425	U
KTFSS16900HPGM	16,900	.6654	3,630	.1429	U
KTFSS17000HPGM	17,000	.6693	3,660	.1441	V
KTFSS17066HPGM	17,066	.6719	3,670	.1445	V
KTFSS17100HPGM	17,100	.6732	3,670	.1445	V
KTFSS17200HPGM	17,200	.6772	3,690	.1453	V
KTFSS17300HPGM *	17,300	.6811	3,710	.1461	V
KTFSS17400HPGM	17,400	.6850	3,720	.1465	V
KTFSS17463HPGM	17,462	.6875	3,740	.1472	V
KTFSS17480HPGM	17,480	.6882	3,740	.1472	V
KTFSS17500HPGM	17,500	.6890	3,740	.1472	V
KTFSS17600HPGM	17,600	.6929	3,760	.1480	V
KTFSS17700HPGM	17,700	.6969	3,770	.1484	V
KTFSS17800HPGM	17,800	.7008	3,790	.1492	V
KTFSS17859HPGM	17,859	.7031	3,800	.1496	V
KTFSS17900HPGM	17,900	.7047	3,810	.1500	V
KTFSS18000HPGM	18,000	.7087	3,890	.1531	W
KTFSS18100HPGM	18,100	.7126	3,910	.1539	W
KTFSS18200HPGM	18,200	.7165	3,930	.1547	W
KTFSS18258HPGM	18,258	.7188	3,940	.1551	W
KTFSS18300HPGM	18,300	.7205	3,940	.1551	W
KTFSS18400HPGM	18,400	.7244	3,960	.1559	W
KTFSS18500HPGM	18,500	.7283	3,980	.1567	W
KTFSS18600HPGM	18,600	.7323	3,990	.1571	W
KTFSS18654HPGM	18,654	.7344	4,000	.1575	W
KTFSS18700HPGM	18,700	.7362	4,010	.1579	W
KTFSS18800HPGM	18,800	.7402	4,030	.1587	W
KTFSS18900HPGM	18,900	.7441	4,040	.1591	W
KTFSS19000HPGM	19,000	.7480	4,070	.1602	X
KTFSS19050HPGM	19,050	.7500	4,080	.1606	X
KTFSS19100HPGM	19,100	.7520	4,090	.1610	X
KTFSS19200HPGM	19,200	.7559	4,100	.1614	X
KTFSS19228HPGM	19,228	.7570	4,110	.1618	X
KTFSS19253HPGM *	19,253	.7580	4,110	.1618	X
KTFSS19279HPGM	19,279	.7590	4,120	.1622	X
KTFSS19300HPGM	19,300	.7598	4,120	.1622	X
KTFSS19355HPGM *	19,355	.7620	4,130	.1626	X

(continued)

(KenTIP FS Inserts • HPG KCP15A™ • No Internal Coolant Channels — continued)

P ● M K ○ N S H

● first choice
○ alternate choice

KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS19400HPGM	19,400	.7638	4,140	.1630	X
KTFSS19446HPGM	19,446	.7656	4,140	.1630	X
KTFSS19460HPGM	19,460	.7661	4,150	.1634	X
KTFSS19500HPGM	19,500	.7677	4,150	.1634	X
KTFSS19600HPGM	19,600	.7717	4,170	.1642	X
KTFSS19700HPGM	19,700	.7756	4,190	.1650	X
KTFSS19800HPGM	19,800	.7795	4,200	.1654	X
KTFSS19845HPGM	19,845	.7813	4,210	.1657	X
KTFSS19900HPGM	19,900	.7835	4,220	.1661	X
KTFSS20000HPGM	20,000	.7874	4,310	.1697	Y
KTFSS20100HPGM	20,100	.7913	4,320	.1701	Y
KTFSS20200HPGM	20,200	.7953	4,340	.1709	Y
KTFSS20241HPGM *	20,241	.7969	4,350	.1713	Y
KTFSS20300HPGM	20,300	.7992	4,360	.1717	Y
KTFSS20500HPGM	20,500	.8071	4,390	.1728	Y
KTFSS20600HPGM	20,600	.8110	4,410	.1736	Y
KTFSS20638HPGM	20,638	.8125	4,410	.1736	Y
KTFSS20700HPGM *	20,700	.8150	4,420	.1740	Y
KTFSS20800HPGM	20,800	.8189	4,440	.1748	Y
KTFSS20900HPGM *	20,900	.8228	4,460	.1756	Y
KTFSS20990HPGM *	20,990	.8264	4,470	.1760	Y
KTFSS21000HPGM	21,000	.8268	4,480	.1764	Z
KTFSS21100HPGM *	21,100	.8307	4,500	.1772	Z
KTFSS21200HPGM	21,200	.8346	4,510	.1776	Z
KTFSS21300HPGM *	21,300	.8386	4,530	.1783	Z
KTFSS21400HPGM *	21,400	.8425	4,550	.1791	Z
KTFSS21433HPGM	21,432	.8438	4,550	.1791	Z
KTFSS21500HPGM	21,500	.8465	4,560	.1795	Z
KTFSS21700HPGM	21,700	.8543	4,600	.1811	Z
KTFSS21800HPGM *	21,800	.8583	4,610	.1815	Z
KTFSS21829HPGM	21,829	.8594	4,620	.1819	Z
KTFSS21900HPGM *	21,900	.8622	4,630	.1823	Z
KTFSS22000HPGM	22,000	.8661	4,720	.1858	ZA
KTFSS22100HPGM *	22,100	.8701	4,730	.1862	ZA
KTFSS22200HPGM *	22,200	.8740	4,750	.1870	ZA
KTFSS22225HPGM	22,225	.8750	4,750	.1870	ZA
KTFSS22400HPGM *	22,400	.8819	4,780	.1882	ZA
KTFSS22500HPGM	22,500	.8858	4,800	.1890	ZA
KTFSS22600HPGM *	22,600	.8898	4,820	.1898	ZA
KTFSS22700HPGM *	22,700	.8937	4,830	.1902	ZA

KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS22800HPGM	22,800	.8976	4,850	.1909	ZA
KTFSS22900HPGM *	22,900	.9016	4,870	.1917	ZA
KTFSS23000HPGM	23,000	.9055	4,890	.1925	ZB
KTFSS23100HPGM	23,100	.9094	4,910	.1933	ZB
KTFSS23200HPGM *	23,200	.9134	4,920	.1937	ZB
KTFSS23300HPGM	23,300	.9173	4,940	.1945	ZB
KTFSS23400HPGM *	23,400	.9213	4,960	.1953	ZB
KTFSS23416HPGM	23,416	.9219	4,960	.1953	ZB
KTFSS23500HPGM	23,500	.9252	4,980	.1961	ZB
KTFSS23600HPGM *	23,600	.9291	4,990	.1965	ZB
KTFSS23700HPGM *	23,700	.9331	5,010	.1972	ZB
KTFSS23800HPGM *	23,800	.9370	5,030	.1980	ZB
KTFSS23813HPGM	23,812	.9375	5,030	.1980	ZB
KTFSS23900HPGM *	23,900	.9409	5,040	.1984	ZB
KTFSS24000HPGM	24,000	.9449	5,130	.2020	ZC
KTFSS24100HPGM *	24,100	.9488	5,140	.2024	ZC
KTFSS24200HPGM *	24,200	.9528	5,160	.2031	ZC
KTFSS24300HPGM	24,300	.9567	5,180	.2039	ZC
KTFSS24400HPGM *	24,400	.9606	5,190	.2043	ZC
KTFSS24500HPGM	24,500	.9646	5,210	.2051	ZC
KTFSS24600HPGM *	24,600	.9685	5,230	.2059	ZC
KTFSS24608HPGM	24,608	.9688	5,230	.2059	ZC
KTFSS24700HPGM *	24,700	.9724	5,240	.2063	ZC
KTFSS24800HPGM *	24,800	.9764	5,260	.2071	ZC
KTFSS24900HPGM *	24,900	.9803	5,280	.2079	ZC
KTFSS25000HPGM	25,000	.9843	5,300	.2087	ZD
KTFSS25100HPGM *	25,100	.9882	5,320	.2094	ZD
KTFSS25200HPGM *	25,200	.9921	5,330	.2098	ZD
KTFSS25250HPGM *	25,250	.9941	5,340	.2102	ZD
KTFSS25300HPGM *	25,300	.9961	5,350	.2106	ZD
KTFSS25400HPGM	25,400	1.0000	5,370	.2114	ZD
KTFSS25500HPGM *	25,500	1.0039	5,380	.2118	ZD
KTFSS25540HPGM	25,540	1.0055	5,390	.2122	ZD
KTFSS25600HPGM	25,600	1.0079	5,400	.2126	ZD
KTFSS25679HPGM	25,679	1.0110	5,410	.2130	ZD
KTFSS25700HPGM *	25,700	1.0118	5,420	.2134	ZD
KTFSS25800HPGM *	25,800	1.0157	5,440	.2142	ZD
KTFSS25806HPGM	25,806	1.0160	5,440	.2142	ZD
KTFSS25900HPGM *	25,900	1.0197	5,450	.2146	ZD
KTFSS26000HPGM	26,000	1.0236	5,470	.2154	ZD

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Products with D1 ≥ 20mm will be available by January 1st, 2018.

KenTIP FS HPG Geometry

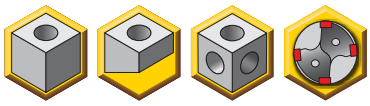
Tolerance

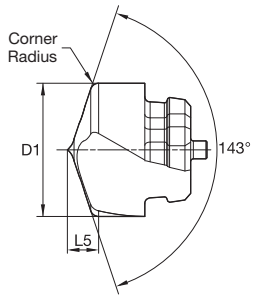
D1 metric	tolerance k8
6	0,000/+0,018
>6–10	0,000/+0,022
>10–18	0,000/+0,027
>18–26	0,000/+0,033

Modular Drill Carbide Insert Blades • KenTIP™ FS • HPG Geometry • Grade KCP15A™ • No Internal Coolant Channels on the Insert • Through Coolant on the Body • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate per Rev						
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0
P	1	90	**130**	170	mm/r	0,11–0,22	0,13–0,28	0,14–0,34	0,17–0,43	0,19–0,50	0,25–0,53
	2	100	**140**	180	mm/r	0,11–0,26	0,13–0,32	0,14–0,36	0,17–0,40	0,19–0,50	0,25–0,53
	3	60	**100**	130	mm/r	0,11–0,31	0,12–0,39	0,16–0,41	0,21–0,51	0,23–0,51	0,30–0,56
	4	60	**100**	130	mm/r	0,11–0,31	0,12–0,39	0,16–0,41	0,17–0,51	0,18–0,51	0,23–0,51
	5	60	**70**	100	mm/r	0,10–0,22	0,10–0,25	0,10–0,28	0,14–0,32	0,16–0,35	0,20–0,46
	6	60	**70**	70	mm/r	0,10–0,22	0,10–0,25	0,10–0,28	0,14–0,32	0,16–0,35	0,20–0,46
K	1	80	**120**	170	mm/r	0,15–0,32	0,16–0,35	0,17–0,39	0,21–0,46	0,25–0,53	0,31–0,65
	2	80	**110**	120	mm/r	0,15–0,32	0,16–0,33	0,17–0,36	0,21–0,45	0,25–0,53	0,31–0,65
	3	50	**80**	100	mm/r	0,16–0,33	0,17–0,36	0,18–0,40	0,20–0,45	0,21–0,48	0,23–0,53

- HPC-point geometry for all cast irons.
- 4-margin lands ensure hole straightness.
- Large corner radius prevents chipping and reduces exit burs when drilling through holes.
- KC7410™ is an AlCr PVD multilayer coating.
- Superb wear resistance.
- With internal coolant.







HPC Geometry

KenTIP FS Inserts • HPC KC7410 • With Internal Coolant Channels

P M K● N S H

KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST06000HPCM	6,000	.2362	1,410	.0555	A
KTFST06200HPCM	6,200	.2441	1,440	.0567	A
KTFST06350HPCM	6,350	.2500	1,490	.0587	B
KTFST06500HPCM	6,500	.2559	1,510	.0594	B
KTFST06530HPCM	6,530	.2571	1,520	.0598	B
KTFST06700HPCM	6,700	.2638	1,570	.0618	C
KTFST06746HPCM	6,746	.2656	1,570	.0618	C
KTFST06800HPCM	6,800	.2677	1,580	.0622	C
KTFST07000HPCM	7,000	.2756	1,640	.0646	D
KTFST07145HPCM	7,145	.2813	1,670	.0657	D
KTFST07300HPCM	7,300	.2874	1,690	.0665	D
KTFST07500HPCM	7,500	.2953	1,760	.0693	E
KTFST07600HPCM	7,600	.2992	1,780	.0701	E
KTFST07800HPCM	7,800	.3071	1,810	.0713	E
KTFST07938HPCM	7,938	.3125	1,830	.0720	E
KTFST08000HPCM	8,000	.3150	1,880	.0740	F
KTFST08100HPCM *	8,100	.3189	1,890	.0744	F
KTFST08204HPCM *	8,204	.3230	1,910	.0752	F
KTFST08500HPCM	8,500	.3346	1,990	.0783	G
KTFST08600HPCM *	8,600	.3386	2,010	.0791	G
KTFST08700HPCM *	8,700	.3425	2,030	.0799	G
KTFST08733HPCM *	8,732	.3438	2,030	.0799	G
KTFST09000HPCM	9,000	.3543	2,110	.0831	H
KTFST09100HPCM *	9,100	.3583	2,130	.0839	H
KTFST09500HPCM	9,500	.3740	2,230	.0878	I
KTFST09525HPCM	9,525	.3750	2,230	.0878	I
KTFST09600HPCM *	9,600	.3780	2,250	.0886	I
KTFST09700HPCM *	9,700	.3819	2,260	.0890	I
KTFST09800HPCM *	9,800	.3858	2,280	.0898	I
KTFST09921HPCM	9,921	.3906	2,300	.0906	I
KTFST10000HPCM	10,000	.3937	2,350	.0925	J
KTFST10023HPCM *	10,023	.3946	2,350	.0925	J
KTFST10200HPCM	10,200	.4016	2,380	.0937	J
KTFST10300HPCM	10,300	.4055	2,400	.0945	J
KTFST10320HPCM *	10,320	.4063	2,400	.0945	J
KTFST10500HPCM	10,500	.4134	2,460	.0969	K

P M K● N S H

● first choice
○ alternate choice

KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST10600HPCM *	10,600	.4173	2,480	.0976	K
KTFST10700HPCM *	10,700	.4213	2,500	.0984	K
KTFST10716HPCM	10,716	.4219	2,500	.0984	K
KTFST10800HPCM	10,800	.4252	2,510	.0988	K
KTFST11000HPCM	11,000	.4331	2,580	.1016	L
KTFST11100HPCM	11,100	.4370	2,600	.1024	L
KTFST11113HPCM	11,112	.4375	2,600	.1024	L
KTFST11400HPCM	11,400	.4488	2,650	.1043	L
KTFST11500HPCM	11,500	.4528	2,700	.1063	M
KTFST11800HPCM *	11,800	.4646	2,750	.1083	M
KTFST11908HPCM *	11,908	.4688	2,770	.1091	M
KTFST12000HPCM	12,000	.4724	2,820	.1110	N
KTFST12304HPCM *	12,304	.4844	2,870	.1130	N
KTFST12500HPCM	12,500	.4921	2,930	.1154	O
KTFST12700HPCM	12,700	.5000	2,970	.1169	O
KTFST13000HPCM	13,000	.5118	3,050	.1201	P
KTFST13096HPCM	13,096	.5156	3,070	.1209	P
KTFST13200HPCM *	13,200	.5197	3,080	.1213	P
KTFST13300HPCM	13,300	.5236	3,100	.1220	P
KTFST13492HPCM	13,492	.5312	3,130	.1232	P
KTFST13500HPCM	13,500	.5315	3,170	.1248	Q
KTFST13600HPCM	13,600	.5354	3,180	.1252	Q
KTFST13800HPCM	13,800	.5433	3,220	.1268	Q
KTFST13891HPCM	13,891	.5469	3,230	.1272	Q
KTFST14000HPCM	14,000	.5512	3,290	.1295	R
KTFST14100HPCM *	14,100	.5551	3,300	.1299	R
KTFST14288HPCM	14,288	.5625	3,330	.1311	R
KTFST14500HPCM	14,500	.5709	3,400	.1339	S
KTFST14600HPCM *	14,600	.5748	3,420	.1346	S
KTFST14684HPCM *	14,684	.5781	3,430	.1350	S
KTFST14800HPCM *	14,800	.5827	3,450	.1358	S
KTFST15000HPCM	15,000	.5906	3,520	.1386	T
KTFST15083HPCM *	15,082	.5938	3,530	.1390	T
KTFST15100HPCM	15,100	.5945	3,540	.1394	T
KTFST15200HPCM *	15,200	.5984	3,550	.1398	T
KTFST15300HPCM *	15,300	.6024	3,570	.1406	T

(continued)

(KenTIP FS Inserts • HPC KC7410™ • With Internal Coolant Channels — continued)



KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST15500HPCM	15,500	.6102	3,600	.1417	T
KTFST15600HPCM *	15,600	.6142	3,620	.1425	T
KTFST15800HPCM	15,800	.6220	3,650	.1437	T
KTFST15875HPCM *	15,875	.6250	3,670	.1445	T
KTFST16000HPCM	16,000	.6299	3,750	.1476	U
KTFST16100HPCM	16,100	.6339	3,770	.1484	U
KTFST16104HPCM *	16,104	.6340	3,770	.1484	U
KTFST16200HPCM *	16,200	.6378	3,790	.1492	U
KTFST16271HPCM *	16,271	.6406	3,800	.1496	U
KTFST16300HPCM *	16,300	.6417	3,800	.1496	U
KTFST16500HPCM	16,500	.6496	3,840	.1512	U
KTFST16550HPCM *	16,550	.6516	3,850	.1516	U
KTFST16600HPCM	16,600	.6535	3,850	.1516	U
KTFST16670HPCM	16,670	.6563	3,870	.1524	U
KTFST17000HPCM	17,000	.6693	3,990	.1571	V
KTFST17066HPCM *	17,066	.6719	4,000	.1575	V
KTFST17100HPCM *	17,100	.6732	4,010	.1579	V
KTFST17200HPCM	17,200	.6772	4,020	.1583	V
KTFST17300HPCM	17,300	.6811	4,040	.1591	V
KTFST17463HPCM *	17,462	.6875	4,070	.1602	V
KTFST17500HPCM	17,500	.6890	4,070	.1602	V
KTFST17550HPCM *	17,550	.6909	4,080	.1606	V
KTFST17600HPCM	17,600	.6929	4,090	.1610	V
KTFST17700HPCM *	17,700	.6969	4,110	.1618	V
KTFST17800HPCM	17,800	.7008	4,120	.1622	V
KTFST18000HPCM	18,000	.7087	4,220	.1661	W
KTFST18100HPCM *	18,100	.7126	4,240	.1669	W
KTFST18258HPCM *	18,258	.7188	4,270	.1681	W
KTFST18500HPCM	18,500	.7283	4,310	.1697	W
KTFST18600HPCM	18,600	.7323	4,320	.1701	W
KTFST18700HPCM *	18,700	.7362	4,340	.1709	W
KTFST19000HPCM	19,000	.7480	4,460	.1756	X



● first choice
○ alternate choice

KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST19050HPCM	19,050	.7500	4,470	.1760	X
KTFST19279HPCM *	19,279	.7590	4,500	.1772	X
KTFST19446HPCM *	19,446	.7656	4,530	.1783	X
KTFST19500HPCM	19,500	.7677	4,540	.1787	X
KTFST19800HPCM *	19,800	.7795	4,590	.1807	X
KTFST20000HPCM	20,000	.7874	4,690	.1846	Y
KTFST20241HPCM	20,241	.7969	4,730	.1862	Y
KTFST20300HPCM *	20,300	.7992	4,740	.1866	Y
KTFST20500HPCM	20,500	.8071	4,780	.1882	Y
KTFST20638HPCM	20,638	.8125	4,800	.1890	Y
KTFST21000HPCM	21,000	.8268	4,930	.1941	Z
KTFST21433HPCM *	21,432	.8438	5,000	.1969	Z
KTFST21500HPCM *	21,500	.8465	5,010	.1972	Z
KTFST22000HPCM	22,000	.8661	5,160	.2031	ZA
KTFST22225HPCM *	22,225	.8750	5,200	.2047	ZA
KTFST22440HPCM *	22,440	.8835	5,240	.2063	ZA
KTFST22500HPCM *	22,500	.8858	5,250	.2067	ZA
KTFST23000HPCM	23,000	.9055	5,400	.2126	ZB
KTFST23416HPCM *	23,416	.9219	5,470	.2154	ZB
KTFST23500HPCM *	23,500	.9252	5,480	.2157	ZB
KTFST23813HPCM *	23,812	.9375	5,530	.2177	ZB
KTFST24000HPCM	24,000	.9449	5,630	.2217	ZC
KTFST24500HPCM *	24,500	.9646	5,720	.2252	ZC
KTFST24608HPCM *	24,608	.9688	5,730	.2256	ZC
KTFST25000HPCM	25,000	.9843	5,870	.2311	ZD
KTFST25070HPCM *	25,070	.9870	5,880	.2315	ZD
KTFST25400HPCM	25,400	1.0000	5,930	.2335	ZD
KTFST25500HPCM *	25,500	1.0039	5,950	.2343	ZD
KTFST25679HPCM *	25,679	1.0110	5,980	.2354	ZD
KTFST25806HPCM *	25,806	1.0160	6,000	.2362	ZD
KTFST26000HPCM	26,000	1.0236	6,030	.2374	ZD

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Products with D1 ≤ 19,999mm will be available in November 2017.
Products with D1 ≥ 20mm will be available by January 1st, 2018.

KenTIP FS HPC Geometry
Tolerance

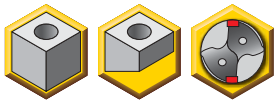
D1 metric	tolerance k8
6	0,000/+0,018
>6–10	0,000/+0,022
>10–18	0,000/+0,027
>18–26	0,000/+0,033

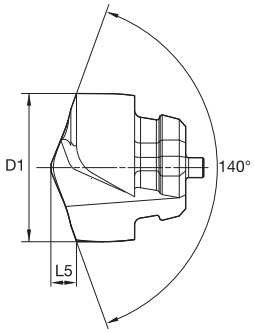
Application Data

Modular Drill Carbide Insert Blades • KenTIP™ FS • HPC Geometry • Grade KC7410™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate per Rev	8,0	10,0	12,0	14,0	16,0	20,0
K	1	100	**175**	200	mm/r	0,14–0,34	0,16–0,39	0,19–0,45	0,23–0,50	0,26–0,58	0,3–0,64
	2	100	**160**	180	mm/r	0,14–0,34	0,16–0,39	0,19–0,45	0,23–0,50	0,26–0,58	0,3–0,64
	3	70	**85**	120	mm/r	0,13–0,27	0,15–0,33	0,17–0,37	0,19–0,42	0,21–0,46	0,28–0,54

- HPL-point geometry for stainless steels.
- Forms 2 chips per cutting edge for an uninterrupted and smooth chip flow.
- KCMS15™ is an AlTiN PVD monolayer coating.
- Prevents edge built-up, which delivers superior hole quality.
- Very high metal removal rates.
- With internal coolant.

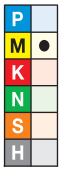






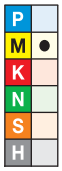
HPL Geometry

KenTIP FS Inserts • HPL KCMS15 • With Internal Coolant Channels



● first choice
○ alternate choice

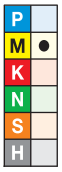
KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST06000HPLM	6,000	.2362	1,340	.0528	A
KTFST06350HPLM	6,350	.2500	1,400	.0551	B
KTFST06500HPLM	6,500	.2559	1,430	.0563	B
KTFST06629HPLM	6,629	.2610	1,460	.0575	C
KTFST06800HPLM	6,800	.2677	1,490	.0587	C
KTFST07000HPLM	7,000	.2756	1,530	.0602	D
KTFST07500HPLM	7,500	.2953	1,630	.0642	E
KTFST07800HPLM	7,800	.3071	1,680	.0661	E
KTFST07938HPLM	7,938	.3125	1,710	.0673	E
KTFST08000HPLM	8,000	.3150	1,720	.0677	F
KTFST08100HPLM *	8,100	.3189	1,740	.0685	F
KTFST08204HPLM *	8,204	.3230	1,760	.0693	F
KTFST08334HPLM *	8,334	.3281	1,790	.0705	F
KTFST08400HPLM *	8,400	.3307	1,800	.0709	F
KTFST08500HPLM	8,500	.3346	1,820	.0717	G
KTFST08600HPLM *	8,600	.3386	1,840	.0724	G
KTFST08700HPLM *	8,700	.3425	1,860	.0732	G
KTFST08800HPLM *	8,800	.3465	1,880	.0740	G
KTFST08900HPLM	8,900	.3504	1,900	.0748	G
KTFST09000HPLM	9,000	.3543	1,930	.0760	H
KTFST09100HPLM *	9,100	.3583	1,950	.0768	H
KTFST09200HPLM	9,200	.3622	1,970	.0776	H
KTFST09400HPLM *	9,400	.3701	2,000	.0787	H
KTFST09500HPLM	9,500	.3740	2,030	.0799	I
KTFST09558HPLM *	9,558	.3763	2,040	.0803	I
KTFST09600HPLM	9,600	.3780	2,050	.0807	I
KTFST09700HPLM *	9,700	.3819	2,070	.0815	I
KTFST09800HPLM	9,800	.3858	2,090	.0823	I
KTFST09900HPLM	9,900	.3898	2,110	.0831	I
KTFST10000HPLM	10,000	.3937	2,130	.0839	J
KTFST10100HPLM	10,100	.3976	2,150	.0846	J
KTFST10200HPLM	10,200	.4016	2,170	.0854	J
KTFST10300HPLM	10,300	.4055	2,190	.0862	J
KTFST10320HPLM	10,320	.4063	2,190	.0862	J
KTFST10400HPLM *	10,400	.4094	2,210	.0870	J
KTFST10500HPLM	10,500	.4134	2,230	.0878	K



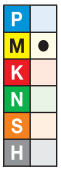
KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST10600HPLM *	10,600	.4173	2,250	.0886	K
KTFST10700HPLM	10,700	.4213	2,270	.0894	K
KTFST10800HPLM *	10,800	.4252	2,290	.0902	K
KTFST10900HPLM *	10,900	.4291	2,310	.0909	K
KTFST11000HPLM	11,000	.4331	2,340	.0921	L
KTFST11100HPLM	11,100	.4370	2,350	.0925	L
KTFST11113HPLM	11,112	.4375	2,360	.0929	L
KTFST11200HPLM *	11,200	.4409	2,370	.0933	L
KTFST11400HPLM *	11,400	.4488	2,410	.0949	L
KTFST11500HPLM	11,500	.4528	2,440	.0961	M
KTFST11600HPLM *	11,600	.4567	2,460	.0969	M
KTFST11800HPLM *	11,800	.4646	2,490	.0980	M
KTFST11908HPLM	11,908	.4688	2,520	.0992	M
KTFST12000HPLM	12,000	.4724	2,540	.1000	N
KTFST12200HPLM *	12,200	.4803	2,580	.1016	N
KTFST12304HPLM	12,304	.4844	2,600	.1024	N
KTFST12500HPLM	12,500	.4921	2,640	.1039	O
KTFST12700HPLM	12,700	.5000	2,680	.1055	O
KTFST12800HPLM *	12,800	.5039	2,700	.1063	O
KTFST12900HPLM *	12,900	.5079	2,720	.1071	O
KTFST13000HPLM	13,000	.5118	2,740	.1079	P
KTFST13096HPLM	13,096	.5156	2,760	.1087	P
KTFST13200HPLM *	13,200	.5197	2,780	.1094	P
KTFST13492HPLM *	13,492	.5312	2,840	.1118	P
KTFST13500HPLM	13,500	.5315	2,840	.1118	Q
KTFST13800HPLM *	13,800	.5433	2,900	.1142	Q
KTFST13891HPLM *	13,891	.5469	2,920	.1150	Q
KTFST13896HPLM *	13,896	.5471	2,920	.1150	Q
KTFST14000HPLM	14,000	.5512	2,950	.1161	R
KTFST14100HPLM *	14,100	.5551	2,960	.1165	R
KTFST14200HPLM *	14,200	.5591	2,980	.1173	R
KTFST14288HPLM	14,288	.5625	3,000	.1181	R
KTFST14300HPLM	14,300	.5630	3,000	.1181	R
KTFST14400HPLM *	14,400	.5669	3,020	.1189	R
KTFST14500HPLM	14,500	.5709	3,050	.1201	S
KTFST14684HPLM *	14,684	.5781	3,080	.1213	S

(continued)

(KenTIP FS Inserts • HPL KCMS15™ • With Internal Coolant Channels — continued)



KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST14800HPLM *	14,800	.5827	3,100	.1220	S
KTFST15000HPLM	15,000	.5906	3,150	.1240	T
KTFST15100HPLM *	15,100	.5945	3,170	.1248	T
KTFST15200HPLM *	15,200	.5984	3,190	.1256	T
KTFST15500HPLM	15,500	.6102	3,240	.1276	T
KTFST15875HPLM	15,875	.6250	3,310	.1303	T
KTFST16000HPLM	16,000	.6299	3,350	.1319	U
KTFST16100HPLM *	16,100	.6339	3,370	.1327	U
KTFST16104HPLM	16,104	.6340	3,370	.1327	U
KTFST16150HPLM	16,150	.6358	3,380	.1331	U
KTFST16271HPLM	16,271	.6406	3,400	.1339	U
KTFST16500HPLM	16,500	.6496	3,450	.1358	U
KTFST16670HPLM	16,670	.6563	3,480	.1370	U
KTFST17000HPLM	17,000	.6693	3,550	.1398	V
KTFST17463HPLM *	17,462	.6875	3,640	.1433	V
KTFST17480HPLM	17,480	.6882	3,640	.1433	V
KTFST17500HPLM	17,500	.6890	3,650	.1437	V
KTFST17700HPLM *	17,700	.6969	3,690	.1453	V
KTFST18000HPLM	18,000	.7087	3,760	.1480	W
KTFST18258HPLM *	18,258	.7188	3,800	.1496	W
KTFST18500HPLM	18,500	.7283	3,850	.1516	W
KTFST18654HPLM *	18,654	.7344	3,880	.1528	W
KTFST19000HPLM	19,000	.7480	3,960	.1559	X
KTFST19050HPLM	19,050	.7500	3,970	.1563	X
KTFST19200HPLM *	19,200	.7559	3,990	.1571	X
KTFST19228HPLM *	19,228	.7570	4,000	.1575	X
KTFST19253HPLM	19,253	.7580	4,000	.1575	X
KTFST19279HPLM	19,279	.7590	4,010	.1579	X



● first choice
○ alternate choice

KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST19355HPLM *	19,355	.7620	4,020	.1583	X
KTFST19446HPLM	19,446	.7656	4,040	.1591	X
KTFST19460HPLM *	19,460	.7661	4,040	.1591	X
KTFST19500HPLM	19,500	.7677	4,050	.1594	X
KTFST19845HPLM	19,845	.7813	4,120	.1622	X
KTFST19850HPLM *	19,850	.7815	4,120	.1622	X
KTFST20000HPLM	20,000	.7874	4,160	.1638	Y
KTFST20500HPLM	20,500	.8071	4,250	.1673	Y
KTFST20638HPLM	20,638	.8125	4,280	.1685	Y
KTFST21000HPLM	21,000	.8268	4,360	.1717	Z
KTFST21150HPLM *	21,150	.8327	4,390	.1728	Z
KTFST21500HPLM	21,500	.8465	4,450	.1752	Z
KTFST22000HPLM	22,000	.8661	4,560	.1795	ZA
KTFST22225HPLM	22,225	.8750	4,600	.1811	ZA
KTFST22500HPLM	22,500	.8858	4,660	.1835	ZA
KTFST23000HPLM	23,000	.9055	4,760	.1874	ZB
KTFST23500HPLM	23,500	.9252	4,860	.1913	ZB
KTFST23813HPLM	23,812	.9375	4,920	.1937	ZB
KTFST24000HPLM	24,000	.9449	4,960	.1953	ZC
KTFST24500HPLM	24,500	.9646	5,060	.1992	ZC
KTFST25000HPLM	25,000	.9843	5,170	.2035	ZD
KTFST25400HPLM	25,400	1.0000	5,240	.2063	ZD
KTFST25500HPLM	25,500	1.0039	5,260	.2071	ZD
KTFST25600HPLM	25,600	1.0079	5,280	.2079	ZD
KTFST25650HPLM	25,650	1.0098	5,290	.2083	ZD
KTFST25679HPLM	25,679	1.0110	5,290	.2083	ZD
KTFST25806HPLM	25,806	1.0160	5,320	.2094	ZD
KTFST26000HPLM	26,000	1.0236	5,370	.2114	ZD

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Products with D1 ≥ 20mm will be available by January 1st, 2018.

KenTIP FS HPL Geometry

Tolerance

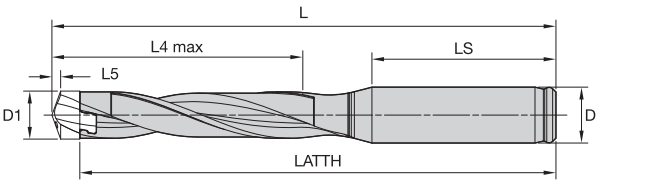
D1 metric	tolerance k8
6	0,000/+0,018
>6–10	0,000/+0,022
>10–18	0,000/+0,027
>18–26	0,000/+0,033

Application Data

Modular Drill Carbide Insert Blades • KenTIP™ FS • HPL Geometry • Grade KCMS15™ • Through Coolant • Metric

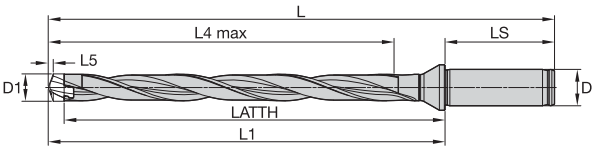
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate per Rev	8,0	10,0	12,0	14,0	16,0	20,0
M	1	50	**60**	90	mm/r	0,08–0,15	0,09–0,18	0,11–0,20	0,12–0,22	0,13–0,24	0,16–0,28
	2	30	**60**	90	mm/r	0,08–0,15	0,09–0,18	0,11–0,20	0,12–0,22	0,13–0,24	0,16–0,28
	3	20	**50**	60	mm/r	0,08–0,15	0,09–0,18	0,11–0,20	0,12–0,22	0,13–0,24	0,16–0,28

- KenTIP FS toolholder with straight cylindrical round metric shank.
- 12 x D holders feature a flanged shank for improved stiffness.
- Multi-coolant provides an advanced coolant channel layout with four coolant exits in each holder.
- Each tool body is shipped with related insert wrench.

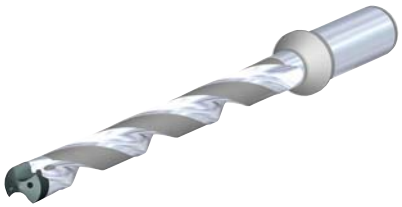


Straight Round Shank (SS Shank)





Flanged Round Shank (SF Shank)

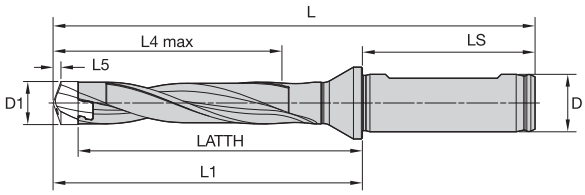


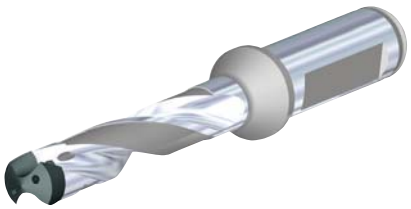
KenTIP FS Round Shank • 1.5 x D/3 x D/5 x D/8 x D/12 x D • Metric

1.5 x D SS	3 x D SS	5 x D SS	8 x D SS	12 x D SF	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTFS060R01SS8M	KTFS060R03SS8M	KTFS060R05SS8M	KTFS060R08SS8M	KTFS060R12SF12M	6,000	.2363	6,299	.2480	A	170.319
KTFS063R01SS8M	KTFS063R03SS8M	KTFS063R05SS8M	KTFS063R08SS8M	KTFS063R12SF12M	6,300	.2481	6,599	.2598	B	170.319
KTFS066R01SS8M	KTFS066R03SS8M	KTFS066R05SS8M	KTFS066R08SS8M	KTFS066R12SF12M	6,600	.2599	6,999	.2755	C	170.319
KTFS070R01SS8M	KTFS070R03SS8M	KTFS070R05SS8M	KTFS070R08SS8M	KTFS070R12SF12M	7,000	.2756	7,499	.2952	D	170.319
KTFS075R01SS8M	KTFS075R03SS8M	KTFS075R05SS8M	KTFS075R08SS8M	KTFS075R12SF12M	7,500	.2953	7,999	.3149	E	170.319
KTFS080R01SS10M	KTFS080R03SS10M	KTFS080R05SS10M	KTFS080R08SS10M	KTFS080R12SF12M	8,000	.3150	8,499	.3346	F	170.306
KTFS085R01SS10M	KTFS085R03SS10M	KTFS085R05SS10M	KTFS085R08SS10M	KTFS085R12SF12M	8,500	.3346	8,999	.3543	G	170.306
KTFS090R01SS10M	KTFS090R03SS10M	KTFS090R05SS10M	KTFS090R08SS10M	KTFS090R12SF12M	9,000	.3544	9,499	.3739	H	170.306
KTFS095R01SS10M	KTFS095R03SS10M	KTFS095R05SS10M	KTFS095R08SS10M	KTFS095R12SF12M	9,500	.3740	9,999	.3936	I	170.306
KTFS100R01SS12M	KTFS100R03SS12M	KTFS100R05SS12M	KTFS100R08SS12M	KTFS100R12SF16M	10,000	.3937	10,499	.4133	J	170.307
KTFS105R01SS12M	KTFS105R03SS12M	KTFS105R05SS12M	KTFS105R08SS12M	KTFS105R12SF16M	10,500	.4134	10,999	.4330	K	170.307
KTFS110R01SS12M	KTFS110R03SS12M	KTFS110R05SS12M	KTFS110R08SS12M	KTFS110R12SF16M	11,000	.4331	11,499	.4527	L	170.307
KTFS115R01SS12M	KTFS115R03SS12M	KTFS115R05SS12M	KTFS115R08SS12M	KTFS115R12SF16M	11,500	.4528	11,999	.4724	M	170.307
KTFS120R01SS14M	KTFS120R03SS14M	KTFS120R05SS14M	KTFS120R08SS14M	KTFS120R12SF16M	12,000	.4725	12,499	.4921	N	170.308
KTFS125R01SS14M	KTFS125R03SS14M	KTFS125R05SS14M	KTFS125R08SS14M	KTFS125R12SF16M	12,500	.4922	12,999	.5117	O	170.308
KTFS130R01SS14M	KTFS130R03SS14M	KTFS130R05SS14M	KTFS130R08SS14M	KTFS130R12SF16M	13,000	.5118	13,499	.5314	P	170.308
KTFS135R01SS14M	KTFS135R03SS14M	KTFS135R05SS14M	KTFS135R08SS14M	KTFS135R12SF16M	13,500	.5315	13,999	.5511	Q	170.308
KTFS140R01SS16M	KTFS140R03SS16M	KTFS140R05SS16M	KTFS140R08SS16M	KTFS140R12SF16M	14,000	.5512	14,499	.5708	R	170.309
KTFS145R01SS16M	KTFS145R03SS16M	KTFS145R05SS16M	KTFS145R08SS16M	KTFS145R12SF16M	14,500	.5709	14,999	.5905	S	170.309
KTFS150R01SS16M	KTFS150R03SS16M	KTFS150R05SS16M	KTFS150R08SS16M	KTFS150R12SF20M	15,000	.5906	15,999	.6299	T	170.309
KTFS160R01SS16M	KTFS160R03SS16M	KTFS160R05SS16M	KTFS160R08SS16M	KTFS160R12SF20M	16,000	.6300	16,999	.6692	U	170.309
KTFS170R01SS20M	KTFS170R03SS20M	KTFS170R05SS20M	KTFS170R08SS20M	KTFS170R12SF20M	17,000	.6693	17,999	.7086	V	170.314
KTFS180R01SS20M	KTFS180R03SS20M	KTFS180R05SS20M	KTFS180R08SS20M	KTFS180R12SF25M	18,000	.7087	18,999	.7479	W	170.314
KTFS190R01SS20M	KTFS190R03SS20M	KTFS190R05SS20M	KTFS190R08SS20M	KTFS190R12SF25M	19,000	.7480	19,999	.7873	X	170.314

- KenTIP FS toolholder with flanged shank and 90° flat metric shank.
- Multi-coolant provides an advanced coolant channel layout with four coolant exits in each holder.
- Each tool body is shipped with related insert wrench.







Flanged Shank with Flat (SCF Shank)

KenTIP FS Flanged Shank with Flat • 1.5 x D/3 x D/5 x D/8 x D/12 x D • Metric

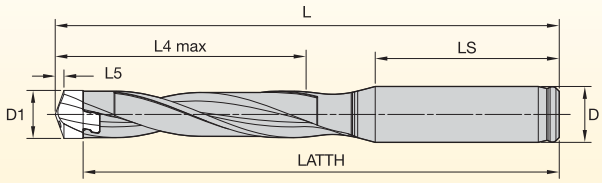
1.5 x D SCF	3 x D SCF	5 x D SCF	8 x D SCF	12 x D SCF	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
–	KTFS080R03SCF12M	KTFS080R05SCF12M	KTFS080R08SCF12M	–	8,000	.3150	8,499	.3346	F	170.306
–	KTFS085R03SCF12M	KTFS085R05SCF12M	KTFS085R08SCF12M	–	8,500	.3346	8,999	.3543	G	170.306
–	KTFS090R03SCF12M	KTFS090R05SCF12M	KTFS090R08SCF12M	–	9,000	.3544	9,499	.3739	H	170.306
–	KTFS095R03SCF12M	KTFS095R05SCF12M	KTFS095R08SCF12M	–	9,500	.3740	9,999	.3936	I	170.306
–	KTFS100R03SCF16M	KTFS100R05SCF16M	KTFS100R08SCF16M	–	10,000	.3937	10,499	.4133	J	170.307
–	KTFS105R03SCF16M	KTFS105R05SCF16M	KTFS105R08SCF16M	–	10,500	.4134	10,999	.4330	K	170.307
–	KTFS110R03SCF16M	KTFS110R05SCF16M	KTFS110R08SCF16M	–	11,000	.4331	11,499	.4527	L	170.307
–	KTFS115R03SCF16M	KTFS115R05SCF16M	KTFS115R08SCF16M	–	11,500	.4528	11,999	.4724	M	170.307
–	KTFS120R03SCF16M	KTFS120R05SCF16M	KTFS120R08SCF16M	–	12,000	.4725	12,499	.4921	N	170.308
–	KTFS125R03SCF16M	KTFS125R05SCF16M	KTFS125R08SCF16M	–	12,500	.4922	12,999	.5117	O	170.308
–	KTFS130R03SCF16M	KTFS130R05SCF16M	KTFS130R08SCF16M	–	13,000	.5118	13,499	.5314	P	170.308
–	KTFS135R03SCF16M	KTFS135R05SCF16M	KTFS135R08SCF16M	–	13,500	.5315	13,999	.5511	Q	170.308
–	KTFS140R03SCF16M	KTFS140R05SCF16M	KTFS140R08SCF16M	–	14,000	.5512	14,499	.5708	R	170.309
–	KTFS145R03SCF16M	KTFS145R05SCF16M	KTFS145R08SCF16M	–	14,500	.5709	14,999	.5905	S	170.309
–	KTFS150R03SCF20M	KTFS150R05SCF20M	KTFS150R08SCF20M	–	15,000	.5906	15,999	.6299	T	170.309
–	KTFS160R03SCF20M	KTFS160R05SCF20M	KTFS160R08SCF20M	–	16,000	.6300	16,999	.6692	U	170.309
–	KTFS170R03SCF20M	KTFS170R05SCF20M	KTFS170R08SCF20M	–	17,000	.6693	17,999	.7086	V	170.314
–	KTFS180R03SCF25M	KTFS180R05SCF25M	KTFS180R08SCF25M	–	18,000	.7087	18,999	.7479	W	170.314
–	KTFS190R03SCF25M	KTFS190R05SCF25M	KTFS190R08SCF25M	–	19,000	.7480	19,999	.7873	X	170.314
KTFS200R01SCF25M	KTFS200R03SCF25M	KTFS200R05SCF25M	KTFS200R08SCF25M	KTFS200R12SCF25M	20,000	.7874	20,999	.8267	Y	170.314
KTFS210R01SCF25M	KTFS210R03SCF25M	KTFS210R05SCF25M	KTFS210R08SCF25M	KTFS210R12SCF25M	21,000	.8268	21,999	.8661	Z	170.314
KTFS220R01SCF25M	KTFS220R03SCF25M	KTFS220R05SCF25M	KTFS220R08SCF25M	KTFS220R12SCF25M	22,000	.8662	22,999	.9054	ZA	170.314
KTFS230R01SCF25M	KTFS230R03SCF25M	KTFS230R05SCF25M	KTFS230R08SCF25M	KTFS230R12SCF25M	23,000	.9055	23,999	.9448	ZB	170.314
KTFS240R01SCF25M	KTFS240R03SCF25M	KTFS240R05SCF25M	KTFS240R08SCF25M	KTFS240R12SCF25M	24,000	.9449	24,999	.9842	ZC	170.314
KTFS250R01SCF25M	KTFS250R03SCF25M	KTFS250R05SCF25M	KTFS250R08SCF25M	KTFS250R12SCF25M	25,000	.9843	25,999	1.0236	ZD	170.314

NOTE: **Products with D1 ≥ 20mm will be available by January 1st, 2018.**

Modular Drills • Dimension Tables

Straight Round Shank • Metric





					1.5 x D SS			3 x D SS			5 x D SS			8 x D SS		
D1 min	D1 max	Seat	LS	round D	LATTH	L	L4 max	LATTH	L	L4 max	LATTH	L	L4 max	LATTH	L	L4 max
6,000	6,299	A	37	8	53,5	57	9	63,5	67	19	76,5	80	32	94,5	98	50
6,300	6,599	B	37	8	54,3	58	10	64,3	68	20	77,3	81	33	97,3	101	53
6,600	6,999	C	37	8	55,2	59	10	66,2	70	21	80,2	84	35	101,2	105	56
7,000	7,499	D	37	8	55,9	60	11	66,9	71	22	82,9	87	38	104,9	109	60
7,500	7,999	E	37	8	56,7	61	12	68,7	73	24	84,7	89	40	108,7	113	64
8,000	8,499	F	41	10	63,4	68	13	76,4	81	26	92,4	97	42	118,4	123	68
8,500	8,999	G	41	10	64,1	69	14	77,1	82	27	95,1	100	45	122,1	127	72
9,000	9,499	H	41	10	63,8	69	14	77,8	83	28	97,8	103	48	125,8	131	76
9,500	9,999	I	41	10	64,5	70	15	79,5	85	30	99,5	105	50	129,5	135	80
10,000	10,499	J	46	12	72,2	78	16	88,2	94	32	108,2	114	52	140,2	146	84
10,500	10,999	K	46	12	71,9	78	16	88,9	95	33	110,9	117	55	143,9	150	88
11,000	11,499	L	46	12	72,6	79	17	89,6	96	34	113,6	120	58	147,6	154	92
11,500	11,999	M	46	12	73,3	80	18	91,3	98	36	115,3	122	60	151,3	158	96
12,000	12,499	N	46	14	76,0	83	19	95,0	102	38	119,0	126	62	157,0	164	100
12,500	12,999	O	46	14	76,8	84	20	95,8	103	39	121,8	129	65	160,8	168	104
13,000	13,499	P	46	14	76,5	84	20	96,5	104	40	124,5	132	68	164,5	172	108
13,500	13,999	Q	46	14	77,2	85	21	98,2	106	42	126,2	134	70	168,2	176	112
14,000	14,499	R	49	16	81,9	90	22	103,9	112	44	131,9	140	72	175,9	184	116
14,500	14,999	S	49	16	81,6	90	22	104,6	113	45	134,6	143	75	179,6	188	120
15,000	15,999	T	49	16	83,3	92	24	107,3	116	48	139,3	148	80	187,3	196	128
16,000	16,999	U	49	16	84,7	94	26	109,7	119	51	143,7	153	85	194,7	204	136
17,000	17,999	V	51	20	90,1	100	27	117,1	127	54	153,1	163	90	207,1	217	144
18,000	18,999	W	51	20	90,6	101	28	119,6	130	57	157,6	168	95	214,6	225	152
19,000	19,999	X	51	20	92,0	103	30	122,0	133	60	162,0	173	100	222,0	233	160

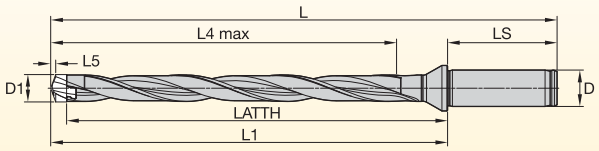
NOTE: Toolholder dimensions:
L: Total length of drill
L4: Max. drilling depth
L5: Protruding length (Insert specific. See related insert pages)
LATTH: Pocket seat reference length
LS: Shank length

(continued)

Modular Drills • Dimension Tables *(continued)*

Flanged Round Shank • Metric





					12 x D SF			
D1 min	D1 max	Seat	LS	flanged D	LATTH	L	L1	L4 max
6,000	6,299	A	45	12	92,5	141	96	76
6,300	6,599	B	45	12	95,3	144	99	79
6,600	6,999	C	45	12	101,2	150	105	84
7,000	7,499	D	45	12	106,9	156	111	90
7,500	7,999	E	45	12	112,7	162	117	96
8,000	8,499	F	45	12	118,4	168	123	102
8,500	8,999	G	45	12	124,1	174	129	108
9,000	9,499	H	45	12	129,8	180	135	114
9,500	9,999	I	45	12	135,5	186	141	120
10,000	10,499	J	48	16	144,2	198	150	126
10,500	10,999	K	48	16	149,9	204	156	132
11,000	11,499	L	48	16	155,6	210	162	138
11,500	11,999	M	48	16	161,3	216	168	144
12,000	12,499	N	48	16	167,0	222	174	150
12,500	12,999	O	48	16	172,8	228	180	156
13,000	13,499	P	48	16	178,5	234	186	162
13,500	13,999	Q	48	16	184,2	240	192	168
14,000	14,499	R	48	16	189,9	246	198	174
14,500	14,999	S	48	16	195,6	252	204	180
15,000	15,999	T	50	20	210,3	269	219	192
16,000	16,999	U	50	20	221,7	281	231	204
17,000	17,999	V	50	20	233,1	293	243	216
18,000	18,999	W	56	25	247,6	314	258	228
19,000	19,999	X	56	25	259,0	326	270	240

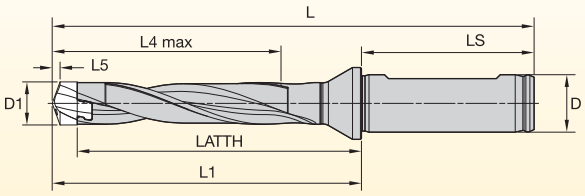
NOTE: Toolholder dimensions:
L: Total length of drill
L1: Drill length including flange
L4: Max. drilling depth
L5: Protruding length (Insert specific. See related insert pages)
LATTH: Pocket seat reference length
LS: Shank length

(continued)

Modular Drills • Dimension Tables *(continued)*

Flanged Shank with Flat • Metric

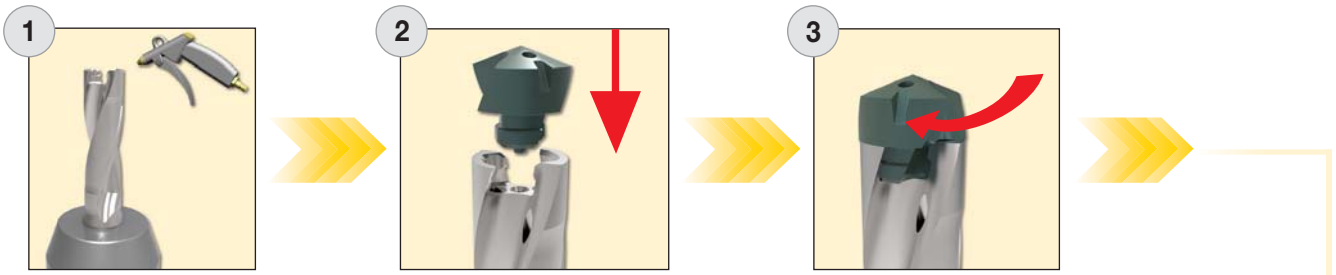




					1.5 x D SCF				3 x D SCF				5 x D SCF				8 x D SCF				12 x D SCF			
D1 min	D1 max	Seat	LS	flanged D	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max
8,000	8,499	F	45	12	–	–	–	–	42,4	92	2	26	58,4	108	2	42	84,4	134	4	68	–	–	–	–
8,500	8,999	G	45	12	–	–	–	–	43,1	93	2	27	61,1	111	3	45	88,1	138	4	72	–	–	–	–
9,000	9,499	H	45	12	–	–	–	–	43,8	94	2	28	63,8	114	3	48	91,8	142	4	76	–	–	–	–
9,500	9,999	I	45	12	–	–	–	–	45,5	96	2	30	65,5	116	3	50	95,5	146	4	80	–	–	–	–
10,000	10,499	J	48	16	–	–	–	–	50,2	104	2	32	70,2	124	3	52	102,2	156	4	84	–	–	–	–
10,500	10,999	K	48	16	–	–	–	–	50,9	105	2	33	72,9	127	3	55	105,9	160	4	88	–	–	–	–
11,000	11,499	L	48	16	–	–	–	–	51,6	106	2	34	75,6	130	3	58	109,6	164	5	92	–	–	–	–
11,500	11,999	M	48	16	–	–	–	–	53,3	108	2	36	77,3	132	3	60	113,3	168	5	96	–	–	–	–
12,000	12,499	N	48	16	–	–	–	–	55,0	110	2	38	79,0	134	3	62	117,0	172	5	100	–	–	–	–
12,500	12,999	O	48	16	–	–	–	–	55,8	111	2	39	81,8	137	4	65	120,8	176	5	104	–	–	–	–
13,000	13,499	P	48	16	–	–	–	–	56,5	112	3	40	84,5	140	4	68	124,5	180	5	108	–	–	–	–
13,500	13,999	Q	48	16	–	–	–	–	58,2	114	3	42	86,2	142	4	70	128,2	184	5	112	–	–	–	–
14,000	14,499	R	48	16	–	–	–	–	59,9	116	3	44	87,9	144	4	72	131,9	188	6	116	–	–	–	–
14,500	14,999	S	48	16	–	–	–	–	60,6	117	3	45	90,6	147	4	75	135,6	192	6	120	–	–	–	–
15,000	15,999	T	50	20	–	–	–	–	66,3	125	3	48	98,3	157	4	80	146,3	205	6	128	–	–	–	–
16,000	16,999	U	50	20	–	–	–	–	68,7	128	3	51	102,7	162	4	85	153,7	213	6	136	–	–	–	–
17,000	17,999	V	50	20	–	–	–	–	71,1	131	3	54	107,1	167	5	90	161,1	221	7	144	–	–	–	–
18,000	18,999	W	56	25	–	–	–	–	76,6	143	3	57	114,6	181	5	95	171,6	238	7	152	–	–	–	–
19,000	19,999	X	56	25	–	–	–	–	79,0	146	4	60	119,0	186	5	100	179,0	246	7	160	–	–	–	–
20,000	20,999	Y	56	25	50,4	118	2	32	81,4	149	4	63	123,4	191	5	105	186,4	254	8	168	270,4	338	11	252
21,000	21,999	Z	56	25	50,8	119	2	33	83,8	152	4	66	127,8	196	6	110	193,8	262	8	176	281,8	350	12	264
22,000	22,999	ZA	56	25	51,2	120	3	34	86,2	155	4	69	132,2	201	6	115	201,2	270	8	184	293,2	362	12	276
23,000	23,999	ZB	56	25	52,7	122	3	36	88,7	158	4	72	136,7	206	6	120	208,7	278	9	192	304,7	374	13	288
24,000	24,999	ZC	56	25	54,1	124	3	38	91,1	161	4	75	141,1	211	6	125	216,1	286	9	200	316,1	386	13	300
25,000	25,999	ZD	56	25	54,5	125	3	39	93,5	164	4	78	145,5	216	6	130	223,5	294	9	208	327,5	398	13	312

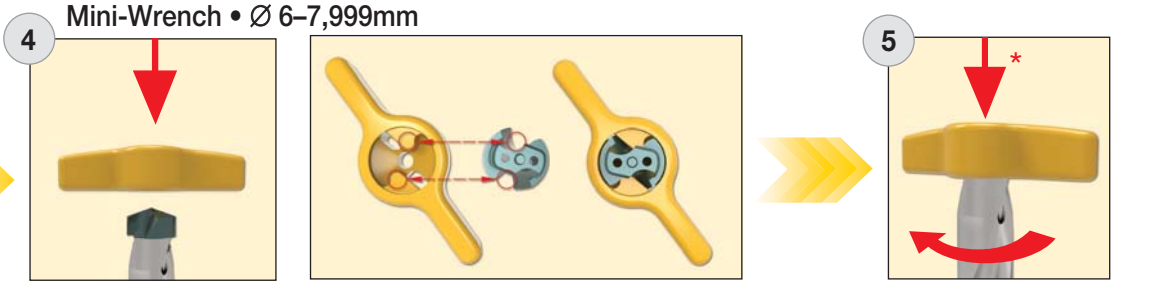
NOTE: Toolholder dimensions:
L: Total length of drill
L1: Drill length including flange
L4: Max. drilling depth
L5: Protruding length (Insert specific. See related insert pages)
LATTH: Pocket seat reference length
LS: Shank length

Mounting



1. Protect your eyes and hands. Fix holder. Clean pocket with air blast.
2. Put insert into pocket seat so it rests firmly on the holder.
3. Turn slightly in clockwise direction using your fingers.

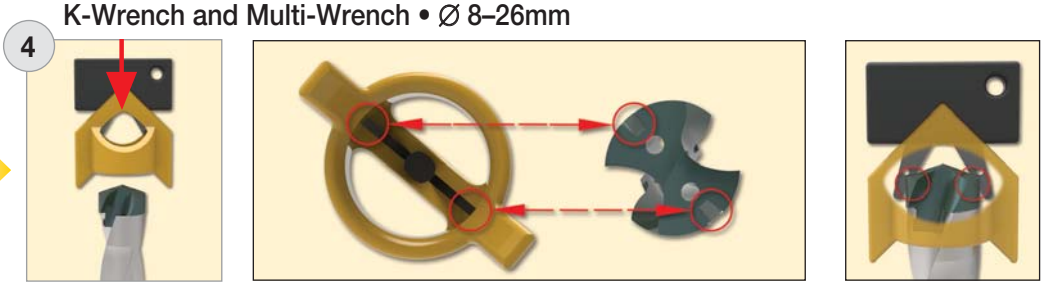
Mini-Wrench • Ø 6–7,999mm



4. Set wrench properly onto insert: Wrench noses must fit firmly into the chip grooves.

*For unmounting, firmly press wrench on insert to avoid slipping.

K-Wrench and Multi-Wrench • Ø 8–26mm



4. Set wrench properly onto insert: Wrench blade must fit firmly into slots on insert flanks.

Available Smart Wrenches

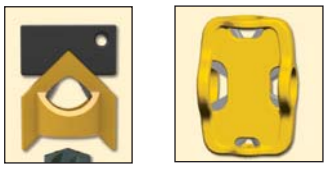
Mini-Wrench

Wrench noses must fit into the chip grooves.

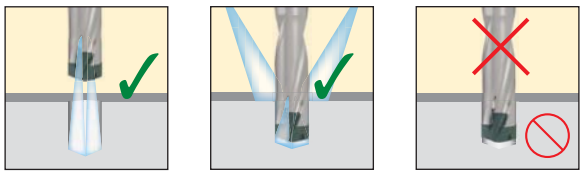


K-Wrench **Multi-Wrench**

Wrench blades must fit into insert slots.



Coolant



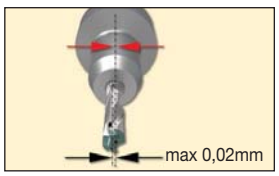
Internal coolant is recommended for all applications.

Flood coolant only for drilling depth ≤ 3 x D.

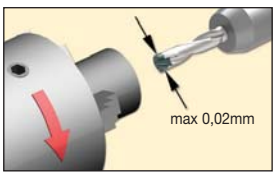
Dry cutting is not recommended. MQL ability is limited.

Core Deviation

Machining Center



Stationary Drill/Lathe

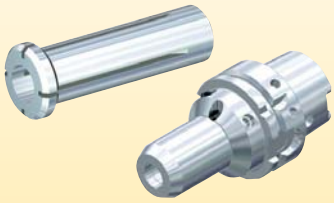


Rotating Applications

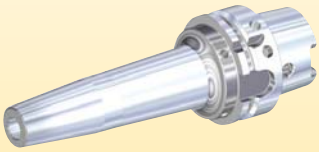
KenTIP FS holders with straight cylindrical SS and SF shanks (no flats) are designed for rotating applications where the drill rotates while the workpiece remains stationary. The shank to drill-point location of these drills is held to an extremely close tolerance. To maintain accuracy and gain maximum performance, please use the approved toolholding method shown below.



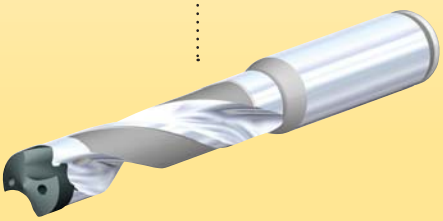
ERICKSON™ ER collet chucks



ERICKSON Hydrochuck HP Line

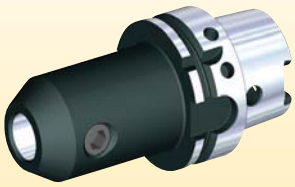


ERICKSON Shrink Fit toolholders for general purpose

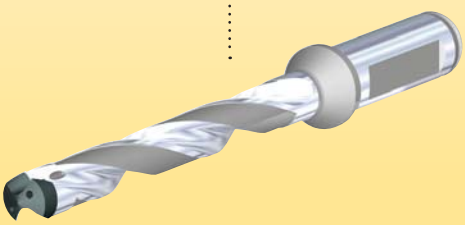


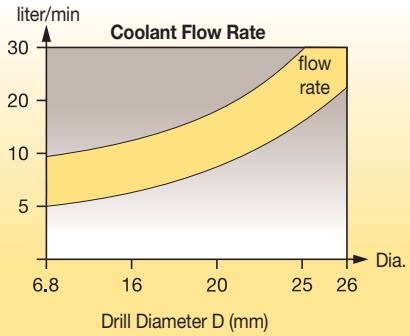
Rotating and Stationary Applications

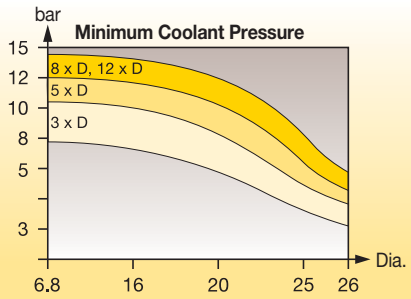
KenTIP FS holders with SCF shanks (Cylindrical with 90° flat and flange) are reducing deflections and represent a stiffer holder solution. As the shank is compatible with End Mill adaptors, these holders are very flexible in use. SCF shanks can be used in any rotating applications and are suited for lathe and other settings where the tool is stationary.



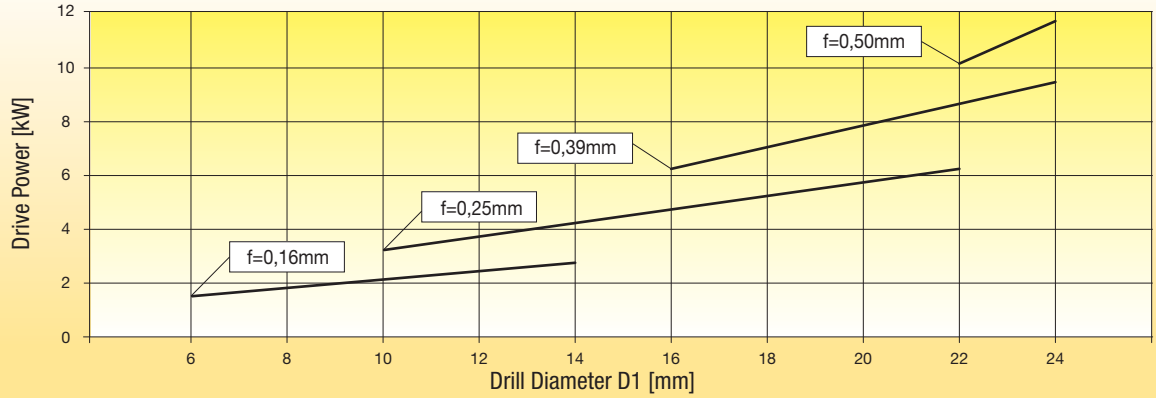
EM adaptors



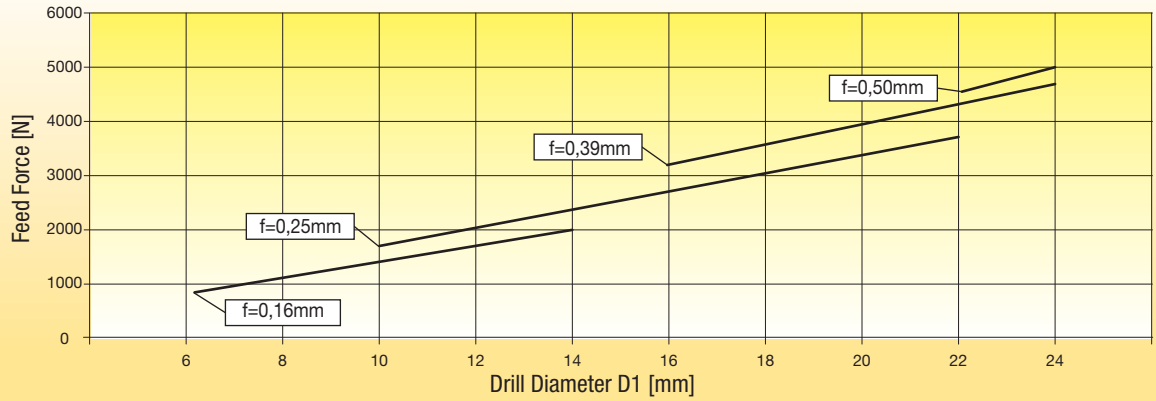




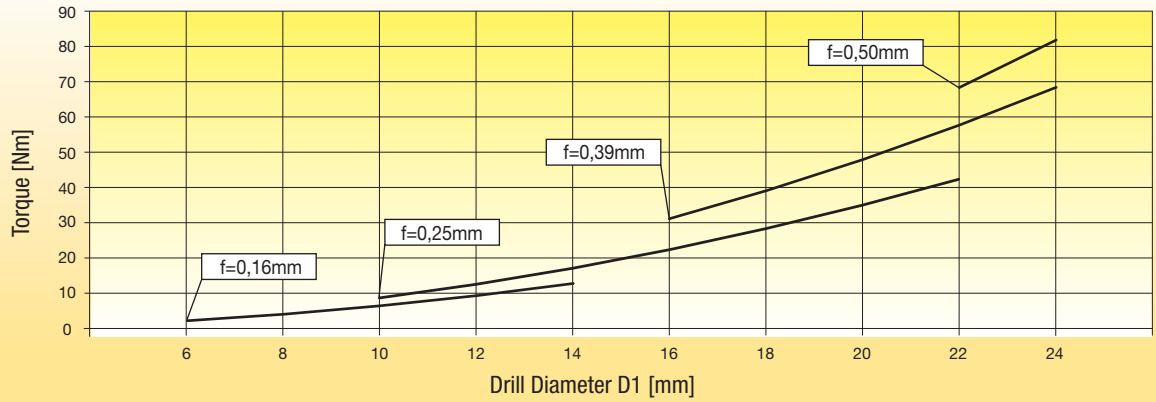
Drive Power (kW)



Feed Force (N)



Torque (Nm)



NOTE: The diagrams above are used to determine the drive power, feed force, and torque. They are based on cutting force measurement in tempered steels with a tensile strength: Rm = 750 N/mm^2. The base cutting speed used is: vc = 80 m/min.

KenTIP™ Modular Drill System

Primary Application

The KenTIP modular drill system offers performance levels commonly achieved with solid carbide drills. The proprietary locking system enables inserts to be changed inside the machine tool. Use KenTIP in steel, cast iron, ductile iron, and stainless steel applications. KenTIP modular drills are available up to diameter 27,99mm (1.1020"). Change drilling inserts within the machine without taking the body off, saving setup time and manufacturing costs.

With our new FEG Flat bottom E-shape inserts, the KenTIP modular drill system now offers an easy and very reliable solution to drill blind holes that performs on a very wide range of difficult applications.

Features and Benefits

Advanced Interface

- Strong pocket seats on all inserts and bodies.
- Long tip and body life in unstable conditions, especially when side loads occur.

Disposable Inserts

- No reconditioning costs.
- Consistent performance.
- Eliminates number of tools waiting for reconditioning, providing significant cost savings.

HP Drill-Point Design

- Very high feed rates possible.
- Low thrust prevents workpiece flexing.
- Excellent centring capabilities.

Tailored Grades and Geometries

- KCP15™ grade has a new PVD coating enabling longer tool life in all steel applications.
- KCPM45™ grade combines a very tough, fine-grain carbide substrate with a TiAlN PVD coating. It is used on our FEG flat-bottom inserts.
- For applications in cast iron and stainless steel, we recommend to use our new KenTIP FS modular drill. Please see page H6 for drills.
- For further availability on KC7320™ HPL and KC7410™ HPC inserts for KenTIP, please refer to NOVO™ or contact your sales representative.

Easy Insert Change

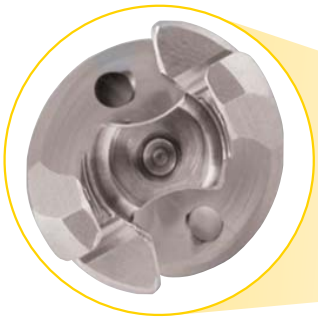
- Locking method requires no screws or clamps.
- Insert blades can be changed with a simple provided tool and do not require drill body removal from the machine or holder.

NEW!

FEG Style, E-shape Flat-Bottom Inserts

KenTIP™ FEG inserts create blind holes, through holes, and countersinks. These inserts are focused on versatility and will support you in many essential drilling applications.







Drill Body Portfolio

- Standard 12 x D holders with round shanks available, inch and metric. This covers the complete KenTIP diameter range.
- Standard 3, 5, and 8 x D tool bodies with round and flanged shank available, inch and metric.
- Standard 1.5 x D bodies available, especially for piloting operations on metric drill bodies.

Customisation

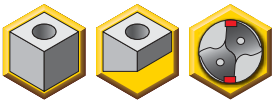
- Intermediate diameters available as semi-standards.
- Close tolerance tips available for precision holes.
- Chamfering insert pockets available.
- Multiple steps possible.
- CounterFix Micro tangential inserts for small diameter step drills.

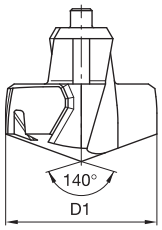


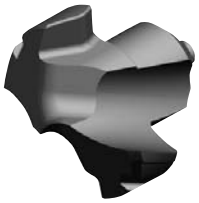
NEW!

CounterFix Micro Tangential Inserts

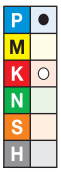
- KenTIP KCP15™ HP cutting edges enable high metal removal rates and superior tool life for steel applications.
- KenTIP HP geometry works with low cutting and feed forces and provides very good centring. Reinforced cutting edges and good chip forming improve tool life due to high wear and edge chipping resistance.
- KCP15 is a fine grain carbide with a TiAlN-based PVD nanolayer coating with greatly improved layer bonding for higher tool life. Its increased Al content provides better thermal and chemical stability, which makes it more suitable for higher cutting speeds.
- KenTIP KCP15 HP cutting edges are perfectly suited to drill alloyed and high alloy steels.
- Use KenTIP KCP15 HP cutting edges as an alternative in cast iron materials.





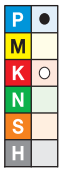

HP

KenTIP Inserts • HP KCP15



● first choice
○ alternate choice

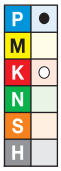
KCP15	D1 mm	D1 in	seat size
KTIP0794HPM	7,938	.3125	F
KTIP0800HPM	8,000	.3150	F
KTIP0810HPM	8,100	.3189	F
KTIP0816HPM	8,164	.3214	F
KTIP0820HPM	8,204	.3230	F
KTIP0830HPM	8,300	.3268	F
KTIP0833HPM	8,334	.3281	F
KTIP0840HPM	8,400	.3307	F
KTIP0843HPM	8,433	.3320	F
KTIP0850HPM	8,500	.3346	G
KTIP0860HPM	8,600	.3386	G
KTIP0861HPM	8,611	.3390	G
KTIP0870HPM	8,700	.3425	G
KTIP0873HPM	8,733	.3438	G
KTIP0880HPM	8,800	.3465	G
KTIP0884HPM	8,839	.3480	G
KTIP0890HPM	8,900	.3504	G
KTIP0900HPM	9,000	.3543	H
KTIP0909HPM	9,093	.3580	H
KTIP0910HPM	9,100	.3583	H
KTIP0913HPM	9,129	.3594	H
KTIP0920HPM	9,200	.3622	H
KTIP0930HPM	9,300	.3661	H
KTIP0935HPM	9,347	.3680	H
KTIP0940HPM	9,400	.3701	H
KTIP0950HPM	9,500	.3740	I
KTIP0953HPM	9,525	.3750	I
KTIP0956HPM	9,558	.3763	I
KTIP0958HPM	9,576	.3770	I
KTIP0960HPM	9,600	.3780	I
KTIP0970HPM	9,703	.3820	I
KTIP0980HPM	9,804	.3860	I



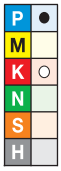
KCP15	D1 mm	D1 in	seat size
KTIP0983HPM	9,830	.3870	I
KTIP0990HPM	9,900	.3898	I
KTIP0992HPM	9,921	.3906	I
KTIP1000HPM	10,000	.3937	J
KTIP1002HPM	10,023	.3946	J
KTIP1008HPM	10,084	.3970	J
KTIP1010HPM	10,100	.3976	J
KTIP1020HPM	10,200	.4016	J
KTIP1026HPM	10,262	.4040	J
KTIP1030HPM	10,300	.4055	J
KTIP1032HPM	10,320	.4063	J
KTIP1040HPM	10,400	.4094	J
KTIP1049HPM	10,490	.4130	J
KTIP1050HPM	10,500	.4134	K
KTIP1060HPM	10,600	.4173	K
KTIP1070HPM	10,700	.4213	K
KTIP1072HPM	10,716	.4219	K
KTIP1080HPM	10,800	.4252	K
KTIP1090HPM	10,900	.4291	K
KTIP1100HPM	11,000	.4331	L
KTIP1110HPM	11,100	.4370	L
KTIP1111HPM	11,113	.4375	L
KTIP1120HPM	11,200	.4409	L
KTIP1130HPM	11,300	.4449	L
KTIP1140HPM	11,400	.4488	L
KTIP1150HPM	11,500	.4528	M
KTIP1151HPM	11,509	.4531	M
KTIP1160HPM	11,600	.4567	M
KTIP1161HPM	11,610	.4571	M
KTIP1170HPM	11,700	.4606	M
KTIP1180HPM	11,800	.4646	M
KTIP1190HPM	11,900	.4685	M

(continued)

(KenTIP Inserts • HP KCP15™ — continued)



KCP15	D1 mm	D1 in	seat size
KTIP1191HPM	11,908	.4688	M
KTIP1200HPM	12,000	.4724	N
KTIP1210HPM	12,100	.4764	N
KTIP1220HPM	12,200	.4803	N
KTIP1230HPM	12,304	.4844	N
KTIP1240HPM	12,400	.4882	N
KTIP1247HPM	12,474	.4911	N
KTIP1250HPM	12,500	.4921	O
KTIP1260HPM	12,600	.4961	O
KTIP1270HPM	12,700	.5000	O
KTIP1280HPM	12,800	.5039	O
KTIP1290HPM	12,903	.5080	O
KTIP1300HPM	13,000	.5118	P
KTIP1310HPM	13,096	.5156	P
KTIP1320HPM	13,200	.5197	P
KTIP1328HPM	13,280	.5228	P
KTIP1330HPM	13,300	.5236	P
KTIP1338HPM	13,380	.5268	P
KTIP1340HPM	13,400	.5276	P
KTIP1349HPM	13,494	.5313	P
KTIP1350HPM	13,500	.5315	Q
KTIP1360HPM	13,600	.5354	Q
KTIP1370HPM	13,700	.5394	Q
KTIP1380HPM	13,800	.5433	Q
KTIP1389HPM	13,891	.5469	Q
KTIP1390HPM	13,896	.5471	Q
KTIP1394HPM	13,940	.5488	Q
KTIP1400HPM	14,000	.5512	R
KTIP1410HPM	14,100	.5551	R
KTIP1420HPM	14,200	.5591	R
KTIP1429HPM	14,288	.5625	R
KTIP1430HPM	14,300	.5630	R
KTIP1440HPM	14,400	.5669	R
KTIP1450HPM	14,500	.5709	S
KTIP1460HPM	14,600	.5748	S
KTIP1467HPM	14,666	.5774	S
KTIP1468HPM	14,684	.5781	S
KTIP1470HPM	14,700	.5787	S
KTIP1480HPM	14,800	.5827	S
KTIP1490HPM	14,900	.5866	S
KTIP1500HPM	15,000	.5906	T
KTIP1508HPM	15,083	.5938	T
KTIP1510HPM	15,100	.5945	T
KTIP1520HPM	15,200	.5984	T
KTIP1530HPM	15,300	.6024	T
KTIP1538HPM	15,380	.6055	T
KTIP1540HPM	15,400	.6063	T
KTIP1548HPM	15,479	.6094	T
KTIP1550HPM	15,500	.6102	T
KTIP1560HPM	15,600	.6142	T
KTIP1570HPM	15,700	.6181	T
KTIP1580HPM	15,800	.6220	T



● first choice
○ alternate choice

KCP15	D1 mm	D1 in	seat size
KTIP1588HPM	15,875	.6250	T
KTIP1600HPM	16,000	.6299	U
KTIP1603HPM	16,027	.6310	U
KTIP1608HPM	16,078	.6330	U
KTIP1610HPM	16,100	.6339	U
KTIP1620HPM	16,200	.6378	U
KTIP1627HPM	16,271	.6406	U
KTIP1630HPM	16,300	.6417	U
KTIP1640HPM	16,400	.6457	U
KTIP1650HPM	16,500	.6496	U
KTIP1660HPM	16,600	.6535	U
KTIP1667HPM	16,670	.6563	U
KTIP1670HPM	16,700	.6575	U
KTIP1680HPM	16,800	.6614	U
KTIP1690HPM	16,900	.6654	U
KTIP1700HPM	17,000	.6693	V
KTIP1707HPM	17,066	.6719	V
KTIP1710HPM	17,100	.6732	V
KTIP1720HPM	17,200	.6772	V
KTIP1730HPM	17,300	.6811	V
KTIP1740HPM	17,400	.6850	V
KTIP1748HPM	17,463	.6875	V
KTIP1750HPM	17,500	.6890	V
KTIP1760HPM	17,600	.6929	V
KTIP1770HPM	17,700	.6969	V
KTIP1780HPM	17,800	.7008	V
KTIP1786HPM	17,859	.7031	V
KTIP1790HPM	17,900	.7047	V
KTIP1800HPM	18,000	.7087	W
KTIP1810HPM	18,100	.7126	W
KTIP1820HPM	18,200	.7165	W
KTIP1826HPM	18,258	.7188	W
KTIP1830HPM	18,300	.7205	W
KTIP1840HPM	18,400	.7244	W
KTIP1850HPM	18,500	.7283	W
KTIP1860HPM	18,600	.7323	W
KTIP1865HPM	18,654	.7344	W
KTIP1870HPM	18,700	.7362	W
KTIP1880HPM	18,800	.7402	W
KTIP1890HPM	18,900	.7441	W
KTIP1900HPM	19,000	.7480	X
KTIP1905HPM	19,050	.7500	X
KTIP1910HPM	19,100	.7520	X
KTIP1920HPM	19,200	.7559	X
KTIP1923HPM	19,228	.7570	X
KTIP1925HPM	19,253	.7580	X
KTIP1930HPM	19,300	.7598	X
KTIP1935HPM	19,350	.7620	X
KTIP1940HPM	19,400	.7638	X
KTIP1946HPM	19,446	.7656	X
KTIP1950HPM	19,500	.7677	X
KTIP1960HPM	19,600	.7717	X

(continued)

(KenTIP Inserts • HP KCP15™ — continued)

P ● M K ○ N S H	D1		
KCP15	mm	in	seat size
KTIP1970HPM	19,700	.7756	X
KTIP1980HPM	19,800	.7795	X
KTIP1984HPM	19,844	.7813	X
KTIP1990HPM	19,900	.7835	X
KTIP2000HPM	20,000	.7874	Y
KTIP2010HPM	20,100	.7913	Y
KTIP2020HPM	20,200	.7953	Y
KTIP2024HPM	20,241	.7969	Y
KTIP2030HPM	20,300	.7992	Y
KTIP2050HPM	20,500	.8071	Y
KTIP2060HPM	20,600	.8110	Y
KTIP2064HPM	20,638	.8125	Y
KTIP2070HPM	20,700	.8150	Y
KTIP2080HPM	20,800	.8189	Y
KTIP2090HPM	20,900	.8228	Y
KTIP2099HPM	20,990	.8264	Y
KTIP2100HPM	21,000	.8268	Z
KTIP2110HPM	21,100	.8307	Z
KTIP2143HPM	21,432	.8438	Z
KTIP2150HPM	21,500	.8465	Z
KTIP2200HPM	22,000	.8661	ZA
KTIP2223HPM	22,225	.8750	ZA
KTIP2250HPM	22,500	.8858	ZA
KTIP2280HPM	22,800	.8976	ZA

P ● M K ○ N S H	D1		
KCP15	mm	in	seat size
KTIP2300HPM	23,000	.9055	ZB
KTIP2350HPM	23,500	.9252	ZB
KTIP2381HPM	23,813	.9375	ZB
KTIP2400HPM	24,000	.9449	ZC
KTIP2450HPM	24,500	.9646	ZC
KTIP2461HPM	24,608	.9688	ZC
KTIP2500HPM	25,000	.9843	ZD
KTIP2540HPM	25,400	1.0000	ZD
KTIP2550HPM	25,500	1.0039	ZD
KTIP2567HPM	25,679	1.0110	ZD
KTIP2581HPM	25,806	1.0160	ZD
KTIP2599HPM	25,990	1.0232	ZD
KTIP2600HPM	26,000	1.0236	ZE
KTIP2619HPM	26,187	1.0310	ZE
KTIP2650HPM	26,500	1.0433	ZE
KTIP2659HPM	26,590	1.0469	ZE
KTIP2700HPM	27,000	1.0630	ZE
KTIP2750HPM	27,500	1.0827	ZE
KTIP2778HPM	27,780	1.0938	ZE
KTIP2799HPM	27,990	1.1020	ZE

● first choice
○ alternate choice

KenTIP HP Geometry

Tolerance

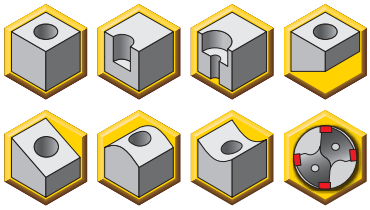
D1 metric	tolerance k8
8–10	0,000/+0,022
>10–17	0,000/+0,027
>17–18	0,000/+0,027
>18–28	0,000/+0,033

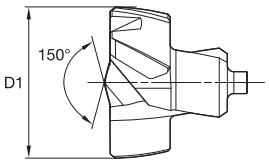
Application Data

Modular Drill Carbide Insert Blades • KenTIP™ • HP Geometry • Grade KCP15™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric								
					Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0	24,0	28,0
P	1	90	**130**	180	mm/r	0,12–0,21	0,14–0,26	0,15–0,33	0,18–0,41	0,20–0,47	0,26–0,50	0,27–0,51	0,30–0,54
	2	110	**150**	190	mm/r	0,12–0,25	0,14–0,30	0,15–0,35	0,18–0,38	0,20–0,47	0,26–0,50	0,27–0,51	0,30–0,54
	3	50	**80**	110	mm/r	0,12–0,29	0,13–0,37	0,17–0,39	0,22–0,48	0,24–0,48	0,32–0,54	0,32–0,54	0,35–0,56
	4	50	**80**	110	mm/r	0,12–0,29	0,13–0,37	0,17–0,39	0,18–0,48	0,19–0,48	0,24–0,48	0,35–0,46	0,27–0,46
K	1	60	**100**	180	mm/r	0,16–0,30	0,17–0,34	0,18–0,37	0,22–0,44	0,26–0,50	0,33–0,62	0,35–0,65	0,40-0,70
	2	60	**80**	90	mm/r	0,16–0,30	0,17–0,32	0,18–0,35	0,22–0,43	0,26–0,50	0,33–0,62	0,35–0,65	0,40–0,70
	3	40	**70**	90	mm/r	0,17–0,32	0,18–0,35	0,19–0,38	0,21–0,43	0,22–0,46	0,24–0,50	0,25–0,51	0,40-0,70

- KenTIP FEG flat-bottom inserts create 180° flat holes — only a small cavity remains in the centre of the hole ground. KenTIP offers easy-to-change disposable inserts and low cutting forces for your flat-bottom applications.
- Whether it is a blind hole, a through hole, or if you need to countersink, these inserts are focused on versatility and will support you in many essential drilling applications.
- KenTIP FEG inserts feature a small centring point as well as double margin lands for improved guidance and hole straightness. A corner chamfer serves to reduce bur formation and to improve tool life.
- KCPM45™ combines a very tough, fine-grain carbide substrate with an advanced multilayer TiAlN coating. It is capable of machining steel even in the most demanding conditions.
- Use KenTIP FEG KCPM45 cutting edges as an effective alternative in cast iron and stainless steel.







KenTIP Inserts • FEG (Flat Bottom)

P ● M ○ K ○ N S H

KCPM45	D1 mm	D1 in	seat size
KTIP0794FEGM	7,938	.3125	F
KTIP0800FEGM	8,000	.3150	F
KTIP0850FEGM	8,500	.3346	G
KTIP0852FEGM	8,520	.3354	G
KTIP0900FEGM	9,000	.3543	H
KTIP0913FEGM	9,130	.3594	H
KTIP0950FEGM	9,500	.3740	I
KTIP1000FEGM	10,000	.3937	J
KTIP1010FEGM	10,100	.3976	J
KTIP1050FEGM	10,500	.4134	K
KTIP1080FEGM	10,800	.4252	K
KTIP1100FEGM	11,000	.4331	L
KTIP1150FEGM	11,500	.4528	M
KTIP1170FEGM	11,700	.4606	M
KTIP1200FEGM	12,000	.4724	N
KTIP1250FEGM	12,500	.4921	O
KTIP1270FEGM	12,700	.5000	O
KTIP1300FEGM	13,000	.5118	P
KTIP1350FEGM	13,500	.5315	Q
KTIP1400FEGM	14,000	.5512	R

P ● M ○ K ○ N S H

● first choice
○ alternate choice

KCPM45	D1 mm	D1 in	seat size
KTIP1450FEGM	14,500	.5709	S
KTIP1490FEGM	14,900	.5866	S
KTIP1500FEGM	15,000	.5906	T
KTIP1550FEGM	15,500	.6102	T
KTIP1595FEGM	15,950	.6280	T
KTIP1600FEGM	16,000	.6299	U
KTIP1650FEGM	16,500	.6496	U
KTIP1700FEGM	17,000	.6693	V
KTIP1750FEGM	17,500	.6890	V
KTIP1770FEGM	17,700	.6969	V
KTIP1800FEGM	18,000	.7087	W
KTIP1850FEGM	18,500	.7283	W
KTIP1900FEGM	19,000	.7480	X
KTIP1905FEGM	19,050	.7500	X
KTIP1950FEGM	19,500	.7677	X
KTIP2000FEGM	20,000	.7874	Y

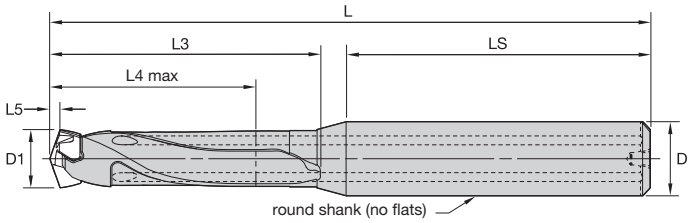
KenTIP FEG Geometry Tolerance

D1 metric	tolerance s7
8–10	+0,023/+0,038
>10–18	+0,028/+0,046
>18–28	+0,035/+0,056

Modular Drill Carbide Insert Blades • KenTIP™ • FEG Geometry • Grade KCPM45™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric								
					Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0	24,0	28,0
P	1	110	**140**	170	mm/r	0,14–0,23	0,14–0,23	0,14–0,23	0,14–0,23	0,17–0,25	0,19–0,29	0,23–0,38	0,23–0,38
	2	100	**120**	140	mm/r	0,17–0,23	0,17–0,23	0,17–0,23	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,29–0,38
	3	80	**100**	120	mm/r	0,14–0,20	0,14–0,20	0,14–0,20	0,14–0,20	0,15–0,23	0,17–0,25	0,23–0,34	0,23–0,34
	4	70	**90**	110	mm/r	0,11–0,20	0,11–0,20	0,11–0,20	0,11–0,20	0,13–0,23	0,14–0,25	0,18–0,34	0,18–0,34
M	1	40	**60**	80	mm/r	0,09–0,14	0,09–0,14	0,09–0,14	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,16–0,25
	2	35	**55**	70	mm/r	0,09–0,14	0,09–0,14	0,09–0,14	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,16–0,25
K	1	90	**135**	175	mm/r	0,18–0,24	0,18–0,24	0,18–0,24	0,18–0,24	0,21–0,28	0,23–0,31	0,28–0,37	0,28–0,37
	2	80	**120**	140	mm/r	0,18–0,24	0,18–0,24	0,18–0,24	0,18–0,24	0,21–0,28	0,23–0,31	0,28–0,37	0,28–0,37
	3	70	**110**	125	mm/r	0,15–0,24	0,15–0,24	0,15–0,24	0,15–0,24	0,18–0,26	0,21–0,29	0,23–0,37	0,23–0,37

- Tool body shipped with insert wrench.



For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H35.

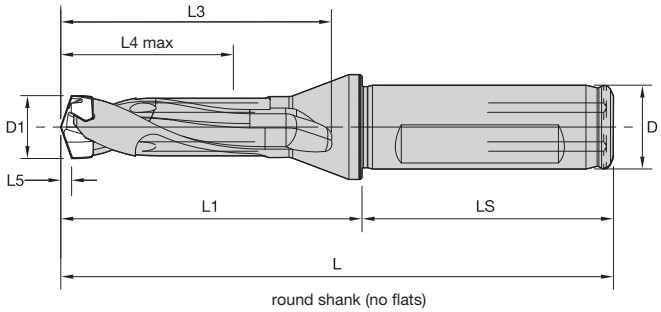


KenTIP Round Shank • 1.5 x D/3 x D/5 x D/8 x D/12 x D • Metric

1.5 x D	3 x D	5 x D	8 x D	12 x D	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTIP080R1SS10M	KTIP080R3SS10M	KTIP080R5SS10M	KTIP080R8SS10M	KTIP080R12SS10M	8,000	.3150	8,499	.3346	F	170.306
KTIP085R1SS10M	KTIP085R3SS10M	KTIP085R5SS10M	KTIP085R8SS10M	KTIP085R12SS10M	8,500	.3346	8,999	.3543	G	170.306
KTIP090R1SS10M	KTIP090R3SS10M	KTIP090R5SS10M	KTIP090R8SS10M	KTIP090R12SS10M	9,000	.3543	9,499	.3740	H	170.306
KTIP095R1SS10M	KTIP095R3SS10M	KTIP095R5SS10M	KTIP095R8SS10M	KTIP095R12SS10M	9,500	.3740	9,999	.3937	I	170.306
KTIP100R1SS12M	KTIP100R3SS12M	KTIP100R5SS12M	KTIP100R8SS12M	KTIP100R12SS12M	10,000	.3937	10,499	.4133	J	170.307
KTIP105R1SS12M	KTIP105R3SS12M	KTIP105R5SS12M	KTIP105R8SS12M	KTIP105R12SS12M	10,500	.4134	10,999	.4330	K	170.307
KTIP110R1SS12M	KTIP110R3SS12M	KTIP110R5SS12M	KTIP110R8SS12M	KTIP110R12SS12M	11,000	.4331	11,499	.4527	L	170.307
KTIP115R1SS12M	KTIP115R3SS12M	KTIP115R5SS12M	KTIP115R8SS12M	KTIP115R12SS12M	11,500	.4528	11,999	.4724	M	170.307
KTIP120R1SS14M	KTIP120R3SS14M	KTIP120R5SS14M	KTIP120R8SS14M	KTIP120R12SS14M	12,000	.4724	12,499	.4921	N	170.308
KTIP125R1SS14M	KTIP125R3SS14M	KTIP125R5SS14M	KTIP125R8SS14M	KTIP125R12SS14M	12,500	.4921	12,999	.5118	O	170.308
KTIP130R1SS14M	KTIP130R3SS14M	KTIP130R5SS14M	KTIP130R8SS14M	KTIP130R12SS14M	13,000	.5118	13,499	.5315	P	170.308
KTIP135R1SS14M	KTIP135R3SS14M	KTIP135R5SS14M	KTIP135R8SS14M	KTIP135R12SS14M	13,500	.5315	13,999	.5511	Q	170.308
KTIP140R1SS16M	KTIP140R3SS16M	KTIP140R5SS16M	KTIP140R8SS16M	KTIP140R12SS16M	14,000	.5512	14,499	.5708	R	170.309
KTIP145R1SS16M	KTIP145R3SS16M	KTIP145R5SS16M	KTIP145R8SS16M	KTIP145R12SS16M	14,500	.5709	14,999	.5905	S	170.309
KTIP150R1SS16M	KTIP150R3SS16M	KTIP150R5SS16M	KTIP150R8SS16M	KTIP150R12SS16M	15,000	.5906	15,999	.6299	T	170.309
KTIP160R1SS18M	KTIP160R3SS18M	KTIP160R5SS18M	KTIP160R8SS18M	KTIP160R12SS18M	16,000	.6299	16,999	.6693	U	170.309
KTIP170R1SS18M	KTIP170R3SS18M	KTIP170R5SS18M	KTIP170R8SS18M	KTIP170R12SS18M	17,000	.6693	17,999	.7086	V	170.314
KTIP180R1SS20M	KTIP180R3SS20M	KTIP180R5SS20M	KTIP180R8SS20M	KTIP180R12SS20M	18,000	.7087	18,999	.7480	W	170.314
KTIP190R1SS20M	KTIP190R3SS20M	KTIP190R5SS20M	KTIP190R8SS20M	KTIP190R12SS20M	19,000	.7480	19,999	.7874	X	170.314
KTIP200R1SS25M	KTIP200R3SS25M	KTIP200R5SS25M	KTIP200R8SS25M	KTIP200R12SS25M	20,000	.7874	20,999	.8267	Y	170.314
KTIP210R1SS25M	KTIP210R3SS25M	KTIP210R5SS25M	KTIP210R8SS25M	KTIP210R12SS25M	21,000	.8268	21,999	.8661	Z	170.314
KTIP220R1SS25M	KTIP220R3SS25M	KTIP220R5SS25M	KTIP220R8SS25M	KTIP220R12SS25M	22,000	.8661	22,999	.9055	ZA	170.314
KTIP230R1SS25M	KTIP230R3SS25M	KTIP230R5SS25M	KTIP230R8SS25M	KTIP230R12SS25M	23,000	.9055	23,999	.9448	ZB	170.314
KTIP240R1SS25M	KTIP240R3SS25M	KTIP240R5SS25M	KTIP240R8SS25M	KTIP240R12SS25M	24,000	.9449	24,999	.9842	ZC	170.314
KTIP250R1SS32M	KTIP250R3SS32M	KTIP250R5SS32M	KTIP250R8SS32M	KTIP250R12SS32M	25,000	.9843	25,999	1.0236	ZD	170.314
KTIP260R1SS32M	KTIP260R3SS32M	KTIP260R5SS32M	KTIP260R8SS32M	KTIP260R12SS32M	26,000	1.0236	26,999	1.0630	ZE	170.314
KTIP270R1SS32M	KTIP270R3SS32M	KTIP270R5SS32M	KTIP270R8SS32M	KTIP270R12SS32M	27,000	1.0630	27,999	1.1023	ZE	170.314

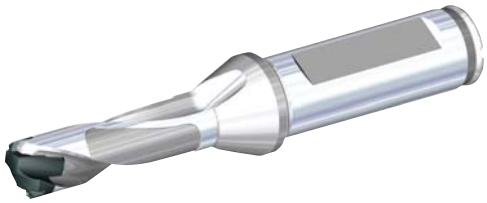
- Tool body shipped with insert wrench.





round shank (no flats)

For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H36.



KenTIP Flanged Shank • 1.5 x D/3 x D/5 x D/8 x D • Metric

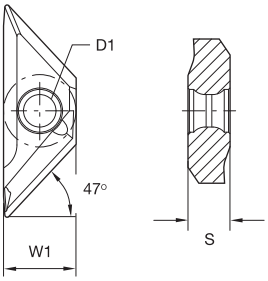
1.5 x D	3 x D	5 x D	8 x D	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTIP080R1SCF12M	KTIP080R3SCF12M	KTIP080R5SCF12M	KTIP080R8SCF12M	8,000	.3150	8,499	.3346	F	170.306
KTIP085R1SCF12M	KTIP085R3SCF12M	KTIP085R5SCF12M	KTIP085R8SCF12M	8,500	.3346	8,999	.3543	G	170.306
KTIP090R1SCF12M	KTIP090R3SCF12M	KTIP090R5SCF12M	KTIP090R8SCF12M	9,000	.3543	9,499	.3740	H	170.306
KTIP095R1SCF12M	KTIP095R3SCF12M	KTIP095R5SCF12M	KTIP095R8SCF12M	9,500	.3740	9,999	.3937	I	170.306
KTIP100R1SCF16M	KTIP100R3SCF16M	KTIP100R5SCF16M	KTIP100R8SCF16M	10,000	.3937	10,499	.4133	J	170.307
KTIP105R1SCF16M	KTIP105R3SCF16M	KTIP105R5SCF16M	KTIP105R8SCF16M	10,500	.4134	10,999	.4330	K	170.307
KTIP110R1SCF16M	KTIP110R3SCF16M	KTIP110R5SCF16M	KTIP110R8SCF16M	11,000	.4331	11,499	.4527	L	170.307
KTIP115R1SCF16M	KTIP115R3SCF16M	KTIP115R5SCF16M	KTIP115R8SCF16M	11,500	.4528	11,999	.4724	M	170.307
KTIP120R1SCF16M	KTIP120R3SCF16M	KTIP120R5SCF16M	KTIP120R8SCF16M	12,000	.4724	12,499	.4921	N	170.308
KTIP125R1SCF16M	KTIP125R3SCF16M	KTIP125R5SCF16M	KTIP125R8SCF16M	12,500	.4921	12,999	.5118	O	170.308
KTIP130R1SCF16M	KTIP130R3SCF16M	KTIP130R5SCF16M	KTIP130R8SCF16M	13,000	.5118	13,499	.5315	P	170.308
KTIP135R1SCF16M	KTIP135R3SCF16M	KTIP135R5SCF16M	KTIP135R8SCF16M	13,500	.5315	13,999	.5511	Q	170.308
KTIP140R1SCF16M	KTIP140R3SCF16M	KTIP140R5SCF16M	KTIP140R8SCF16M	14,000	.5512	14,499	.5708	R	170.309
KTIP145R1SCF16M	KTIP145R3SCF16M	KTIP145R5SCF16M	KTIP145R8SCF16M	14,500	.5709	14,999	.5905	S	170.309
KTIP150R1SCF20M	KTIP150R3SCF20M	KTIP150R5SCF20M	KTIP150R8SCF20M	15,000	.5906	15,999	.6299	T	170.309
KTIP160R1SCF20M	KTIP160R3SCF20M	KTIP160R5SCF20M	KTIP160R8SCF20M	16,000	.6299	16,999	.6693	U	170.309
KTIP170R1SCF20M	KTIP170R3SCF20M	KTIP170R5SCF20M	KTIP170R8SCF20M	17,000	.6693	17,999	.7086	V	170.314
KTIP180R1SCF25M	KTIP180R3SCF25M	KTIP180R5SCF25M	KTIP180R8SCF25M	18,000	.7087	18,999	.7480	W	170.314
KTIP190R1SCF25M	KTIP190R3SCF25M	KTIP190R5SCF25M	KTIP190R8SCF25M	19,000	.7480	19,999	.7874	X	170.314
KTIP200R1SCF25M	KTIP200R3SCF25M	KTIP200R5SCF25M	KTIP200R8SCF25M	20,000	.7874	20,999	.8267	Y	170.314
KTIP210R1SCF25M	KTIP210R3SCF25M	KTIP210R5SCF25M	KTIP210R8SCF25M	21,000	.8268	21,999	.8661	Z	170.314
KTIP220R1SCF25M	KTIP220R3SCF25M	KTIP220R5SCF25M	KTIP220R8SCF25M	22,000	.8661	22,999	.9055	ZA	170.314
KTIP230R1SCF25M	KTIP230R3SCF25M	KTIP230R5SCF25M	KTIP230R8SCF25M	23,000	.9055	23,999	.9448	ZB	170.314
KTIP240R1SCF25M	KTIP240R3SCF25M	KTIP240R5SCF25M	KTIP240R8SCF25M	24,000	.9449	24,999	.9842	ZC	170.314
KTIP250R1SCF25M	KTIP250R3SCF25M	KTIP250R5SCF25M	KTIP250R8SCF25M	25,000	.9843	25,999	1.0236	ZD	170.314
KTIP260R1SCF25M	KTIP260R3SCF25M	KTIP260R5SCF25M	KTIP260R8SCF25M	26,000	1.0236	26,999	1.0630	ZE	170.314
KTIP270R1SCF25M	KTIP270R3SCF25M	KTIP270R5SCF25M	KTIP270R8SCF25M	27,000	1.0630	27,999	1.1023	ZE	170.314

- Drilling and chamfering in one operation using the KenTIP drilling system.
- Low setup time — no height adjustment required.
- Use standard chamfering inserts with our universal -GD geometry style.
- Selection of two grade choices:
  - — KC7215 offering the highest level of wear resistance for higher cutting speeds in stable conditions.
  - — KC7015 for medium cutting speeds and normal conditions.
- Tool bodies with chamfer pockets available as custom solutions.

● first choice
○ alternate choice

P	○	●
M	○	○
K	○	●
N	●	○
S	○	●
H		





FAS-GD • Chamfering Insert

catalogue number	W1 mm	W1 in	D1 mm	D1 in	S mm	S in	KC7215	KC7015
FAS100302GD	6,35	.250	2,85	.112	3,48	.137	●	●

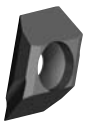


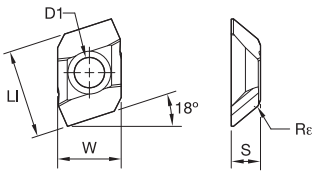
Made-to-order KenTIP holders with chamfering step using standard FAS inserts. Also available for KenTIP FS upon request.

- Very small incremental diameter changes for step drills.
- Best reliability and hole quality.
- Improved chip control and very low tendency for chattering.
- High tool life per edge; 2x indexable.
- Can be used with KenTIP and KSEM™ as well as Drill Fix™ indexable made-to-order step drills.
- CFM inserts are perfectly suited for usage on made-to-order indexable countersinking tools.

● first choice
○ alternate choice

P		●
M		○
K		○
N		●
S		●
H		





CounterFix Micro • Tangential Chamfer and Counterboring Inserts

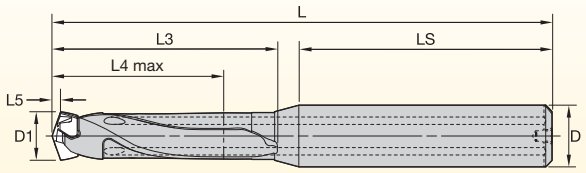
catalogue number	D1	LI	W	S	Rε	KCU40
CFM0402R00RHP	2,05	6,000	4,25	1,98	0,20	●
CFM0402R30RHP	2,05	6,000	4,25	1,98	0,20	●
CFM0402R45RHP	2,05	6,000	4,25	1,98	0,20	●



Made-to-order KenTIP holder with two very small counterboring steps using CounterFix Micro Inserts. Also available for KenTIP FS upon request.

Modular Drills • Dimension Tables

Dimensions for KenTIP™ Modular Drills • Round Shank • Metric



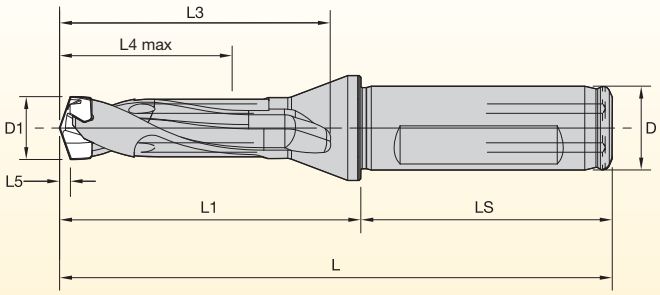


D1 mm	D1 max	seat	L5	LS	round D	1.5 x D L	1.5 x D L3	1.5 x D L4 max	3 x D L	3 x D L3	3 x D L4 max	5 x D L	5 x D L3	5 x D L4 max	8 x D L	8 x D L3	8 x D L4 max	12 x D L	12 x D L3	12 x D L4 max	wrench
8,000	8,499	F	1,4	41	10	67	23	13	79	35	26	97	53	43	123	79	68	157	113	102	**170.306**
8,500	8,999	G	1,5	41	10	68	24	14	81	37	27	100	56	45	127	83	72	163	119	108	**170.306**
9,000	9,499	H	1,6	41	10	69	25	14	83	39	29	103	58	48	132	88	76	170	126	114	**170.306**
9,500	9,999	I	1,6	41	10	70	26	15	85	41	30	107	63	50	137	92	80	177	133	120	**170.306**
10,000	10,499	J	1,7	46	12	77	28	16	92	43	32	115	66	53	147	98	84	189	140	126	**170.307**
10,500	10,999	K	1,8	46	12	78	29	17	94	45	33	118	68	55	151	101	88	195	146	132	**170.307**
11,000	11,499	L	1,9	46	12	79	30	17	96	47	35	121	71	58	156	105	92	202	153	138	**170.307**
11,500	11,999	M	2,0	46	12	80	31	18	98	49	36	124	75	60	160	110	96	208	159	144	**170.307**
12,000	12,499	N	2,1	46	14	83	34	19	101	52	38	127	78	63	165	116	100	215	166	150	**170.308**
12,500	12,999	O	2,2	46	14	84	35	20	103	54	39	130	81	65	169	120	104	221	172	156	**170.308**
13,000	13,499	P	2,2	46	14	85	36	20	105	56	41	133	84	68	174	125	108	228	179	162	**170.308**
13,500	13,999	Q	2,3	46	14	86	37	21	107	58	42	137	88	70	179	130	112	235	186	168	**170.308**
14,000	14,499	R	2,4	49	16	91	39	22	112	60	44	143	91	73	187	135	116	245	193	174	**170.309**
14,500	14,999	S	2,5	49	16	92	40	23	114	62	45	146	94	75	191	139	120	251	199	180	**170.309**
15,000	15,999	T	2,6	49	16	94	42	24	118	66	48	152	100	80	200	148	128	264	212	192	**170.309**
16,000	16,999	U	2,8	49	18	97	45	26	122	70	51	158	106	85	209	157	136	277	225	204	**170.309**
17,000	17,999	V	2,9	49	18	100	48	27	127	75	54	165	113	90	219	167	144	291	239	216	**170.314**
18,000	18,999	W	3,1	51	20	105	51	29	133	79	57	173	119	95	230	176	152	306	252	228	**170.314**
19,000	19,999	X	3,3	51	20	107	53	30	137	83	60	179	125	100	239	185	160	319	265	240	**170.314**
20,000	20,999	Y	3,5	57	25	116	56	32	147	87	63	191	131	105	254	200	168	344	284	252	**170.314**
21,000	21,999	Z	3,6	57	25	118	58	33	151	91	66	198	138	110	264	204	176	352	292	264	**170.314**
22,000	22,999	ZA	3,8	57	25	122	62	35	156	96	69	204	144	115	273	213	184	365	305	276	**170.314**
23,000	23,999	ZB	4,0	57	25	124	64	36	160	100	72	210	150	120	282	222	192	378	318	288	**170.314**
24,000	24,999	ZC	4,1	57	25	127	67	38	164	104	75	216	156	125	291	231	200	391	331	300	**170.314**
25,000	25,999	ZD	4,3	61	32	133	69	39	172	108	78	227	163	130	305	241	208	409	345	312	**170.314**
26,000	26,999	ZE	4,5	61	32	138	74	41	178	114	81	232	168	135	315	251	216	423	359	324	**170.314**
27,000	27,999	ZE	4,7	61	32	139	75	42	181	117	84	239	175	140	323	259	224	435	371	336	**170.314**

(continued)

Modular Drills • Dimension Tables *(continued)*

Dimensions for KenTIP™ Modular Drills • Flanged Shank • Metric





D1 mm	D1 max	seat	L5	LS	Flanged D	1.5 x D L	L3	L4 max	3 x D L	L3	L4 max	5 x D L	L3	L4 max	8 x D L	L3	L4 max	wrench
8,000	8,490	F	1,4	45	12	73	23	13	86	35	26	104	53	43	129	79	68	**170.306**
8,500	8,990	G	1,5	45	12	74	24	14	88	37	27	107	56	45	134	83	72	**170.306**
9,000	9,490	H	1,6	45	12	76	25	14	90	39	29	110	59	48	138	88	76	**170.306**
9,500	9,990	I	1,6	45	12	77	26	15	92	41	30	114	63	50	144	93	80	**170.306**
10,000	10,490	J	1,7	48	16	81	28	16	97	43	32	120	66	53	151	97	84	**170.307**
10,500	10,990	K	1,8	48	16	82	29	17	99	45	33	123	69	55	156	102	88	**170.307**
11,000	11,490	L	1,9	48	16	84	30	17	101	47	35	126	72	58	160	107	92	**170.307**
11,500	11,990	M	2,0	48	16	85	31	18	103	49	36	129	75	60	165	111	96	**170.307**
12,000	12,490	N	2,1	48	16	87	34	19	106	52	38	132	78	63	169	116	100	**170.308**
12,500	12,990	O	2,2	48	16	88	35	20	108	54	39	135	81	65	174	120	104	**170.308**
13,000	13,490	P	2,2	48	16	90	36	20	110	56	41	138	84	68	178	124	108	**170.308**
13,500	13,990	Q	2,3	48	16	91	37	21	112	58	42	142	88	70	184	130	112	**170.308**
14,000	14,490	R	2,4	48	16	92	39	22	114	60	44	145	91	73	188	134	116	**170.309**
14,500	14,990	S	2,5	48	16	93	40	23	116	62	45	148	94	75	193	139	120	**170.309**
15,000	15,990	T	2,6	50	20	98	42	24	122	66	48	156	100	80	204	148	128	**170.309**
16,000	16,990	U	2,8	50	20	100	45	26	126	70	51	162	106	85	213	157	136	**170.309**
17,000	17,990	V	2,9	50	20	104	48	27	131	75	54	169	113	90	223	167	144	**170.314**
18,000	18,990	W	3,1	56	25	112	51	29	141	79	57	181	119	95	238	176	152	**170.314**
19,000	19,990	X	3,3	56	25	115	53	30	144	83	60	187	125	100	247	185	160	**170.314**
20,000	20,990	Y	3,5	56	25	117	56	32	149	87	63	193	131	105	256	194	168	**170.314**
21,000	21,990	Z	3,6	56	25	120	58	33	153	91	66	200	138	110	266	204	176	**170.314**
22,000	22,990	ZA	3,8	56	25	123	62	35	158	96	69	206	144	115	275	213	184	**170.314**
23,000	23,990	ZB	4,0	56	25	126	64	36	162	100	72	212	150	120	284	222	192	**170.314**
24,000	24,990	ZC	4,1	56	25	128	67	38	166	104	75	218	156	125	293	231	200	**170.314**
25,000	25,990	ZD	4,3	56	25	131	69	39	170	108	78	225	163	130	303	241	208	**170.314**
26,000	26,990	ZE	4,5	56	25	135	74	41	176	114	81	230	168	135	313	251	216	**170.314**
27,000	27,990	ZE	4,7	56	25	137	75	42	179	117	84	237	175	140	321	259	224	**170.314**

Mounting the KenTIP Inserts



1) Fix drill holder on arbour. For insert exchange, fix arbour on the machine or set on tool presetter.



2) Remove dust using air blast.



3) Put insert into drill holder (use gloves to protect your hands).



4) Turn lightly in a clockwise direction (use gloves to protect your hands).



5) Set the wrench properly.



6) Make sure the wrench fits with the insert slot (check size and alignment of wrench and insert slots to avoid injury).





7) Slowly turn the wrench in a clockwise direction.



8) Complete.

Cooling the KenTIP Drill



1) Internal coolant is recommended.



2) In case of external coolant, cutting depth must be 3 x D or less.

Only when using the 3 x D tool bodies

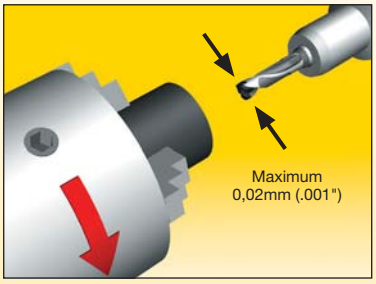


3) Dry cutting is not recommended. Limited applicability in cast iron materials, MQL strongly recommended.

Dry machining

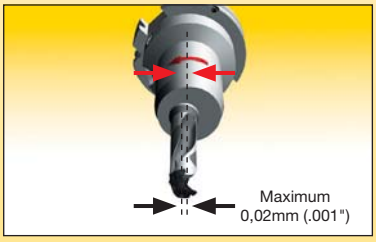
Usage Precautions
Core Deviation

1) For Turning Machines



Set deviation amount under 0,02mm between workpiece and drill.

2) For Machining Centres



Do not use any arbour with a damaged attachment surface. Centre of arbour deviation must be within 0,02mm.

KSEM™ Modular Drill System

Primary Application

The KSEM™ modular drill system offers extended length and drilling diameters beyond the KenTIP™ modular drill system. The KSEM system enables very aggressive feed rates in many applications to enable very high productivity levels. It offers a very robust pocket for its exchangeable inserts to increase tool life for both steel holder and carbide tip. This makes the KSEM system a very economic and reliable system for drilling in the intermediate diameter range.
Hole depths of 10 x D and drilling diameters from 12,5–40mm (.4921–1.5748") are covered by our standard tooling range. Various grades are available for drilling applications in almost any materials.

Features and Benefits

HP Drill-Point styles

- Low thrust prevents workpiece flexing.
- Excellent centring capabilities.
- Application specific selection of geometries for unmatched performance.

Strong Pocket, Easy Insert Change

- Robust pocket design for increased insert and holder life.
- Four-wall pocket provides insert stability.
- Requires only a simple wrench for insert removal.

Regrindable Inserts

- All geometries except SPL can be reconditioned to improve tool economy.
- Quick and reliable regrinding services offered by Kennametal and our partners.

Tailored Grades

- KC7315™ grade TiAlN-based PVD multilayer coating for high cutting speeds, primarily in steel applications.
- KCPM45™ grade multilayer TiAlN coated, very tough carbide substrate. Improved chipping resistance in demanding machining conditions.
- KC7320™ grade AlTiN-based PVD coating for the demands of drilling stainless steels.
- KCMS35™ grade with high Al content TiAlN PVD coating specifically for M3 and S-type materials.
- KC7410™ grade contains multiple layers of PVD coating offering outstanding wear resistance for drilling cast irons.
- KC7135™ grade with thin TiCN-TiN PVD coating for universal usage in all materials.

NEW!



KSEM™ SPL inserts offer extraordinary drilling performance in stainless steels, super alloys, and other demanding environments.

NEW!



KSEM FEG inserts create blind holes, through holes, and countersinks. These inserts are focused on versatility and will support you in many essential drilling applications.



Drill Body Portfolio

- Standard 1, 3, 5, 7, and 10 x D tool bodies with round shanks (inch) and Whistle Notch shanks (metric) available.
- Flanged shanks with 2 flats and entry for external coolant supply in 1, 3, 5, and 8 x D.
- KSEM mountable chamfering ring with FAS carbide chamfer inserts.

Customisation

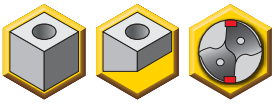
- Intermediate diameters available as semi-standards.
- Extensive step drill capabilities to support advanced applications and for one-shot counterboring and chamfering drills.
- Nearly all shank styles for toolholders available as semi-standards.
- Very high L x D ratios possible up to 25 x D and even higher (depending on drill diameter).

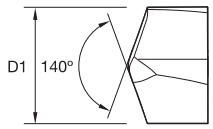
NEW!



Need to create very small diameter steps for chamfering and counterboring?
CFM inserts fit KSEM made-to-order step drills perfectly.
Find them in the KenTIP™ modular drill system section page H34

- KSEM KC7315™ HP cutting edges enable high metal removal rates and superior tool life for steel applications.
- HP geometry offers a wide and strong HP-style chiseled edge that prevents material quenching in the centre, enabling high feed rates. Sickle shaped, honed cutting edges provide excellent chip forming and tool life, even in long chipping materials.
- KC7315 is a fine-grain carbide with a TiAlN-based PVD multilayer coating. Its high wear resistance enables very high cutting speeds in stable conditions.
- KC7315 HP cutting edges are perfectly suited to drill alloyed and high-alloy steels.
- Use KC7315 HP cutting edges as an alternative to cast iron materials.







HP

KSEM Inserts • HP KC7315

P ●
M
K ○
N
S
H

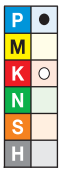
● first choice
○ alternate choice

KC7315	D1 mm	D1 in	seat size
KSEM1250HPM	12,500	.4921	C
KSEM1270HPM	12,700	.5000	C
KSEM1280HPM	12,800	.5039	C
KSEM1300HPM	13,000	.5118	C
KSEM1310HPM	13,100	.5160	C
KSEM1320HPM	13,200	.5197	C
KSEM1350HPM	13,500	.5310	C
KSEM1370HPM	13,700	.5394	B
KSEM1380HPM	13,800	.5433	B
KSEM1389HPM	13,890	.5470	B
KSEM1400HPM	14,000	.5512	B
KSEM1410HPM	14,100	.5551	B
KSEM1420HPM	14,200	.5591	B
KSEM1429HPM	14,290	.5630	B
KSEM1440HPM	14,400	.5669	B
KSEM1450HPM	14,500	.5709	B
KSEM1468HPM	14,680	.5780	A
KSEM1480HPM	14,800	.5827	A
KSEM1500HPM	15,000	.5906	A
KSEM1508HPM	15,080	.5940	A
KSEM1530HPM	15,300	.6024	A
KSEM1550HPM	15,500	.6102	A
KSEM1560HPM	15,600	.6142	A
KSEM1570HPM	15,700	.6181	A
KSEM1580HPM	15,800	.6220	A
KSEM1588HPM	15,880	.6250	1
KSEM1600HPM	16,000	.6299	1
KSEM1609HPM	16,090	.6340	1
KSEM1620HPM	16,200	.6378	1
KSEM1627HPM	16,270	.6410	1
KSEM1650HPM	16,500	.6496	1
KSEM1667HPM	16,670	.6560	1
KSEM1700HPM	17,000	.6693	1
KSEM1707HPM	17,070	.6720	1
KSEM1746HPM	17,460	.6875	1
KSEM1750HPM	17,500	.6890	1

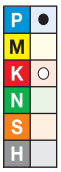
KC7315	D1 mm	D1 in	seat size
KSEM1786HPM	17,860	.7030	1
KSEM1800HPM	18,000	.7087	1
KSEM1826HPM	18,260	.7190	2
KSEM1850HPM	18,500	.7283	2
KSEM1865HPM	18,650	.7340	2
KSEM1900HPM	19,000	.7480	2
KSEM1905HPM	19,050	.7500	2
KSEM1923HPM	19,228	.7570	2
KSEM1927HPM	19,270	.7590	2
KSEM1945HPM	19,450	.7660	2
KSEM1950HPM	19,500	.7677	2
KSEM1984HPM	19,840	.7810	2
KSEM2000HPM	20,000	.7874	3
KSEM2024HPM	20,240	.7970	3
KSEM2050HPM	20,500	.8071	3
KSEM2064HPM	20,640	.8125	3
KSEM2100HPM	21,000	.8268	3
KSEM2143HPM	21,430	.8440	3
KSEM2150HPM	21,500	.8460	3
KSEM2183HPM	21,830	.8590	3
KSEM2200HPM	22,000	.8661	3
KSEM2223HPM	22,230	.8750	4
KSEM2244HPM	22,440	.8840	4
KSEM2250HPM	22,500	.8858	4
KSEM2300HPM	23,000	.9055	4
KSEM2342HPM	23,420	.9220	4
KSEM2350HPM	23,500	.9252	4
KSEM2381HPM	23,810	.9375	4
KSEM2400HPM	24,000	.9449	4
KSEM2450HPM	24,500	.9646	5
KSEM2461HPM	24,610	.9690	5
KSEM2500HPM	25,000	.9843	5
KSEM2540HPM	25,400	1.0000	5
KSEM2550HPM	25,500	1.0039	5
KSEM2560HPM	25,610	1.0080	5
KSEM2567HPM	25,670	1.0110	5

(continued)

(KSEM Inserts • HP KC7315™ — continued)



KC7315	D1 mm	D1 in	seat size
KSEM2600HPM	26,000	1.0236	5
KSEM2619HPM	26,190	1.0310	6
KSEM2650HPM	26,500	1.0433	6
KSEM2659HPM	26,590	1.0470	6
KSEM2700HPM	27,000	1.0630	6
KSEM2750HPM	27,500	1.0827	6
KSEM2778HPM	27,780	1.0940	6
KSEM2800HPM	28,000	1.1024	6
KSEM2818HPM	28,180	1.1090	7
KSEM2850HPM	28,500	1.1220	7
KSEM2858HPM	28,580	1.1250	7
KSEM2900HPM	29,000	1.1417	7
KSEM2937HPM	29,370	1.1563	7
KSEM2950HPM	29,500	1.1614	7
KSEM2977HPM	29,770	1.1720	7
KSEM3000HPM	30,000	1.1811	7
KSEM3016HPM	30,160	1.1875	8
KSEM3050HPM	30,500	1.2008	8
KSEM3096HPM	30,960	1.2190	8
KSEM3100HPM	31,000	1.2205	8



● first choice
○ alternate choice

KC7315	D1 mm	D1 in	seat size
KSEM3150HPM	31,500	1.2402	8
KSEM3175HPM	31,750	1.2500	8
KSEM3200HPM	32,000	1.2598	8
KSEM3250HPM	32,500	1.2795	9
KSEM3300HPM	33,000	1.2992	9
KSEM3334HPM	33,340	1.3130	9
KSEM3400HPM	34,000	1.3386	9
KSEM3413HPM	34,130	1.3440	9
KSEM3493HPM	34,930	1.3750	9
KSEM3500HPM	35,000	1.3780	9
KSEM3550HPM	35,500	1.3976	9
KSEM3600HPM	36,000	1.4173	9
KSEM3750HPM	37,500	1.4764	10
KSEM3800HPM	38,000	1.4961	10
KSEM3810HPM	38,100	1.5000	10
KSEM3850HPM	38,500	1.5157	10
KSEM3900HPM	39,000	1.5354	10
KSEM3950HPM	39,500	1.5551	10
KSEM4000HPM	40,000	1.5748	10

Tolerance HP • Metric

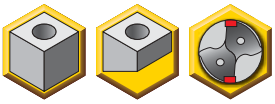
D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

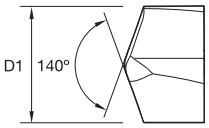
Application Data

Modular Drill Carbide Insert Blades • KSEM • HP Geometry • Grade KC7315 • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 12,5	16,0	20,0	25,4	32,0	40,0
P	1	70	**90**	110	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	80	**100**	120	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	65	**75**	80	mm/r	0,15–0,28	0,17–0,31	0,19–0,36	0,25–0,46	0,23–0,53	0,33–0,60
	4	50	**65**	75	mm/r	0,12–0,28	0,14–0,31	0,16–0,36	0,20–0,46	0,23–0,53	0,30–0,60
	5	45	**50**	65	mm/r	0,09–0,15	0,11–0,18	0,12–0,21	0,15 –0,25	0,17–0,29	0,20–0,33
	6	45	**50**	65	mm/r	0,12–0,23	0,14–0,26	0,16–0,29	0,20 –0,38	0,23 –0,43	0,26–0,54

- KSEM KC7315™ HPG cutting edges enable high metal removal rates and superior tool life for steel applications.
- HPG geometry works with low cutting and feed forces and provides very good centring. Reinforced cutting edges and good chip forming improve tool life due to high wear and edge chipping resistance.
- KC7315 is a fine-grain carbide with a TiAlN-based PVD multilayer coating. Its high wear resistance enables very high cutting speeds in stable conditions.
- KC7315 HPG cutting edges are perfectly suited to drill alloyed and high-alloy steels.
- Use KC7315 HPG cutting edges as an alternative to cast iron materials.

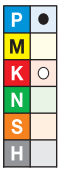




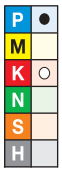


HPG

KSEM Inserts • HPG KC7315



KC7315	D1 mm	D1 in	seat size
KSEM1250HPGM	12,500	.4921	C
KSEM1260HPGM	12,600	.4961	C
KSEM1270HPGM	12,700	.5000	C
KSEM1280HPGM	12,800	.5039	C
KSEM1293HPGM	12,930	.5090	C
KSEM1300HPGM	13,000	.5118	C
KSEM1310HPGM	13,100	.5160	C
KSEM1320HPGM	13,200	.5197	C
KSEM1350HPGM	13,500	.5310	C
KSEM1360HPGM	13,600	.5354	B
KSEM1370HPGM	13,700	.5394	B
KSEM1380HPGM	13,800	.5433	B
KSEM1389HPGM	13,890	.5470	B
KSEM1400HPGM	14,000	.5512	B
KSEM1410HPGM	14,100	.5551	B
KSEM1420HPGM	14,200	.5591	B
KSEM1429HPGM	14,290	.5630	B
KSEM1440HPGM	14,400	.5669	B
KSEM1450HPGM	14,500	.5709	B
KSEM1460HPGM	14,600	.5748	A
KSEM1468HPGM	14,680	.5780	A
KSEM1480HPGM	14,800	.5827	A
KSEM1500HPGM	15,000	.5906	A
KSEM1508HPGM	15,080	.5940	A
KSEM1530HPGM	15,300	.6024	A
KSEM1548HPGM	15,480	.6090	A
KSEM1550HPGM	15,500	.6102	A
KSEM1560HPGM	15,600	.6142	A
KSEM1570HPGM	15,700	.6181	A
KSEM1580HPGM	15,800	.6220	A
KSEM1588HPGM	15,880	.6250	1
KSEM1600HPGM	16,000	.6299	1
KSEM1604HPGM	16,040	.6315	1
KSEM1609HPGM	16,090	.6340	1
KSEM1619HPGM	16,190	.6374	1
KSEM1620HPGM	16,200	.6378	1

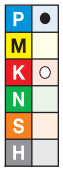


● first choice
○ alternate choice

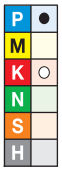
KC7315	D1 mm	D1 in	seat size
KSEM1627HPGM	16,270	.6410	1
KSEM1650HPGM	16,500	.6496	1
KSEM1660HPGM	16,600	.6535	1
KSEM1667HPGM	16,670	.6560	1
KSEM1700HPGM	17,000	.6693	1
KSEM1707HPGM	17,070	.6720	1
KSEM1735HPGM	17,350	.6831	1
KSEM1746HPGM	17,460	.6875	1
KSEM1750HPGM	17,500	.6890	1
KSEM1760HPGM	17,600	.6929	1
KSEM1770HPGM	17,700	.6969	1
KSEM1786HPGM	17,860	.7030	1
KSEM1800HPGM	18,000	.7087	1
KSEM1826HPGM	18,260	.7190	2
KSEM1850HPGM	18,500	.7283	2
KSEM1860HPGM	18,600	.7323	2
KSEM1865HPGM	18,650	.7340	2
KSEM1880HPGM	18,800	.7402	2
KSEM1900HPGM	19,000	.7480	2
KSEM1905HPGM	19,050	.7500	2
KSEM1925HPGM	19,250	.7579	2
KSEM1927HPGM	19,270	.7590	2
KSEM1932HPGM	19,320	.7606	2
KSEM1935HPGM	19,350	.7618	2
KSEM1945HPGM	19,450	.7660	2
KSEM1950HPGM	19,500	.7677	2
KSEM1970HPGM	19,700	.7756	2
KSEM1984HPGM	19,840	.7810	2
KSEM2000HPGM	20,000	.7874	3
KSEM2024HPGM	20,240	.7969	3
KSEM2050HPGM	20,500	.8071	3
KSEM2064HPGM	20,640	.8125	3
KSEM2070HPGM	20,700	.8150	3
KSEM2100HPGM	21,000	.8268	3
KSEM2110HPGM	21,100	.8307	3
KSEM2120HPGM	21,200	.8346	3

(continued)

(KSEM Inserts • HPG KC7315™ — continued)



KC7315	D1 mm	D1 in	seat size
KSEM2133HPGM	21,330	.8398	3
KSEM2143HPGM	21,430	.8440	3
KSEM2150HPGM	21,500	.8460	3
KSEM2170HPGM	21,700	.8543	3
KSEM2183HPGM	21,830	.8590	3
KSEM2200HPGM	22,000	.8661	3
KSEM2210HPGM	22,100	.8701	4
KSEM2215HPGM	22,150	.8720	4
KSEM2223HPGM	22,230	.8750	4
KSEM2244HPGM	22,440	.8840	4
KSEM2250HPGM	22,500	.8858	4
KSEM2262HPGM	22,620	.8906	4
KSEM2300HPGM	23,000	.9055	4
KSEM2305HPGM	23,050	.9075	4
KSEM2310HPGM	23,100	.9094	4
KSEM2325HPGM	23,250	.9154	4
KSEM2330HPGM	23,300	.9173	4
KSEM2342HPGM	23,420	.9220	4
KSEM2350HPGM	23,500	.9252	4
KSEM2381HPGM	23,810	.9375	4
KSEM2400HPGM	24,000	.9449	4
KSEM2430HPGM	24,300	.9567	5
KSEM2450HPGM	24,500	.9646	5
KSEM2461HPGM	24,610	.9690	5
KSEM2470HPGM	24,700	.9724	5
KSEM2500HPGM	25,000	.9843	5
KSEM2540HPGM	25,400	1.0000	5
KSEM2550HPGM	25,500	1.0039	5
KSEM2554HPGM	25,540	1.0055	5
KSEM2560HPGM	25,600	1.0080	5
KSEM2565HPGM	25,654	1.0100	5
KSEM2567HPGM	25,670	1.0110	5
KSEM2600HPGM	26,000	1.0236	5
KSEM2619HPGM	26,190	1.0310	6
KSEM2650HPGM	26,500	1.0433	6
KSEM2653HPGM	26,530	1.0445	6
KSEM2659HPGM	26,590	1.0470	6
KSEM2670HPGM	26,700	1.0512	6
KSEM2700HPGM	27,000	1.0630	6
KSEM2750HPGM	27,500	1.0827	6
KSEM2778HPGM	27,780	1.0940	6
KSEM2800HPGM	28,000	1.1024	6
KSEM2818HPGM	28,180	1.1090	7
KSEM2850HPGM	28,500	1.1220	7
KSEM2858HPGM	28,580	1.1250	7
KSEM2900HPGM	29,000	1.1417	7
KSEM2937HPGM	29,370	1.1563	7
KSEM2950HPGM	29,500	1.1614	7



● first choice
○ alternate choice

KC7315	D1 mm	D1 in	seat size
KSEM2955HPGM	29,550	1.1634	7
KSEM2973HPGM	29,730	1.1705	7
KSEM2977HPGM	29,770	1.1720	7
KSEM3000HPGM	30,000	1.1811	7
KSEM3016HPGM	30,160	1.1875	8
KSEM3050HPGM	30,500	1.2008	8
KSEM3056HPGM	30,560	1.2030	8
KSEM3096HPGM	30,960	1.2190	8
KSEM3100HPGM	31,000	1.2205	8
KSEM3125HPGM	31,250	1.2303	8
KSEM3150HPGM	31,500	1.2402	8
KSEM3175HPGM	31,750	1.2500	8
KSEM3200HPGM	32,000	1.2598	8
KSEM3220HPGM	32,200	1.2677	9
KSEM3234HPGM	32,340	1.2732	9
KSEM3250HPGM	32,500	1.2795	9
KSEM3254HPGM	32,540	1.2810	9
KSEM3294HPGM	32,940	1.2970	9
KSEM3300HPGM	33,000	1.2992	9
KSEM3334HPGM	33,340	1.3130	9
KSEM3350HPGM	33,500	1.3189	9
KSEM3373HPGM	33,730	1.3280	9
KSEM3400HPGM	34,000	1.3386	9
KSEM3413HPGM	34,130	1.3440	9
KSEM3450HPGM	34,500	1.3583	9
KSEM3493HPGM	34,930	1.3750	9
KSEM3500HPGM	35,000	1.3780	9
KSEM3550HPGM	35,500	1.3976	9
KSEM3572HPGM	35,720	1.4060	9
KSEM3600HPGM	36,000	1.4173	9
KSEM3612HPGM	36,120	1.4220	10
KSEM3650HPGM	36,500	1.4375	10
KSEM3651HPGM	36,510	1.4375	10
KSEM3700HPGM	37,000	1.4567	10
KSEM3731HPGM	37,310	1.4690	10
KSEM3750HPGM	37,500	1.4764	10
KSEM3800HPGM	38,000	1.4961	10
KSEM3810HPGM	38,100	1.5000	10
KSEM3846HPGM	38,460	1.5142	10
KSEM3850HPGM	38,500	1.5157	10
KSEM3900HPGM	39,000	1.5354	10
KSEM3950HPGM	39,500	1.5551	10
KSEM3975HPGM	39,750	1.5650	10
KSEM4000HPGM	40,000	1.5748	10

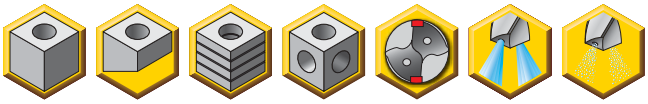
Tolerance HPG • Metric

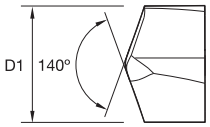
D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Modular Drill Carbide Insert Blades • KSEM™ • HPG Geometry • Grade KC7315™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	75	**110**	140	mm/r	0,15–0,34	0,17–0,40	0,19–0,45	0,25–0,58	0,29–0,66	0,33–0,76
	2	90	**120**	150	mm/r	0,15–0,34	0,17–0,40	0,19–0,45	0,25–0,58	0,29–0,66	0,33–0,76
	3	50	**75**	100	mm/r	0,15–0,28	0,17–0,34	0,19–0,40	0,25–0,51	0,29–0,58	0,33–0,66
	4	55	**75**	95	mm/r	0,12–0,31	0,14–0,34	0,16–0,40	0,20–0,51	0,23–0,58	0,26–0,66
	5	50	**65**	80	mm/r	0,09–0,17	0,11–0,20	0,12–0,23	0,15–0,28	0,17–0,32	0,20–0,36
	6	50	**65**	80	mm/r	0,12–0,25	0,14–0,29	0,16–0,32	0,20–0,42	0,23–0,47	0,26–0,54
K	1	90	**135**	175	mm/r	0,17–0,35	0,21–0,42	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
	2	90	**110**	125	mm/r	0,17–0,33	0,21–0,41	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
	3	40	**95**	125	mm/r	0,18–0,36	0,20–0,41	0,21–0,44	0,23–0,48	0,25–0,53	0,27–0,57

- KSEM KCPM45™ HPG cutting edges provide increased productivity and improved tool life in steel in difficult conditions.
- HPG geometry works with low cutting and feed forces and provides very good centring. Reinforced cutting edges and good chip forming improve tool life due to high wear and edge chipping resistance.
- KCPM45 combines a very tough, fine-grain carbide substrate with an advanced multilayer TiAlN coating. It is capable of machining steel even in the most demanding conditions.
- Material snap back, stacked plates, cross holes, and inclined exits are some examples of where KCPM45 HPG edges will do a great job in your operations.
- Use KCPM45 HPG cutting edges as an effective alternative in stainless steel as well.







HPG

KSEM Inserts • HPG KCPM45

P ● M ○ K N S H

● first choice
○ alternate choice

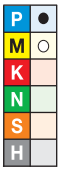
KCPM45	D1 mm	D1 in	seat size
KSEM1250HPGM	12,500	.4921	C
KSEM1270HPGM	12,700	.5000	C
KSEM1280HPGM	12,800	.5039	C
KSEM1293HPGM	12,930	.5090	C
KSEM1300HPGM	13,000	.5118	C
KSEM1350HPGM	13,500	.5310	C
KSEM1360HPGM	13,600	.5354	B
KSEM1380HPGM	13,800	.5433	B
KSEM1389HPGM	13,890	.5470	B
KSEM1400HPGM	14,000	.5512	B
KSEM1410HPGM	14,100	.5551	B
KSEM1429HPGM	14,290	.5630	B
KSEM1450HPGM	14,500	.5709	B
KSEM1468HPGM	14,680	.5780	A
KSEM1500HPGM	15,000	.5906	A
KSEM1508HPGM	15,080	.5940	A
KSEM1550HPGM	15,500	.6102	A
KSEM1580HPGM	15,800	.6220	A
KSEM1588HPGM	15,880	.6250	1
KSEM1600HPGM	16,000	.6299	1
KSEM1609HPGM	16,090	.6340	1
KSEM1620HPGM	16,200	.6378	1
KSEM1627HPGM	16,270	.6410	1
KSEM1650HPGM	16,500	.6496	1
KSEM1667HPGM	16,670	.6560	1
KSEM1700HPGM	17,000	.6693	1
KSEM1707HPGM	17,070	.6720	1
KSEM1746HPGM	17,460	.6875	1
KSEM1750HPGM	17,500	.6890	1
KSEM1786HPGM	17,860	.7030	1
KSEM1800HPGM	18,000	.7087	1
KSEM1826HPGM	18,260	.7190	2

P ● M ○ K N S H

KCPM45	D1 mm	D1 in	seat size
KSEM1850HPGM	18,500	.7283	2
KSEM1865HPGM	18,650	.7340	2
KSEM1900HPGM	19,000	.7480	2
KSEM1905HPGM	19,050	.7500	2
KSEM1920HPGM	19,200	.7559	2
KSEM1923HPGM	19,228	.7570	2
KSEM1925HPGM	19,250	.7579	2
KSEM1927HPGM	19,270	.7590	2
KSEM1945HPGM	19,450	.7660	2
KSEM1950HPGM	19,500	.7677	2
KSEM1965HPGM	19,650	.7736	2
KSEM1984HPGM	19,840	.7810	2
KSEM2000HPGM	20,000	.7874	3
KSEM2024HPGM	20,240	.7969	3
KSEM2050HPGM	20,500	.8071	3
KSEM2064HPGM	20,640	.8125	3
KSEM2100HPGM	21,000	.8268	3
KSEM2143HPGM	21,430	.8440	3
KSEM2150HPGM	21,500	.8460	3
KSEM2183HPGM	21,830	.8590	3
KSEM2200HPGM	22,000	.8661	3
KSEM2223HPGM	22,230	.8750	4
KSEM2244HPGM	22,440	.8840	4
KSEM2250HPGM	22,500	.8858	4
KSEM2300HPGM	23,000	.9055	4
KSEM2342HPGM	23,420	.9220	4
KSEM2350HPGM	23,500	.9252	4
KSEM2360HPGM	23,600	.9291	4
KSEM2370HPGM	23,700	.9331	4
KSEM2381HPGM	23,810	.9375	4
KSEM2400HPGM	24,000	.9449	4
KSEM2450HPGM	24,500	.9646	5

(continued)

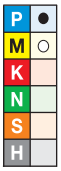
(KSEM Inserts • HPG KCPM45™ — continued)



KCPM45	D1 mm	D1 in	seat size
KSEM2461HPGM	24,610	.9690	5
KSEM2500HPGM	25,000	.9843	5
KSEM2540HPGM	25,400	1.0000	5
KSEM2550HPGM	25,500	1.0039	5
KSEM2560HPGM	25,600	1.0080	5
KSEM2565HPGM	25,654	1.0100	5
KSEM2567HPGM	25,670	1.0106	5
KSEM2581HPGM	25,810	1.0161	5
KSEM2600HPGM	26,000	1.0236	5
KSEM2619HPGM	26,190	1.0310	6
KSEM2650HPGM	26,500	1.0433	6
KSEM2659HPGM	26,590	1.0470	6
KSEM2700HPGM	27,000	1.0630	6
KSEM2750HPGM	27,500	1.0827	6
KSEM2778HPGM	27,780	1.0940	6
KSEM2800HPGM	28,000	1.1024	6
KSEM2818HPGM	28,180	1.1090	7
KSEM2835HPGM	28,350	1.1161	7
KSEM2850HPGM	28,500	1.1220	7
KSEM2858HPGM	28,580	1.1250	7
KSEM2900HPGM	29,000	1.1417	7
KSEM2937HPGM	29,370	1.1563	7
KSEM2950HPGM	29,500	1.1614	7
KSEM2977HPGM	29,770	1.1720	7
KSEM3000HPGM	30,000	1.1811	7
KSEM3016HPGM	30,160	1.1875	8
KSEM3050HPGM	30,500	1.2008	8
KSEM3096HPGM	30,960	1.2190	8

Tolerance HPG • Metric

D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039



● first choice
○ alternate choice

KCPM45	D1 mm	D1 in	seat size
KSEM3100HPGM	31,000	1.2205	8
KSEM3115HPGM	31,150	1.2264	8
KSEM3150HPGM	31,500	1.2402	8
KSEM3175HPGM	31,750	1.2500	8
KSEM3200HPGM	32,000	1.2598	8
KSEM3250HPGM	32,500	1.2795	9
KSEM3254HPGM	32,540	1.2810	9
KSEM3300HPGM	33,000	1.2992	9
KSEM3334HPGM	33,340	1.3130	9
KSEM3350HPGM	33,500	1.3189	9
KSEM3400HPGM	34,000	1.3386	9
KSEM3450HPGM	34,500	1.3583	9
KSEM3493HPGM	34,930	1.3750	9
KSEM3500HPGM	35,000	1.3780	9
KSEM3600HPGM	36,000	1.4173	9
KSEM3651HPGM	36,510	1.4375	10
KSEM3700HPGM	37,000	1.4567	10
KSEM3731HPGM	37,310	1.4690	10
KSEM3750HPGM	37,500	1.4764	10
KSEM3800HPGM	38,000	1.4961	10
KSEM3810HPGM	38,100	1.5000	10
KSEM3846HPGM	38,460	1.5142	10
KSEM3900HPGM	39,000	1.5354	10
KSEM4000HPGM	40,000	1.5748	10

Modular Drill Carbide Insert Blades • KSEM™ • HPG Geometry • Grade KCPM45™ • Through Coolant • Metric

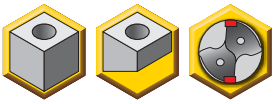
Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	100	**110**	120	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	80	**95**	110	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	65	**70**	80	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
M	1	30	**60**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	30	**50**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

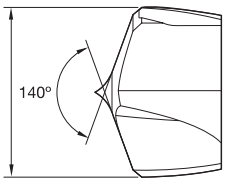
Modular Drill Carbide Insert Blades • KSEM • HPG Geometry • Grade KCPM45 • MQL* • Metric

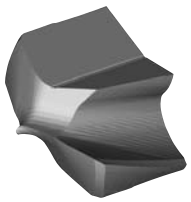
Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	60	**70**	80	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	50	**60**	70	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	65	**45**	80	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
M	1	30	**40**	50	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	25	**30**	35	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**25**	30	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

*Recommended for drilling depths ≤1.5 x D.

- KSEM KC7410™ HPCCL focuses on tool life and process reliability in cast iron materials in all cast iron materials. It offers increased feed forces in increases your productivity.
- HPCCL geometry offers a wide and strong HP-style chiseled edge that prevents material quenching in the centre, enabling high feed rates. With a corner chamfer and strong edges, it creates high quality holes and increased tool life.
- KC7410 is a multilayer AlCr-based coating over fine-grain carbide. It is extraordinarily wear resistant in cast iron applications due to its high hot hardness.
- Use KC7410 HPCCL in all cast iron applications, especially when working in difficult conditions and CGI or ADI irons.



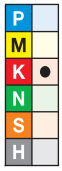



HPCCL

KSEM Inserts • HPCCL KC7410



KC7410	D1 mm	D1 in	seat size
KSEM1250HPCCLM	12,500	.4921	C
KSEM1270HPCCLM *	12,700	.5000	C
KSEM1293HPCCLM	12,930	.5091	C
KSEM1300HPCCLM	13,000	.5118	C
KSEM1310HPCCLM	13,100	.5157	C
KSEM1350HPCCLM	13,500	.5315	C
KSEM1389HPCCLM	13,890	.5469	B
KSEM1400HPCCLM	14,000	.5512	B
KSEM1429HPCCLM	14,290	.5626	B
KSEM1450HPCCLM	14,500	.5709	B
KSEM1468HPCCLM	14,680	.5780	A
KSEM1500HPCCLM	15,000	.5906	A
KSEM1548HPCCLM *	15,480	.6094	A
KSEM1550HPCCLM	15,500	.6102	A
KSEM1588HPCCLM *	15,880	.6252	1
KSEM1600HPCCLM	16,000	.6299	1
KSEM1609HPCCLM	16,090	.6335	1
KSEM1627HPCCLM	16,270	.6406	1
KSEM1650HPCCLM	16,500	.6496	1
KSEM1667HPCCLM	16,670	.6563	1
KSEM1700HPCCLM	17,000	.6693	1
KSEM1707HPCCLM	17,070	.6720	1
KSEM1746HPCCLM	17,460	.6874	1
KSEM1750HPCCLM	17,500	.6890	1
KSEM1760HPCCLM	17,600	.6929	1
KSEM1800HPCCLM	18,000	.7087	1
KSEM1826HPCCLM	18,260	.7189	2
KSEM1850HPCCLM	18,500	.7283	2
KSEM1900HPCCLM	19,000	.7480	2
KSEM1905HPCCLM	19,050	.7500	2
KSEM1927HPCCLM *	19,270	.7587	2
KSEM1945HPCCLM *	19,450	.7657	2



● first choice
○ alternate choice

KC7410	D1 mm	D1 in	seat size
KSEM1950HPCCLM	19,500	.7677	2
KSEM1984HPCCLM	19,840	.7811	2
KSEM2000HPCCLM	20,000	.7874	3
KSEM2024HPCCLM	20,240	.7969	3
KSEM2050HPCCLM	20,500	.8071	3
KSEM2064HPCCLM	20,640	.8126	3
KSEM2100HPCCLM	21,000	.8268	3
KSEM2143HPCCLM	21,430	.8437	3
KSEM2150HPCCLM	21,500	.8465	3
KSEM2200HPCCLM	22,000	.8661	3
KSEM2210HPCCLM	22,100	.8701	4
KSEM2223HPCCLM	22,230	.8752	4
KSEM2244HPCCLM	22,440	.8835	4
KSEM2250HPCCLM	22,500	.8858	4
KSEM2300HPCCLM	23,000	.9055	4
KSEM2342HPCCLM	23,420	.9220	4
KSEM2350HPCCLM	23,500	.9252	4
KSEM2381HPCCLM	23,810	.9374	4
KSEM2400HPCCLM	24,000	.9449	4
KSEM2450HPCCLM	24,500	.9646	5
KSEM2461HPCCLM	24,610	.9689	5
KSEM2500HPCCLM	25,000	.9843	5
KSEM2540HPCCLM	25,400	1.0000	5
KSEM2550HPCCLM	25,500	1.0039	5
KSEM2567HPCCLM	25,670	1.0106	5
KSEM2600HPCCLM	26,000	1.0236	5
KSEM2619HPCCLM	26,190	1.0311	6
KSEM2650HPCCLM	26,500	1.0433	6
KSEM2659HPCCLM	26,590	1.0469	6
KSEM2700HPCCLM	27,000	1.0630	6
KSEM2750HPCCLM	27,500	1.0827	6
KSEM2778HPCCLM	27,780	1.0937	6

(continued)

(KSEM Inserts • HPCCL KC7410™ — continued)



KC7410	D1 mm	D1 in	seat size
KSEM2800HPCCLM	28,000	1.1024	6
KSEM2818HPCCLM *	28,180	1.0940	7
KSEM2850HPCCLM	28,500	1.1220	7
KSEM2858HPCCLM	28,580	1.1250	7
KSEM2900HPCCLM	29,000	1.1417	7
KSEM2937HPCCLM	29,370	1.1563	7
KSEM2950HPCCLM *	29,500	1.1614	7
KSEM2977HPCCLM	29,770	1.1720	7
KSEM3000HPCCLM	30,000	1.1811	7
KSEM3016HPCCLM	30,160	1.1875	8
KSEM3050HPCCLM	30,500	1.2008	8
KSEM3100HPCCLM	31,000	1.2205	8



● first choice
○ alternate choice

KC7410	D1 mm	D1 in	seat size
KSEM3175HPCCLM	31,750	1.2500	8
KSEM3200HPCCLM	32,000	1.2598	8
KSEM3300HPCCLM	33,000	1.2992	9
KSEM3400HPCCLM *	34,000	1.3386	9
KSEM3500HPCCLM	35,000	1.3780	9
KSEM3600HPCCLM	36,000	1.4173	9
KSEM3700HPCCLM	37,000	1.4567	10
KSEM3800HPCCLM	38,000	1.4961	10
KSEM3900HPCCLM	39,000	1.5354	10
KSEM3920HPCCLM	39,200	1.5433	10
KSEM4000HPCCLM *	40,000	1.5748	10

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance HPCCL • Metric

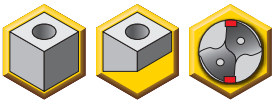
D1	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

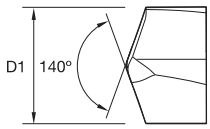
Application Data

Modular Drill Carbide Insert Blades • KSEM™ • HPCCL Geometry • Grade KC7410™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		12,5	16,0	20,0	25,4	32,0	40,0
K	1	100	**175**	200	mm/r	0,17–0,35	0,21–0,42	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
K	2	100	**160**	180	mm/r	0,17–0,33	0,21–0,41	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
K	3	70	**85**	100	mm/r	0,18–0,36	0,20–0,41	0,21–0,44	0,23–0,48	0,25–0,53	0,27–0,57

- KSEM KC7320™ HPL cutting edges provide perfect results and very high productivity in stainless steel.
- HPL geometry forms two chips per cutting edge for an uninterrupted, smooth chip flow. Very high metal removal rates and a reliable drilling process up to 10 x D makes HPL the superior solution for drilling in stainless steels.
- Grade KC7320 features a high Al content TiAlN coating on a universal fine-grain carbide. Its excellent oxidation stability and carbide toughness enables a high level of wear resistance in austenitic and other stainless steels.







HPL

KSEM Inserts • HPL KC7320

P M ● K N S H

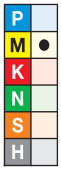
● first choice
○ alternate choice

KC7320	D1 mm	D1 in	seat size
KSEM1250HPLM	12,500	.4921	C
KSEM1270HPLM	12,700	.5000	C
KSEM1280HPLM	12,800	.5039	C
KSEM1293HPLM	12,930	.5090	C
KSEM1300HPLM	13,000	.5118	C
KSEM1311HPLM	13,100	.5157	C
KSEM1350HPLM	13,500	.5310	C
KSEM1360HPLM	13,600	.5354	B
KSEM1380HPLM	13,800	.5433	B
KSEM1389HPLM	13,890	.5470	B
KSEM1400HPLM	14,000	.5512	B
KSEM1410HPLM	14,100	.5551	B
KSEM1415HPLM	14,150	.5571	B
KSEM1420HPLM	14,200	.5591	B
KSEM1429HPLM	14,290	.5630	B
KSEM1450HPLM	14,500	.5709	B
KSEM1460HPLM	14,600	.5748	A
KSEM1468HPLM	14,680	.5780	A
KSEM1480HPLM	14,800	.5827	A
KSEM1500HPLM	15,000	.5906	A
KSEM1508HPLM	15,080	.5940	A
KSEM1548HPLM	15,480	.6090	A
KSEM1550HPLM	15,500	.6102	A
KSEM1560HPLM	15,600	.6142	A
KSEM1588HPLM	15,880	.6250	1
KSEM1600HPLM	16,000	.6299	1
KSEM1609HPLM	16,090	.6340	1
KSEM1610HPLM	16,100	.6339	1
KSEM1615HPLM	16,150	.6358	1
KSEM1620HPLM	16,200	.6378	1
KSEM1627HPLM	16,270	.6410	1
KSEM1650HPLM	16,500	.6496	1
KSEM1667HPLM	16,670	.6560	1
KSEM1700HPLM	17,000	.6693	1
KSEM1707HPLM	17,070	.6720	1
KSEM1746HPLM	17,460	.6875	1
KSEM1750HPLM	17,500	.6890	1
KSEM1775HPLM	17,750	.6988	1
KSEM1780HPLM	17,800	.7008	1
KSEM1786HPLM	17,860	.7030	1
KSEM1790HPLM	17,900	.7047	1
KSEM1800HPLM	18,000	.7087	1
KSEM1826HPLM	18,260	.7190	2
KSEM1850HPLM	18,500	.7283	2

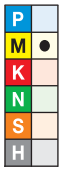
KC7320	D1 mm	D1 in	seat size
KSEM1860HPLM	18,600	.7323	2
KSEM1865HPLM	18,650	.7340	2
KSEM1890HPLM	18,900	.7441	2
KSEM1900HPLM	19,000	.7480	2
KSEM1905HPLM	19,050	.7500	2
KSEM1920HPLM	19,200	.7559	2
KSEM1923HPLM	19,228	.7570	2
KSEM1925HPLM	19,250	.7579	2
KSEM1927HPLM	19,270	.7590	2
KSEM1935HPLM	19,350	.7618	2
KSEM1936HPLM	19,360	.7622	2
KSEM1938HPLM	19,380	.7630	2
KSEM1945HPLM	19,450	.7660	2
KSEM1950HPLM	19,500	.7677	2
KSEM1984HPLM	19,840	.7810	2
KSEM2000HPLM	20,000	.7874	3
KSEM2010HPLM	20,100	.7913	3
KSEM2024HPLM	20,240	.7970	3
KSEM2035HPLM	20,350	.8012	3
KSEM2050HPLM	20,500	.8071	3
KSEM2064HPLM	20,640	.8125	3
KSEM2100HPLM	21,000	.8268	3
KSEM2115HPLM	21,150	.8327	3
KSEM2133HPLM	21,330	.8398	3
KSEM2143HPLM	21,430	.8440	3
KSEM2150HPLM	21,500	.8460	3
KSEM2183HPLM	21,830	.8590	3
KSEM2200HPLM	22,000	.8661	3
KSEM2223HPLM	22,230	.8750	4
KSEM2244HPLM	22,440	.8840	4
KSEM2250HPLM	22,500	.8858	4
KSEM2277HPLM	22,770	.8965	4
KSEM2300HPLM	23,000	.9055	4
KSEM2342HPLM	23,420	.9220	4
KSEM2350HPLM	23,500	.9252	4
KSEM2381HPLM	23,810	.9375	4
KSEM2400HPLM	24,000	.9449	4
KSEM2450HPLM	24,500	.9646	5
KSEM2461HPLM	24,610	.9690	5
KSEM2500HPLM	25,000	.9843	5
KSEM2507HPLM	25,070	.9870	5
KSEM2540HPLM	25,400	1.0000	5
KSEM2550HPLM	25,500	1.0039	5
KSEM2560HPLM	25,600	1.0080	5

(continued)

(KSEM Inserts • HPL KC7320™ — continued)



KC7320	D1 mm	D1 in	seat size
KSEM2565HPLM	25,650	1.0098	5
KSEM2567HPLM	25,670	1.0110	5
KSEM2581HPLM	25,810	1.0161	5
KSEM2600HPLM	26,000	1.0236	5
KSEM2619HPLM	26,190	1.0310	6
KSEM2650HPLM	26,500	1.0433	6
KSEM2659HPLM	26,590	1.0470	6
KSEM2670HPLM	26,700	1.0512	6
KSEM2700HPLM	27,000	1.0630	6
KSEM2750HPLM	27,500	1.0827	6
KSEM2779HPLM	27,780	1.0940	6
KSEM2800HPLM	28,000	1.1024	6
KSEM2810HPLM	28,100	1.1063	7
KSEM2817HPLM	28,180	1.1090	7
KSEM2850HPLM	28,500	1.1220	7
KSEM2858HPLM	28,580	1.1250	7
KSEM2900HPLM	29,000	1.1417	7
KSEM2937HPLM	29,370	1.1563	7
KSEM2950HPLM	29,500	1.1614	7
KSEM2977HPLM	29,770	1.1720	7



● first choice
○ alternate choice

KC7320	D1 mm	D1 in	seat size
KSEM3000HPLM	30,000	1.1811	7
KSEM3016HPLM	30,160	1.1875	8
KSEM3050HPLM	30,500	1.2008	8
KSEM3100HPLM	31,000	1.2205	8
KSEM3150HPLM	31,500	1.2402	8
KSEM3175HPLM	31,750	1.2500	8
KSEM3200HPLM	32,000	1.2598	8
KSEM3254HPLM	32,540	1.2810	9
KSEM3300HPLM	33,000	1.2992	9
KSEM3335HPLM	33,400	1.3130	9
KSEM3400HPLM	34,000	1.3386	9
KSEM3493HPLM	34,930	1.3750	9
KSEM3500HPLM	35,000	1.3780	9
KSEM3571HPLM	35,720	1.4060	9
KSEM3600HPLM	36,000	1.4173	9
KSEM3700HPLM	37,000	1.4567	10
KSEM3750HPLM	37,500	1.4764	10
KSEM3800HPLM	38,000	1.4961	10
KSEM3810HPLM	38,100	1.5000	10
KSEM3846HPLM	38,460	1.5140	10
KSEM3900HPLM	39,000	1.5354	10
KSEM4000HPLM	40,000	1.5748	10

Tolerance HPL • Metric

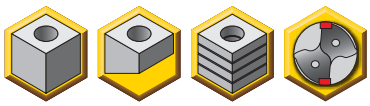
D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

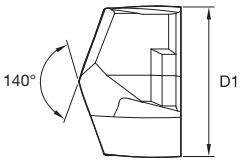
Application Data

Modular Drill Carbide Insert Blades • KSEM • HPL Geometry • Grade KC7320 • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 12,5	16,0	20,0	25,4	32,0	40,0
M	1	30	**60**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
M	2	30	**50**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
M	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

- KSEM SPL geometry was made to offer extraordinary drilling performance in stainless steels, super alloys, and other demanding environments.
- KSEM SPL provides process reliability, ensuring longer tool life and productivity in difficult-to-machine materials. Its advanced-point geometry and web design greatly reduces cutting forces.
- KCMS35™ is based on a very tough, fine-grain carbide substrate with a high Al content TiAlN PVD coating. It offers a high level of wear resistance and oxidation stability in parallel with chipping resistance for centre point and cutting edges.
- This insert style is ideally suited to drill heavy-duty and corrosion-resistant tube end sheets and other heat exchanger components (especially from M3 and type S materials).
- Use KSEM KCMS35 SPL inserts as an effective alternative for plain and alloyed steels, as well as in the most important Al and Cu applications.

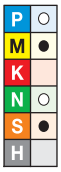




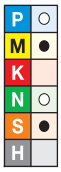


SPL

KSEM Inserts • SPL KCMS35



KCMS35	D1 mm	D1 in	seat size
KSEM1250SPLM	12,500	.4921	C
KSEM1270SPLM	12,700	.5000	C
KSEM1300SPLM	13,000	.5118	C
KSEM1350SPLM	13,500	.5315	C
KSEM1400SPLM	14,000	.5512	B
KSEM1429SPLM	14,290	.5626	B
KSEM1450SPLM	14,500	.5709	B
KSEM1500SPLM	15,000	.5906	A
KSEM1550SPLM	15,500	.6102	A
KSEM1588SPLM	15,880	.6252	1
KSEM1600SPLM	16,000	.6299	1
KSEM1609SPLM	16,090	.6335	1
KSEM1615SPLM	16,150	.6358	1
KSEM1627SPLM	16,270	.6406	1
KSEM1650SPLM	16,500	.6496	1
KSEM1667SPLM	16,670	.6563	1
KSEM1700SPLM	17,000	.6693	1
KSEM1746SPLM	17,460	.6874	1
KSEM1750SPLM	17,500	.6890	1
KSEM1800SPLM	18,000	.7087	1
KSEM1830SPLM	18,300	.7205	2
KSEM1850SPLM	18,500	.7283	2
KSEM1900SPLM	19,000	.7480	2
KSEM1905SPLM	19,050	.7500	2
KSEM1920SPLM	19,200	.7559	2
KSEM1923SPLM	19,230	.7571	2
KSEM1925SPLM	19,250	.7579	2
KSEM1927SPLM	19,270	.7587	2
KSEM1935SPLM	19,350	.7618	2
KSEM1945SPLM	19,450	.7657	2
KSEM1950SPLM	19,500	.7677	2
KSEM1984SPLM	19,840	.7811	2

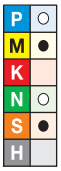


● first choice
○ alternate choice

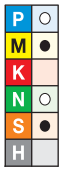
KCMS35	D1 mm	D1 in	seat size
KSEM2000SPLM	20,000	.7874	3
KSEM2024SPLM	20,240	.7969	3
KSEM2050SPLM	20,500	.8071	3
KSEM2064SPLM	20,640	.8126	3
KSEM2100SPLM	21,000	.8268	3
KSEM2150SPLM	21,500	.8465	3
KSEM2200SPLM	22,000	.8661	3
KSEM2223SPLM	22,230	.8752	4
KSEM2250SPLM	22,500	.8858	4
KSEM2300SPLM	23,000	.9055	4
KSEM2350SPLM	23,500	.9252	4
KSEM2381SPLM	23,810	.9374	4
KSEM2400SPLM	24,000	.9449	4
KSEM2450SPLM	24,500	.9646	5
KSEM2500SPLM	25,000	.9843	5
KSEM2525SPLM	25,250	.9941	5
KSEM2530SPLM	25,300	.9961	5
KSEM2540SPLM	25,400	1.0000	5
KSEM2550SPLM	25,500	1.0039	5
KSEM2560SPLM	25,600	1.0079	5
KSEM2565SPLM	25,650	1.0098	5
KSEM2567SPLM	25,670	1.0106	5
KSEM2581SPLM	25,810	1.0161	5
KSEM2600SPLM	26,000	1.0236	5
KSEM2619SPLM	26,190	1.0311	6
KSEM2630SPLM	26,300	1.0354	6
KSEM2650SPLM	26,500	1.0433	6
KSEM2659SPLM	26,590	1.0469	6
KSEM2700SPLM	27,000	1.0630	6
KSEM2750SPLM	27,500	1.0827	6
KSEM2800SPLM	28,000	1.1024	6
KSEM2850SPLM	28,500	1.1220	7

(continued)

(KSEM Inserts • SPL KCMS35™ — continued)



KCMS35	D1 mm	D1 in	seat size
KSEM2858SPLM	28,580	1.1252	7
KSEM2900SPLM	29,000	1.1417	7
KSEM2950SPLM	29,500	1.1614	7
KSEM3000SPLM	30,000	1.1811	7
KSEM3050SPLM	30,500	1.2008	8
KSEM3100SPLM	31,000	1.2205	8
KSEM3150SPLM	31,500	1.2402	8
KSEM3175SPLM	31,750	1.2500	8
KSEM3200SPLM	32,000	1.2598	8
KSEM3250SPLM	32,500	1.2795	9
KSEM3350SPLM	33,500	1.3189	9
KSEM3400SPLM	34,000	1.3386	9



● first choice
○ alternate choice

KCMS35	D1 mm	D1 in	seat size
KSEM3450SPLM	34,500	1.3583	9
KSEM3500SPLM	35,000	1.3780	9
KSEM3550SPLM	35,500	1.3976	9
KSEM3600SPLM	36,000	1.4173	9
KSEM3650SPLM	36,500	1.4370	10
KSEM3700SPLM	37,000	1.4567	10
KSEM3750SPLM	37,500	1.4764	10
KSEM3800SPLM	38,000	1.4961	10
KSEM3846SPLM	38,460	1.5142	10
KSEM3850SPLM	38,500	1.5157	10
KSEM3900SPLM	39,000	1.5354	10
KSEM3950SPLM	39,500	1.5551	10
KSEM4000SPLM	40,000	1.5748	10

Tolerance SPL • Metric

D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

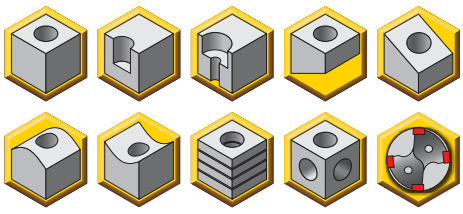
Application Data

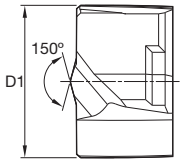
Modular Drill Carbide Insert Blades • KSEM™ • SPL Geometry • Grade KCMS35™ • Through Coolant • Metric

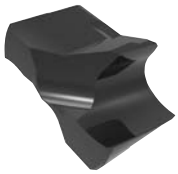
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	12,5	16,0	20,0	25,4	32,0	40,0
P	1	110	**140**	170	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	100	**120**	140	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	80	**100**	120	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
M	1	40	**60**	80	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	35	**55**	70	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
N	1	90	**155**	220	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
	2	90	**155**	220	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
	3	80	**120**	160	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
	4	90	**155**	220	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
S	1	20	**40**	60	mm/r	0,05–0,10	0,07–0,12	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25
	2	15	**30**	45	mm/r	0,05–0,10	0,07–0,12	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25
	3	15	**30**	45	mm/r	0,05–0,10	0,07–0,12	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25
	4	10	**25**	40	mm/r	0,05–0,10	0,07–0,12	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

Application recommendation: We recommend pre-centring when drilling with SPL inserts >5 x D.
For deeper holes (> = 10 x D), and for drilling M1 and M2 materials in general, we recommend using KSEM HPL inserts as a first choice.

- KSEM FEG flat-bottom inserts create 180° flat holes — only a small cavity remains in the centre of the hole ground. KSEM offers an extraordinarily strong pocket seat for your demanding flat-bottom applications.
- Whether it is a blind hole, a through hole, or if you need to countersink, these inserts are focused on versatility and will support you in many essential drilling applications.
- KSEM FEG inserts feature a small centring point as well as double margin lands for improved guidance and hole straightness. A corner chamfer serves to reduce bur formation and to improve tool life.
- KCPM45™ combines a very tough, fine-grain carbide substrate with an advanced multilayer TiAlN coating. It is capable of machining steel even in the most demanding conditions.
- Use KSEM FEG KCPM45 cutting edges as an effective alternative in cast iron, stainless steel, and high-temp alloys.

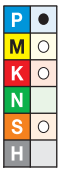






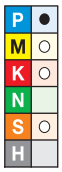
FEG

KSEM Inserts • FEG KCPM45



● first choice
○ alternate choice

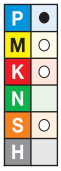
KCPM45	D1 mm	D1 in	seat size
KSEM1600FEGM	16,000	.6299	1
KSEM1650FEGM	16,500	.6496	1
KSEM1700FEGM	17,000	.6693	1
KSEM1750FEGM	17,500	.6890	1
KSEM1800FEGM	18,000	.7087	1
KSEM1850FEGM	18,500	.7283	2
KSEM1900FEGM	19,000	.7480	2
KSEM1905FEGM	19,050	.7500	2
KSEM1950FEGM	19,500	.7677	2
KSEM1984FEGM	19,840	.7811	2
KSEM2000FEGM	20,000	.7874	3
KSEM2050FEGM	20,500	.8071	3
KSEM2100FEGM	21,000	.8268	3
KSEM2150FEGM	21,500	.8465	3
KSEM2200FEGM	22,000	.8661	3
KSEM2250FEGM	22,500	.8858	4
KSEM2300FEGM	23,000	.9055	4
KSEM2350FEGM	23,500	.9252	4
KSEM2400FEGM	24,000	.9449	4
KSEM2450FEGM	24,500	.9646	5
KSEM2500FEGM	25,000	.9843	5
KSEM2540FEGM	25,400	1.0000	5
KSEM2550FEGM	25,500	1.0039	5
KSEM2580FEGM	25,800	1.0157	5



KCPM45	D1 mm	D1 in	seat size
KSEM2581FEGM	25,810	1.0161	5
KSEM2600FEGM	26,000	1.0236	5
KSEM2619FEGM	26,190	1.0311	6
KSEM2650FEGM	26,500	1.0433	6
KSEM2670FEGM	26,700	1.0512	6
KSEM2700FEGM	27,000	1.0630	6
KSEM2750FEGM	27,500	1.0827	6
KSEM2800FEGM	28,000	1.1024	6
KSEM2850FEGM	28,500	1.1220	7
KSEM2900FEGM	29,000	1.1417	7
KSEM2950FEGM	29,500	1.1614	7
KSEM3000FEGM	30,000	1.1811	7
KSEM3050FEGM	30,500	1.2008	8
KSEM3100FEGM	31,000	1.2205	8
KSEM3150FEGM	31,500	1.2402	8
KSEM3175FEGM	31,750	1.2500	8
KSEM3200FEGM	32,000	1.2598	8
KSEM3250FEGM	32,500	1.2795	9
KSEM3300FEGM	33,000	1.2992	9
KSEM3350FEGM	33,500	1.3189	9
KSEM3400FEGM	34,000	1.3386	9
KSEM3450FEGM	34,500	1.3583	9
KSEM3500FEGM	35,000	1.3780	9
KSEM3550FEGM	35,500	1.3976	9

(continued)

(KSEM Inserts • FEG KCPM45™ — continued)



● first choice
○ alternate choice

KCPM45	D1 mm	D1 in	seat size
KSEM3600FEGM	36,000	1.4173	9
KSEM3650FEGM	36,500	1.4370	10
KSEM3700FEGM	37,000	1.4567	10
KSEM3750FEGM	37,500	1.4764	10
KSEM3800FEGM	38,000	1.4961	10
KSEM3810FEGM	38,100	1.5000	10
KSEM3850FEGM	38,500	1.5157	10
KSEM3900FEGM	39,000	1.5354	10
KSEM3950FEGM	39,500	1.5551	10
KSEM4000FEGM	40,000	1.5748	10

Tolerance FEG • Metric

D1 metric	tolerance k7
12,5–18	+0,001/+ 0,019
>18–30	+0,002/+ 0,023
>30–40	+0,002/+ 0,027

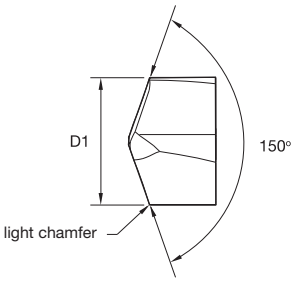
Application Data

Modular Drill Carbide Insert Blades • KSEM™ • FEG Geometry • Grade KCPM45™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric	Recommended Feed Rate (f) by Diameter 12,5	16,0	20,0	25,4	32,0	40,0
P	1	110	**140**	170	mm/r	0,14–0,23	0,17–0,25	0,19–0,29	0,23–0,38	0,26–0,43	0,33–0,76
	2	100	**120**	140	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,32–0,43	0,33–0,76
	3	80	**100**	120	mm/r	0,14–0,20	0,15–0,23	0,17–0,25	0,23–0,34	0,26–0,38	0,33–0,66
	4	70	**90**	110	mm/r	0,11–0,20	0,13–0,23	0,14–0,25	0,18–0,34	0,21–0,38	0,26–0,66
M	1	40	**60**	80	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	35	**55**	70	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
K	1	90	**135**	175	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29– 0,38	0,32–0,43	0,33–0,76
	2	80	**120**	140	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,32–0,43	0,33–0,76
	3	70	**110**	125	mm/r	0,15–0,24	0,18–0,26	0,21–0,29	0,23–0,37	0,25–0,42	0,27–0,57
S	1	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	15	**30**	45	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

- KSEM PC cutting edges serve mainly as precentring inserts, but can also be used in demanding conditions.
- Steep 150° degree angle with a light corner chamfer. Very good centring capability and edge chipping resistance.
- KC7135™ is a very resistant grade featuring a TiCN-TiN PVD coating.







KSEM Inserts • PC KC7135

P ● M K ● N S H

● first choice
○ alternate choice

KC7135	D1 mm	D1 in	seat size
KSEM1250PCM	12,500	.4921	C
KSEM1280PCM	12,800	.5039	C
KSEM1300PCM	13,000	.5118	C
KSEM1350PCM	13,500	.5310	C
KSEM1380PCM	13,800	.5433	B
KSEM1400PCM	14,000	.5512	B
KSEM1410PCM	14,100	.5551	B
KSEM1450PCM	14,500	.5709	B
KSEM1460PCM	14,600	.5748	A
KSEM1480PCM	14,800	.5827	A
KSEM1500PCM	15,000	.5906	A
KSEM1550PCM	15,500	.6102	A
KSEM1560PCM	15,600	.6142	A
KSEM1580PCM	15,800	.6220	A
KSEM1600PCM	16,000	.6299	1
KSEM1620PCM	16,200	.6378	1
KSEM1650PCM	16,500	.6496	1
KSEM1700PCM	17,000	.6693	1
KSEM1750PCM	17,500	.6890	1
KSEM1800PCM	18,000	.7087	1
KSEM1850PCM	18,500	.7283	2
KSEM1900PCM	19,000	.7480	2
KSEM1950PCM	19,500	.7677	2
KSEM2000PCM	20,000	.7874	3
KSEM2050PCM	20,500	.8071	3
KSEM2100PCM	21,000	.8268	3
KSEM2150PCM	21,500	.8460	3
KSEM2200PCM	22,000	.8661	3

P ● M K ● N S H

KC7135	D1 mm	D1 in	seat size
KSEM2250PCM	22,500	.8858	4
KSEM2300PCM	23,000	.9055	4
KSEM2350PCM	23,500	.9252	4
KSEM2400PCM	24,000	.9449	4
KSEM2450PCM	24,500	.9646	5
KSEM2500PCM	25,000	.9843	5
KSEM2550PCM	25,500	1.0039	5
KSEM2600PCM	26,000	1.0236	5
KSEM2650PCM	26,500	1.0433	6
KSEM2700PCM	27,000	1.0630	6
KSEM2800PCM	28,000	1.1024	6
KSEM2850PCM	28,500	1.1220	7
KSEM2900PCM	29,000	1.1417	7
KSEM2950PCM	29,500	1.1614	7
KSEM3000PCM	30,000	1.1811	7
KSEM3050PCM	30,500	1.2008	8
KSEM3100PCM	31,000	1.2205	8
KSEM3200PCM	32,000	1.2598	8
KSEM3300PCM	33,000	1.2992	9
KSEM3400PCM	34,000	1.3386	9
KSEM3500PCM	35,000	1.3780	9
KSEM3600PCM	36,000	1.4173	9
KSEM3700PCM	37,000	1.4567	10
KSEM3800PCM	38,000	1.4961	10
KSEM3900PCM	39,000	1.5354	10
KSEM4000PCM	40,000	1.5748	10

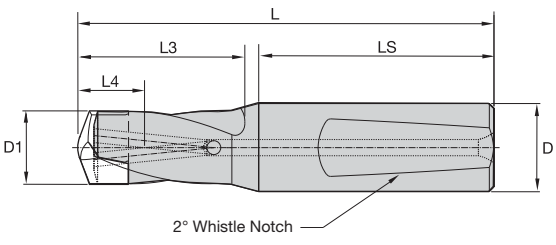
Tolerance PC • Metric

D1 metric	tolerance k7
12,5–18	+0,001/+0,019
>18–30	+0,002/+0,023
>30–40	+0,002/+0,027

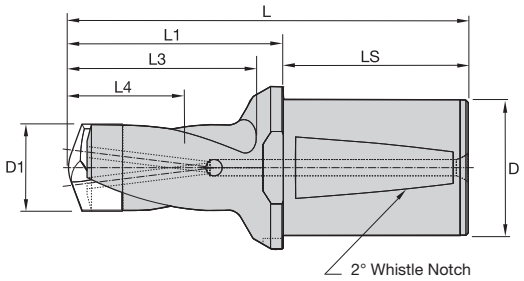
Modular Drill Carbide Insert Blades • KSEM™ • PC Geometry • Grade KC7135™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric					
					Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0
P	1	90	**100**	110	mm/r	0,14–0,23	0,17–0,25	0,19–0,29	0,23–0,38	0,26–0,43
	2	80	**90**	100	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,32–0,43
	3	55	**65**	75	mm/r	0,14–0,20	0,15–0,23	0,17–0,25	0,23–0,34	0,26–0,38
	4	50	**60**	70	mm/r	0,11–0,20	0,13–0,23	0,14–0,25	0,18–0,34	0,21–0,38
	5	45	**50**	60	mm/r	0,08–0,11	0,10–0,13	0,11–0,14	0,14–0,18	0,15–0,20
	6	45	**55**	65	mm/r	0,11–0,17	0,13–0,18	0,14–0,20	0,18–0,28	0,21–0,31
K	1	60	**60**	90	mm/r	0,08–0,24	0,09–0,28	0,11–0,31	0,14–0,43	0,15–0,48
	2	60	**60**	75	mm/r	0,18–0,24	0,21–0,28	0,23–0,31	0,28–0,37	0,32–0,42
	3	40	**40**	75	mm/r	0,15–0,24	0,18–0,26	0,21–0,29	0,23–0,37	0,25–0,42

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H68–H69.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H38–H57.



Whistle Notch shank D1≤32mm



Whistle Notch shank with Drive D1≥32mm

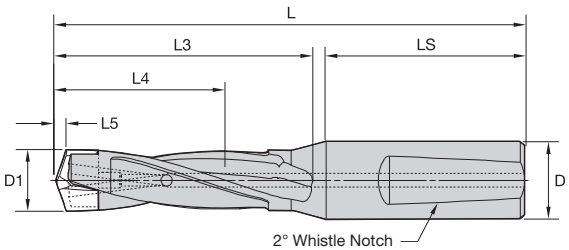


KSEM WN/WD50 Shank • 1 x D • Metric

1 x D	D1 mm	D1 in	D1 max mm	D1 max in	L	L1	L4 max	L5	LS	D	seat size	central lock screw	wrench
KSEM125R1WN16M	12,500	.4921	13,500	.5314	78	—	14	2,0	48	16	C	**364.017**	**170.294**
KSEM136R1WN16M	13,510	.5319	14,500	.5708	81	—	15	2,2	48	16	B	**364.016**	**170.289**
KSEM146R1WN20M	14,510	.5713	15,874	.6249	85	—	16	2,3	50	20	A	**364.016**	**170.289**
KSEM160R1WN20M	16,000	.6299	18,000	.7086	88	—	18	2,5	50	20	1	**364.010**	**170.270**
KSEM181R1WN25M	18,010	.7091	19,999	.7873	99	—	20	2,9	56	25	2	**364.010**	**170.270**
KSEM200R1WN25M	20,000	.7874	22,000	.8661	102	—	22	3,2	56	25	3	**364.011**	**170.272**
KSEM221R1WN25M	22,010	.8665	24,000	.9448	107	—	24	3,5	56	25	4	**364.011**	**170.272**
KSEM241R1WN32M	24,010	.9453	26,000	1.0236	115	—	26	3,8	60	32	5	**364.012**	**170.274**
KSEM261R1WN32M	26,010	1.0240	28,000	1.1023	119	—	28	4,0	60	32	6	**364.012**	**170.274**
KSEM281R1WN32M	28,016	1.1030	30,000	1.1811	123	—	30	4,3	60	32	7	**364.013**	**170.276**
KSEM301R1WN32M	30,010	1.1815	32,000	1.2598	127	—	32	4,6	60	32	8	**364.013**	**170.276**
KSEM321R1WD50M	32,010	1.2602	36,000	1.4173	147	79	36	4,9	68	50	9	**364.015**	**170.276**
KSEM361R1WD50M	36,010	1.4177	40,000	1.5748	155	87	40	5,5	68	50	10	**364.015**	**170.276**

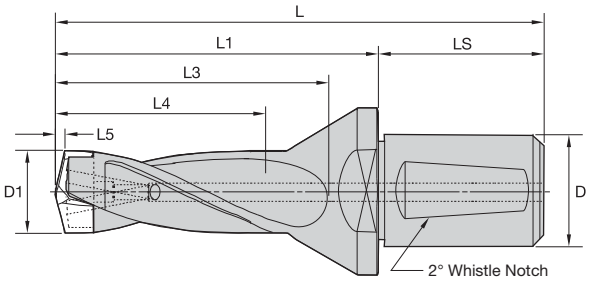
- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H68–H69.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H38–H57.



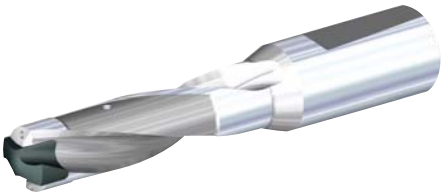


for diameters < 16mm, DIN 6535 - HE
for diameters > 16mm, DIN 1835 part 1 form E

Whistle Notch shank D1≤32mm



Whistle Notch shank with Drive D1≥32mm



KSEM WN/WD50 Shank • 3 x D/5 x D • Metric

3 x D	5 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
KSEM125R3WN16M	**KSEM125R5WN16M**	12,500	.4921	13,000	.5118	2,0	48	16	C	**364.017**
KSEM130R3WN16M	**KSEM130R5WN16M**	13,000	.5118	13,500	.5314	2,1	48	16	C	**364.017**
KSEM135R3WN16M	**KSEM135R5WN16M**	13,500	.5315	13,500	.5314	2,1	48	16	C	**364.017**
KSEM136R3WN16M	**KSEM136R5WN16M**	13,510	.5319	14,000	.5512	2,2	48	16	B	**364.016**
KSEM140R3WN16M	**KSEM140R5WN16M**	14,000	.5512	14,500	.5708	2,2	48	16	B	**364.016**
KSEM145R3WN20M	**KSEM145R5WN20M**	14,500	.5709	14,500	.5708	2,3	50	20	B	**364.016**
KSEM146R3WN20M	**KSEM146R5WN20M**	14,510	.5713	15,000	.5906	2,3	50	20	A	**364.016**
KSEM150R3WN20M	**KSEM150R5WN20M**	15,000	.5906	15,500	.6102	2,4	50	20	A	**364.016**
KSEM155R3WN20M	**KSEM155R5WN20M**	15,500	.6102	15,874	.6249	2,5	50	20	A	**364.016**
KSEM160R3WN20M	**KSEM160R5WN20M**	16,000	.6299	16,500	.6496	2,5	50	20	1	**364.010**
KSEM165R3WN20M	**KSEM165R5WN20M**	16,500	.6496	17,000	.6693	2,6	50	20	1	**364.010**
KSEM170R3WN20M	**KSEM170R5WN20M**	17,000	.6693	17,500	.6890	2,7	50	20	1	**364.010**
KSEM175R3WN20M	**KSEM175R5WN20M**	17,500	.6890	18,000	.7086	2,8	50	20	1	**364.010**
KSEM180R3WN20M	**KSEM180R5WN20M**	18,000	.7087	18,000	.7086	2,9	50	20	1	**364.010**
–	**KSEM181R5WN25M**	18,010	.7091	18,500	.7283	2,9	56	25	2	**364.010**
KSEM185R3WN25M	**KSEM185R5WN25M**	18,500	.7283	19,000	.7480	2,9	56	25	2	**364.010**
KSEM190R3WN25M	**KSEM190R5WN25M**	19,000	.7480	19,500	.7677	3,0	56	25	2	**364.010**
KSEM195R3WN25M	**KSEM195R5WN25M**	19,500	.7677	19,999	.7873	3,1	56	25	2	**364.010**
KSEM200R3WN25M	**KSEM200R5WN25M**	20,000	.7874	20,500	.8071	3,2	56	25	3	**364.011**
KSEM205R3WN25M	**KSEM205R5WN25M**	20,500	.8071	21,000	.8268	3,3	56	25	3	**364.011**
KSEM210R3WN25M	**KSEM210R5WN25M**	21,000	.8268	21,500	.8465	3,3	56	25	3	**364.011**
KSEM215R3WN25M	**KSEM215R5WN25M**	21,500	.8465	22,000	.8661	3,4	56	25	3	**364.011**
KSEM220R3WN25M	**KSEM220R5WN25M**	22,000	.8661	22,000	.8661	3,5	56	25	3	**364.011**
–	**KSEM221R5WN25M**	22,010	.8665	22,500	.8858	3,5	56	25	4	**364.011**

(*continued*)

(KSEM WN/WD50 Shank • 3 x D/5 x D • Metric — continued)

3 x D	5 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
KSEM225R3WN25M	KSEM225R5WN25M	22,500	.8858	23,000	.9055	3,6	56	25	4	364.011
KSEM230R3WN25M	KSEM230R5WN25M	23,000	.9055	23,500	.9252	3,7	56	25	4	364.011
KSEM235R3WN25M	KSEM235R5WN25M	23,500	.9252	24,000	.9448	3,7	56	25	4	364.011
KSEM240R3WN25M	KSEM240R5WN25M	24,000	.9449	24,000	.9448	3,8	56	25	4	364.011
–	KSEM241R5WN32M	24,010	.9453	24,500	.9646	3,8	60	32	5	364.012
KSEM245R3WN32M	KSEM245R5WN32M	24,500	.9646	25,000	.9843	3,9	60	32	5	364.012
KSEM250R3WN32M	KSEM250R5WN32M	25,000	.9843	25,500	1.0039	3,8	60	32	5	364.012
KSEM255R3WN32M	KSEM255R5WN32M	25,500	1.0039	26,000	1.0236	3,9	60	32	5	364.012
KSEM260R3WN32M	KSEM260R5WN32M	26,000	1.0236	26,000	1.0236	4,0	60	32	5	364.012
–	KSEM261R5WN32M	26,010	1.0240	26,500	1.0433	4,0	60	32	6	364.012
KSEM265R3WN32M	KSEM265R5WN32M	26,500	1.0433	27,000	1.0630	4,1	60	32	6	364.012
KSEM270R3WN32M	KSEM270R5WN32M	27,000	1.0630	27,500	1.0827	4,2	60	32	6	364.012
KSEM275R3WN32M	KSEM275R5WN32M	27,500	1.0827	28,000	1.1023	4,2	60	32	6	364.012
KSEM280R3WN32M	KSEM280R5WN32M	28,000	1.1024	28,000	1.1023	4,3	60	32	6	364.012
–	KSEM281R5WN32M	28,016	1.1030	28,500	1.1220	4,3	60	32	7	364.013
KSEM285R3WN32M	KSEM285R5WN32M	28,500	1.1220	29,000	1.1417	4,4	60	32	7	364.013
KSEM290R3WN32M	KSEM290R5WN32M	29,000	1.1417	29,500	1.1614	4,5	60	32	7	364.013
KSEM295R3WN32M	KSEM295R5WN32M	29,500	1.1614	30,000	1.1811	4,5	60	32	7	364.013
KSEM300R3WN32M	KSEM300R5WN32M	30,000	1.1811	30,000	1.1811	4,6	60	32	7	364.013
–	KSEM301R5WN32M	30,010	1.1815	30,500	1.2008	4,6	60	32	8	364.013
KSEM305R3WN32M	KSEM305R5WN32M	30,500	1.2008	31,000	1.2205	4,7	60	32	8	364.013
KSEM310R3WN32M	KSEM310R5WN32M	31,000	1.2205	31,500	1.2402	4,8	60	32	8	364.013
KSEM315R3WN32M	KSEM315R5WN32M	31,500	1.2402	32,000	1.2598	4,8	60	32	8	364.013
KSEM320R3WN32M	KSEM320R5WN32M	32,000	1.2598	32,000	1.2598	4,9	60	32	8	364.013
KSEM321R3WD50M	KSEM321R5WD50M	32,010	1.2602	33,000	1.2992	4,9	68	50	9	364.015
KSEM330R3WD50M	KSEM330R5WD50M	33,000	1.2992	34,000	1.3386	5,1	68	50	9	364.015
KSEM340R3WD50M	KSEM340R5WD50M	34,000	1.3386	35,000	1.3780	5,2	68	50	9	364.015
KSEM350R3WD50M	KSEM350R5WD50M	35,000	1.3780	36,000	1.4173	5,4	68	50	9	364.015
KSEM360R3WD50M	KSEM360R5WD50M	36,000	1.4173	36,000	1.4173	5,5	68	50	9	364.015
KSEM361R3WD50M	KSEM361R5WD50M	36,010	1.4177	37,000	1.4567	5,5	68	50	10	364.015
KSEM370R3WD50M	KSEM370R5WD50M	37,000	1.4567	38,000	1.4961	5,7	68	50	10	364.015
KSEM380R3WD50M	KSEM380R5WD50M	38,000	1.4961	39,000	1.5354	5,8	68	50	10	364.015
KSEM390R3WD50M	KSEM390R5WD50M	39,000	1.5354	40,000	1.5748	6,0	68	50	10	364.015
KSEM400R3WD50M	KSEM400R5WD50M	40,000	1.5748	40,000	1.5748	6,2	68	50	10	364.015

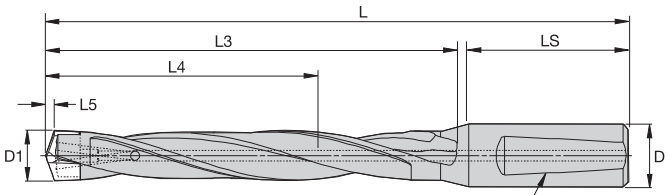


KSEM WD40 Shank • 3 x D/5 x D • Metric

3 x D	5 x D	D1 mm	D1 in	L5	LS	D	seat size	central lock screw
KSEM321R3WD40M	KSEM321R5WD40M	32,010	1.2602	5,6	68	40	9	364.015
KSEM330R3WD40M	KSEM330R5WD40M	33,000	1.2992	5,8	68	40	9	364.015
KSEM340R3WD40M	KSEM340R5WD40M	34,000	1.3386	6,0	68	40	9	364.015
KSEM350R3WD40M	KSEM350R5WD40M	35,000	1.3780	6,1	68	40	9	364.015
KSEM360R3WD40M	KSEM360R5WD40M	36,000	1.4173	6,3	68	40	9	364.015
KSEM361R3WD40M	KSEM361R5WD40M	36,010	1.4177	6,3	68	40	10	364.015
KSEM370R3WD40M	KSEM370R5WD40M	37,000	1.4567	6,5	68	40	10	364.015
KSEM380R3WD40M	KSEM380R5WD40M	38,000	1.4961	6,7	68	40	10	364.015
KSEM390R3WD40M	KSEM390R5WD40M	39,000	1.5354	6,9	68	40	10	364.015
KSEM400R3WD40M	KSEM400R5WD40M	40,000	1.5748	7,0	68	40	10	364.015

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H68–H69.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H38–H57.





for diameter <16mm DIN 6535 — HE
for diameter >16mm DIN 1835 part 1 form E

For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H72–H73.



KSEM WN Shank • 7 x D/10 x D • Metric

7 x D	10 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
KSEM125R7WN16M	**KSEM125R10WN16M**	12,500	.4921	13,000	.5118	2,0	48	16	C	**364.017**
KSEM130R7WN16M	**KSEM130R10WN16M**	13,000	.5118	13,500	.5314	2,1	48	16	C	**364.017**
KSEM135R7WN16M	**KSEM135R10WN16M**	13,500	.5315	13,500	.5314	2,1	48	16	C	**364.017**
KSEM136R7WN16M	**KSEM136R10WN16M**	13,510	.5319	14,000	.5512	2,2	48	16	B	**364.016**
KSEM140R7WN16M	**KSEM140R10WN16M**	14,000	.5512	14,500	.5708	2,2	48	16	B	**364.016**
KSEM145R7WN20M	**KSEM145R10WN20M**	14,500	.5709	14,500	.5708	2,3	50	20	B	**364.016**
KSEM146R7WN20M	**KSEM146R10WN20M**	14,510	.5713	15,000	.5906	2,3	50	20	A	**364.016**
KSEM150R7WN20M	**KSEM150R10WN20M**	15,000	.5906	15,500	.6102	2,4	50	20	A	**364.016**
KSEM155R7WN20M	**KSEM155R10WN20M**	15,500	.6102	15,874	.6249	2,5	50	20	A	**364.016**
KSEM160R7WN20M	**KSEM160R10WN20M**	16,000	.6299	16,500	.6496	2,5	50	20	1	**364.010**
KSEM165R7WN20M	**KSEM165R10WN20M**	16,500	.6496	17,000	.6693	2,6	50	20	1	**364.010**
KSEM170R7WN20M	**KSEM170R10WN20M**	17,000	.6693	17,500	.6890	2,7	50	20	1	**364.010**
KSEM175R7WN20M	**KSEM175R10WN20M**	17,500	.6890	18,000	.7086	2,8	50	20	1	**364.010**
KSEM180R7WN20M	**KSEM180R10WN20M**	18,000	.7087	18,000	.7086	2,9	50	20	1	**364.010**
—	**KSEM181R10WN25M**	18,010	.7091	18,500	.7283	2,9	56	25	2	**364.010**
KSEM185R7WN25M	**KSEM185R10WN25M**	18,500	.7283	19,000	.7480	2,9	56	25	2	**364.010**
KSEM190R7WN25M	**KSEM190R10WN25M**	19,000	.7480	19,500	.7677	3,0	56	25	2	**364.010**
KSEM195R7WN25M	**KSEM195R10WN25M**	19,500	.7677	19,999	.7873	3,1	56	25	2	**364.010**
KSEM200R7WN25M	**KSEM200R10WN25M**	20,000	.7874	20,500	.8071	3,2	56	25	3	**364.011**
KSEM205R7WN25M	**KSEM205R10WN25M**	20,500	.8071	21,000	.8268	3,3	56	25	3	**364.011**
KSEM210R7WN25M	**KSEM210R10WN25M**	21,000	.8268	21,500	.8465	3,3	56	25	3	**364.011**
KSEM215R7WN25M	**KSEM215R10WN25M**	21,500	.8465	22,000	.8661	3,4	56	25	3	**364.011**
KSEM220R7WN25M	**KSEM220R10WN25M**	22,000	.8661	22,000	.8661	3,5	56	25	3	**364.011**
—	**KSEM221R10WN25M**	22,010	.8665	22,500	.8858	3,5	56	25	4	**364.011**
KSEM225R7WN25M	**KSEM225R10WN25M**	22,500	.8858	23,000	.9055	3,6	56	25	4	**364.011**
KSEM230R7WN25M	**KSEM230R10WN25M**	23,000	.9055	23,500	.9252	3,7	56	25	4	**364.011**
KSEM235R7WN25M	**KSEM235R10WN25M**	23,500	.9252	24,000	.9448	3,7	56	25	4	**364.011**
KSEM240R7WN25M	**KSEM240R10WN25M**	24,000	.9449	24,000	.9448	3,8	56	25	4	**364.011**
—	**KSEM241R10WN32M**	24,010	.9453	24,500	.9646	3,8	60	32	5	**364.012**
KSEM245R7WN32M	**KSEM245R10WN32M**	24,500	.9646	25,000	.9843	3,9	60	32	5	**364.012**
KSEM250R7WN32M	**KSEM250R10WN32M**	25,000	.9843	25,500	1.0039	3,8	60	32	5	**364.012**
KSEM255R7WN32M	**KSEM255R10WN32M**	25,500	1.0039	26,000	1.0236	3,9	60	32	5	**364.012**

(continued)

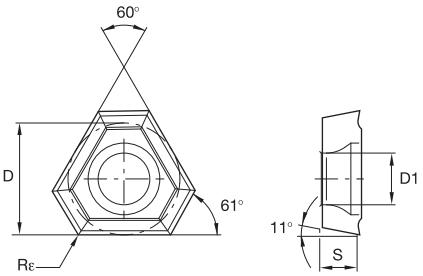
(KSEM WN Shank • 7 x D/10 x D • Metric — continued)

		D1		D1 max						
7 x D	10 x D	mm	in	mm	in	L5	LS	D	seat size	central lock screw
KSEM260R7WN32M	**KSEM260R10WN32M**	26,000	1.0236	26,000	1.0236	4,0	60	32	5	**364.012**
–	**KSEM261R10WN32M**	26,010	1.0240	26,500	1.0433	4,0	60	32	6	**364.012**
KSEM265R7WN32M	**KSEM265R10WN32M**	26,500	1.0433	27,000	1.0630	4,1	60	32	6	**364.012**
KSEM270R7WN32M	**KSEM270R10WN32M**	27,000	1.0630	27,500	1.0827	4,2	60	32	6	**364.012**
KSEM275R7WN32M	**KSEM275R10WN32M**	27,500	1.0827	28,000	1.1023	4,2	60	32	6	**364.012**
KSEM280R7WN32M	**KSEM280R10WN32M**	28,000	1.1024	28,000	1.1023	4,3	60	32	6	**364.012**
–	**KSEM281R10WN32M**	28,016	1.1030	28,500	1.1220	4,3	60	32	7	**364.013**
KSEM285R7WN32M	**KSEM285R10WN32M**	28,500	1.1220	29,000	1.1417	4,4	60	32	7	**364.013**
KSEM290R7WN32M	**KSEM290R10WN32M**	29,000	1.1417	29,500	1.1614	4,5	60	32	7	**364.013**
KSEM295R7WN32M	**KSEM295R10WN32M**	29,500	1.1614	30,000	1.1811	4,5	60	32	7	**364.013**
KSEM300R7WN32M	**KSEM300R10WN32M**	30,000	1.1811	30,000	1.1811	4,6	60	32	7	**364.013**
–	**KSEM301R10WN32M**	30,010	1.1815	30,500	1.2008	4,6	60	32	8	**364.013**
KSEM305R7WN32M	**–**	30,500	1.2008	31,000	1.2205	4,7	60	32	8	**364.013**
KSEM310R7WN32M	**KSEM310R10WN32M**	31,000	1.2205	31,500	1.2402	4,8	60	32	8	**364.013**
KSEM315R7WN32M	**–**	31,500	1.2402	32,000	1.2598	4,8	60	32	8	**364.013**
KSEM320R7WN32M	**KSEM320R10WN32M**	32,000	1.2598	32,000	1.2598	4,9	60	32	8	**364.013**

KSEM Chamfering Solutions

- Drilling and chamfering in one operation.
- No height adjustment required.
- Low setup time.
- Use standard inserts.
- Tool bodies available as standard.





● first choice
○ alternate choice

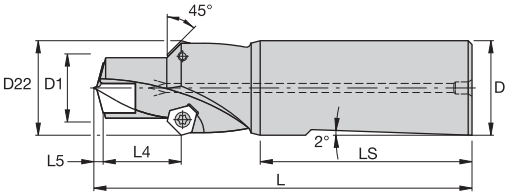
P			●	○
M		●	○	○
K			○	●
N		○	●	○
S			○	●
H				

TPGX-GD Geometry

catalogue number	D	S	Rε	D1	KC7015	KC7315	KC7140
TPGX0902ZPRGD	5,56	2,38	0,20	2,50	●	●	●
TPGX1102ZPRGD	6,35	2,38	0,20	2,85	●	●	●
TPGX1303ZPRGD	7,94	3,18	0,20	3,40	●	●	●
TPGX1603ZPRGD	9,52	3,18	0,20	4,40	●	●	●

- Use any KSEM insert blade diameter within the designated seat size.
- Drill shipped with central lock screw, insert screw, and wrenches.
- Order insert blades separately; see pages H38–H57.
- Order TPGX chamfering insert separately; see page H63.



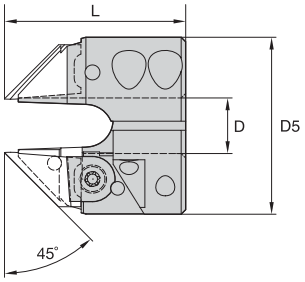




KSEM Bodies • WN/WD50 Shank with Chamfer • 1 x D • Metric

1 x D	D1 mm	D1 in	D1 max mm	D1 max in	D22	L	L4 max	L5	LS	D	seat size	chamfer insert	central lock screw	wrench
KSEM125R1WN16F45M	12,500	.4921	13,500	.5314	18	107	14	2,0	48,0	16	C	KSEM1250	**364.017**	**170.051**
KSEM136R1WN16F45M	13,510	.5319	14,500	.5708	19	107	15	2,2	48,0	16	B	KSEM1351	**364.016**	**170.289**
KSEM146R1WN20F45M	14,510	.5713	15,874	.6249	20	109	16	2,3	50,0	20	A	KSEM1451	**364.016**	**170.289**
KSEM160R1WN20F45M	16,000	.6299	18,000	.7086	22	110	18	2,5	50,0	20	1	KSEM1600	**364.010**	**170.270**
KSEM181R1WN25F45M	18,010	.7091	19,999	.7873	25	118	20	2,9	56,0	25	2	KSEM1801	**364.010**	**170.270**
KSEM200R1WN25F45M	20,000	.7874	22,000	.8661	28	120	22	3,2	56,0	25	3	KSEM2000	**364.011**	**170.272**
KSEM221R1WN25F45M	22,010	.8665	24,000	.9448	30	123	24	3,5	56,0	25	4	KSEM2201	**364.011**	**170.272**
KSEM241R1WN32F45M	24,010	.9453	26,000	1.0236	34	129	26	3,8	60,0	32	5	KSEM2401	**364.012**	**170.055**
KSEM261R1WN32F45M	26,010	1.0240	28,000	1.1023	36	131	28	4,0	60,0	32	6	KSEM2601	**364.012**	**170.055**
KSEM281R1WN32F45M	28,016	1.1030	30,000	1.1811	38	134	30	4,3	60,0	32	7	KSEM2801	**364.013**	**170.276**
KSEM301R1WN32F45M	30,010	1.1815	32,000	1.2598	40	136	32	4,6	60,0	32	8	KSEM3001	**364.013**	**170.276**
KSEM321R1WD50F45M	32,010	1.2602	36,000	1.4173	42	155	36	4,9	68,0	50	9	KSEM3201	**364.015**	**170.276**
KSEM361R1WD50F45M	36,010	1.4177	40,000	1.5748	46	165	40	5,5	68,0	50	10	KSEM3601	**364.015**	**170.276**

- The NEW chamfering rings for KSEM are available in a diameter range of 12,5–32mm.
- The KSEM SEF ring is double-edged, features a more rigid design to withstand high feed rates, and reduces time-consuming deburring and small chamfer operations.
- Reduce machining time — combine drilling and chamfering in one operation.
- Short-term availability — standard tooling off-the-shelf — KSEM body and inserts, SEF ring, and SEFAS™ inserts.
- Flexibility — adjustable drilling depth.
- For speed and feed recommendations, please refer to catalogue recommendations based on geometry and tool body length of the carrying KSEM tool.
- Small chamfers up to 1mm do not need further feed reduction.
- At deeper chamfers, a feed rate reduction of 50% is highly recommended to avoid vibrations and movement of the ring during operation.
- For inserts, please refer to SEFAS System.

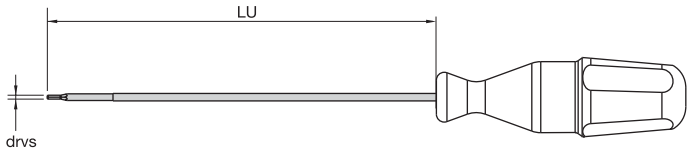


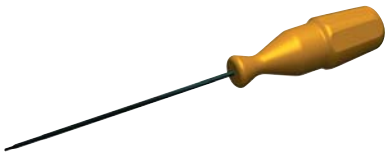


KSEM Chamfer Rings

	D		L		D5					
catalogue number	mm	in	mm	in	mm	in	clamp assembly	chip deflector	chip deflector screw	drill clamp screw
KSEM125SEFM	12,5	.4921	40	1.57	39	1.54	**360.551**	**360.660**	**128.508**	**191.726**
KSEM130SEFM	13,0	.5118	40	1.57	39	1.54	**360.551**	**360.660**	**128.508**	**191.726**
KSEM135SEFM	13,5	.5315	40	1.57	39	1.54	**360.551**	**360.660**	**128.508**	**191.726**
KSEM140SEFM	14,0	.5512	40	1.57	40	1.57	**360.551**	**360.661**	**128.508**	**199.123**
KSEM145SEFM	14,5	.5709	40	1.57	40	1.57	**360.551**	**360.661**	**128.508**	**199.123**
KSEM150SEFM	15,0	.5906	40	1.57	40	1.57	**360.551**	**360.662**	**128.508**	**199.123**
KSEM155SEFM	15,5	.6102	40	1.57	40	1.57	**360.551**	**360.662**	**128.508**	**199.123**
KSEM160SEFM	16,0	.6299	42	1.65	43	1.69	**360.551**	**360.663**	**128.508**	**199.123**
KSEM165SEFM	16,5	.6496	42	1.65	43	1.69	**360.551**	**360.663**	**128.508**	**199.123**
KSEM170SEFM	17,0	.6693	42	1.65	43	1.69	**360.551**	**360.663**	**128.508**	**199.123**
KSEM175SEFM	17,5	.6890	42	1.65	43	1.69	**360.551**	**360.663**	**128.508**	**199.123**
KSEM180SEFM	18,0	.7087	42	1.65	43	1.69	**360.551**	**360.663**	**128.508**	**199.123**
KSEM185SEFM	18,5	.7283	42	1.65	43	1.69	**360.551**	**360.664**	**128.508**	**199.123**
KSEM190SEFM	19,0	.7480	42	1.65	43	1.69	**360.551**	**360.664**	**128.508**	**199.123**
KSEM195SEFM	19,5	.7677	42	1.65	43	1.69	**360.551**	**360.664**	**128.508**	**199.123**
KSEM200SEFM	20,0	.7874	48	1.89	50	1.97	**360.551**	**360.665**	**128.510**	**199.123**
KSEM205SEFM	20,5	.8071	48	1.89	50	1.97	**360.551**	**360.665**	**128.510**	**199.123**
KSEM210SEFM	21,0	.8268	48	1.89	50	1.97	**360.551**	**360.665**	**128.510**	**199.123**
KSEM215SEFM	21,5	.8465	48	1.89	50	1.97	**360.551**	**360.665**	**128.510**	**199.123**
KSEM220SEFM	22,0	.8661	48	1.89	50	1.97	**360.551**	**360.665**	**128.510**	**199.123**
KSEM225SEFM	22,5	.8858	50	1.97	50	1.97	**360.551**	**360.666**	**128.510**	**–**
KSEM230SEFM	23,0	.9055	50	1.97	50	1.97	**360.551**	**360.666**	**128.510**	**–**
KSEM235SEFM	23,5	.9252	50	1.97	50	1.97	**360.551**	**360.666**	**128.510**	**–**
KSEM240SEFM	24,0	.9449	50	1.97	50	1.97	**360.551**	**360.666**	**128.510**	**–**
KSEM245SEFM	24,5	.9646	54	2.13	55	2.17	**360.551**	**360.667**	**128.510**	**–**
KSEM250SEFM	25,0	.9843	54	2.13	55	2.17	**360.551**	**360.667**	**128.510**	**–**
KSEM255SEFM	25,5	1.0039	54	2.13	55	2.17	**360.551**	**360.667**	**128.510**	**–**
KSEM260SEFM	26,0	1.0236	54	2.13	55	2.17	**360.551**	**360.667**	**128.510**	**–**
KSEM265SEFM	26,5	1.0433	56	2.20	55	2.17	**360.551**	**360.668**	**128.510**	**–**
KSEM270SEFM	27,0	1.0630	56	2.20	55	2.17	**360.551**	**360.668**	**128.510**	**–**
KSEM275SEFM	27,5	1.0827	56	2.20	55	2.17	**360.551**	**360.668**	**128.510**	**–**
KSEM280SEFM	28,0	1.1024	56	2.20	55	2.17	**360.551**	**360.668**	**128.510**	**–**
KSEM285SEFM	28,5	1.1220	61	2.40	60	2.36	**360.551**	**360.669**	**128.510**	**–**
KSEM290SEFM	29,0	1.1417	61	2.40	60	2.36	**360.551**	**360.669**	**128.510**	**–**
KSEM295SEFM	29,5	1.1614	61	2.40	60	2.36	**360.551**	**360.669**	**128.510**	**–**
KSEM300SEFM	30,0	1.1811	61	2.40	60	2.36	**360.551**	**360.669**	**128.510**	**–**
KSEM305SEFM	30,5	1.2008	61	2.40	60	2.36	**360.551**	**360.670**	**128.510**	**–**
KSEM310SEFM	31,0	1.2205	61	2.40	60	2.36	**360.551**	**360.670**	**128.510**	**–**
KSEM315SEFM	31,5	1.2402	61	2.40	60	2.36	**360.551**	**360.670**	**128.510**	**–**
KSEM320SEFM	32,0	1.2598	61	2.40	60	2.36	**360.551**	**360.670**	**128.510**	**–**

NOTE: Order inserts separately; see the SEFAS system on page I27.



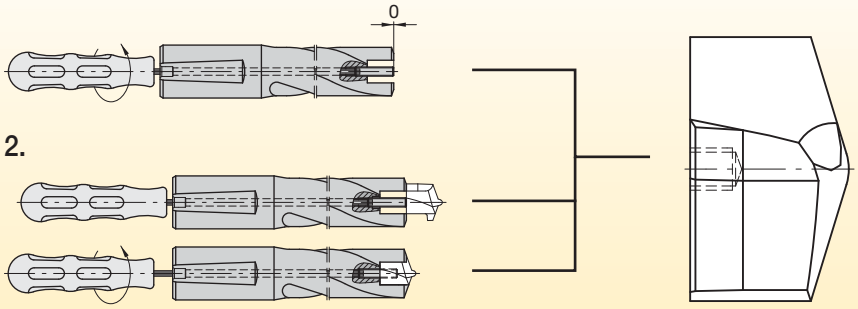


KSEM Wrenches

order number	catalogue number	central lock screw D1<32mm	central lock screw D1≥32mm	DRVS	LU mm	LU in
1126021	**170.270**	364.010	–	1.5 mm	185,00	7
1126032	**170.271**	364.010	–	1.5 mm	225,00	9
1510773	**170.281**	364.010	–	1.5 mm	297,00	12
1255899	**170.285**	364.010	–	1.5 mm	351,00	14
1126040	**170.272**	364.011	–	2 mm	210,00	8
1126049	**170.273**	364.011	–	2 mm	260,00	10
1510776	**170.282**	364.011	–	2 mm	343,00	14
1255900	**170.286**	364.011	–	2 mm	405,00	16
1126066	**170.274**	364.012	–	2.5 mm	240,00	9
1126072	**170.275**	364.012	–	2.5 mm	295,00	12
1510779	**170.283**	364.012	–	2.5 mm	393,00	15
1255901	**170.287**	364.012	–	2.5 mm	459,00	18
1126079	**170.276**	364.101	364.015	3 mm	265,00	10
1126088	**170.277**	364.101	364.015	3 mm	330,00	13
1510781	**170.284**	364.101	364.015	3 mm	439,00	17
1255902	**170.288**	364.101	364.015	3 mm	513,00	20
1834819	**170.294**	364.017	–	T5	156,00	6
1836470	**170.295**	364.017	–	T5	188,00	7
1836471	**170.296**	364.017	–	T5	290,00	11
1795811	**170.289**	364.016	–	T6	156,00	6
1795956	**170.290**	364.016	–	T6	188,00	7
1795960	**170.291**	364.016	–	T6	290,00	11

Mounting the Inserts

1.



Inserts (<32mm) without Connector Pin

1) Use the screwdriver to set the threaded pin:
   - For inserts up to Ø 32mm, flush with the drill face.
   - For inserts bigger Ø 32mm, set 2mm below the drill face.

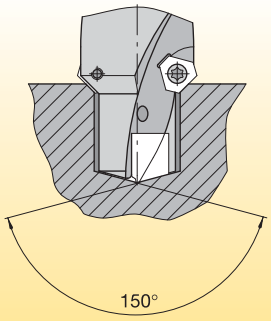
2) Tighten the insert using the screwdriver to fit securely in the insert seat.

To change the insert, turn the clamping screw anti-clockwise until the insert is released.

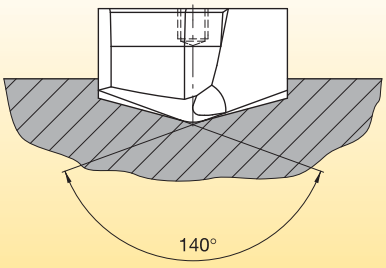
Repair of Damaged Threaded Pin

In the event that the central threaded pin becomes damaged, it can be removed after severing it in the tool body. To do this, drill beneath the insert seat in the tool body. The insert and threaded pin can then be removed. For information regarding the position and diameter of this repair hole, please refer to the manual (sheet **290.001 D/GB**) supplied with the tool body.

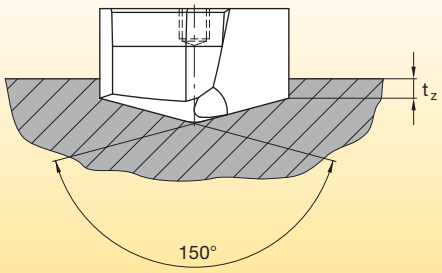
NOTE: For inserts without a connector pin, avoid jamming during mounting through precise positioning.



Pre-centring with FAS centring tool



HP inserts of the follower drill



Centring using PC inserts

Why is pre-centring necessary?

- Generally speaking, for drilling depths 5x the nominal diameter and above (5 x D).
- In unstable conditions (workpiece and tool clamping).

Why pre-centre using PC inserts?

- Soft-cut entry of follower drill due to 150° point angle of the PC insert.
- No extension of the follower drill in the entry area.
- Prevent chipping and breaking on the cutting edges.
- To avoid deflection, it is recommended to pre-centre with PC inserts using toolholders as short as possible (1 x D).

What happens if...
...a centre cannot be used for technical reasons?

- Spot drill with normal insert at normal and reduced cutting data (approximately 1/2 vc and approximately 1/2 vf), then continue drilling with regular cutting data without lifting off/stopping.

...there is no suitable PC cutting insert in the standard range (ø)?

- Use a made-to-order PC insert with k7 tolerance in the required nominal diameter.

OR

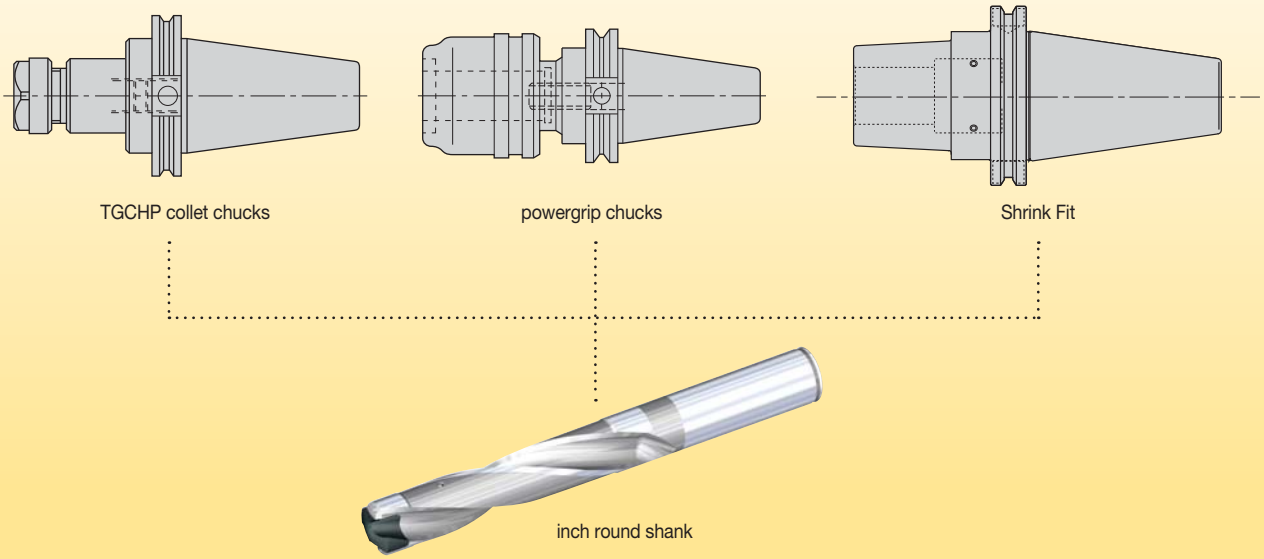
- Pre-centre, using the same cutting insert as used for the follower drill but without the cutting edges penetrating the workpiece (spot drill ø approximately 90% of drill ø D1).

...only one tool body is required?

- Enter the workpiece with 50% feed until the cutting edges and the heels have penetrated the hole, then continue drilling without lifting off/stopping using regular cutting data.

Rotating Applications

KSEM inch drills with round shanks (no flats) are specifically designed for rotating applications where the drill rotates and the workpiece remains stationary. The shank to drill-point location of these drills is held to an extremely close tolerance. To maintain accuracy, and get maximum performance from the KSEM drill, use only the approved toolholding method shown below.



TGCHP collet chucks | powergrip chucks | Shrink Fit

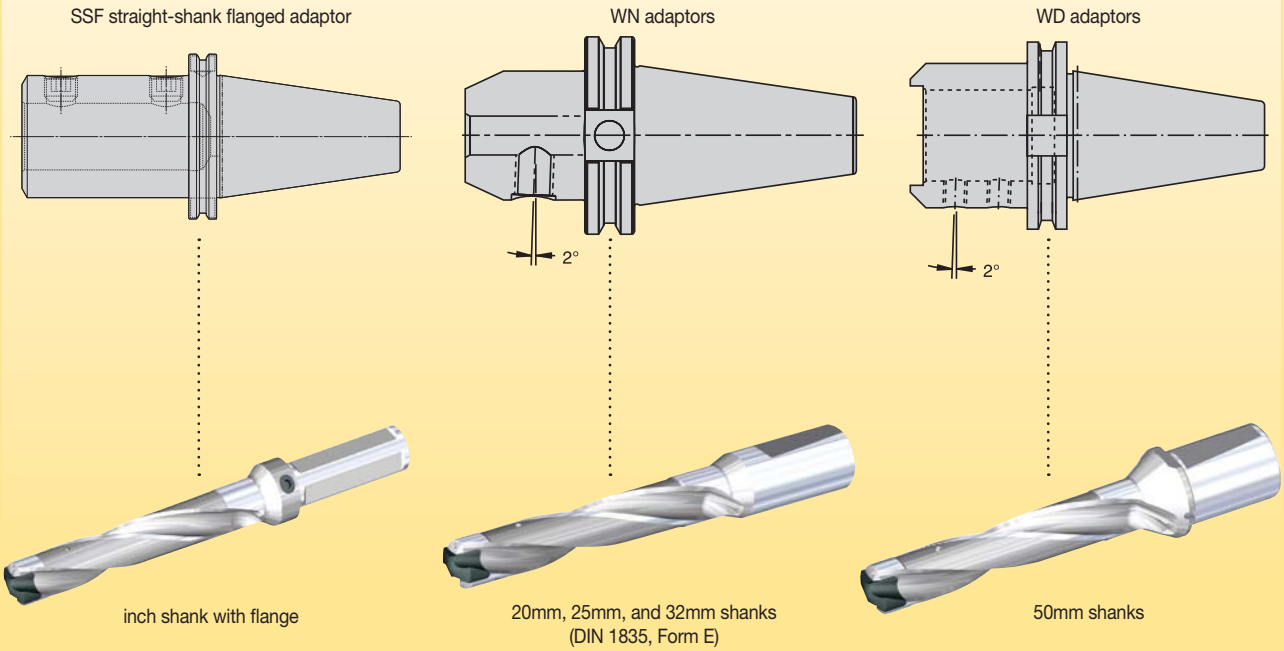
inch round shank

Inch Drill Bodies with Flange

KSEM inch drills with a flange can be used in rotating applications where the drill rotates and the workpiece remains stationary. To maintain accuracy and get maximum performance from the drill, use only the approved toolholding method shown here.

Metric Drill Bodies with a 2° Whistle Notch

KSEM metric drills come equipped with 2° Whistle Notch shanks. The 20mm, 25mm, and 32mm diameter shanks use WN adaptors. The 50mm shank uses a WD adaptor. Choose the correct adaptor to minimise runout and securely hold the drill.



SSF straight-shank flanged adaptor | WN adaptors | WD adaptors

inch shank with flange

20mm, 25mm, and 32mm shanks
(DIN 1835, Form E)

50mm shanks

Insert blades may be used, within limits, on different drill bodies. The insert blade must be of the same seat size. Overhang (see Figure 1) must be kept under 0,250mm (.0098") per side. For best drilling performance, rigidity, and efficient chip evacuation, always use the first-choice steel body. Performance may be compromised by using alternatives. In some applications, chips may bind between the drill body and the hole wall — especially when machining long-chipping materials like austenitic stainless steel and low-carbon steel.

(does not apply to stub length drills)

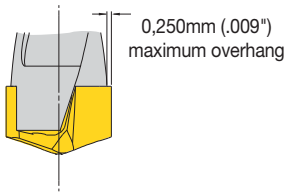


Figure 1

diameter D

inch	mm	insert blade	seat size	first choice	alternate body 1	alternate body 2	alternate body 3	alternate body 4
.492	12,50	KSEM1250	C	KSEM125..M	–	–	–	–
.500	12,70	KSEM0500	C	KSEM0500..	KSEM125..M	–	–	–
.509	12,93	KSEM0509	C	KSEM0509..	KSEM0500..	KSEM125..M	–	–
.512	13,00	KSEM1300	C	KSEM130..M	KSEM0509..	KSEM0500..	KSEM125..M	–
.516	13,10	KSEM0516	C	KSEM0516..	KSEM130..M	KSEM0509..	KSEM0500..	–
.531	13,50	KSEM1350	C	KSEM135..M	KSEM0531..	KSEM0516..	KSEM130..M	–
.547	13.89	KSEM0547	B	KSEM0547..	KSEM136..M	–	–	–
.551	14,00	KSEM1400	B	KSEM140..M	KSEM136..M	KSEM0547..	–	–
.563	14,29	KSEM0563	B	KSEM0563..	KSEM140..M	KSEM0547..	–	–
.571	14,50	KSEM1450	B	KSEM145..M	KSEM0563..	KSEM140..M	–	–
.578	14,68	KSEM0578	A	KSEM0578..	KSEM146..M	–	–	–
.591	15,00	KSEM1500	A	KSEM150..M	KSEM146..M	KSEM0578..	–	–
.594	15,08	KSEM0594	A	KSEM0594..	KSEM150..M	KSEM0578..	–	–
.609	15,48	KSEM0609	A	KSEM0609..	KSEM0594..	KSEM150..M	–	–
.610	15,50	KSEM1550	A	KSEM155..M	KSEM0609..	KSEM0594..	KSEM150..M	–
.625	15,88	KSEM0625	1	KSEM0625..	–	–	–	–
.630	16,00	KSEM1600	1	KSEM160..M	KSEM0625..	–	–	–
.634	16,09	KSEM0634	1	KSEM0634..	KSEM160..M	KSEM0625..	–	–
.641	16,27	KSEM0641	1	KSEM0641..	KSEM0634..	KSEM160..M	KSEM0625..	–
.650	16,50	KSEM1650	1	KSEM165..M	KSEM0641..	KSEM0634..	–	–
.656	16,67	KSEM0656	1	KSEM0656..	KSEM165..M	KSEM0641..	–	–
.669	17,00	KSEM1700	1	KSEM170..M	KSEM0656..	KSEM165..M	–	–
.672	17,07	KSEM0672	1	KSEM0672..	KSEM170..M	KSEM0656..	–	–
.688	17,46	KSEM0688	1	KSEM0688..	KSEM0672..	KSEM170..M	–	–
.689	17,50	KSEM1750	1	KSEM175..M	KSEM0688..	KSEM0672..	KSEM170..M	–
.700	17,78	KSEM0700	1	N/A	KSEM175..M	KSEM0688..	–	–
.703	17,86	KSEM0703	1	KSEM0703..	KSEM175..M	KSEM0688..	–	–
.709	18,00	KSEM1800	1	KSEM180..M	KSEM0703..	KSEM175..M	–	–
.719	18,26	KSEM0719	2	KSEM0719..	KSEM181..M	–	–	–
.728	18,50	KSEM1850	2	KSEM185..M	KSEM0719..	KSEM181..M	–	–
.734	18,65	KSEM0734	2	KSEM0734..	KSEM185..M	KSEM0719..	–	–
.748	19,00	KSEM1900	2	KSEM190..M	KSEM0734..	KSEM185..M	–	–
.750	19,05	KSEM0750	2	KSEM0750..	KSEM190..M	KSEM0734..	–	–
.759	19,27	KSEM0759	2	KSEM0759..	KSEM0750..	KSEM190..M	–	–
.766	19,45	KSEM0766	2	KSEM0766..	KSEM0759..	KSEM0750..	KSEM190..M	–
.768	19,50	KSEM1950	2	KSEM195..M	KSEM0766..	KSEM0759..	KSEM0750..	KSEM190..M
.781	19,84	KSEM0781	2	KSEM0781..	KSEM195..M	KSEM0766..	–	–
.787	20,00	KSEM2000	3	KSEM200..M	–	–	–	–
.797	20,24	KSEM0797	3	KSEM0797..	KSEM200..M	–	–	–
.800	20,32	KSEM0800	3	N/A	KSEM0797..	KSEM200..M	–	–
.807	20,50	KSEM2050	3	KSEM205..M	KSEM0797..	KSEM200..M	–	–
.813	20,64	KSEM0813	3	KSEM0813..	KSEM205..M	KSEM0797..	–	–
.827	21,00	KSEM2100	3	KSEM210..M	KSEM0813..	KSEM205..M	–	–
.844	21,43	KSEM0844	3	KSEM0844..	KSEM210..M	–	–	–
.847	21,50	KSEM2150	3	KSEM215..M	KSEM0844..	KSEM210..M	–	–
.859	21,83	KSEM0859	3	KSEM0859..	KSEM215..M	KSEM0844..	–	–
.866	22,00	KSEM2200	3	KSEM220..M	KSEM0859..	KSEM215..M	–	–
.875	22,23	KSEM0875	4	KSEM0875..	KSEM221..M	–	–	–
.884	22,44	KSEM0884	4	KSEM0884..	KSEM0875..	KSEM221..M	–	–
.886	22,50	KSEM2250	4	KSEM225..M	KSEM0884..	KSEM0875..	KSEM221..M	–
.906	23,00	KSEM2300	4	KSEM230..M	KSEM0906..	KSEM225..M	–	–
.922	23,42	KSEM0922	4	KSEM0922..	KSEM230..M	–	–	–
.925	23,50	KSEM2350	4	KSEM235..M	KSEM0922..	KSEM230..M	–	–
.938	23,81	KSEM0938	4	KSEM0938..	KSEM235..M	KSEM0922..	–	–
.945	24,00	KSEM2400	4	KSEM240..M	KSEM0938..	KSEM235..M	–	–

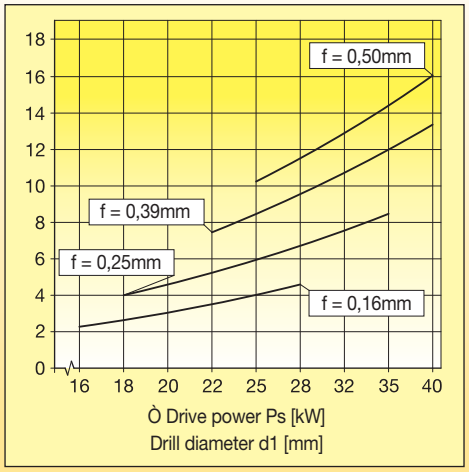
(continued)

(continued)

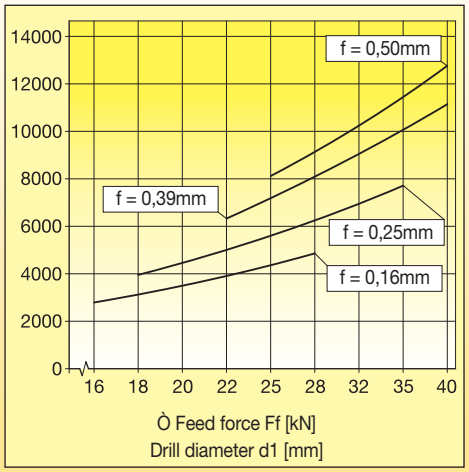
diameter D

inch	mm	insert blade	seat size	first choice	alternate body 1	alternate body 2	alternate body 3	alternate body 4
.965	24,50	KSEM2450	5	KSEM245..M	KSEM241..M	–	–	–
.969	24,61	KSEM0969	5	KSEM0969..	KSEM245..M	–	–	–
.984	25,00	KSEM2500	5	KSEM250..M	KSEM0984..	KSEM0969..	KSEM245..M	–
1.000	25,40	KSEM1000	5	KSEM1000..	KSEM250..M	–	–	–
1.004	25,50	KSEM2550	5	KSEM255..M	KSEM1000..	KSEM250..M	–	–
1.011	25,67	KSEM1011	5	KSEM1011..	KSEM255..M	–	–	–
1.024	26,00	KSEM2600	5	KSEM260..M	KSEM1011..	KSEM255..M	–	–
1.031	26,19	KSEM1031	6	KSEM1031..	KSEM261..M	–	–	–
1.043	26,50	KSEM2650	6	KSEM265..M	KSEM1031..	KSEM261..M	–	–
1.047	26,59	KSEM1047	6	KSEM1047..	KSEM265..M	KSEM1031..	KSEM261..M	–
1.063	27,00	KSEM2700	6	KSEM270..M	KSEM1063..	KSEM1047..	KSEM265..M	–
1.083	27,50	KSEM2750	6	KSEM275..M	KSEM270..M	KSEM1063..	–	–
1.094	27,78	KSEM1094	6	KSEM1094..	KSEM275..M	–	–	–
1.102	28,00	KSEM2800	6	KSEM280..M	KSEM1094..	KSEM275..M	–	–
1.109	28,18	KSEM1109	7	KSEM1109..	KSEM281..M	–	–	–
1.122	28,50	KSEM2850	7	KSEM285..M	KSEM1109..	KSEM281..M	–	–
1.125	28,58	KSEM1125	7	KSEM1125..	KSEM285..M	KSEM1109..	KSEM281..M	–
1.142	29,00	KSEM2900	7	KSEM290..M	KSEM1125..	KSEM285..M	–	–
1.156	29,37	KSEM1156	7	KSEM1156..	KSEM290..M	–	–	–
1.161	29,50	KSEM2950	7	KSEM295..M	KSEM1156..	KSEM290..M	–	–
1.172	29,77	KSEM1172	7	KSEM1172..	KSEM295..M	KSEM1156..	–	–
1.181	30,00	KSEM3000	7	KSEM300..M	KSEM1172..	KSEM295..M	–	–
1.188	30,16	KSEM1188	8	KSEM1188..	KSEM301..M	–	–	–
1.201	30,50	KSEM3050	8	KSEM305..M	KSEM1188..	KSEM301..M	–	–
1.203	30,56	KSEM1203	8	KSEM1203..	KSEM305..M	KSEM1188..	KSEM301..M	–
1.219	30,96	KSEM1219	8	KSEM1219..	KSEM1203..	KSEM305..M	–	–
1.220	31,00	KSEM3100	8	KSEM310..M	KSEM1219..	KSEM1203..	KSEM305..M	–
1.240	31,50	KSEM3150	8	KSEM315..M	KSEM310..M	–	–	–
1.250	31,75	KSEM1250	8	KSEM1250..	KSEM315..M	–	–	–
1.260	32,00	KSEM3200	8	KSEM320..M	KSEM1250..	KSEM315..M	–	–
1.280	32,50	KSEM3250	9	–	KSEM321..M	–	–	–
1.281	32,54	KSEM1281	9	KSEM1281..	KSEM321..M	–	–	–
1.297	32,94	KSEM1297	9	KSEM1297..	KSEM1281..	–	–	–
1.299	33,00	KSEM3300	9	KSEM330..M	KSEM1297..	KSEM1281..	–	–
1.313	33,34	KSEM1313	9	KSEM1313..	KSEM330..M	KSEM1297..	–	–
1.319	33,50	KSEM3350	9	–	–	KSEM1313..	KSEM330..M	–
1.328	33,73	KSEM1328	9	KSEM1328..	KSEM1313..	–	–	–
1.339	34,00	KSEM3400	9	KSEM340..M	KSEM1328..	–	–	–
1.344	34,13	KSEM1344	9	KSEM1344..	KSEM340..M	KSEM1328..	–	–
1.358	34,50	KSEM3450	9	–	–	KSEM1344..	KSEM340..M	–
1.375	34,93	KSEM1375	9	KSEM1375..	–	–	–	–
1.378	35,00	KSEM3500	9	KSEM350..M	KSEM1375..	–	–	–
1.398	35,50	KSEM3550	9	–	–	KSEM350..M	–	–
1.406	35,72	KSEM1406	9	KSEM1406..	–	–	–	–
1.417	36,00	KSEM3600	9	KSEM360..M	KSEM1406..	–	–	–
1.422	36,12	KSEM1422	10	KSEM1422..	KSEM361..M	–	–	–
1.437	36,50	KSEM3650	10	–	–	KSEM1422..	KSEM361..M	–
1.438	36,51	KSEM1438	10	KSEM1438..	KSEM1422..	KSEM361..M	–	–
1.457	37,00	KSEM3700	10	KSEM370..M	KSEM1438..	–	–	–
1.469	37,31	KSEM1469	10	KSEM1469..	KSEM370..M	–	–	–
1.476	37,50	KSEM3750	10	–	–	KSEM1469..	KSEM370..M	–
1.496	38,00	KSEM3800	10	KSEM380..M	–	–	–	–
1.500	38,10	KSEM1500	10	KSEM1500..	KSEM380..M	–	–	–
1.514	38,46	KSEM1514	10	KSEM1514..	KSEM1500..	KSEM380..M	–	–
1.516	38,50	KSEM3850	10	–	–	KSEM1514..	KSEM1500..	KSEM380..M
1.535	39,00	KSEM3900	10	KSEM390..M	–	–	–	–
1.555	39,50	KSEM3950	10	–	–	KSEM390..M	–	–
1.575	40,00	KSEM4000	10	KSEM400..M	–	–	–	–

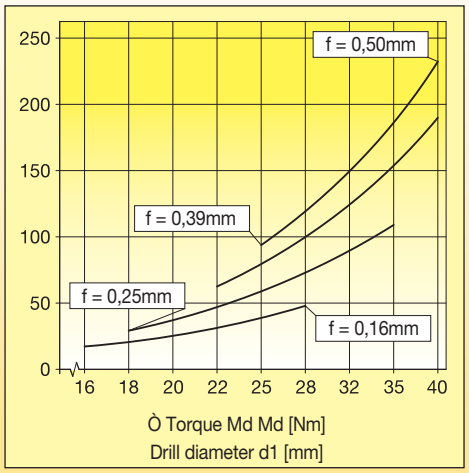
Drive Power (kW)



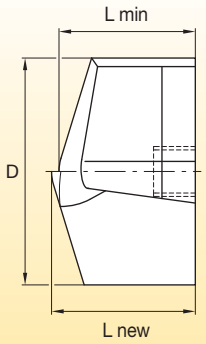
Feed Force (kN)



Torque (Nm)



NOTE: The diagrams above are used to determine the drive power, feed force, and torque. They are based on cutting force measurement in tempered steels in Cgr. 6. Tensile strength: Rm = 600 N/mm^2. The base cutting speed used is: vc = 80 m/min.



The following coolant pressure is recommended:

relative drilling depth	coolant pressure
1–3 x D	8 bars
5 x D	12 bars
7 x D	20 bars
10 x D	30 bars

insert seat size	diameter range D (mm)	L min. (mm)	L new (mm)
C	12,50–13,50	8,5	9,6
B	13,51–14,50	8,9	10,1
A	14,51–15,88	9,4	10,6
1	15,88–18,00	10,3	11,6
2	18,01–19,99	11,2	12,6
3	20,00–22,00	12,1	13,6
4	22,01–24,00	13,0	14,6
5	24,01–26,00	13,9	15,6
6	26,01–28,00	14,8	16,6
7	28,01–30,00	15,7	17,6
8	30,01–32,00	16,6	18,6
9	32,01–36,00	18,4	20,6
10	36,01–40,00	20,2	22,6

A Natural Fit…

Tube Sheet Finishing with Kennametal



Our advanced drilling and hole finishing solutions provide the performance and reliability you need to succeed in your challenging business. We offer a complete holemaking range for working with tube sheets, support baffles, and many other components.

RHR™ Reaming System

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- New KCU05 grade for a great finish and long tool life.

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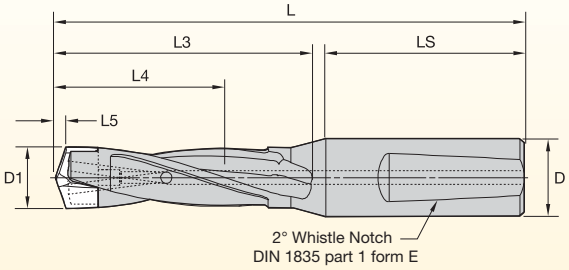
Modular Drills • Dimension Tables

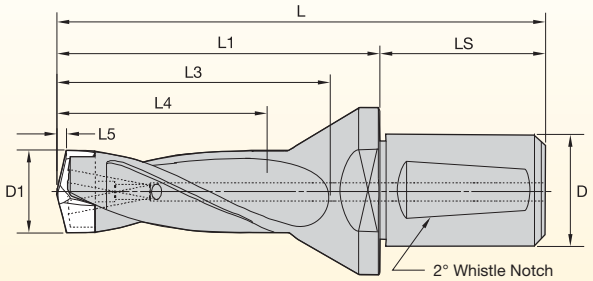
Dimensions for KSEM™ Whistle Notch Shank • WN/WD 3 x D to 10 x D • Metric





for diameters < 16mm, DIN 6535 - HE
for diameters > 16mm, DIN 1835 part 1 form E

Whistle Notch shank D1≤32mm



Whistle Notch shank with Drive D1≥32mm

D1		WN/WD Shank Metric								WN Shank Metric					
		3 x D				5 x D				7 x D			10 x D		
mm	inch	L	L1	L4 max	wrench	L	L1	L4 max	wrench	L	L4 max	wrench	L	L4 max	wrench
12,50	.4921	111	–	42	**170.294**	139	–	70	**170.294**	167	98	170.295	195	125	**170.296**
13,00	.5118	111	–	42	**170.294**	139	–	70	**170.294**	167	98	170.295	200	130	**170.296**
13,50	.5315	111	–	42	**170.294**	139	–	70	**170.294**	167	98	170.295	205	135	**170.296**
13,51	.5319	111	–	42	**170.289**	139	–	70	**170.289**	167	98	170.290	205	135	**170.291**
14,00	.5512	111	–	42	**170.289**	139	–	70	**170.289**	167	98	170.290	210	140	**170.291**
14,50	.5709	122	–	48	**170.289**	154	–	80	**170.289**	186	112	170.290	220	145	**170.291**
14,51	.5713	122	–	48	**170.289**	154	–	80	**170.289**	186	112	170.290	220	145	**170.291**
15,00	.5906	122	–	48	**170.289**	154	–	80	**170.289**	186	112	170.290	225	150	**170.291**
15,50	.6102	122	–	48	**170.289**	154	–	80	**170.289**	186	112	170.290	230	155	**170.291**
16,00	.6299	122	–	48	**170.270**	154	–	80	**170.270**	186	112	170.270	234	160	**170.271**
16,50	.6496	130	–	54	**170.270**	166	–	90	**170.270**	202	126	170.271	241	165	**170.281**
17,00	.6693	130	–	54	**170.270**	166	–	90	**170.270**	202	126	170.271	246	170	**170.281**
17,50	.6890	130	–	54	**170.270**	166	–	90	**170.270**	202	126	170.271	251	175	**170.281**
18,00	.7087	130	–	54	**170.270**	166	–	90	**170.270**	202	126	170.271	256	180	**170.281**
18,01	.7091	–	–	–	**–**	184	–	100	**170.270**	–	–	170.271	269	185	**170.281**
18,50	.7283	144	–	60	**170.270**	184	–	100	**170.270**	224	140	170.271	269	185	**170.281**
19,00	.7480	144	–	60	**170.270**	184	–	100	**170.270**	224	140	170.271	274	190	**170.281**
19,50	.7677	144	–	60	**170.270**	184	–	100	**170.270**	224	140	170.271	279	195	**170.281**
20,00	.7874	153	–	60	**170.272**	197	–	100	**170.272**	241	140	170.273	297	200	**170.282**
20,50	.8071	153	–	66	**170.272**	197	–	110	**170.272**	241	154	170.273	297	205	**170.282**
21,00	.8268	153	–	66	**170.272**	197	–	110	**170.272**	241	154	170.273	297	210	**170.282**
21,50	.8465	153	–	66	**170.272**	197	–	110	**170.272**	241	154	170.273	307	215	**170.282**
22,00	.8661	153	–	66	**170.272**	197	–	110	**170.272**	241	154	170.273	307	220	**170.282**
22,01	.8665	–	–	–	**–**	209	–	120	**170.272**	–	–	170.273	319	225	**170.282**
22,50	.8858	161	–	72	**170.272**	209	–	120	**170.272**	257	168	170.273	319	225	**170.282**
23,00	.9055	161	–	72	**170.272**	209	–	120	**170.272**	257	168	170.273	319	230	**170.282**
23,50	.9252	161	–	72	**170.272**	209	–	120	**170.272**	257	168	170.273	329	235	**170.282**
24,00	.9449	161	–	72	**170.272**	209	–	120	**170.272**	257	168	170.273	329	240	**170.282**
24,01	.9453	–	–	–	**–**	226	–	130	**170.274**	–	–	–	346	245	**170.283**
24,50	.9646	174	–	78	**170.274**	226	–	130	**170.274**	278	182	170.275	346	245	**170.283**
25,00	.9843	174	–	78	**170.274**	226	–	130	**170.274**	278	182	170.275	346	250	**170.283**
25,50	10.039	174	–	78	**170.274**	226	–	130	**170.274**	278	182	170.275	356	255	**170.283**
26,00	10.236	174	–	78	**170.274**	226	–	130	**170.274**	278	182	170.275	356	260	**170.283**
26,01	10.240	–	–	–	**–**	238	–	140	**170.274**	–	–	170.275	363	265	**170.283**
26,50	10.433	182	–	84	**170.274**	238	–	140	**170.274**	294	196	170.275	363	265	**170.283**

(continued)

Modular Drills • Dimension Tables *(continued)*

Dimensions for KSEM™ Whistle Notch Shank • WN/WD 3 x D to 10 x D • Metric



D1		WN/WD Shank Metric								WN Shank Metric					
		3 x D				5 x D				7 x D			10 x D		
mm	inch	L	L1	L4 max	wrench	L	L1	L4 max	wrench	L	L4 max	wrench	L	L4 max	wrench
27,00	10.630	182	–	84	**170.274**	238	–	140	**170.274**	294	196	170.275	368	270	**170.283**
27,50	10.827	182	–	84	**170.274**	238	–	140	**170.274**	294	196	170.275	378	275	**170.283**
28,00	11.024	182	–	84	**170.274**	238	–	140	**170.274**	294	196	170.275	378	280	**170.283**
28,02	11.028	–	–	–	**–**	250	–	150	**170.276**	–	–	–	390	285	**170.284**
28,50	11.220	190	–	90	**170.276**	250	–	150	**170.276**	310	210	170.277	390	285	**170.284**
29,00	11.417	190	–	90	**170.276**	250	–	150	**170.276**	310	210	170.277	390	290	**170.284**
29,50	11.614	190	–	90	**170.276**	250	–	150	**170.276**	310	210	170.277	400	295	**170.284**
30,00	11.811	190	–	90	**170.276**	250	–	150	**170.276**	310	210	170.277	400	300	**170.284**
30,01	11.815	–	–	–	**–**	264	–	160	**170.276**	–	–	170.277	414	305	**170.284**
30,50	12.008	200	–	96	**170.276**	264	–	160	**170.276**	328	224	170.277	–	–	**–**
31,00	12.205	200	–	96	**170.276**	264	–	160	**170.276**	328	224	170.277	414	310	**170.284**
31,50	12.402	200	–	96	**170.276**	264	–	160	**170.276**	328	224	170.277	–	–	**–**
32,00	12.598	200	–	96	**170.276**	264	–	160	**170.276**	328	224	170.277	424	320	**170.284**
32,01	12.602	220	159	99	**170.276**	293	225	165	**170.277**	–	–	–	–	–	**–**
33,00	12.992	227	159	99	**170.276**	293	225	165	**170.277**	–	–	–	–	–	**–**
34,00	13.386	225	157	102	**170.276**	293	225	170	**170.277**	–	–	–	–	–	**–**
35,00	13.780	235	167	105	**170.276**	305	237	175	**170.277**	–	–	–	–	–	**–**
36,00	14.173	233	165	108	**170.276**	305	237	180	**170.277**	–	–	–	–	–	**–**
36,01	14.177	237	176	111	**170.276**	318	250	185	**170.277**	–	–	–	–	–	**–**
37,00	14.567	244	176	111	**170.276**	318	250	185	**170.277**	–	–	–	–	–	**–**
38,00	14.961	242	174	114	**170.276**	318	250	190	**170.277**	–	–	–	–	–	**–**
39,00	15.354	252	184	117	**170.276**	330	262	195	**170.277**	–	–	–	–	–	**–**
40,00	15.748	250	182	120	**170.276**	330	262	200	**170.277**	–	–	–	–	–	**–**

KGEM Tube Sheet Grooving Tool

Primary Application

The new Kennametal grooving tool features a unique approach for manufacturing two grooves simultaneously in minimal time, especially in heat exchanger manufacturing. All tubes need a finish operation to connect them. This new grooving insert features a geometry designed for bur-free cutting and is made with KCU45™, a special grade for machining a wide variety of materials in the heat exchanger industry, including A516-grade 70 low-carbon steel, 304 stainless steel, duplex, and Hastelloy™. The minimal amount of tungsten carbide in the insert eliminates the need for refurbishment, enabling the tool to work faster with a lower cost per hole.

Features and Benefits

Higher Productivity and Profitablity

- Two edges per insert.
- Up to four inserts working at the same time.
- Rigid tool body design for highest productivity and grooving quality.
- Milling tool for maximum flexibility in hole diameter and interrupted cut for chip control.
- KCU45 grade for machining a variety of materials used for heat exchangers.
- Internal coolant supply for optimal tool life, groove quality, and chip evacuation.
- One-path-to-finish tool.
- Flexibility in groove position.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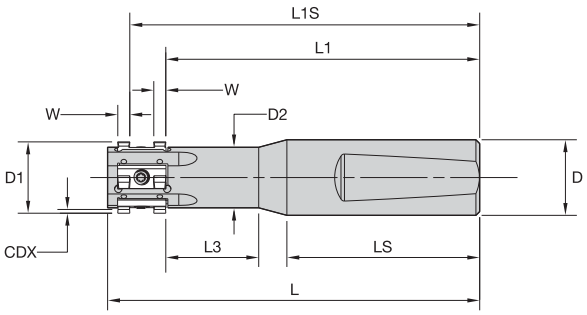




KGEM Groover Body • Metric

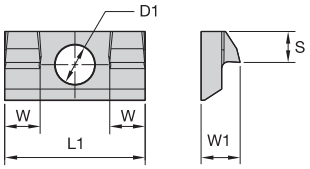


order number	catalogue number	D1	D2	D	L	LS	L1	L1S	L3	CDX	insert screw
5408657	**KGEM1588R1WN20M**	15,88	13,50	20,00	101,00	51,00	85,00	94,52	25,63	1,00	**MS1861**
5134143	**KGEM1905R1WN20M**	18,87	16,00	20,00	98,42	50,80	83,03	92,55	24,58	1,00	**MS1861**
5134145	**KGEM1905R3WN20M**	18,87	16,00	20,00	123,82	50,80	108,44	117,96	49,99	1,00	**MS1861**

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

KSEM™ Support Tooling • KGEM™ Tube Sheet Groover Insert





● first choice
○ alternative choice

P	●
M	●
K	
N	
S	●
H	

KGEM Groover Insert

order number	catalogue number	D1 mm	D1 in	W1 mm	W1 in	W mm	W in	S mm	S in	KCU45
5134141	**KGIP0125N0189GD**	2,80	.110	3,56	.140	3,18	.125	2,82	.111	●
5986819	**KGIP0300N0189GD**	2,80	.110	3,56	.140	3,00	.118	2,82	.111	●

P	A516-Grade70
M	304SS/Duplex
S	Hastelloy

KGEM Tube Sheet Groover • KGIP GD Geometry • Grade KCU45™ • Through Coolant • Metric

Material Group	fz (mm/tooth)	tooth	RPM	vc (m/min)	VFC (mm/min)	VFL (mm/min)	DH (mm)	DT (mm)
P	0,05–0,075	4	1300–1500	77–89	2,46–4,27	264–457	19,05	18,87
M	0,05–0,075	4	600–900	35–53	1,70–2,57	183–274	19,05	18,87
S	0,05–0,075	4	250–300	15–18	0,48–0,86	51–91	19,05	18,87

Nomenclature:
fz: feed per tooth
VFL: linear feed rate = fz x number of tooth x RPM
VFC: compensated feed = VFL x (DH - DT)/DH
DT: tool diameter
DH: hole diameter

NOTE: Choose low-feed (fz) for long tools and less rigid machine tools.
Choose low RPM for lower coolant.

KSEM PLUS™ Modular Drill System

Our KSEM PLUS drill concept is simple but effective. It combines the benefits of the KSEM™ modular drill (high feeds and length-to-diameter [L/D] ratios) with the benefits of an indexable drill (high speeds and low consumable costs). The KSEM PLUS system is a modular drilling platform, offering a pre-mountable HSS head with pocket seats for carbide inserts. The KSEM PLUS modular drill system features two head styles that are interchangeable on fitting tool bodies with our flexible FDS interface.

Primary Application

The KSEM PLUS system performs in steel, cast iron, stainless steel, and advanced materials. It is perfectly suited to exchange older HSS tools or low performance indexable drills for a very high performance drilling solution. The KSEM PLUS range comprises 28–101mm (1.102–4") from 1.5–10 x D. There is a wide range of applications in the energy market, and in general engineering (e.g., bearing rings for windmills, hydraulic manifolds, large engine parts, generator housings, etc.). This tool will deliver vast improvements in productivity, and greatly attribute to increasing your machining capacity.

Features and Benefits

Replaceable Heads with FDS-Interface Coupling

- Quickly and easily replace inserts or drill heads without removing tool bodies from the machine.
- Save money and reduce tool stock by replacing just the worn drill head.
- Use one tool body for different sizes and styles of drill head (a head fits any drill body of the same FDS size).

Two Effective Cutting Edges

- The KSEM PLUS system has two full cutting edges in action when operating.
- Achieve up to 100% increased productivity versus an indexable drill of the same diameter.
- High L/D ratios possible from 1.5 x D up to 10 x D as stocked standards. Longer drills are possible as custom solutions.

KSEM PLUS A1 Heads

- High metal removal rates.
- Very stable in normal cutting conditions.
- Cost-effective indexable Drill Fix™ DFT inserts.

KSEM PLUS Pilot Insert

- Very high feed rates, comparable to modular drills.
- Very long tool life of KSEM PLUS centre inserts and modular heads due to better chip flow.
- No precentring necessary for drill depths up to 5 x D.

KSEM PLUS B1 Heads

- High-speed drilling in difficult conditions.
- Drills stacked plates and cored holes.
- Capable of machining through cross holes.
- Works with slanted exits up to 15°.

DFR™/DFT™/DFC™ Outboard Inserts

- Very high cutting speeds for high metal removal rates.
- Improved stability in all cutting conditions.
- Indexable inserts provide good surface finish and hole diameter accuracy.

KSEM PLUS™ A1 Heads
Economic, high-performance drilling.





KSEM PLUS B1 Heads
High-performance drilling in difficult conditions.







NEW! All KSEMP Heads >70mm now available in 1mm and 1/8" pitch as standard product.

NEW! DS geometry for long chipping materials.

NEW! 1.5 x D toolholders now available with WD and SSF shanks.

Tailored Grades

Centre Inserts

- KC7315™ grade — TiAlN-based PVD grade for superior performance in steel and stainless steel applications.
- KC7410™ grade — multilayered PVD coating for outstanding wear resistance when drilling cast irons.
- KC7135™ grade — chip-resistant universal grade with a TiCN-TiN PVD coating for challenging applications in steel and stainless steel materials.

Drill Fix™ Lateral Inserts

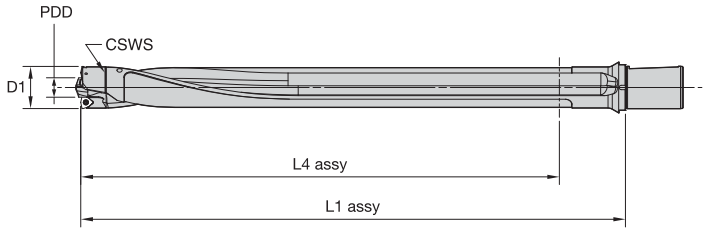
- KCU25™ grade — high metal removal rates, advanced TiCN-Al-CVD coating, and superior tool life in stable working conditions.
- KCU40™ grade — multilayered TiAlN-PVD coating with high wear resistance and reliability in most materials at medium cutting speeds.
- KC7140™ grade — TiCN-based, PVD-coated alloyed carbide for machining alloyed steel and stainless steel on KSEM PLUS systems.
- KC7225™ grade — TiAlN PVD-coated fine-grain carbide offers extreme process safety for non-ferrous materials, super alloys, and titanium.

NEW! DFT™ and DFC™ Lateral Inserts with DS Geometry

- Excellent performance and process stability in applications with long-chipping materials.
- Use for low carbon steel, difficult stainless steel, and non-ferrous materials where long chips can be an issue.
- Available in the KCU40™ grade.

Customisation

- Heads are available in intermediate diameters, and up to Ø 127mm as semi-standards.
- Tool bodies available in all popular shank styles up to shank length of 1200mm. Some restrictions with L/D ratios over 20 x D apply.
- Toolholders can be designed with helical chip flutes for better chip evacuation (e.g. drilling in cast iron).
- Heads for use with reground center inserts are available as semi-standards.
- The KSEM PLUS system features a high level of available customisation. Please contact us about for your individual metalcutting applications.



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalogue number	PDD (mm) centre insert size reference	outboard insert Drill Fix™ DFR/DFT	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalogue number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
28.000	1.1024	**4000408**	**KSEMP2800FDS28A1M**	14.000	DFR040304D28	28	**6123570**	**WD32FDS28076M**	1.5 x D	57	101
28.575	1.1250	**4047811**	**KSEMP1125FDS28A1**	15.000	DFR040304D28		**4000409**	**WD32FDS28128M**	3 x D	96	153
29.000	1.1417	**4047812**	**KSEMP2900FDS28A1M**	15.000	DFR040304D28		**4051136**	**WD32FDS28190M**	5 x D	158	215
29.362	1.1563	**4047823**	**KSEMP1156FDS28A1**	16.000	DFR040304D28		**4051137**	**WD32FDS28283M**	8 x D	251	308
30.000	1.1811	**4047824**	**KSEMP3000FDS28A1M**	16.000	DFR040304D28		**4000411**	**WD32FDS28345M**	10 x D	313	370
30.175	1.1875	**4047825**	**KSEMP1188FDS28A1**	17.000	DFR040304D28		**6123582**	**SSF150FDS280299**	1.5 x D	57	101
30.963	1.2188	**4047826**	**KSEMP1219FDS28A1**	17.000	DFR040304D28		**4051138**	**SSF150FDS280502**	3 x D	96	153
31.000	1.2205	**4047827**	**KSEMP3100FDS28A1M**	17.000	DFR040304D28		**4051139**	**SSF150FDS280746**	5 x D	158	215
							4051140	**SSF150FDS281112**	8 x D	251	308
							4051141	**SSF150FDS281356**	10 x D	313	370
31.750	1.2500	**3794916**	**KSEMP1250FDS32A1**	15.000	DFT05T308D32	32	**6123571**	**WD32FDS32082M**	1.5 x D	59	107
32.000	1.2598	**3794291**	**KSEMP3200FDS32A1M**	15.000	DFT05T308D32		**3950219**	**WD32FDS32146M**	3 x D	110	171
33.000	1.2992	**3742210**	**KSEMP3300FDS32A1M**	16.000	DFT05T308D33		**3794428**	**WD32FDS32216M**	5 x D	180	241
33.200	1.3071	**3793949**	**KSEMP3320FDS32A1M**	16.000	DFT05T308D33		**3742293**	**WD32FDS32321M**	8 x D	285	346
33.350	1.3130	**3794917**	**KSEMP1313FDS32A1**	17.000	DFT05T308D33		**3794429**	**WD32FDS32391M**	10 x D	355	416
34.000	1.3386	**3794292**	**KSEMP3400FDS32A1M**	17.000	DFT05T308D33		**6123583**	**SSF150FDS320323**	1.5 x D	59	107
34.925	1.3750	**3794918**	**KSEMP1375FDS32A1**	18.000	DFT05T308D33		**3952192**	**SSF150FDS320573**	3 x D	110	171
35.000	1.3780	**3794393**	**KSEMP3500FDS32A1M**	18.000	DFT05T308D33		**3794835**	**SSF150FDS320850**	5 x D	180	241
							3794836	**SSF150FDS321263**	8 x D	285	346
							3794837	**SSF150FDS321539**	10 x D	355	416
36.000	1.4173	**3794394**	**KSEMP3600FDS36A1M**	13.000	DFT06T308D36	36	**6123572**	**WD32FDS36092M**	1.5 x D	65	117
36.525	1.4380	**3794919**	**KSEMP1438FDS36A1**	14.000	DFT06T308D36		**3950220**	**WD32FDS36166M**	3 x D	122	191
37.000	1.4567	**3794395**	**KSEMP3700FDS36A1M**	14.000	DFT06T308D36		**3794430**	**WD32FDS36244M**	5 x D	200	269
37.500	1.4764	**3794427**	**KSEMP3750FDS36A1M**	15.000	DFT06T308D36		**3794431**	**WD32FDS36361M**	8 x D	317	386
38.000	1.4961	**3794396**	**KSEMP3800FDS36A1M**	15.000	DFT06T308D36		**3794432**	**WD32FDS36439M**	10 x D	395	464
38.100	1.5000	**3794920**	**KSEMP1500FDS36A1**	15.000	DFT06T308D36		**6123584**	**SSF150FDS360362**	1.5 x D	65	117
39.000	1.5354	**3794397**	**KSEMP3900FDS36A1M**	16.000	DFT06T308D39		**3952343**	**SSF150FDS360652**	3 x D	122	191
39.200	1.5433	**3793950**	**KSEMP3920FDS36A1M**	16.000	DFT06T308D39		**3794838**	**SSF150FDS360960**	5 x D	200	269
39.700	1.5630	**3794921**	**KSEMP1563FDS36A1**	17.000	DFT06T308D39		**3794839**	**SSF150FDS361421**	8 x D	317	386
							3794840	**SSF150FDS361728**	10 x D	395	464
40.000	1.5748	**3794398**	**KSEMP4000FDS40A1M**	17.000	DFT06T308D39	40	**6123573**	**WD50FDS40100M**	1.5 x D	73	125
41.000	1.6142	**3794399**	**KSEMP4100FDS40A1M**	18.000	DFT06T308D39		**3872075**	**WD50FDS40183M**	3 x D	137	213
41.275	1.6250	**3794922**	**KSEMP1625FDS40A1**	18.000	DFT06T308D39		**3794443**	**WD50FDS40271M**	5 x D	225	301
42.000	1.6535	**3794400**	**KSEMP4200FDS40A1M**	19.000	DFT06T308D39		**3794444**	**WD50FDS40403M**	8 x D	357	433
43.000	1.6929	**3794401**	**KSEMP4300FDS40A1M**	20.000	DFT06T308D39		**3794445**	**WD50FDS40491M**	10 x D	445	521
44.000	1.7323	**3794402**	**KSEMP4400FDS40A1M**	21.000	DFT06T308D44		**6123585**	**SSF200FDS400394**	1.5 x D	73	125
44.450	1.7500	**3794933**	**KSEMP1750FDS40A1**	22.000	DFT06T308D44		**3952344**	**SSF200FDS400721**	3 x D	137	213
							3794841	**SSF200FDS401066**	5 x D	225	301
							3794842	**SSF200FDS401586**	8 x D	357	433
							3794903	**SSF200FDS401933**	10 x D	445	521

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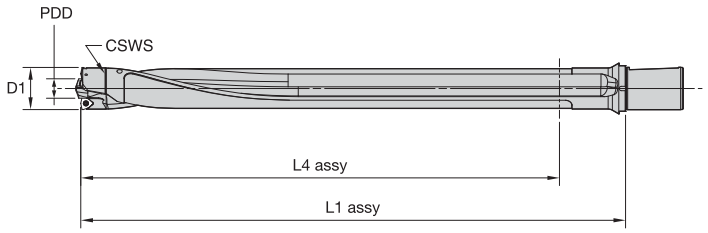
(KSEM PLUS Overview and Assembly for Systems Using A1 Heads — continued)



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalogue number	PDD (mm) centre insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalogue number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
45.000	1.7717	**3794403**	**KSEMP4500FDS45A1M**	18.000	DFT070408D45	45	**6123575**	**WD50FDS45112M**	1.5 x D	85	147
46.000	1.8110	**3794404**	**KSEMP4600FDS45A1M**	19.000	DFT070408D45		**3872709**	**WD50FDS45206M**	3 x D	152	236
47.000	1.8504	**3794405**	**KSEMP4700FDS45A1M**	20.000	DFT070408D45		**3794446**	**WD50FDS45304M**	5 x D	250	334
47.625	1.8750	**3794934**	**KSEMP1875FDS45A1**	21.000	DFT070408D45		**3794447**	**WD50FDS45451M**	8 x D	397	481
48.000	1.8898	**3794406**	**KSEMP4800FDS45A1M**	21.000	DFT070408D45		**3794448**	**WD50FDS45549M**	10 x D	495	579
49.000	1.9291	**3794407**	**KSEMP4900FDS45A1M**	22.000	DFT070408D45		**6123586**	**SSF200FDS450441**	1.5 x D	85	147
							3952345	**SSF200FDS450809**	3 x D	152	236
							3794904	**SSF200FDS451196**	5 x D	250	334
							3794905	**SSF200FDS451775**	8 x D	397	481
							3794906	**SSF200FDS452161**	10 x D	495	579
50.000	1.9685	**3742211**	**KSEMP5000FDS50A1M**	23.000	DFT070408D50	50	**6123576**	**WD50FDS50122M**	1.5 x D	89	157
50.800	2.0000	**3794935**	**KSEMP2000FDS50A1**	24.000	DFT070408D50		**3950221**	**WD50FDS50228M**	3 x D	170	263
51.000	2.0079	**3794408**	**KSEMP5100FDS50A1M**	24.000	DFT070408D50		**3794449**	**WD50FDS50338M**	5 x D	280	373
52.000	2.0472	**3794409**	**KSEMP5200FDS50A1M**	25.000	DFT070408D50		**3742294**	**WD50FDS50503M**	8 x D	445	538
53.000	2.0866	**3794410**	**KSEMP5300FDS50A1M**	26.000	DFT070408D50		**3794450**	**WD50FDS50613M**	10 x D	555	648
53.975	2.1250	**3794936**	**KSEMP2125FDS50A1**	27.000	DFT070408D50		**6123587**	**SSF200FDS500480**	1.5 x D	89	157
54.000	2.1260	**3794411**	**KSEMP5400FDS50A1M**	27.000	DFT070408D50		**3952346**	**SSF200FDS500896**	3 x D	170	263
55.000	2.1654	**3794412**	**KSEMP5500FDS50A1M**	28.000	DFT070408D50		**3794907**	**SSF200FDS501330**	5 x D	280	373
							3794908	**SSF200FDS501980**	8 x D	445	538
							3794909	**SSF200FDS502413**	10 x D	555	648
56.000	2.2047	**3794413**	**KSEMP5600FDS56A1M**	20.000	DFT090508D56	56	**6123577**	**WD50FDS56140M**	1.5 x D	130	175
57.000	2.2441	**3794414**	**KSEMP5700FDS56A1M**	21.000	DFT090508D56		**3950222**	**WD50FDS56259M**	3 x D	191	294
57.150	2.2500	**3794937**	**KSEMP2250FDS56A1**	21.000	DFT090508D56		**3794451**	**WD50FDS56383M**	5 x D	315	418
58.000	2.2835	**3794415**	**KSEMP5800FDS56A1M**	22.000	DFT090508D56		**3794452**	**WD50FDS56569M**	8 x D	501	604
59.000	2.3228	**3794416**	**KSEMP5900FDS56A1M**	23.000	DFT090508D56		**3794453**	**WD50FDS56693M**	10 x D	625	728
60.000	2.3622	**3794417**	**KSEMP6000FDS56A1M**	24.000	DFT090508D56		**6123588**	**SSF200FDS560551**	1.5 x D	130	175
60.330	2.3750	**3794938**	**KSEMP2375FDS56A1**	24.000	DFT090508D56		**3952347**	**SSF200FDS561020**	3 x D	191	294
61.000	2.4016	**3794418**	**KSEMP6100FDS56A1M**	25.000	DFT090508D56		**3794910**	**SSF200FDS561507**	5 x D	315	418
62.000	2.4409	**3794419**	**KSEMP6200FDS56A1M**	26.000	DFT090508D56		**3794911**	**SSF200FDS562240**	8 x D	501	604
							3794912	**SSF200FDS562783**	10 x D	625	728
63.000	2.4803	**3794420**	**KSEMP6300FDS63A1M**	27.000	DFT090508D63	63	**6123578**	**WD50FDS63154M**	1.5 x D	111	194
63.500	2.5000	**3794939**	**KSEMP2500FDS63A1**	28.000	DFT090508D63		**3950333**	**WD50FDS63289M**	3 x D	214	329
64.000	2.5197	**3794421**	**KSEMP6400FDS63A1M**	28.000	DFT090508D63		**3794454**	**WD50FDS63429M**	5 x D	354	469
65.000	2.5591	**3794422**	**KSEMP6500FDS63A1M**	29.000	DFT090508D63		**3794455**	**WD50FDS63639M**	8 x D	564	679
66.000	2.5984	**3794423**	**KSEMP6600FDS63A1M**	30.000	DFT090508D63		**3742296**	**WD50FDS63779M**	10 x D	704	819
66.680	2.6250	**3794940**	**KSEMP2625FDS63A1**	31.000	DFT090508D63		**6123589**	**SSF200FDS630606**	1.5 x D	111	194
67.000	2.6378	**3794424**	**KSEMP6700FDS63A1M**	31.000	DFT090508D63		**3952348**	**SSF200FDS631138**	3 x D	214	329
68.000	2.6772	**3794425**	**KSEMP6800FDS63A1M**	32.000	DFT090508D63		**3794913**	**SSF200FDS631688**	5 x D	354	469
69.000	2.7165	**3794426**	**KSEMP6900FDS63A1M**	33.000	DFT090508D63		**3794914**	**SSF200FDS632515**	8 x D	564	679
69.850	2.7500	**3794941**	**KSEMP2750FDS63A1**	34.000	DFT090508D63		**3794915**	**SSF200FDS633066**	10 x D	704	819
70.000	2.7559	**3742212**	**KSEMP7000FDS63A1M**	34.000	DFT090508D63						

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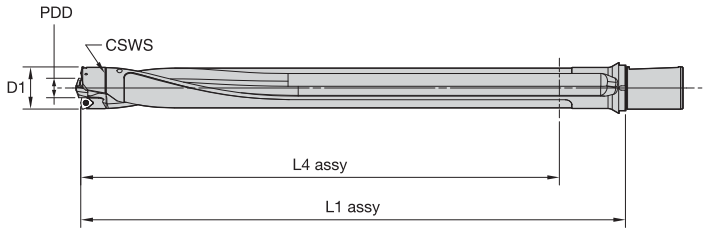
(KSEM PLUS Overview and Assembly for Systems Using A1 Heads — continued)



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalogue number	PDD (mm) centre insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalogue number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
71.000	2.7950	**6041904**	**KSEMP7100FDS71A1M**	26.000	4x DFT06T308D44	71	**6123579**	**WD50FDS71172M**	1.5 x D	128	217
72.000	2.8350	**5397513**	**KSEMP7200FDS71A1M**	27.000			**5397942**	**WD50FDS71292M**	3 x D	241	333
73.000	2.8740	**6041906**	**KSEMP7300FDS71A1M**	28.000			**5397943**	**WD50FDS71452M**	5 x D	401	493
73.025	2.8750	**6041931**	**KSEMP2875FDS71A1**	28.000			**6123590**	**SSF200FDS710677**	1.5 x D	128	217
74.000	2.9130	**5397514**	**KSEMP7400FDS71A1M**	29.000			**5397948**	**SSF200FDS711150**	3 x D	241	333
75.000	2.9530	**6041907**	**KSEMP7500FDS71A1M**	30.000			**5397949**	**SSF200FDS711780**	5 x D	401	493
76.000	2.9920	**5397515**	**KSEMP7600FDS71A1M**	31.000							
76.200	3.0000	**5397516**	**KSEMP3000FDS71A1**	31.000							
77.000	3.0310	**6041908**	**KSEMP7700FDS71A1M**	32.000							
78.000	3.0710	**5397517**	**KSEMP7800FDS71A1M**	33.000							
79.000	3.1100	**6041909**	**KSEMP7900FDS71A1M**	34.000							
79.375	3.1250	**6041932**	**KSEMP3125FDS80A1**	31.000	2x DFT06T308D44 & 2x DFT070408D50	80	**6123580**	**WD50FDS80192M**	1.5 x D	145	247
80.000	3.1500	**5397518**	**KSEMP8000FDS80A1M**	31.000			**5397944**	**WD50FDS80327M**	3 x D	271	373
81.000	3.1890	**6041910**	**KSEMP8100FDS80A1M**	32.000			**5397945**	**WD50FDS80507M**	5 x D	451	553
82.000	3.2280	**5397519**	**KSEMP8200FDS80A1M**	33.000			**6123591**	**SSF200FDS800756**	1.5 x D	145	247
83.000	3.2680	**6041921**	**KSEMP8300FDS80A1M**	34.000			**5398010**	**SSF200FDS801287**	3 x D	271	373
82.550	3.2500	**5397550**	**KSEMP3250FDS80A1**	34.000			**5398011**	**SSF200FDS801996**	5 x D	451	553
84.000	3.3070	**5397551**	**KSEMP8400FDS80A1M**	35.000							
85.000	3.3070	**6041922**	**KSEMP8500FDS80A1M**	36.000							
85.725	3.3750	**6041933**	**KSEMP3375FDS80A1**	37.000							
86.000	3.3860	**5397552**	**KSEMP8600FDS80A1M**	37.000							
87.000	3.4250	**6041923**	**KSEMP8700FDS80A1M**	38.000							
88.000	3.4650	**5397553**	**KSEMP8800FDS80A1M**	39.000							
88.900	3.5000	**5397554**	**KSEMP3500FDS80A1**	40.000							
89.000	3.5040	**6041924**	**KSEMP8900FDS80A1M**	40.000							
90.000	3.5430	**5397555**	**KSEMP9000FDS90A1M**	37.000	4x DFT070408D50	90	**6123581**	**WD50FDS90212M**	1.5 x D	160	272
91.000	3.5830	**6041925**	**KSEMP9100FDS90A1M**	38.000			**5397946**	**WD50FDS90362M**	3 x D	302	414
92.000	3.6220	**5397556**	**KSEMP9200FDS90A1M**	39.000			**5397947**	**WD50FDS90562M**	5 x D	502	614
92.075	3.6250	**6041934**	**KSEMP3625FDS90A1**	39.000			**6123592**	**SSF200FDS900835**	1.5 x D	160	272
93.000	3.6610	**6041926**	**KSEMP9300FDS90A1M**	40.000			**5398012**	**SSF200FDS901425**	3 x D	302	414
							5398013	**SSF200FDS902213**	5 x D	502	614
94.000	3.7010	**5397557**	**KSEMP9400FDS90A1M**	26.000	6x DFT06T308D44						
95.000	3.7400	**6041927**	**KSEMP9500FDS90A1M**	27.000							
95.250	3.7500	**5397558**	**KSEMP3750FDS90A1**	27.000							
96.000	3.7800	**5397559**	**KSEMP9600FDS90A1M**	28.000							
97.000	3.8190	**6041928**	**KSEMP9700FDS90A1M**	29.000							
98.000	3.8580	**5397560**	**KSEMP9800FDS90A1M**	30.000							
98.425	3.8750	**6041935**	**KSEMP3875FDS90A1**	31.000							
99.000	3.8980	**6041929**	**KSEMP9900FDS90A1M**	31.000							
100.000	3.9370	**6041930**	**KSEMP10000FDS90A1M**	32.000							
101.600	4.0000	**5397561**	**KSEMP4000FDS90A1**	34.000							

Keep it Short and **Simple…**





Achieve short chips in long-chipping materials with our new DS/LP geometries for indexable drills and KSEM PLUS™.

- High metal removal rates without long chips, especially in low-carbon steel applications.
- Improved control of chip flow, chip breakage, and chip curling. Eliminates chip jamming by providing excellent chip forming and chipbreaking capabilities.
- Avoid bird nesting and long, stringy chips to reduce idle time and improve process stability.

See pages J4–J50 for Drill Fix™ Indexable Drills.

See pages H80–H82, H84–H101, and H106 for KSEM PLUS A1 and B1 head systems.





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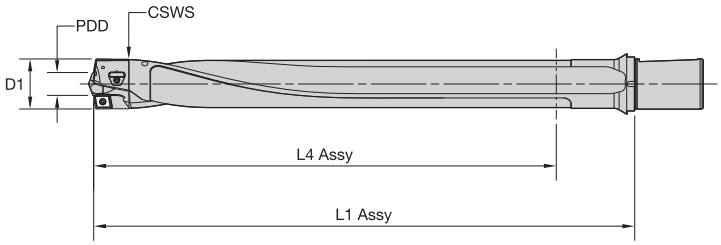

available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalogue number	PDD (mm) centre insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalogue number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
28.000	1.1020	**5115736**	**KSEMP2800FDS28B1M**	14.000	**DFC inserts** DFC040310D28 **DPA guiding pads** DPA07T3D25	28	**6123570**	**WD32FDS28076M**	1.5 x D	54	98
28.575	1.1250	**5115737**	**KSEMP1125FDS28B1**	15.000			**4000409**	**WD32FDS28128M**	3 x D	93	150
29.000	1.1420	**5115738**	**KSEMP2900FDS28B1M**	15.000			**4051136**	**WD32FDS28190M**	5 x D	155	212
29.362	1.1560	**5115739**	**KSEMP1156FDS28B1**	16.000			**4051137**	**WD32FDS28283M**	8 x D	248	305
30.000	1.1810	**5116010**	**KSEMP3000FDS28B1M**	16.000			**4000411**	**WD32FDS28345M**	10 x D	310	367
30.175	1.1880	**5116011**	**KSEMP1188FDS28B1**	17.000			**6123582**	**SSF150FDS280299**	1.5 x D	54	98
30.963	1.2190	**5116012**	**KSEMP1219FDS28B1**	17.000			**4051138**	**SSF150FDS280502**	3 x D	93	150
31.000	1.2200	**5116013**	**KSEMP3100FDS28B1M**	17.000			**4051139**	**SSF150FDS280746**	5 x D	155	212
							4051140	**SSF150FDS281112**	8 x D	248	305
							4051141	**SSF150FDS281356**	10 x D	310	367
31.750	1.2500	**5116014**	**KSEMP1250FDS32B1**	15.000	**DFC inserts** DFC05T312D32 **DPA guiding pads** DPA09T4D32	32	**6123571**	**WD32FDS32082M**	1.5 x D	54	102
32.000	1.2600	**5116015**	**KSEMP3200FDS32B1M**	15.000			**3950219**	**WD32FDS32146M**	3 x D	105	166
33.000	1.2990	**5116016**	**KSEMP3300FDS32B1M**	16.000			**3794428**	**WD32FDS32216M**	5 x D	175	236
33.200	1.3070	**5116017**	**KSEMP3320FDS32B1M**	16.000			**3742293**	**WD32FDS32321M**	8 x D	280	341
33.350	1.3130	**5116018**	**KSEMP1313FDS32B1**	17.000			**3794429**	**WD32FDS32391M**	10 x D	350	411
34.000	1.3390	**5116019**	**KSEMP3400FDS32B1M**	17.000			**6123583**	**SSF150FDS320323**	1.5 x D	54	102
34.925	1.3750	**5116030**	**KSEMP1375FDS32B1**	18.000			**3952192**	**SSF150FDS320573**	3 x D	105	166
35.000	1.3780	**5116031**	**KSEMP3500FDS32B1M**	18.000			**3794835**	**SSF150FDS320850**	5 x D	175	236
							3794836	**SSF150FDS321263**	8 x D	280	341
							3794837	**SSF150FDS321539**	10 x D	350	411
36.000	1.4170	**5116032**	**KSEMP3600FDS36B1M**	13.000	**DFC inserts** DFC06T312D36 **DPA guiding pads** DPA09T4D32	36	**6123572**	**WD32FDS36092M**	1.5 x D	60	112
36.525	1.4380	**5116033**	**KSEMP1438FDS36B1**	14.000			**3950220**	**WD32FDS36166M**	3 x D	117	186
37.000	1.4570	**5116034**	**KSEMP3700FDS36B1M**	14.000			**3794430**	**WD32FDS36244M**	5 x D	195	264
37.500	1.4760	**5116035**	**KSEMP3750FDS36B1M**	15.000			**3794431**	**WD32FDS36361M**	8 x D	312	381
38.000	1.4960	**5116036**	**KSEMP3800FDS36B1M**	15.000			**3794432**	**WD32FDS36439M**	10 x D	390	459
38.100	1.5000	**5116037**	**KSEMP1500FDS36B1**	15.000			**6123584**	**SSF150FDS360362**	1.5 x D	60	112
39.000	1.5350	**5116038**	**KSEMP3900FDS36B1M**	16.000			**3952343**	**SSF150FDS360652**	3 x D	117	186
39.200	1.5430	**5116039**	**KSEMP3920FDS36B1M**	16.000			**3794838**	**SSF150FDS360960**	5 x D	195	264
39.700	1.5630	**5116040**	**KSEMP1563FDS36B1**	17.000			**3794839**	**SSF150FDS361421**	8 x D	312	381
							3794840	**SSF150FDS361728**	10 x D	390	459
40.000	1.5750	**5116041**	**KSEMP4000FDS40B1M**	17.000	**DFC inserts** DFC06T312D36 **DPA guiding pads** DPA09T4D32	40	**6123573**	**WD50FDS40100M**	1.5 x D	68	120
41.000	1.6140	**5116042**	**KSEMP4100FDS40B1M**	18.000			**3872075**	**WD50FDS40183M**	3 x D	132	208
41.275	1.6250	**5116043**	**KSEMP1625FDS40B1**	18.000			**3794443**	**WD50FDS40271M**	5 x D	220	296
42.000	1.6540	**5116044**	**KSEMP4200FDS40B1M**	19.000			**3794444**	**WD50FDS40403M**	8 x D	352	428
43.000	1.6930	**5116045**	**KSEMP4300FDS40B1M**	20.000			**3794445**	**WD50FDS40491M**	10 x D	440	516
44.000	1.7320	**5116046**	**KSEMP4400FDS40B1M**	21.000			**6123585**	**SSF200FDS400394**	1.5 x D	68	120
44.450	1.7500	**5116047**	**KSEMP1750FDS40B1**	22.000			**3952344**	**SSF200FDS400721**	3 x D	132	208
							3794841	**SSF200FDS401066**	5 x D	220	296
							3794842	**SSF200FDS401586**	8 x D	352	428
							3794903	**SSF200FDS401933**	10 x D	440	516

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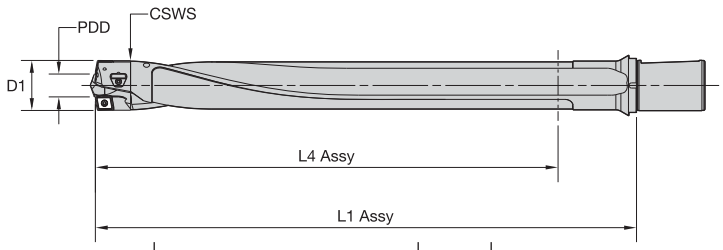
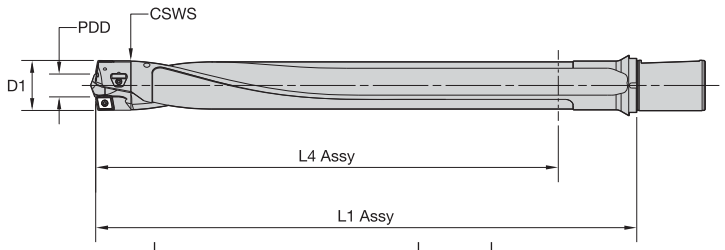
(KSEM PLUS Overview and Assembly for Systems Using B1 Heads — continued)



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalogue number	PDD (mm) centre insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalogue number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
45.000	1.7720	**5116098**	**KSEMP4500FDS45B1M**	18.000	**DFC inserts** DFC070416D45 **DPA guiding pads** DPA09T4D32	45	**6123575**	**WD50FDS45112M**	1.5 x D	80	142
46.000	1.8110	**5116099**	**KSEMP4600FDS45B1M**	19.000			**3872709**	**WD50FDS45206M**	3 x D	147	231
47.000	1.8500	**5116110**	**KSEMP4700FDS45B1M**	20.000			**3794446**	**WD50FDS45304M**	5 x D	245	329
47.625	1.8750	**5116111**	**KSEMP1875FDS45B1**	21.000			**3794447**	**WD50FDS45451M**	8 x D	392	476
48.000	1.8900	**5116112**	**KSEMP4800FDS45B1M**	21.000			**3794448**	**WD50FDS45549M**	10 x D	490	574
49.000	1.9290	**5116113**	**KSEMP4900FDS45B1M**	22.000			**6123586**	**SSF200FDS450441**	1.5 x D	80	142
							3952345	**SSF200FDS450809**	3 x D	147	231
							3794904	**SSF200FDS451196**	5 x D	245	329
							3794905	**SSF200FDS451775**	8 x D	392	476
							3794906	**SSF200FDS452161**	10 x D	490	574
50.000	1.9690	**5116114**	**KSEMP5000FDS50B1M**	23.000	**DFC inserts** DFC070416D45 **DPA guiding pads** DPA13T5D50	50	**6123576**	**WD50FDS50122M**	1.5 x D	84	152
50.800	2.0000	**5116115**	**KSEMP2000FDS50B1**	24.000			**3950221**	**WD50FDS50228M**	3 x D	165	258
51.000	2.0080	**5116116**	**KSEMP5100FDS50B1M**	24.000			**3794449**	**WD50FDS50338M**	5 x D	275	368
52.000	2.0470	**5116117**	**KSEMP5200FDS50B1M**	25.000			**3742294**	**WD50FDS50503M**	8 x D	440	533
53.000	2.0870	**5116118**	**KSEMP5300FDS50B1M**	26.000			**3794450**	**WD50FDS50613M**	10 x D	550	643
53.975	2.1250	**5116119**	**KSEMP2125FDS50B1**	27.000			**6123587**	**SSF200FDS500480**	1.5 x D	84	152
54.000	2.1260	**5116120**	**KSEMP5400FDS50B1M**	27.000			**3952346**	**SSF200FDS500896**	3 x D	165	258
55.000	2.1650	**5116121**	**KSEMP5500FDS50B1M**	28.000			**3794907**	**SSF200FDS501330**	5 x D	275	368
							3794908	**SSF200FDS501980**	8 x D	440	533
							3794909	**SSF200FDS502413**	10 x D	550	643
56.000	2.2050	**5116122**	**KSEMP5600FDS56B1M**	20.000	**DFC inserts** DFC090520D56 **DPA guiding pads** DPA13T5D50	56	**6123577**	**WD50FDS56140M**	1.5 x D	125	170
57.000	2.2440	**5116123**	**KSEMP5700FDS56B1M**	21.000			**3950222**	**WD50FDS56259M**	3 x D	186	289
57.150	2.2500	**5116124**	**KSEMP2250FDS56B1**	21.000			**3794451**	**WD50FDS56383M**	5 x D	310	413
58.000	2.2830	**5116125**	**KSEMP5800FDS56B1M**	22.000			**3794452**	**WD50FDS56569M**	8 x D	496	599
59.000	2.3230	**5116126**	**KSEMP5900FDS56B1M**	23.000			**3794453**	**WD50FDS56693M**	10 x D	620	723
60.000	2.3620	**5116127**	**KSEMP6000FDS56B1M**	24.000			**6123588**	**SSF200FDS560551**	1.5 x D	125	170
60.330	2.3750	**5116128**	**KSEMP2375FDS56B1**	24.000			**3952347**	**SSF200FDS561020**	3 x D	186	289
61.000	2.4020	**5116129**	**KSEMP6100FDS56B1M**	25.000			**3794910**	**SSF200FDS561507**	5 x D	310	413
62.000	2.4410	**5116130**	**KSEMP6200FDS56B1M**	26.000			**3794911**	**SSF200FDS562240**	8 x D	496	599
							3794912	**SSF200FDS562783**	10 x D	620	723
63.000	2.4800	**5116131**	**KSEMP6300FDS63B1M**	27.000	**DFC inserts** DFC090520D56 **DPA guiding pads** DPA13T5D50	63	**6123578**	**WD50FDS63154M**	1.5 x D	107	190
63.500	2.5000	**5116132**	**KSEMP2500FDS63B1**	28.000			**3950333**	**WD50FDS63289M**	3 x D	210	325
64.000	2.5200	**5116133**	**KSEMP6400FDS63B1M**	28.000			**3794454**	**WD50FDS63429M**	5 x D	350	465
65.000	2.5590	**5116134**	**KSEMP6500FDS63B1M**	29.000			**3794455**	**WD50FDS63639M**	8 x D	560	675
66.000	2.5980	**5116135**	**KSEMP6600FDS63B1M**	30.000			**3742296**	**WD50FDS63779M**	10 x D	700	815
66.680	2.6250	**5116136**	**KSEMP2625FDS63B1**	31.000			**6123589**	**SSF200FDS630606**	1.5 x D	107	190
67.000	2.6380	**5116137**	**KSEMP6700FDS63B1M**	31.000			**3952348**	**SSF200FDS631138**	3 x D	210	325
68.000	2.6770	**5116138**	**KSEMP6800FDS63B1M**	32.000			**3794913**	**SSF200FDS631688**	5 x D	350	465
69.000	2.7170	**5116139**	**KSEMP6900FDS63B1M**	33.000			**3794914**	**SSF200FDS632515**	8 x D	560	675
69.850	2.7500	**5116140**	**KSEMP2750FDS63B1**	34.000			**3794915**	**SSF200FDS633066**	10 x D	700	815
70.000	2.7560	**5116141**	**KSEMP7000FDS63B1M**	34.000							

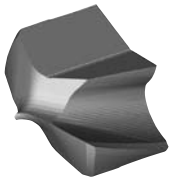
(continued)

(KSEM PLUS Overview and Assembly for Systems Using B1 Heads — continued)



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalogue number	PDD (mm) centre insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalogue number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
71.000	2.7950	**6041937**	**KSEMP7100FDS71B1M**	26.000	**DFC inserts** 4x DFC06T312D36 **DPA guiding pads** DPA13T5D50	71	**6123579**	**WD50FDS71172M**	1.5 x D	127	216
72.000	2.8350	**6041797**	**KSEMP7200FDS71B1M**	27.000			**5397942**	**WD50FDS71292M**	3 x D	240	332
73.000	2.8740	**6041938**	**KSEMP7300FDS71B1M**	28.000			**5397943**	**WD50FDS71452M**	5 x D	400	492
73.025	2.8750	**6042002**	**KSEMP2875FDS71B1**	28.000			**6123590**	**SSF200FDS710677**	1.5 x D	127	216
74.000	2.9130	**6041798**	**KSEMP7400FDS71B1M**	29.000			**5397948**	**SSF200FDS711150**	3 x D	240	332
75.000	2.9530	**6041939**	**KSEMP7500FDS71B1M**	30.000			**5397949**	**SSF200FDS711780**	5 x D	400	492
76.000	2.9920	**6041799**	**KSEMP7600FDS71B1M**	31.000							
77.000	3.0310	**6041940**	**KSEMP7700FDS71B1M**	32.000							
76.200	3.0000	**5397562**	**KSEMP3000FDS71B1**	31.000							
78.000	3.0710	**6041800**	**KSEMP7800FDS71B1M**	33.000							
79.000	3.1100	**6041991**	**KSEMP7900FDS71B1M**	34.000							
79.375	3.1250	**6042003**	**KSEMP3125FDS80B1**	31.000	**DFC inserts** 2x DFC06T312D36 & 2x DFC070416D45 **DPA guiding pads** DPA13T5D50	80	**6123580**	**WD50FDS80192M**	1.5 x D	144	246
80.000	3.1500	**6041881**	**KSEMP8000FDS80B1M**	31.000			**5397944**	**WD50FDS80327M**	3 x D	270	372
81.000	3.1890	**6041992**	**KSEMP8100FDS80B1M**	32.000			**5397945**	**WD50FDS80507M**	5 x D	450	552
82.000	3.2280	**6041882**	**KSEMP8200FDS80B1M**	33.000			**6123591**	**SSF200FDS800756**	1.5 x D	144	246
82.550	3.2500	**5397563**	**KSEMP3250FDS80B1**	34.000			**5398010**	**SSF200FDS801287**	3 x D	270	372
83.000	3.2680	**6041993**	**KSEMP8300FDS80B1M**	34.000			**5398011**	**SSF200FDS801996**	5 x D	450	552
84.000	3.3070	**6041883**	**KSEMP8400FDS80B1M**	35.000							
85.000	3.3460	**6041994**	**KSEMP8500FDS80B1M**	36.000							
85.725	3.3750	**6042004**	**KSEMP3375FDS80B1**	37.000							
86.000	3.3860	**6041884**	**KSEMP8600FDS80B1M**	37.000							
87.000	3.4250	**6041995**	**KSEMP8700FDS80B1M**	38.000							
88.000	3.4650	**6041885**	**KSEMP8800FDS80B1M**	39.000							
88.900	3.5000	**5397564**	**KSEMP3500FDS80B1**	40.000							
89.000	3.5040	**6041996**	**KSEMP8900FDS80B1M**	40.000							
90.000	3.5430	**6041886**	**KSEMP9000FDS90B1M**	37.000	**DFC inserts** 4x DFC070416D45 **DPA guiding pads** DPA13T5D50	90	**6123581**	**WD50FDS90212M**	1.5 x D	158	270
91.000	3.5830	**6041997**	**KSEMP9100FDS90B1M**	38.000			**5397946**	**WD50FDS90362M**	3 x D	300	412
92.000	3.6220	**6041887**	**KSEMP9200FDS90B1M**	39.000			**5397947**	**WD50FDS90562M**	5 x D	500	612
92.075	3.6250	**6042005**	**KSEMP3625FDS90B1**	39.000			**6123592**	**SSF200FDS900835**	1.5 x D	158	270
93.000	3.6610	**6041998**	**KSEMP9300FDS90B1M**	40.000			**5398012**	**SSF200FDS901425**	3 x D	300	412
							5398013	**SSF200FDS902213**	5 x D	500	612
94.000	3.7010	**6041888**	**KSEMP9400FDS90B1M**	26.000	**DFC inserts** 6x DFC06T312D36 **DPA guiding pads** DPA13T5D50						
95.000	3.7400	**6041999**	**KSEMP9500FDS90B1M**	27.000							
95.250	3.7500	**5397565**	**KSEMP3750FDS90B1**	27.000							
96.000	3.7800	**6041889**	**KSEMP9600FDS90B1M**	28.000							
97.000	3.8190	**6042000**	**KSEMP9700FDS90B1M**	29.000							
98.000	3.8580	**6041890**	**KSEMP9800FDS90B1M**	30.000							
98.425	3.8750	**6042006**	**KSEMP3875FDS90B1**	31.000							
99.000	3.8980	**6042001**	**KSEMP9900FDS90B1M**	31.000							
100.000	3.9370	**6041901**	**KSEMP10000FDS90B1M**	32.000							
101.600	4.0000	**5397566**	**KSEMP4000FDS90B1**	34.000							

- To ensure 100% system stability, KSEM™ inserts used for KSEM PLUS should not be reground.
- The callout D1 (mm) = PDD. PDD is used in reference to the KSEM PLUS heads.
- Please refer to KSEMP insert recommendation on page H106 to configure your insert setup depending on the application.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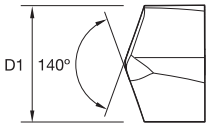
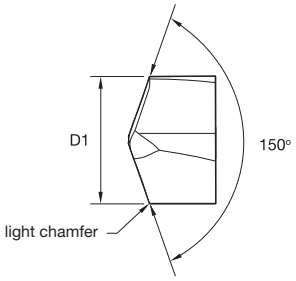


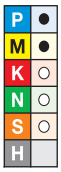
D1 (mm) = PDD

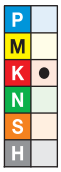

PC

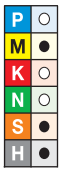


D1 (mm) = PDD

KSEM PLUS Centre Inserts







● first choice
○ alternate choice

HPG • KC7315	HPCCL • KC7410	PC • KC7135	D1 mm	D1 in	seat size
KSEMP1300HPGM	KSEM1300HPCCLM	KSEM1300PCM	13,000	.5118	C
KSEMP1400HPGM	KSEM1400HPCCLM	KSEM1400PCM	14,000	.5512	B
KSEMP1500HPGM	KSEM1500HPCCLM	KSEM1500PCM	15,000	.5906	A
KSEMP1600HPGM	KSEM1600HPCCLM	KSEM1600PCM	16,000	.6299	1
KSEMP1700HPGM	KSEM1700HPCCLM	KSEM1700PCM	17,000	.6693	1
KSEMP1800HPGM	KSEM1800HPCCLM	KSEM1800PCM	18,000	.7087	1
KSEMP1900HPGM	KSEM1900HPCCLM	KSEM1900PCM	19,000	.7480	2
KSEMP2000HPGM	KSEM2000HPCCLM	KSEM2000PCM	20,000	.7874	3
KSEMP2100HPGM	KSEM2100HPCCLM	KSEM2100PCM	21,000	.8268	3
KSEMP2200HPGM	KSEM2200HPCCLM	KSEM2200PCM	22,000	.8661	3
KSEMP2300HPGM	KSEM2300HPCCLM	KSEM2300PCM	23,000	.9055	4
KSEMP2400HPGM	KSEM2400HPCCLM	KSEM2400PCM	24,000	.9449	4
KSEMP2500HPGM	KSEM2500HPCCLM	KSEM2500PCM	25,000	.9843	5
KSEMP2600HPGM	KSEM2600HPCCLM	KSEM2600PCM	26,000	1.0236	5
KSEMP2700HPGM	KSEM2700HPCCLM	KSEM2700PCM	27,000	1.0630	6
KSEMP2800HPGM	KSEM2800HPCCLM	KSEM2800PCM	28,000	1.1024	6
KSEMP2900HPGM	KSEM2900HPCCLM	KSEM2900PCM	29,000	1.1417	7
KSEMP3000HPGM	KSEM3000HPCCLM	KSEM3000PCM	30,000	1.1811	7
KSEMP3100HPGM	KSEM3100HPCCLM	KSEM3100PCM	31,000	1.2205	8
KSEMP3200HPGM	KSEM3200HPCCLM	KSEM3200PCM	32,000	1.2598	8
KSEMP3300HPGM	KSEM3300HPCCLM	KSEM3300PCM	33,000	1.2992	9
KSEMP3400HPGM	KSEM3400HPCCLM	KSEM3400PCM	34,000	1.3386	9
KSEMP3500HPGM	KSEM3500HPCCLM	KSEM3500PCM	35,000	1.3780	9
KSEMP3600HPGM	KSEM3600HPCCLM	KSEM3600PCM	36,000	1.4173	9
KSEMP3700HPGM	KSEM3700HPCCLM	KSEM3700PCM	37,000	1.4567	10
KSEMP3800HPGM	KSEM3800HPCCLM	KSEM3800PCM	38,000	1.4961	10
KSEMP3900HPGM	KSEM3900HPCCLM	KSEM3900PCM	39,000	1.5354	10
KSEMP4000HPGM	KSEM4000HPCCLM	KSEM4000PCM	40,000	1.5748	10

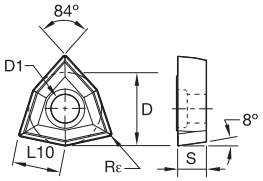
Tolerance KSEMP HPG • KSEM HPCCL • Metric

D1	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Tolerance KSEM PC • Metric

D1 metric	tolerance k7
12,5–18	+0,001/+ 0,019
>18–30	+0,002/+ 0,023
>30–40	+0,002/+ 0,027



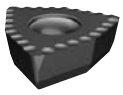


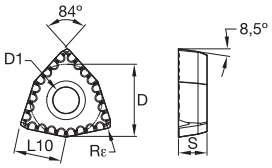
● first choice
○ alternate choice

P	●	●
M	○	○
K	●	○
N	○	○
S	○	●
H		

DFT-HP

catalogue number	L10	D	D1	S	Rε	KCU25	KCU40
DFT05T308D32HP	5,29	8,00	3,40	3,75	0,80	●	●
DFT05T308D33HP	5,29	8,00	3,40	3,75	0,80	●	●
DFT06T308D36HP	6,62	10,00	4,40	3,75	0,80	●	●
DFT06T308D39HP	6,62	10,00	4,40	3,75	0,80	●	●
DFT06T308D44HP	6,62	10,00	4,40	3,75	0,80	●	●
DFT070408D45HP	7,94	12,00	4,40	4,75	0,80	●	●
DFT070408D50HP	7,94	12,00	4,40	4,75	0,80	●	●
DFT090508D56HP	9,92	15,00	5,50	5,25	0,80	●	●
DFT090508D63HP	9,92	15,00	5,50	5,25	0,80	●	●



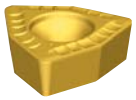


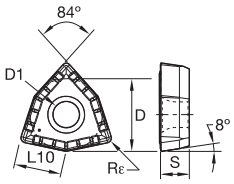
● first choice
○ alternate choice

P	●	
M	○	
K		
N	○	
S	○	
H		

DFT • DS

catalogue number	L10	D	D1	S	Rε	KCU40
DFT05T308D32DS	5,29	8,00	3,40	3,75	0,80	●
DFT05T308D33DS	5,29	8,00	3,40	3,75	0,80	●
DFT06T308D36DS	6,62	10,00	4,40	3,75	0,80	●
DFT06T308D39DS	6,62	10,00	4,40	3,75	0,80	●
DFT06T308D44DS	6,62	10,00	4,40	3,75	0,80	●
DFT070408D45DS	7,94	12,00	4,40	4,75	0,80	●
DFT070408D50DS	7,94	12,00	4,40	4,75	0,80	●
DFT090508D56DS	9,92	15,00	5,50	5,25	0,80	●
DFT090508D63DS	9,92	15,00	5,50	5,25	0,80	●





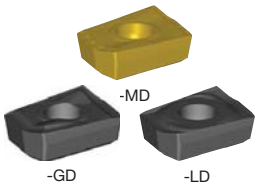
● first choice
○ alternate choice

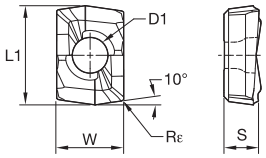
P		●
M		●
K		○
N		○
S		○
H		

DFT-MD

catalogue number	L10	D	D1	S	Rε	KC7140
DFT05T308D32MD	5,29	8,00	3,40	3,75	0,80	●
DFT05T308D33MD	5,29	8,00	3,40	3,75	0,80	●
DFT06T308D36MD	6,62	10,00	4,40	3,75	0,80	●
DFT06T308D39MD	6,62	10,00	4,40	3,75	0,80	●
DFT06T308D44MD	6,62	10,00	4,40	3,75	0,80	●
DFT070408D45MD	7,94	12,00	4,40	4,75	0,80	●
DFT070408D50MD	7,94	12,00	4,40	4,75	0,80	●
DFT090508D56MD	9,92	15,00	5,50	5,25	0,80	●
DFT090508D63MD	9,92	15,00	5,50	5,25	0,80	●

KSEM PLUS A1 Heads • Drill Fix DFR™ Inserts





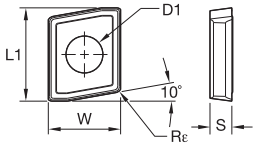
● first choice
○ alternate choice

P		●	○	●	●
M		●	○	○	○
K		○	●	●	○
N		○	●	○	○
S		○	○	○	●
H					

DFR-GD, -MD, -LD

catalogue number	LI	W	D1	S	Rε	KC7140	KC7225	KCU25	KCU40
DFR040304D28GD	10,76	7,26	2,85	3,79	0,40	–	–	●	●
DFR040304D28LD	10,76	7,26	2,85	3,78	0,40	–	●	–	–
DFR040304D28MD	10,76	7,26	2,85	3,79	0,40	●	–	–	–



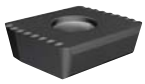


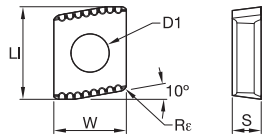
● first choice
○ alternate choice

P	●	●
M	○	○
K	●	○
N	○	●
S	○	●
H		

DFC-HP

catalogue number	LI	W	D1	S	Rε	KCU25	KCU40
DFC040310D28HP	10,00	7,60	2,85	3,18	0,50	●	●
DFC05T312D32HP	12,00	9,40	3,40	3,75	0,80	●	●
DFC06T312D36HP	16,00	12,40	4,40	3,75	0,80	●	●
DFC070416D45HP	18,00	14,50	4,40	4,75	0,80	●	●
DFC090520D56HP	24,00	19,00	5,50	5,25	0,80	●	●





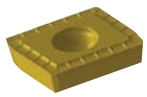
● first choice
○ alternate choice

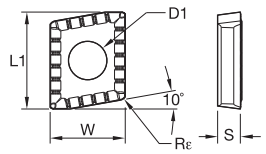
P	●	
M	○	
K	○	
N	●	
S	●	
H		

DFC-DS

NEW!

catalogue number	LI	W	D1	S	Rε	KCU40
DFC040310D28DS	10,00	7,60	2,85	3,18	0,50	●
DFC05T312D32DS	12,00	9,40	3,40	3,75	0,80	●
DFC06T312D36DS	16,00	12,40	4,40	3,75	0,80	●
DFC070416D45DS	18,00	14,50	4,40	4,75	0,80	●
DFC090520D56DS	24,00	19,00	5,50	5,25	0,80	●



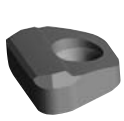


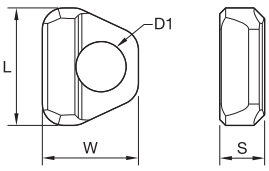
● first choice
○ alternate choice

P	●	
M	●	
K	○	
N	○	
S	○	
H		

DFC-MD

catalogue number	LI	W	D1	S	Rε	KC7140
DFC040310D28MD	10,00	7,60	2,85	3,18	0,50	●
DFC05T312D32MD	12,00	9,40	3,40	3,75	0,80	●
DFC06T312D36MD	16,00	12,40	4,40	3,75	0,80	●
DFC070416D45MD	18,00	14,50	4,40	4,75	0,80	●
DFC090520D56MD	24,00	19,00	5,50	5,25	0,80	●





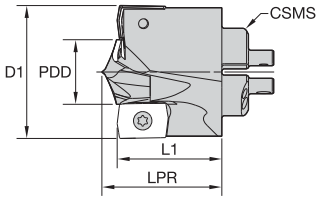
● first choice
○ alternate choice

P	●	
M	●	
K	●	
N	●	
S	●	
H		

DPA Guiding Pads

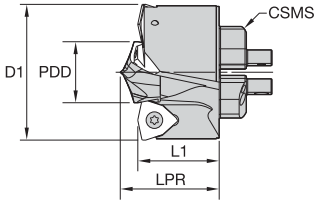
	L		W		D1		S		
catalogue number	mm	in	mm	in	mm	in	mm	in	KCU40
DPA07T3D25	8,60	.3390	7,00	.2760	2,85	.1120	3,50	.1380	●
DPA09T4D32	11,00	.4330	9,00	.3540	3,40	.1340	4,20	.1650	●
DPA13T5D50	16,00	.6300	13,00	.5120	4,40	.1730	5,20	.2050	●

- To ensure 100% system stability, KSEM™ inserts used for KSEM PLUS should not be reground.
- KSEM PLUS heads are shipped with all insert screws.
- KSEM PLUS heads are shipped with two wrenches, one for the KSEM insert and one to be used for the DFT™/DFR™ inserts as well as for the assembly of the body to the head.
- Order KSEM PLUS shanks using connection coupling size (CSMS) to determine which heads go with each shank.
- PDD in the callout drawing refers to the D1 of the KSEM HPG and HPCCL inserts for use with KSEM PLUS.
- Order inserts (KSEM, DFT, and DFR) for KSEM PLUS separately.



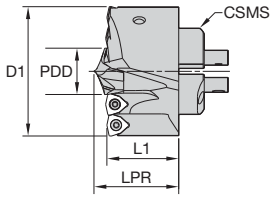


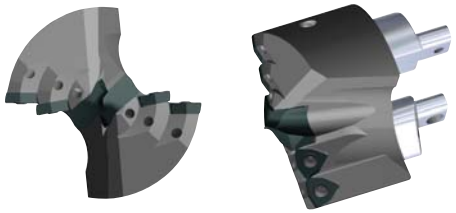
2 x DFR
diameter: 28–<31,75mm



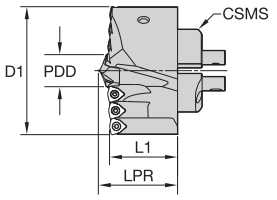


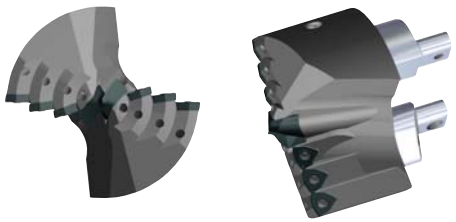
2 x DFT
diameter: 31,75–70,34mm





4 x DFT
diameter: 70,35–93,34mm





6 x DFT
diameter: 93,35–127mm

KSEM PLUS A1 Heads 28–101,60mm (1.102–4")

ISO catalogue number	ANSI catalogue number	D1		PDD		LPR		L1		CSMS system size
order number		mm	in	mm	in	mm	in	mm	in	
4000408	KSEMP2800FDS28A1M	KSEMP2800FDS28A1M	28,00	1.102	14,00	.5512	24,9	.980	22,0	.866	FDS28
4047811	KSEMP2858FDS28A1M	KSEMP1125FDS28A1	28,58	1.125	15,00	.5906	25,0	.984	22,0	.866	FDS28
4047812	KSEMP2900FDS28A1M	KSEMP2900FDS28A1M	29,00	1.142	15,00	.5906	25,0	.984	22,0	.866	FDS28
4047823	KSEMP2937FDS28A1M	KSEMP1156FDS28A1	29,36	1.156	16,00	.6299	25,2	.992	22,0	.866	FDS28
4047824	KSEMP3000FDS28A1M	KSEMP3000FDS28A1M	30,00	1.181	16,00	.6299	25,2	.992	22,0	.866	FDS28
4047825	KSEMP3017FDS28A1M	KSEMP1188FDS28A1	30,18	1.188	17,00	.6693	25,4	1.000	22,0	.866	FDS28
4047826	KSEMP3096FDS28A1M	KSEMP1219FDS28A1	30,96	1.219	17,00	.6693	25,4	1.000	22,0	.866	FDS28
4047827	KSEMP3100FDS28A1M	KSEMP3100FDS28A1M	31,00	1.221	17,00	.6693	25,4	1.000	22,0	.866	FDS28
3794916	KSEMP3175FDS32A1M	KSEMP1250FDS32A1	31,75	1.250	15,00	.5906	23,0	.907	20,0	.787	FDS32
3794291	KSEMP3200FDS32A1M	KSEMP3200FDS32A1M	32,00	1.260	15,00	.5906	23,0	.907	20,0	.787	FDS32
3742210	KSEMP3300FDS32A1M	KSEMP3300FDS32A1M	33,00	1.299	16,00	.6299	23,2	.913	20,0	.787	FDS32
3793949	KSEMP3320FDS32A1M	KSEMP3320FDS32A1M	33,20	1.307	16,00	.6299	23,2	.913	20,0	.787	FDS32
3794917	KSEMP3334FDS32A1M	KSEMP1313FDS32A1	33,35	1.313	17,00	.6693	23,4	.920	20,0	.787	FDS32
3794292	KSEMP3400FDS32A1M	KSEMP3400FDS32A1M	34,00	1.339	17,00	.6693	23,4	.920	20,0	.787	FDS32
3794918	KSEMP3493FDS32A1M	KSEMP1375FDS32A1	34,93	1.375	18,00	.7087	23,6	.928	20,0	.787	FDS32
3794393	KSEMP3500FDS32A1M	KSEMP3500FDS32A1M	35,00	1.378	18,00	.7087	23,6	.928	20,0	.787	FDS32

(continued)

(KSEM PLUS A1 Heads 28–101,60mm (1.102–4") — continued)

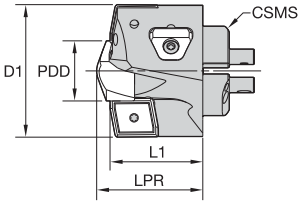
order number	ISO catalogue number	ANSI catalogue number	D1 mm	D1 in	PDD mm	PDD in	LPR mm	LPR in	L1 mm	L1 in	CSMS system size
3794394	KSEMP3600FDS36A1M	KSEMP3600FDS36A1M	36,00	1.417	13,00	.5118	22,7	.893	20,0	.787	FDS36
3794919	KSEMP3651FDS36A1M	KSEMP1438FDS36A1	36,53	1.438	14,00	.5512	22,9	.900	20,0	.787	FDS36
3794395	KSEMP3700FDS36A1M	KSEMP3700FDS36A1M	37,00	1.457	14,00	.5512	22,9	.900	20,0	.787	FDS36
3794427	KSEMP3750FDS36A1M	KSEMP3750FDS36A1M	37,50	1.476	15,00	.5906	23,0	.907	20,0	.787	FDS36
3794396	KSEMP3800FDS36A1M	KSEMP3800FDS36A1M	38,00	1.496	15,00	.5906	23,0	.907	20,0	.787	FDS36
3794920	KSEMP3810FDS36A1M	KSEMP1500FDS36A1	38,10	1.500	15,00	.5906	23,0	.907	20,0	.787	FDS36
3794397	KSEMP3900FDS36A1M	KSEMP3900FDS36A1M	39,00	1.535	16,00	.6299	23,2	.913	20,0	.787	FDS36
3793950	KSEMP3920FDS36A1M	KSEMP3920FDS36A1M	39,20	1.543	16,00	.6299	23,2	.913	20,0	.787	FDS36
3794921	KSEMP3970FDS36A1M	KSEMP1563FDS36A1	39,70	1.563	17,00	.6693	23,4	.920	20,0	.787	FDS36
3794398	KSEMP4000FDS40A1M	KSEMP4000FDS40A1M	40,00	1.575	17,00	.6693	28,6	1.125	25,0	.984	FDS40
3794399	KSEMP4100FDS40A1M	KSEMP4100FDS40A1M	41,00	1.614	18,00	.7087	28,8	1.132	25,0	.984	FDS40
3794922	KSEMP4128FDS40A1M	KSEMP1625FDS40A1	41,28	1.625	18,00	.7087	28,8	1.132	25,0	.984	FDS40
3794400	KSEMP4200FDS40A1M	KSEMP4200FDS40A1M	42,00	1.654	19,00	.7480	28,9	1.139	25,0	.984	FDS40
3794401	KSEMP4300FDS40A1M	KSEMP4300FDS40A1M	43,00	1.693	20,00	.7874	29,1	1.146	25,0	.984	FDS40
3794402	KSEMP4400FDS40A1M	KSEMP4400FDS40A1M	44,00	1.732	21,00	.8268	29,3	1.153	25,0	.984	FDS40
3794933	KSEMP4445FDS40A1M	KSEMP1750FDS40A1	44,45	1.750	22,00	.8661	29,5	1.160	25,0	.984	FDS40
3794403	KSEMP4500FDS45A1M	KSEMP4500FDS45A1M	45,00	1.772	18,00	.7087	28,8	1.132	25,0	.984	FDS45
3794404	KSEMP4600FDS45A1M	KSEMP4600FDS45A1M	46,00	1.811	19,00	.7480	28,9	1.139	25,0	.984	FDS45
3794405	KSEMP4700FDS45A1M	KSEMP4700FDS45A1M	47,00	1.850	20,00	.7874	29,1	1.146	25,0	.984	FDS45
3794934	KSEMP4763FDS45A1M	KSEMP1875FDS45A1	47,63	1.875	21,00	.8268	29,3	1.153	25,0	.984	FDS45
3794406	KSEMP4800FDS45A1M	KSEMP4800FDS45A1M	48,00	1.890	21,00	.8268	29,3	1.153	25,0	.984	FDS45
3794407	KSEMP4900FDS45A1M	KSEMP4900FDS45A1M	49,00	1.929	22,00	.8661	29,5	1.160	25,0	.984	FDS45
3742211	KSEMP5000FDS50A1M	KSEMP5000FDS50A1M	50,00	1.969	23,00	.9055	34,8	1.372	30,0	1.181	FDS50
3794935	KSEMP5080FDS50A1M	KSEMP2000FDS50A1	50,80	2.000	24,00	.9449	35,0	1.379	30,0	1.181	FDS50
3794408	KSEMP5100FDS50A1M	KSEMP5100FDS50A1M	51,00	2.008	24,00	.9449	35,0	1.379	30,0	1.181	FDS50
3794409	KSEMP5200FDS50A1M	KSEMP5200FDS50A1M	52,00	2.047	25,00	.9843	35,2	1.386	30,0	1.181	FDS50
3794410	KSEMP5300FDS50A1M	KSEMP5300FDS50A1M	53,00	2.087	26,00	1.0236	35,4	1.392	30,0	1.181	FDS50
3794936	KSEMP5398FDS50A1M	KSEMP2125FDS50A1	53,98	2.125	27,00	1.0630	35,6	1.399	30,0	1.181	FDS50
3794411	KSEMP5400FDS50A1M	KSEMP5400FDS50A1M	54,00	2.126	27,00	1.0630	35,6	1.399	30,0	1.181	FDS50
3794412	KSEMP5500FDS50A1M	KSEMP5500FDS50A1M	55,00	2.165	28,00	1.1024	35,7	1.406	30,0	1.181	FDS50
3794413	KSEMP5600FDS56A1M	KSEMP5600FDS56A1M	56,00	2.205	20,00	.7874	34,3	1.351	30,0	1.181	FDS56
3794414	KSEMP5700FDS56A1M	KSEMP5700FDS56A1M	57,00	2.244	21,00	.8268	34,5	1.358	30,0	1.181	FDS56
3794937	KSEMP5715FDS56A1M	KSEMP2250FDS56A1	57,15	2.250	21,00	.8268	34,5	1.358	30,0	1.181	FDS56
3794415	KSEMP5800FDS56A1M	KSEMP5800FDS56A1M	58,00	2.284	22,00	.8661	34,7	1.365	30,0	1.181	FDS56
3794416	KSEMP5900FDS56A1M	KSEMP5900FDS56A1M	59,00	2.323	23,00	.9055	34,8	1.372	30,0	1.181	FDS56
3794417	KSEMP6000FDS56A1M	KSEMP6000FDS56A1M	60,00	2.362	24,00	.9449	35,0	1.379	30,0	1.181	FDS56
3794938	KSEMP6033FDS56A1M	KSEMP2375FDS56A1	60,33	2.375	24,00	.9449	35,0	1.379	30,0	1.181	FDS56
3794418	KSEMP6100FDS56A1M	KSEMP6100FDS56A1M	61,00	2.402	25,00	.9843	35,2	1.386	30,0	1.181	FDS56
3794419	KSEMP6200FDS56A1M	KSEMP6200FDS56A1M	62,00	2.441	26,00	1.0236	35,4	1.392	30,0	1.181	FDS56
3794420	KSEMP6300FDS63A1M	KSEMP6300FDS63A1M	63,00	2.480	27,00	1.0630	41,8	1.643	36,0	1.417	FDS63
3794939	KSEMP6350FDS63A1M	KSEMP2500FDS63A1	63,50	2.500	28,00	1.1024	41,9	1.650	36,0	1.417	FDS63
3794421	KSEMP6400FDS63A1M	KSEMP6400FDS63A1M	64,00	2.520	28,00	1.1024	41,9	1.650	36,0	1.417	FDS63
3794422	KSEMP6500FDS63A1M	KSEMP6500FDS63A1M	65,00	2.559	29,00	1.1417	42,1	1.657	36,0	1.417	FDS63
3794423	KSEMP6600FDS63A1M	KSEMP6600FDS63A1M	66,00	2.598	30,00	1.1811	42,3	1.664	36,0	1.417	FDS63
3794940	KSEMP6668FDS63A1M	KSEMP2625FDS63A1	66,68	2.625	31,00	1.2205	42,5	1.671	36,0	1.417	FDS63
3794424	KSEMP6700FDS63A1M	KSEMP6700FDS63A1M	67,00	2.638	31,00	1.2205	42,5	1.671	36,0	1.417	FDS63
3794425	KSEMP6800FDS63A1M	KSEMP6800FDS63A1M	68,00	2.677	32,00	1.2598	42,6	1.678	36,0	1.417	FDS63
3794426	KSEMP6900FDS63A1M	KSEMP6900FDS63A1M	69,00	2.717	33,00	1.2992	42,8	1.685	36,0	1.417	FDS63
3794941	KSEMP6985FDS63A1M	KSEMP2750FDS63A1	69,85	2.750	34,00	1.3386	43,0	1.692	36,0	1.417	FDS63
3742212	KSEMP7000FDS63A1M	KSEMP7000FDS63A1M	70,00	2.756	34,00	1.3386	43,0	1.692	36,0	1.417	FDS63
6041904	KSEMP7100FDS71A1M	KSEMP7100FDS71A1M	71,00	2.795	26,00	1.0240	46,8	1.842	46,8	1.842	FDS71
5397513	KSEMP7200FDS71A1M	KSEMP7200FDS71A1M	72,00	2.835	27,00	1.0630	47,0	1.849	47,0	1.849	FDS71
6041906	KSEMP7300FDS71A1M	KSEMP7300FDS71A1M	73,00	2.874	28,00	1.1020	47,1	1.855	47,1	1.855	FDS71
6041931	KSEMP7303FDS71A1M	KSEMP2875FDS71A1	73,03	2.875	28,00	1.1020	47,1	1.855	47,1	1.855	FDS71
5397514	KSEMP7400FDS71A1M	KSEMP7400FDS71A1M	74,00	2.913	29,00	1.1420	47,3	1.863	47,3	1.863	FDS71
6041907	KSEMP7500FDS71A1M	KSEMP7500FDS71A1M	75,00	2.953	30,00	1.1810	47,5	1.869	47,5	1.869	FDS71

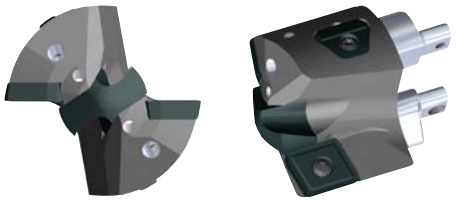
(continued)

(KSEM PLUS A1 Heads 28–101,60mm (1.102–4") — continued)

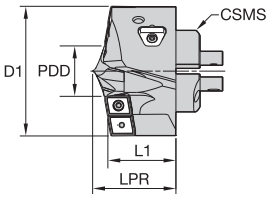
order number	ISO catalogue number	ANSI catalogue number	D1 mm	D1 in	PDD mm	PDD in	LPR mm	LPR in	L1 mm	L1 in	CSMS system size
5397515	KSEMP7600FDS71A1M	KSEMP7600FDS71A1M	76,00	2.992	31,00	1.2200	47,7	1.876	47,7	1.876	FDS71
5397516	KSEMP7620FDS71A1M	KSEMP3000FDS71A1	76,20	3.000	31,00	1.2200	47,7	1.876	47,7	1.876	FDS71
6041908	KSEMP7700FDS71A1M	KSEMP7700FDS71A1M	77,00	3.031	32,00	1.2600	47,8	1.883	47,8	1.883	FDS71
5397517	KSEMP7800FDS71A1M	KSEMP7800FDS71A1M	78,00	3.071	33,00	1.2990	48,0	1.890	48,0	1.890	FDS71
6041909	KSEMP7900FDS71A1M	KSEMP7900FDS71A1M	79,00	3.110	34,00	1.3390	48,2	1.897	48,2	1.897	FDS71
6041932	KSEMP7938FDS80A1M	KSEMP3125FDS80A1	79,38	3.125	31,00	1.2200	52,8	2.077	52,8	2.077	FDS80
5397518	KSEMP8000FDS80A1M	KSEMP8000FDS80A1M	80,00	3.150	31,00	1.2200	52,8	2.077	52,8	2.077	FDS80
6041910	KSEMP8100FDS80A1M	KSEMP8100FDS80A1M	81,00	3.189	32,00	1.2600	52,9	2.085	52,9	2.085	FDS80
5397519	KSEMP8200FDS80A1M	KSEMP8200FDS80A1M	82,00	3.228	33,00	1.2992	53,1	2.091	53,1	2.091	FDS80
5397550	KSEMP8255FDS80A1M	KSEMP3250FDS80A1	82,55	3.250	34,00	1.3386	53,3	2.098	53,3	2.098	FDS80
6041921	KSEMP8300FDS80A1M	KSEMP8300FDS80A1M	83,00	3.268	34,00	1.3390	53,3	2.098	53,3	2.098	FDS80
5397551	KSEMP8400FDS80A1M	KSEMP8400FDS80A1M	84,00	3.307	35,00	1.3780	53,5	2.105	53,5	2.105	FDS80
6041922	KSEMP8500FDS80A1M	KSEMP8500FDS80A1M	85,00	3.346	36,00	1.4170	53,6	2.112	53,6	2.112	FDS80
6041933	KSEMP8573FDS80A1M	KSEMP3375FDS80A1	85,73	3.375	37,00	1.4570	53,8	2.119	53,8	2.119	FDS80
5397552	KSEMP8600FDS80A1M	KSEMP8600FDS80A1M	86,00	3.386	37,00	1.4567	53,8	2.119	53,8	2.119	FDS80
6041923	KSEMP8700FDS80A1M	KSEMP8700FDS80A1M	87,00	3.425	38,00	1.4960	54,0	2.126	54,0	2.126	FDS80
5397553	KSEMP8800FDS80A1M	KSEMP8800FDS80A1M	88,00	3.465	39,00	1.5354	54,2	2.133	54,2	2.133	FDS80
5397554	KSEMP8890FDS80A1M	KSEMP3500FDS80A1	88,90	3.500	40,00	1.5748	54,3	2.140	54,3	2.140	FDS80
6041924	KSEMP8900FDS80A1M	KSEMP8900FDS80A1M	89,00	3.504	40,00	1.5750	54,3	2.140	54,3	2.140	FDS80
5397555	KSEMP9000FDS90A1M	KSEMP9000FDS90A1M	90,00	3.543	37,00	1.4567	59,2	2.332	59,2	2.332	FDS90
6041925	KSEMP9100FDS90A1M	KSEMP9100FDS90A1M	91,00	3.583	38,00	1.4960	59,4	2.339	59,4	2.339	FDS90
5397556	KSEMP9200FDS90A1M	KSEMP9200FDS90A1M	92,00	3.622	39,00	1.5354	59,6	2.346	59,6	2.346	FDS90
6041934	KSEMP9208FDS90A1M	KSEMP3625FDS90A1	92,08	3.625	39,00	1.5350	59,6	2.346	59,6	2.346	FDS90
6041926	KSEMP9300FDS90A1M	KSEMP9300FDS90A1M	93,00	3.661	40,00	1.5750	59,7	2.352	59,7	2.352	FDS90
5397557	KSEMP9400FDS90A1M	KSEMP9400FDS90A1M	94,00	3.701	26,00	1.0236	58,0	2.283	58,0	2.283	FDS90
6041927	KSEMP9500FDS90A1M	KSEMP9500FDS90A1M	95,00	3.740	27,00	1.0630	58,2	2.290	58,2	2.290	FDS90
5397558	KSEMP9525FDS90A1M	KSEMP3750FDS90A1	95,25	3.750	27,00	1.0630	58,3	2.297	58,3	2.297	FDS90
5397559	KSEMP9600FDS90A1M	KSEMP9600FDS90A1M	96,00	3.780	28,00	1.1024	58,3	2.297	58,3	2.297	FDS90
6041928	KSEMP9700FDS90A1M	KSEMP9700FDS90A1M	97,00	3.819	29,00	1.1420	58,5	2.304	58,5	2.304	FDS90
5397560	KSEMP9800FDS90A1M	KSEMP9800FDS90A1M	98,00	3.858	30,00	1.1811	58,7	2.311	58,7	2.311	FDS90
6041935	KSEMP9843FDS90A1M	KSEMP3875FDS90A1	98,43	3.875	31,00	1.2200	58,9	2.317	58,9	2.317	FDS90
6041929	KSEMP9900FDS90A1M	KSEMP9900FDS90A1M	99,00	3.898	31,00	1.2200	58,9	2.317	58,9	2.317	FDS90
6041930	KSEMP10000FDS90A1M	KSEMP10000FDS90A1M	100,00	3.937	32,00	1.2600	59,0	2.324	59,0	2.324	FDS90
5397561	KSEMP10160FDS90A1M	KSEMP4000FDS90A1	101,60	4.000	34,00	1.3390	59,4	2.338	59,4	2.338	FDS90

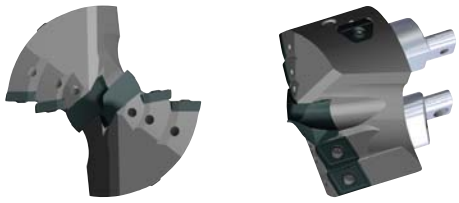
- To ensure 100% system stability, KSEM™ inserts used for KSEM PLUS should not be reground.
- KSEM PLUS heads are shipped with all insert screws.
- KSEM PLUS B1 heads are shipped with two or three wrenches, one for the KSEM insert, one for DFC™ inserts and DPA guiding pads, as well as for assembling the head onto the tool body. One additional wrench might be added depending on the size of the guiding pad.
- Order KSEM PLUS shanks using connection coupling size (CSMS) to determine which heads go with each shank.
- PDD in the callout drawing refers to the D1 of the KSEM, HPGM, and HPCM inserts for use with KSEM PLUS.
- Order inserts (KSEM, DFC) for KSEM PLUS separately.



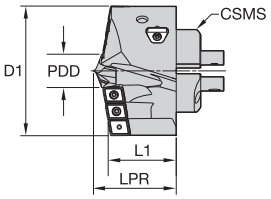


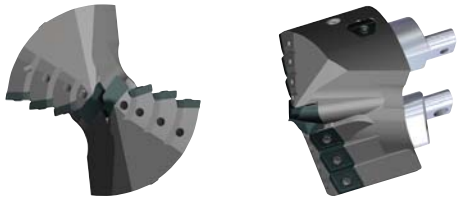
2 x DFC
diameter: 28–70,34mm





4 x DFC
diameter: 70,35–93,34mm





6 x DFC
diameter: 93,35–127mm

KSEM PLUS B1 Heads 28–101,60mm (1.102–4")

order number	ISO catalogue number	ANSI catalogue number	D1		PDD		LPR		L1		CSMS system size
			mm	in	mm	in	mm	in	mm	in	
5115736	KSEMP2800FDS28B1M	KSEMP2800FDS28B1M	28,00	1.102	14,00	.5512	28,1	1.105	25,0	.984	FDS28
5115737	KSEMP2858FDS28B1M	KSEMP1125FDS28B1	28,58	1.125	15,00	.5906	28,2	1.110	25,0	.984	FDS28
5115738	KSEMP2900FDS28B1M	KSEMP2900FDS28B1M	29,00	1.142	15,00	.5906	28,2	1.111	25,0	.984	FDS28
5115739	KSEMP2937FDS28B1M	KSEMP1156FDS28B1	29,36	1.156	16,00	.6299	28,4	1.118	25,0	.984	FDS28
5116010	KSEMP3000FDS28B1M	KSEMP3000FDS28B1M	30,00	1.181	16,00	.6299	28,4	1.118	25,0	.984	FDS28
5116011	KSEMP3017FDS28B1M	KSEMP1188FDS28B1	30,18	1.188	17,00	.6693	28,6	1.125	25,0	.984	FDS28
5116012	KSEMP3096FDS28B1M	KSEMP1219FDS28B1	30,96	1.219	17,00	.6693	28,6	1.125	25,0	.984	FDS28
5116013	KSEMP3100FDS28B1M	KSEMP3100FDS28B1M	31,00	1.220	17,00	.6693	28,6	1.125	25,0	.984	FDS28
5116014	KSEMP3175FDS32B1M	KSEMP1250FDS32B1	31,75	1.250	15,00	.5906	28,2	1.111	25,0	.984	FDS32
5116015	KSEMP3200FDS32B1M	KSEMP3200FDS32B1M	32,00	1.260	15,00	.5906	28,2	1.111	25,0	.984	FDS32
5116016	KSEMP3300FDS32B1M	KSEMP3300FDS32B1M	33,00	1.299	16,00	.6299	28,4	1.118	25,0	.984	FDS32
5116017	KSEMP3320FDS32B1M	KSEMP3320FDS32B1M	33,20	1.307	16,00	.6299	28,4	1.118	25,0	.984	FDS32
5116018	KSEMP3334FDS32B1M	KSEMP1313FDS32B1	33,35	1.313	17,00	.6693	28,6	1.125	25,0	.984	FDS32
5116019	KSEMP3400FDS32B1M	KSEMP3400FDS32B1M	34,00	1.339	17,00	.6693	28,6	1.125	25,0	.984	FDS32
5116030	KSEMP3493FDS32B1M	KSEMP1375FDS32B1	34,93	1.375	18,00	.7087	28,8	1.132	25,0	.984	FDS32
5116031	KSEMP3500FDS32B1M	KSEMP3500FDS32B1M	35,00	1.378	18,00	.7087	28,8	1.132	25,0	.984	FDS32
5116032	KSEMP3600FDS36B1M	KSEMP3600FDS36B1M	36,00	1.417	13,00	.5118	27,9	1.098	25,0	.984	FDS36
5116033	KSEMP3651FDS36B1M	KSEMP1438FDS36B1	36,53	1.438	14,00	.5512	28,1	1.105	25,0	.984	FDS36
5116034	KSEMP3700FDS36B1M	KSEMP3700FDS36B1M	37,00	1.457	14,00	.5512	28,1	1.105	25,0	.984	FDS36
5116035	KSEMP3750FDS36B1M	KSEMP3750FDS36B1M	37,50	1.476	15,00	.5906	28,2	1.111	25,0	.984	FDS36

(continued)

(KSEM PLUS B1 Heads 28–101,60mm (1.102–4") — continued)

order number	ISO catalogue number	ANSI catalogue number	D1		PDD		LPR		L1		CSMS system size
			mm	in	mm	in	mm	in	mm	in	
5116036	KSEMP3800FDS36B1M	KSEMP3800FDS36B1M	38,00	1.496	15,00	.5906	28,2	1.111	25,0	.984	FDS36
5116037	KSEMP3810FDS36B1M	KSEMP1500FDS36B1	38,10	1.500	15,00	.5906	28,2	1.111	25,0	.984	FDS36
5116038	KSEMP3900FDS36B1M	KSEMP3900FDS36B1M	39,00	1.535	16,00	.6299	28,4	1.118	25,0	.984	FDS36
5116039	KSEMP3920FDS36B1M	KSEMP3920FDS36B1M	39,20	1.543	16,00	.6299	28,4	1.118	25,0	.984	FDS36
5116040	KSEMP3970FDS36B1M	KSEMP1563FDS36B1	39,70	1.563	17,00	.6693	28,6	1.125	25,0	.984	FDS36
5116041	KSEMP4000FDS40B1M	KSEMP4000FDS40B1M	40,00	1.575	17,00	.6693	33,8	1.330	30,0	1.181	FDS40
5116042	KSEMP4100FDS40B1M	KSEMP4100FDS40B1M	41,00	1.614	18,00	.7087	34,0	1.337	30,0	1.181	FDS40
5116043	KSEMP4128FDS40B1M	KSEMP1625FDS40B1	41,28	1.625	18,00	.7087	34,0	1.337	30,0	1.181	FDS40
5116044	KSEMP4200FDS40B1M	KSEMP4200FDS40B1M	42,00	1.654	19,00	.7480	34,1	1.344	30,0	1.181	FDS40
5116045	KSEMP4300FDS40B1M	KSEMP4300FDS40B1M	43,00	1.693	20,00	.7874	34,3	1.351	30,0	1.181	FDS40
5116046	KSEMP4400FDS40B1M	KSEMP4400FDS40B1M	44,00	1.732	21,00	.8268	34,5	1.358	30,0	1.181	FDS40
5116047	KSEMP4445FDS40B1M	KSEMP1750FDS40B1	44,45	1.750	22,00	.8661	34,7	1.365	30,0	1.181	FDS40
5116098	KSEMP4500FDS45B1M	KSEMP4500FDS45B1M	45,00	1.772	18,00	.7087	34,0	1.337	30,0	1.181	FDS45
5116099	KSEMP4600FDS45B1M	KSEMP4600FDS45B1M	46,00	1.811	19,00	.7480	34,1	1.344	30,0	1.181	FDS45
5116110	KSEMP4700FDS45B1M	KSEMP4700FDS45B1M	47,00	1.850	20,00	.7874	34,3	1.351	30,0	1.181	FDS45
5116111	KSEMP4763FDS45B1M	KSEMP1875FDS45B1	47,63	1.875	21,00	.8268	34,5	1.358	30,0	1.181	FDS45
5116112	KSEMP4800FDS45B1M	KSEMP4800FDS45B1M	48,00	1.890	21,00	.8268	34,5	1.358	30,0	1.181	FDS45
5116113	KSEMP4900FDS45B1M	KSEMP4900FDS45B1M	49,00	1.929	22,00	.8661	34,7	1.365	30,0	1.181	FDS45
5116114	KSEMP5000FDS50B1M	KSEMP5000FDS50B1M	50,00	1.969	23,00	.9055	40,0	1.577	35,0	1.378	FDS50
5116115	KSEMP5080FDS50B1M	KSEMP2000FDS50B1	50,80	2.000	24,00	.9449	40,2	1.584	35,0	1.378	FDS50
5116116	KSEMP5100FDS50B1M	KSEMP5100FDS50B1M	51,00	2.008	24,00	.9449	40,2	1.584	35,0	1.378	FDS50
5116117	KSEMP5200FDS50B1M	KSEMP5200FDS50B1M	52,00	2.047	25,00	.9843	40,4	1.590	35,0	1.378	FDS50
5116118	KSEMP5300FDS50B1M	KSEMP5300FDS50B1M	53,00	2.087	26,00	1.0236	40,6	1.597	35,0	1.378	FDS50
5116119	KSEMP5398FDS50B1M	KSEMP2125FDS50B1	53,98	2.125	27,00	1.0630	40,8	1.604	35,0	1.378	FDS50
5116120	KSEMP5400FDS50B1M	KSEMP5400FDS50B1M	54,00	2.126	27,00	1.0630	40,8	1.604	35,0	1.378	FDS50
5116121	KSEMP5500FDS50B1M	KSEMP5500FDS50B1M	55,00	2.165	28,00	1.1024	40,9	1.611	35,0	1.378	FDS50
5116122	KSEMP5600FDS56B1M	KSEMP5600FDS56B1M	56,00	2.205	20,00	.7874	39,5	1.556	35,0	1.378	FDS56
5116123	KSEMP5700FDS56B1M	KSEMP5700FDS56B1M	57,00	2.244	21,00	.8268	39,7	1.563	35,0	1.378	FDS56
5116124	KSEMP5715FDS56B1M	KSEMP2250FDS56B1	57,15	2.250	21,00	.8268	39,7	1.563	35,0	1.378	FDS56
5116125	KSEMP5800FDS56B1M	KSEMP5800FDS56B1M	58,00	2.283	22,00	.8661	39,9	1.570	35,0	1.378	FDS56
5116126	KSEMP5900FDS56B1M	KSEMP5900FDS56B1M	59,00	2.323	23,00	.9055	40,0	1.577	35,0	1.378	FDS56
5116127	KSEMP6000FDS56B1M	KSEMP6000FDS56B1M	60,00	2.362	24,00	.9449	40,2	1.584	35,0	1.378	FDS56
5116128	KSEMP6033FDS56B1M	KSEMP2375FDS56B1	60,33	2.375	24,00	.9449	40,2	1.584	35,0	1.378	FDS56
5116129	KSEMP6100FDS56B1M	KSEMP6100FDS56B1M	61,00	2.402	25,00	.9843	40,4	1.590	35,0	1.378	FDS56
5116130	KSEMP6200FDS56B1M	KSEMP6200FDS56B1M	62,00	2.441	26,00	1.0236	40,6	1.597	35,0	1.378	FDS56
5116131	KSEMP6300FDS63B1M	KSEMP6300FDS63B1M	63,00	2.480	27,00	1.0630	46,0	1.809	40,0	1.575	FDS63
5116132	KSEMP6350FDS63B1M	KSEMP2500FDS63B1	63,50	2.500	28,00	1.1024	46,1	1.816	40,0	1.575	FDS63
5116133	KSEMP6400FDS63B1M	KSEMP6400FDS63B1M	64,00	2.520	28,00	1.1024	46,1	1.816	40,0	1.575	FDS63
5116134	KSEMP6500FDS63B1M	KSEMP6500FDS63B1M	65,00	2.559	29,00	1.1417	46,3	1.823	40,0	1.575	FDS63
5116135	KSEMP6600FDS63B1M	KSEMP6600FDS63B1M	66,00	2.598	30,00	1.1811	46,5	1.830	40,0	1.575	FDS63
5116136	KSEMP6668FDS63B1M	KSEMP2625FDS63B1	66,68	2.625	31,00	1.2205	46,7	1.837	40,0	1.575	FDS63
5116137	KSEMP6700FDS63B1M	KSEMP6700FDS63B1M	67,00	2.638	31,00	1.2205	46,7	1.837	40,0	1.575	FDS63
5116138	KSEMP6800FDS63B1M	KSEMP6800FDS63B1M	68,00	2.677	32,00	1.2598	46,8	1.844	40,0	1.575	FDS63
5116139	KSEMP6900FDS63B1M	KSEMP6900FDS63B1M	69,00	2.717	33,00	1.2992	47,0	1.851	40,0	1.575	FDS63
5116140	KSEMP6985FDS63B1M	KSEMP2750FDS63B1	69,85	2.750	34,00	1.3386	47,2	1.858	40,0	1.575	FDS63
5116141	KSEMP7000FDS63B1M	KSEMP7000FDS63B1M	70,00	2.756	34,00	1.3386	47,2	1.858	40,0	1.575	FDS63
6041937	KSEMP7100FDS71B1M	KSEMP7100FDS71B1M	71,00	2.795	26,00	1.0240	47,9	1.885	40,0	1.575	FDS71
6041797	KSEMP7200FDS71B1M	KSEMP7200FDS71B1M	72,00	2.835	27,00	1.0630	48,1	1.892	40,0	1.575	FDS71
6041938	KSEMP7300FDS71B1M	KSEMP7300FDS71B1M	73,00	2.874	28,00	1.1020	48,2	1.899	40,0	1.575	FDS71
6042002	KSEMP7303FDS71B1M	KSEMP2875FDS71B1	73,03	2.875	28,00	1.1020	48,2	1.899	40,0	1.575	FDS71
6041798	KSEMP7400FDS71B1M	KSEMP7400FDS71B1M	74,00	2.913	29,00	1.1420	48,4	1.906	40,0	1.575	FDS71
6041939	KSEMP7500FDS71B1M	KSEMP7500FDS71B1M	75,00	2.953	30,00	1.1810	48,6	1.913	40,0	1.575	FDS71
6041799	KSEMP7600FDS71B1M	KSEMP7600FDS71B1M	76,00	2.992	31,00	1.2200	48,8	1.919	40,0	1.575	FDS71
5397562	KSEMP7620FDS71B1M	KSEMP3000FDS71B1	76,20	3.000	31,00	1.2200	48,8	1.919	48,8	1.919	FDS71
6041940	KSEMP7700FDS71B1M	KSEMP7700FDS71B1M	77,00	3.031	32,00	1.2600	48,9	1.927	40,0	1.575	FDS71
6041800	KSEMP7800FDS71B1M	KSEMP7800FDS71B1M	78,00	3.071	33,00	1.2990	49,1	1.933	40,0	1.575	FDS71

(continued)

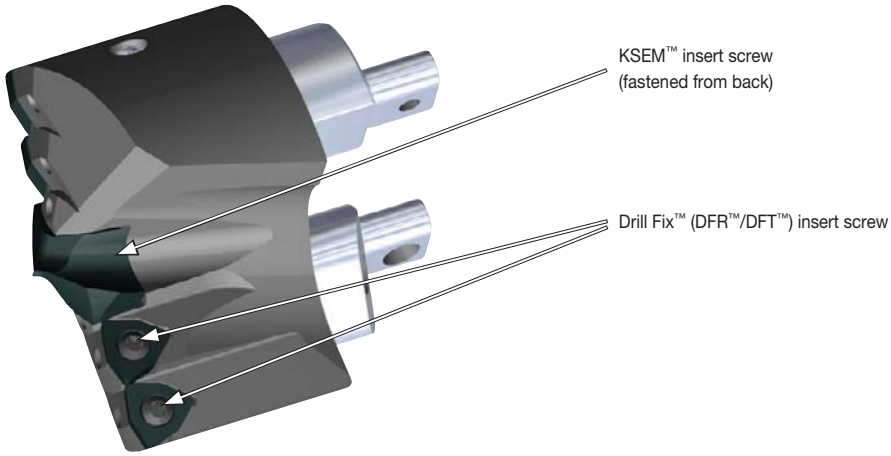
(KSEM PLUS B1 Heads 28–101,60mm (1.102–4") — continued)

order number	ISO catalogue number	ANSI catalogue number	D1		PDD		LPR		L1		CSMS system size
			mm	in	mm	in	mm	in	mm	in	
6041991	**KSEMP7900FDS71B1M**	**KSEMP7900FDS71B1M**	79,00	3.110	34,00	1.3390	49,3	1.940	40,0	1.575	FDS71
6042003	**KSEMP7938FDS80B1M**	**KSEMP3125FDS80B1**	79,38	3.125	31,00	1.2200	54,1	2.128	45,0	1.772	FDS80
6041881	**KSEMP8000FDS80B1M**	**KSEMP8000FDS80B1M**	80,00	3.150	31,00	1.2200	54,1	2.128	45,0	1.772	FDS80
6041992	**KSEMP8100FDS80B1M**	**KSEMP8100FDS80B1M**	81,00	3.189	32,00	1.2600	54,2	2.135	45,0	1.772	FDS80
6041882	**KSEMP8200FDS80B1M**	**KSEMP8200FDS80B1M**	82,00	3.228	33,00	1.2990	54,4	2.142	45,0	1.772	FDS80
5397563	**KSEMP8255FDS80B1M**	**KSEMP3250FDS80B1**	82,55	3.250	34,00	1.3386	54,6	2.149	54,6	2.149	FDS80
6041993	**KSEMP8300FDS80B1M**	**KSEMP8300FDS80B1M**	83,00	3.268	34,00	1.3390	54,6	2.149	45,0	1.772	FDS80
6041883	**KSEMP8400FDS80B1M**	**KSEMP8400FDS80B1M**	84,00	3.307	35,00	1.3780	54,8	2.156	45,0	1.772	FDS80
6041994	**KSEMP8500FDS80B1M**	**KSEMP8500FDS80B1M**	85,00	3.346	36,00	1.4170	54,9	2.163	45,0	1.772	FDS80
6042004	**KSEMP8573FDS80B1M**	**KSEMP3375FDS80B1**	85,73	3.375	37,00	1.4570	55,1	2.170	45,0	1.772	FDS80
6041884	**KSEMP8600FDS80B1M**	**KSEMP8600FDS80B1M**	86,00	3.386	37,00	1.4570	55,1	2.170	45,0	1.772	FDS80
6041995	**KSEMP8700FDS80B1M**	**KSEMP8700FDS80B1M**	87,00	3.425	38,00	1.4960	55,3	2.177	45,0	1.772	FDS80
6041885	**KSEMP8800FDS80B1M**	**KSEMP8800FDS80B1M**	88,00	3.465	39,00	1.5350	55,5	2.184	45,0	1.772	FDS80
5397564	**KSEMP8890FDS80B1M**	**KSEMP3500FDS80B1**	88,90	3.500	40,00	1.5748	55,6	2.190	55,6	2.190	FDS80
6041996	**KSEMP8900FDS80B1M**	**KSEMP8900FDS80B1M**	89,00	3.504	40,00	1.5750	55,6	2.190	45,0	1.772	FDS80
6041886	**KSEMP9000FDS90B1M**	**KSEMP9000FDS90B1M**	90,00	3.543	37,00	1.4570	60,3	2.375	50,0	1.969	FDS90
6041997	**KSEMP9100FDS90B1M**	**KSEMP9100FDS90B1M**	91,00	3.583	38,00	1.4960	60,5	2.382	50,0	1.969	FDS90
6041887	**KSEMP9200FDS90B1M**	**KSEMP9200FDS90B1M**	92,00	3.622	39,00	1.5350	60,7	2.389	50,0	1.969	FDS90
6042005	**KSEMP9208FDS90B1M**	**KSEMP3625FDS90B1**	92,08	3.625	39,00	1.5350	60,7	2.389	50,0	1.969	FDS90
6041998	**KSEMP9300FDS90B1M**	**KSEMP9300FDS90B1M**	93,00	3.661	40,00	1.5750	60,8	2.395	50,0	1.969	FDS90
6041888	**KSEMP9400FDS90B1M**	**KSEMP9400FDS90B1M**	94,00	3.701	26,00	1.0240	60,4	2.376	50,0	1.968	FDS90
6041999	**KSEMP9500FDS90B1M**	**KSEMP9500FDS90B1M**	95,00	3.740	27,00	1.0630	60,6	2.383	50,0	1.968	FDS90
5397565	**KSEMP9525FDS90B1M**	**KSEMP3750FDS90B1**	95,25	3.750	27,00	1.0630	60,6	2.383	60,6	2.383	FDS90
6041889	**KSEMP9600FDS90B1M**	**KSEMP9600FDS90B1M**	96,00	3.780	28,00	1.1020	60,7	2.390	50,0	1.968	FDS90
6042000	**KSEMP9700FDS90B1M**	**KSEMP9700FDS90B1M**	97,00	3.819	29,00	1.1420	60,9	2.398	50,0	1.968	FDS90
6041890	**KSEMP9800FDS90B1M**	**KSEMP9800FDS90B1M**	98,00	3.858	30,00	1.1810	61,1	2.404	50,0	1.968	FDS90
6042006	**KSEMP9843FDS90B1M**	**KSEMP3875FDS90B1**	98,43	3.875	31,00	1.2200	61,3	2.411	50,0	1.968	FDS90
6042001	**KSEMP9900FDS90B1M**	**KSEMP9900FDS90B1M**	99,00	3.898	31,00	1.2200	61,3	2.412	50,0	1.969	FDS90
6041901	**KSEMP10000FDS90B1M**	**KSEMP10000FDS90B1M**	100,00	3.937	32,00	1.2600	61,4	2.418	50,0	1.968	FDS90
5397566	**KSEMP10160FDS90B1M**	**KSEMP4000FDS90B1**	101,60	4.000	34,00	1.3390	61,8	2.432	61,8	2.432	FDS90

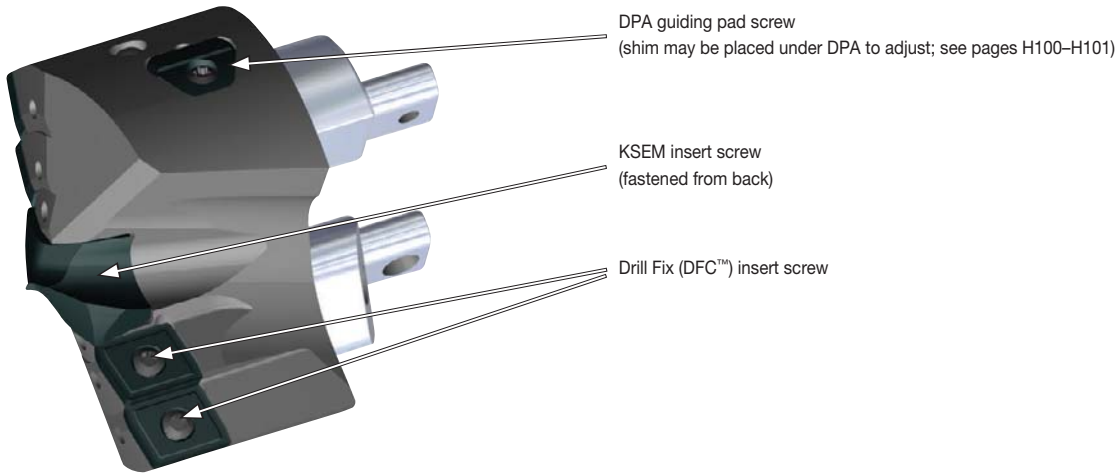
NOTE: When one screw is listed, it is for both insert and guiding pad. When two screws are listed, the first one is for the insert screw, and the second one is for the guiding pad. Find complete KSEM PLUS B1 product overview on pages H84-H86.

- The following pages consolidate required spare parts for KSEM PLUS heads.
- Tables show each spare part followed by required screw driver (if applicable).
- Adjustment shims for DPA guide pads on KSEM PLUS B1 heads come as easy-to-use shim packs.
- Please find reference for spare part location below.

KSEM PLUS A1 Heads • Spare Parts



KSEM PLUS B1 Heads • Spare Parts



KSEM PLUS A1 Heads 28–101,60mm (1.102–4") • Spare Parts

D1		PDD						
mm	in	mm	in	CSMS system size	KSEM insert screw	KSEM wrench	Drill Fix insert screw	Drill Fix wrench
28,00	1.102	14,00	.551	FDS28	364.016	170.350	192.432	170.352
28,58	1.125	15,00	.591	FDS28	364.016	170.350	192.432	170.352
29,00	1.142	15,00	.591	FDS28	364.016	170.350	192.432	170.352
29,36	1.156	16,00	.630	FDS28	364.010	170.345	192.432	170.352
30,00	1.181	16,00	.630	FDS28	364.010	170.345	192.432	170.352
30,18	1.188	17,00	.669	FDS28	364.010	170.345	192.432	170.352
30,96	1.219	17,00	.669	FDS28	364.010	170.345	192.432	170.352
31,00	1.221	17,00	.669	FDS28	364.010	170.345	192.432	170.352
31,75	1.250	15,00	.591	FDS32	364.016	170.350	191.924	170.353
32,00	1.260	15,00	.591	FDS32	364.016	170.350	191.924	170.353
33,00	1.299	16,00	.630	FDS32	364.010	170.345	191.924	170.353
33,20	1.307	16,00	.630	FDS32	364.010	170.345	191.924	170.353
33,35	1.313	17,00	.669	FDS32	364.010	170.345	191.924	170.353
34,00	1.339	17,00	.669	FDS32	364.010	170.345	191.924	170.353
34,93	1.375	18,00	.709	FDS32	364.010	170.345	191.924	170.353
35,00	1.378	18,00	.709	FDS32	364.010	170.345	191.924	170.353
36,00	1.417	13,00	.512	FDS36	364.016	170.350	191.916	170.355
36,53	1.438	14,00	.551	FDS36	364.016	170.350	191.916	170.355
37,00	1.457	14,00	.551	FDS36	364.016	170.350	191.916	170.355
37,50	1.476	15,00	.591	FDS36	364.016	170.350	191.916	170.355
38,00	1.496	15,00	.591	FDS36	364.016	170.350	191.916	170.355
38,10	1.500	15,00	.591	FDS36	364.016	170.350	191.916	170.355
39,00	1.535	16,00	.630	FDS36	364.010	170.345	191.916	170.355
39,20	1.543	16,00	.630	FDS36	364.010	170.345	191.916	170.355
39,70	1.563	17,00	.669	FDS36	364.010	170.345	191.916	170.355
40,00	1.575	17,00	.669	FDS40	364.010	170.345	191.916	170.355
41,00	1.614	18,00	.709	FDS40	364.010	170.345	191.916	170.355
41,28	1.625	18,00	.709	FDS40	364.010	170.345	191.916	170.355
42,00	1.654	19,00	.748	FDS40	364.010	170.345	191.916	170.355
43,00	1.693	20,00	.787	FDS40	364.011	170.346	191.916	170.355
44,00	1.732	21,00	.827	FDS40	364.011	170.346	191.916	170.355
44,45	1.750	22,00	.866	FDS40	364.011	170.346	191.916	170.355
45,00	1.772	18,00	.709	FDS45	364.010	170.345	191.698	170.355
46,00	1.811	19,00	.748	FDS45	364.010	170.345	191.698	170.355
47,00	1.850	20,00	.787	FDS45	364.011	170.346	191.698	170.355
47,63	1.875	21,00	.827	FDS45	364.011	170.346	191.698	170.355
48,00	1.890	21,00	.827	FDS45	364.011	170.346	191.698	170.355
49,00	1.929	22,00	.866	FDS45	364.011	170.346	191.698	170.355
50,00	1.969	23,00	.906	FDS50	364.011	170.346	191.698	170.355
50,80	2.000	24,00	.945	FDS50	364.011	170.346	191.698	170.355
51,00	2.008	24,00	.945	FDS50	364.011	170.346	191.698	170.355
52,00	2.047	25,00	.984	FDS50	364.012	170.347	191.698	170.355
53,00	2.087	26,00	1.024	FDS50	364.012	170.347	191.698	170.355
53,98	2.125	27,00	1.063	FDS50	364.012	170.347	191.698	170.355
54,00	2.126	27,00	1.063	FDS50	364.012	170.347	191.698	170.355
55,00	2.165	28,00	1.102	FDS50	364.012	170.347	191.698	170.355
56,00	2.205	20,00	.787	FDS56	364.011	170.346	191.726	170.356
57,00	2.244	21,00	.827	FDS56	364.011	170.346	191.726	170.356
57,15	2.250	21,00	.827	FDS56	364.011	170.346	191.726	170.356
58,00	2.284	22,00	.866	FDS56	364.011	170.346	191.726	170.356
59,00	2.323	23,00	.906	FDS56	364.011	170.346	191.726	170.356
60,00	2.362	24,00	.945	FDS56	364.011	170.346	191.726	170.356
60,33	2.375	24,00	.945	FDS56	364.011	170.346	191.726	170.356
61,00	2.402	25,00	.984	FDS56	364.012	170.347	191.726	170.356
62,00	2.441	26,00	1.024	FDS56	364.012	170.347	191.726	170.356
63,00	2.480	27,00	1.063	FDS63	364.012	170.347	191.726	170.356

(continued)

(KSEM PLUS A1 Heads 28–101,60mm (1.102–4") • Spare Parts — continued)

D1		PDD						
mm	in	mm	in	CSMS system size	KSEM insert screw	KSEM wrench	Drill Fix insert screw	Drill Fix wrench
63,50	2.500	28,00	1.102	FDS63	364.012	170.347	191.726	170.356
64,00	2.520	28,00	1.102	FDS63	364.012	170.347	191.726	170.356
65,00	2.559	29,00	1.142	FDS63	364.013	170.348	191.726	170.356
66,00	2.598	30,00	1.181	FDS63	364.013	170.348	191.726	170.356
66,68	2.625	31,00	1.221	FDS63	364.013	170.348	191.726	170.356
67,00	2.638	31,00	1.221	FDS63	364.013	170.348	191.726	170.356
68,00	2.677	32,00	1.260	FDS63	364.013	170.348	191.726	170.356
69,00	2.717	33,00	1.299	FDS63	364.015	170.348	191.726	170.356
69,85	2.750	34,00	1.339	FDS63	364.015	170.348	191.726	170.356
70,00	2.756	34,00	1.339	FDS63	364.015	170.348	191.726	170.356
71,00	2.795	26,00	1.024	FDS71	364.012	170.347	191.916	170.355
72,00	2.835	27,00	1.063	FDS71	364.012	170.347	191.916	170.355
73,00	2.874	28,00	1.102	FDS71	364.012	170.347	191.916	170.355
73,03	2.875	28,00	1.102	FDS71	364.012	170.347	191.916	170.355
74,00	2.913	29,00	1.142	FDS71	364.013	170.365	191.916	170.355
75,00	2.953	30,00	1.181	FDS71	364.013	170.365	191.916	170.355
76,00	2.992	31,00	1.220	FDS71	364.013	170.365	191.916	170.355
76,20	3.000	31,00	1.220	FDS71	364.013	170.365	191.916	170.355
77,00	3.031	32,00	1.260	FDS71	364.013	170.365	191.916	170.355
78,00	3.071	33,00	1.299	FDS71	364.015	170.365	191.916	170.355
79,00	3.110	34,00	1.339	FDS71	364.015	170.365	191.916	170.355
79,38	3.125	31,00	1.220	FDS80	364.013	170.365	191.916	170.355
80,00	3.150	31,00	1.220	FDS80	364.013	170.365	191.916	170.355
81,00	3.189	32,00	1.260	FDS80	364.013	170.365	191.916	170.355
82,00	3.228	33,00	1.299	FDS80	364.015	170.365	191.916	170.355
82,55	3.250	34,00	1.339	FDS80	364.015	170.365	191.916	170.355
83,00	3.268	34,00	1.339	FDS80	364.015	170.365	191.916	170.355
84,00	3.307	35,00	1.378	FDS80	364.015	170.365	191.916	170.355
85,00	3.346	36,00	1.417	FDS80	364.015	170.365	191.916	170.355
85,73	3.375	37,00	1.457	FDS80	364.015	170.365	191.916	170.355
86,00	3.386	37,00	1.457	FDS80	364.015	170.365	191.916	170.355
87,00	3.425	38,00	1.496	FDS80	364.015	170.365	191.916	170.355
88,00	3.465	39,00	1.535	FDS80	364.015	170.365	191.916	170.355
88,90	3.500	40,00	1.575	FDS80	364.015	170.365	191.916	170.355
89,00	3.504	40,00	1.575	FDS80	364.015	170.365	191.916	170.355
90,00	3.543	37,00	1.457	FDS90	364.015	170.365	191.916	170.355
91,00	3.583	38,00	1.496	FDS90	364.015	170.365	191.916	170.355
92,00	3.622	39,00	1.535	FDS90	364.015	170.365	191.916	170.355
92,08	3.625	39,00	1.535	FDS90	364.015	170.365	191.916	170.355
93,00	3.661	40,00	1.575	FDS90	364.015	170.365	191.916	170.355
94,00	3.701	26,00	1.024	FDS90	364.012	170.355	191.916	170.355
95,00	3.740	27,00	1.063	FDS90	364.012	170.355	191.916	170.355
95,25	3.750	27,00	1.063	FDS90	364.012	170.355	191.916	170.355
96,00	3.780	28,00	1.102	FDS90	364.012	170.355	191.916	170.355
97,00	3.819	29,00	1.142	FDS90	364.013	170.365	191.916	170.355
98,00	3.858	30,00	1.181	FDS90	364.013	170.365	191.916	170.355
98,43	3.875	31,00	1.220	FDS90	364.013	170.365	191.916	170.355
99,00	3.898	31,00	1.220	FDS90	364.013	170.365	191.916	170.355
100,00	3.937	32,00	1.260	FDS90	364.013	170.365	191.916	170.355
101,60	4.000	34,00	1.339	FDS90	364.015	170.365	191.916	170.355

KSEM PLUS B1 Heads 28–101,60mm (1.102–4") • Spare Parts

D1		PDD									
mm	in	mm	in	CSMS system size	KSEM insert screw	Torx wrench	DFC insert screw	Torx wrench	DPA guiding pad screw	Torx wrench	shim pack
28,00	1.102	14,00	.551	FDS28	364.016	170.350	192.432	170.352	192.432	170.352	193.554
28,58	1.125	15,00	.591	FDS28	364.016	170.350	192.432	170.352	192.432	170.352	193.554
29,00	1.142	15,00	.591	FDS28	364.016	170.350	192.432	170.352	192.432	170.352	193.554
29,36	1.156	16,00	.630	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
30,00	1.181	16,00	.630	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
30,18	1.188	17,00	.669	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
30,96	1.219	17,00	.669	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
31,00	1.220	17,00	.669	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
31,75	1.250	15,00	.591	FDS32	364.016	170.350	191.924	170.353	191.924	170.353	193.555
32,00	1.260	15,00	.591	FDS32	364.016	170.350	191.924	170.353	191.924	170.353	193.555
33,00	1.299	16,00	.630	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
33,20	1.307	16,00	.630	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
33,35	1.313	17,00	.669	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
34,00	1.339	17,00	.669	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
34,93	1.375	18,00	.709	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
35,00	1.378	18,00	.709	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
36,00	1.417	13,00	.512	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
36,53	1.438	14,00	.551	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
37,00	1.457	14,00	.551	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
37,50	1.476	15,00	.591	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
38,00	1.496	15,00	.591	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
38,10	1.500	15,00	.591	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
39,00	1.535	16,00	.630	FDS36	364.010	170.345	191.916	170.355	191.924	170.353	193.555
39,20	1.543	16,00	.630	FDS36	364.010	170.345	191.916	170.355	191.924	170.353	193.555
39,70	1.563	17,00	.669	FDS36	364.010	170.345	191.916	170.355	191.924	170.353	193.555
40,00	1.575	17,00	.669	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
41,00	1.614	18,00	.709	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
41,28	1.625	18,00	.709	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
42,00	1.654	19,00	.748	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
43,00	1.693	20,00	.787	FDS40	364.011	170.346	191.916	170.355	191.924	170.353	193.555
44,00	1.732	21,00	.827	FDS40	364.011	170.346	191.916	170.355	191.924	170.353	193.555
44,45	1.750	22,00	.866	FDS40	364.011	170.346	191.916	170.355	191.924	170.353	193.555
45,00	1.772	18,00	.709	FDS45	364.010	170.345	191.916	170.355	191.924	170.353	193.555
46,00	1.811	19,00	.748	FDS45	364.010	170.345	191.916	170.355	191.924	170.353	193.555
47,00	1.850	20,00	.787	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
47,63	1.875	21,00	.827	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
48,00	1.890	21,00	.827	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
49,00	1.929	22,00	.866	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
50,00	1.969	23,00	.906	FDS50	364.011	170.346	191.916	170.355	191.916	170.355	193.556
50,80	2.000	24,00	.945	FDS50	364.011	170.346	191.916	170.355	191.916	170.355	193.556
51,00	2.008	24,00	.945	FDS50	364.011	170.346	191.916	170.355	191.916	170.355	193.556
52,00	2.047	25,00	.984	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
53,00	2.087	26,00	1.024	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
53,98	2.125	27,00	1.063	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
54,00	2.126	27,00	1.063	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
55,00	2.165	28,00	1.102	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
56,00	2.205	20,00	.787	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
57,00	2.244	21,00	.827	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
57,15	2.250	21,00	.827	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
58,00	2.283	22,00	.866	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
59,00	2.323	23,00	.906	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
60,00	2.362	24,00	.945	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
60,33	2.375	24,00	.945	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
61,00	2.402	25,00	.984	FDS56	364.012	170.347	191.726	170.356	191.916	170.355	193.556
62,00	2.441	26,00	1.024	FDS56	364.012	170.347	191.726	170.356	191.916	170.355	193.556
63,00	2.480	27,00	1.063	FDS63	364.012	170.347	191.726	170.356	191.916	170.355	193.556

(continued)

(KSEM PLUS B1 Heads 28–101,60mm (1.102–4") • Spare Parts — continued)



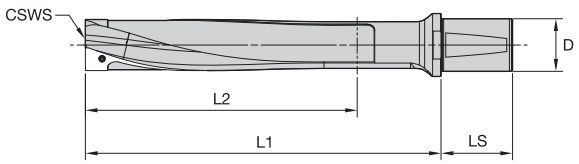






D1		PDD									
mm	in	mm	in	CSMS system size	KSEM insert screw	Torx wrench	DFC insert screw	Torx wrench	DPA guiding pad screw	Torx wrench	shim pack
63,50	2.500	28,00	1.102	FDS63	**364.012**	**170.347**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
64,00	2.520	28,00	1.102	FDS63	**364.012**	**170.347**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
65,00	2.559	29,00	1.142	FDS63	**364.013**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
66,00	2.598	30,00	1.181	FDS63	**364.013**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
66,68	2.625	31,00	1.221	FDS63	**364.013**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
67,00	2.638	31,00	1.221	FDS63	**364.013**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
68,00	2.677	32,00	1.260	FDS63	**364.013**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
69,00	2.717	33,00	1.299	FDS63	**364.015**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
69,85	2.750	34,00	1.339	FDS63	**364.015**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
70,00	2.756	34,00	1.339	FDS63	**364.015**	**170.348**	**191.726**	**170.356**	**191.916**	**170.355**	**193.556**
71,00	2.795	26,00	1.024	FDS71	**364.012**	**170.347**	**191.916**	**170.356**	**191.916**	**170.355**	**193.556**
72,00	2.835	27,00	1.063	FDS71	**364.012**	**170.347**	**191.916**	**170.356**	**191.916**	**170.355**	**193.556**
73,00	2.874	28,00	1.102	FDS71	**364.012**	**170.347**	**191.916**	**170.356**	**191.916**	**170.355**	**193.556**
73,03	2.875	28,00	1.102	FDS71	**364.012**	**170.347**	**191.916**	**170.356**	**191.916**	**170.355**	**193.556**
74,00	2.913	29,00	1.142	FDS71	**364.013**	**170.365**	**191.916**	**170.356**	**191.916**	**170.355**	**193.556**
75,00	2.953	30,00	1.181	FDS71	**364.013**	**170.365**	**191.916**	**170.356**	**191.916**	**170.355**	**193.556**
76,00	2.992	31,00	1.220	FDS71	**364.013**	**170.365**	**191.916**	**170.356**	**191.916**	**170.355**	**193.556**
76,20	3.000	31,00	1.220	FDS71	**364.013**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
77,00	3.031	32,00	1.260	FDS71	**364.013**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
78,00	3.071	33,00	1.299	FDS71	**364.015**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
79,00	3.110	34,00	1.339	FDS71	**364.015**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
79,38	3.125	31,00	1.220	FDS80	**364.013**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
80,00	3.150	31,00	1.220	FDS80	**364.013**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
81,00	3.189	32,00	1.260	FDS80	**364.013**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
82,00	3.228	33,00	1.299	FDS80	**364.015**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
82,55	3.250	34,00	1.339	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
83,00	3.268	34,00	1.339	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
84,00	3.307	35,00	1.378	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
85,00	3.346	36,00	1.417	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
85,73	3.375	37,00	1.457	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
86,00	3.386	37,00	1.457	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
87,00	3.425	38,00	1.496	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
88,00	3.465	39,00	1.535	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
88,90	3.500	40,00	1.575	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
89,00	3.504	40,00	1.575	FDS80	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
90,00	3.543	37,00	1.457	FDS90	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
91,00	3.583	38,00	1.496	FDS90	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
92,00	3.622	39,00	1.535	FDS90	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
92,08	3.625	39,00	1.535	FDS90	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
93,00	3.661	40,00	1.575	FDS90	**364.015**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
94,00	3.701	26,00	1.024	FDS90	**364.012**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
95,00	3.740	27,00	1.063	FDS90	**364.012**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
95,25	3.750	27,00	1.063	FDS90	**364.012**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
96,00	3.780	28,00	1.102	FDS90	**364.012**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
97,00	3.819	29,00	1.142	FDS90	**364.013**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
98,00	3.858	30,00	1.181	FDS90	**364.013**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
98,43	3.875	31,00	1.220	FDS90	**364.013**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
99,00	3.898	31,00	1.220	FDS90	**364.013**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
100,00	3.937	32,00	1.260	FDS90	**364.013**	**170.355**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**
101,60	4.000	34,00	1.339	FDS90	**364.015**	**170.365**	**191.916**	**170.355**	**191.916**	**170.356**	**193.556**

- Order KSEM PLUS heads according to the connection coupling size (CSWS).
- Order KSEM PLUS heads separately; see page H91–H96.
- Wrench will be shipped with KSEM PLUS head.
- Custom solution for cast iron application with twisted flutes available.





KSEM PLUS WD Shanks • 1.5 x D • Metric

1.5 x D catalogue number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28076M	FDS28	32	76	32	58	**193.537**
WD32FDS32082M	FDS32	32	82	34	58	**193.523**
WD32FDS36092M	FDS36	32	92	40	58	**193.524**
WD50FDS40100M	FDS40	50	100	43	68	**193.524**
WD50FDS45112M	FDS45	50	112	50	68	**193.525**
WD50FDS50122M	FDS50	50	122	54	68	**193.525**
WD50FDS56140M	FDS56	50	140	65	68	**193.526**
WD50FDS63154M	FDS63	50	154	71	68	**193.526**
WD50FDS71172M	FDS71	50	172	80	68	**193.526**
WD50FDS80192M	FDS80	50	192	90	68	**193.545**
WD50FDS90212M	FDS90	50	212	100	68	**193.545**

KSEM PLUS WD Shanks • 3 x D • Metric

3 x D catalogue number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28128M	FDS28	32	128	71	58	**193.537**
WD32FDS32146M	FDS32	32	146	85	58	**193.523**
WD32FDS36166M	FDS36	32	166	97	58	**193.524**
WD50FDS40183M	FDS40	50	183	107	68	**193.524**
WD50FDS45206M	FDS45	50	206	122	68	**193.525**
WD50FDS50228M	FDS50	50	228	135	68	**193.525**
WD50FDS56259M	FDS56	50	259	156	68	**193.526**
WD50FDS63289M	FDS63	50	289	174	68	**193.526**
WD50FDS71292M	FDS71	50	292	200	68	**193.526**
WD50FDS80327M	FDS80	50	327	225	68	**193.545**
WD50FDS90362M	FDS90	50	362	250	68	**193.545**

KSEM PLUS WD Shanks • 5 x D • Metric





5 x D catalogue number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28190M	FDS28	32	190	133	58	**193.537**
WD32FDS32216M	FDS32	32	216	155	58	**193.523**
WD32FDS36244M	FDS36	32	244	175	58	**193.524**
WD50FDS40271M	FDS40	50	271	195	68	**193.524**
WD50FDS45304M	FDS45	50	304	220	68	**193.525**
WD50FDS50338M	FDS50	50	338	245	68	**193.525**
WD50FDS56383M	FDS56	50	383	280	68	**193.526**
WD50FDS63429M	FDS63	50	429	314	68	**193.526**
WD50FDS71452M	FDS71	50	452	360	68	**193.526**
WD50FDS80507M	FDS80	50	507	405	68	**193.545**
WD50FDS90562M	FDS90	50	562	450	68	**193.545**

KSEM PLUS WD Shanks • 8 x D • Metric





8 x D catalogue number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28283M	FDS28	32	283	226	58	**193.537**
WD32FDS32321M	FDS32	32	321	260	58	**193.523**
WD32FDS36361M	FDS36	32	361	292	58	**193.524**
WD50FDS40403M	FDS40	50	403	327	68	**193.524**
WD50FDS45451M	FDS45	50	451	367	68	**193.525**
WD50FDS50503M	FDS50	50	503	410	68	**193.525**
WD50FDS56569M	FDS56	50	569	466	68	**193.526**
WD50FDS63639M	FDS63	50	639	524	68	**193.526**

KSEM PLUS WD Shanks • 10 x D • Metric





10 x D catalogue number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28345M	FDS28	32	345	288	58	**193.537**
WD32FDS32391M	FDS32	32	391	330	58	**193.523**
WD32FDS36439M	FDS36	32	439	370	58	**193.524**
WD50FDS40491M	FDS40	50	491	415	68	**193.524**
WD50FDS45549M	FDS45	50	549	465	68	**193.525**
WD50FDS50613M	FDS50	50	613	520	68	**193.525**
WD50FDS56693M	FDS56	50	693	590	68	**193.526**
WD50FDS63779M	FDS63	50	779	664	68	**193.526**

KSEM PLUS Carbide Insert Recommendations

Material Group	Outboard/ Inboard	Insert Style	Grade	Page(s)	Comments
P	O	DFR-GD	KCU25, KCU40	H89	Recommended outboard insert style for working in all P-materials. Start with KCU40™ and use KCU25™ in stable conditions to achieve higher tool life.
		DFC-/DFT-HP		H90, H88	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 10% to further improve chip formation in long-chipping steels and low carbon steel.
	I	KSEMP-HPG	KC7315	H87	Must use KSEMP centre inserts in P-materials to avoid excessive wear on head & inserts.
M	O	DFR-MD	KC7140	H89	Recommended outboard insert style for working in all M-materials.
		DFC-/DFT-MD		H90, H89	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 20% to further improve chip formation and/or run with lower power consumption.
	I	KSEMP-HPG	KC7315	H87	Recommended inboard insert style for working in all M-materials.
		KSEM-PC	KC7135	H56, H87	For unstable conditions in stainless steel, use KSEM PC inserts.
		KSEM-HPL	KC7320	H50	If chip control issue resulting from centre insert occurs in M-materials, use KSEM HPL insert inboard. Reduction of feed rate up to 20% is recommended.
K	O	DFR-LD	KCU25	H89	Recommended insert styles for working in all K-Materials.
		DFC-/DFT-HP		H90, H88	
	I	KSEM-HPCCL	KC7410	H48, H87	
N	O	DFR-GD	KC7225	H89	Recommended outboard insert styles for working in all non-ferrous materials.
		DFC-/DFT-HP	KCU40	H90, H88	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 15% for diameters <56mm and up to 50% for larger diameters to improve chip formation.
		DFR/DFT-ST	KD1425	J85	Use PCD tipped outboard when working with CFRP, CFRP/metal stacks and plastics (N3, N5, and N6).
	I	KSEMP-HPG	KC7315	H87	Recommended inboard insert style for working in all non-ferrous materials.
		KSEM-HPS	K715	—	This is a made-to-order item (uncoated/sharp) — use it to improve your results in N3, N5, and N6, if required.
S	O	DFR-GD	KC7140	H89	Recommended outboard insert style for working in all S-materials.
		DFC-/DFT-HP	KCU40	H90, H88	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 20% to further improve chip formation and/or run with lower power consumption.
	I	KSEM-PC	KC7135	H56, H87	If centre breakage is an issue in S-materials, use KSEM PC insert inboard.



Need help with bad chip formation?

Our new DS geometry for DFT™ and DFC™ inserts on KSEM PLUS helps you to improve your performance in long chipping materials.

If chip formation is an issue, you may use our new DFT and DFC DS style inserts with the recommendations for feed rate adjustments given as indicated.

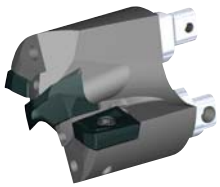
Modular Drill • KSEM PLUS™ • Metric • A1 and B1 Style

Metric											
Material Group		Condition	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter					
			min	Starting Value	max	Ø	KSEM 14….17 DFR/DFC04... 28.00–31,74	KSEM 15….18 DFT/DFC05... 31,74–35,99	KSEM 13….22 DFT/DFC06... 36,00–44,99	KSEM 18….28 DFT/DFC07... 45,00–55,99	KSEM 20….34 DFT/DFC09... 56,00–102,35
P	1	S	115	**235**	290	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	90	**160**	215	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	65	**100**	140	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	90	**190**	230	mm/r	0,160–0,280	0,160–0,280	0,200–0,360	0,200–0,400	0,200–0,450
		U	71	**130**	170	mm/r	0,160–0,280	0,160–0,280	0,200–0,360	0,200–0,400	0,200–0,450
		I	50	**80**	110	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	3	S	90	**180**	230	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**120**	170	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**70**	106	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	4	S	90	**140**	220	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**110**	160	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**80**	110	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	5	S	90	**130**	210	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**100**	150	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**70**	100	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	6	S	70	**90**	180	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	50	**75**	120	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	40	**60**	100	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
M	1	S	60	**110**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**70**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	30	**50**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	60	**100**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**60**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	30	**50**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	3	S	50	**90**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**60**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	25	**40**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
K	1	S	90	**170**	230	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**120**	160	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	40	**70**	90	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
	2	S	90	**160**	220	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**110**	160	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	40	**70**	100	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
	3	S	90	**150**	210	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**100**	150	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	35	**60**	90	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
N	1	S	150	**240**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**160**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**100**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	2	S	150	**220**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**150**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**100**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	3	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	4	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	5	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	6	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	7	S	110	**220**	260	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	70	**140**	170	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	45	**90**	110	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
S	1	S	25	**50**	75	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	15	**30**	50	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	35	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	3	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	40	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	4	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	40	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360

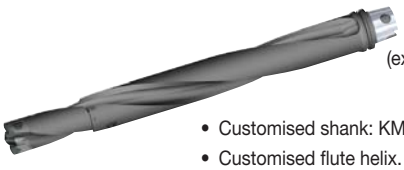


Application	Workpiece Shape	A1 Head	B1 Head
Flat Face		✓	✓
Cored Hole		✗	✓
Stacked Plates		✗	✓
Angled Exit (exit only!)		✓ <3°	✓ max 15°
Angled Entrance		✓ <3°	✓ <3°
Cross Holes		✗	✓ max 50% of D1

KSEM PLUS Customised Solution Capabilities:



- Intermediate head Ø.
- Custom head to use reground KSEM™ inserts.
- Heads for cross holes Ø = d1.



(example)

- Customised shank: KM™, HSK, VDI, ISO taper, etc.
- Customised flute helix.
- Step drill.

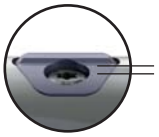


- Drill body up to L1 = 20 x D and total length of 1250mm.

Mounting DPA Guiding Pads on B1 Heads

All B1 heads are delivered with preset guiding pads.

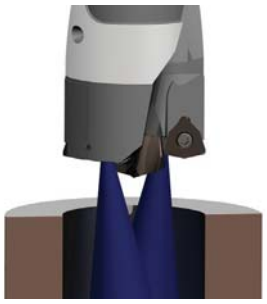




Measure radial undersize "A" of pad to cutting edge for both sides and adjust using shim set that comes with each head.

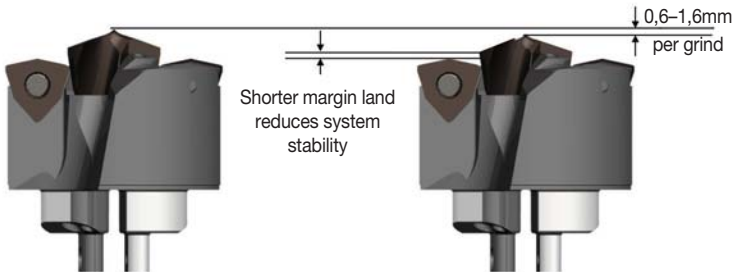
NOTE: For best results with slanted exits and in cross hole drilling, we recommend guiding pads adjustment results in an undersize of A = 30 µm (edge of guiding pads to cutting edges).

Coolant Recommendations



Internal coolant is recommended for optimum chip flow and tool life.

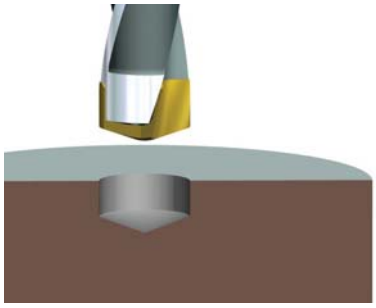
KSEM PLUS Piloting Insert SHOULD NOT Be Reground:



Only new KSEM PLUS inserts will provide consistency and process security on a KSEM PLUS modular drill system. If you want to regrind, refer to our custom solution A1 and B1 heads.

NOTE: Reground KSEM PLUS inserts can be used in KSEM™ drills.

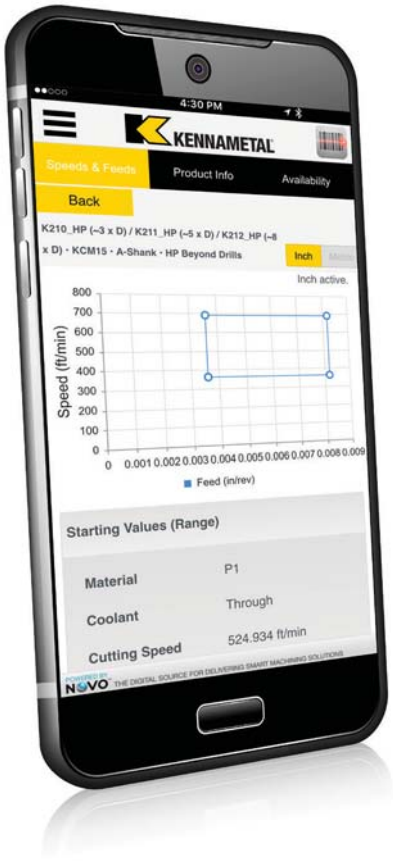
Piloting Instructions:



1. KSEM….PC Pilot drill Ø equal KSEMP Ø PDD
2. Drill 1mm deep from full diameter

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



FEATURES

Scan a Kennametal tool package barcode or search a product catalogue number to access complete product information.

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Combination Tools

Tool Selection Guide **I2–I3**

BF Combination Drilling System **I4–I19**

B343_HPG Drill for BF I8–I10

KenTIP for BF I11–I13

BF Bodies I14

BF Inserts I15–I16

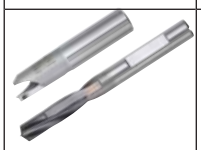
SEFAS Combination Drilling System **I20–I27**

SEFAS Bodies I23–I25

SEFAS Hardware I26

SEFAS Chamfering Inserts I27



		standard							standard range		customised solution range		
		● first choice ○ alternate choice							diameter range		diameter range		
		P	M	K	N	S	H	hole tolerance	D1 mm min–max	drilling depth L/D1	D1 mm min–max	drilling depth	
	**BF with Solid Carbide Drill** Combination Tool	●		●				IT7–11	3,4–18 (B343 drill)	approx. 3 x D	3,4–22,5	.1–5 x D	
	**BF with KenTIP™** Combination Tool	●	●	●				IT7–11	8–18,99	3 x D 4 x D 5 x D	8–25,99	3–5 x D	
	**SEFAS™** Combination Tool	●	○	●	●	○		IT7–11	4–20	approx. 3 x D 5 x D 8 x D 12 x D	3,4–25	1–5 x D	

In regard to insert and drill coatings, anything is possible. If a specific insert or drill is not suitable for your workpiece material, please contact our Engineered Solutions Department for an offer about special coatings and edge preparations.

[1] Other shank styles available as customised solution.

	coolant		■ standard and □ customised solution capabilities [1]			■ standard and □ customised solution capabilities [1]									page(s)
	■		■ ■			■			□		■	□		■	I8–I10
	■		■ ■			■			□		■	□		■	I11–I13
	■		■ ■		□	■			□		■			■	I23–I27

Combination Tools

Combination drilling tools are customisable using standard components and combine centring, drilling, and countersinking into a single operation to increase productivity by reducing cycle time and tool changes.

Both the BF and SEFAS™ combination systems provide high flexibility to adapt the tool to varying hole geometries and provide full through-coolant capabilities.



Features and Benefits

BF Combination Drilling System

- Drilling, chamfering, and countersinking in one tool.
- Uses solid carbide and modular KenTIP™ drills.
- Covered drill diameter range 3,4–18mm (.125–.750").
- A specific range of drill diameters can be applied for each drill body based upon drill shank size.
- Highly flexible system:
  - Chamfer insert with different angles.
  - Insert design enables special geometrical shapes.
  - Inserts can be easily interchanged.

NOTE: TF drills may be used with one insert in limited applications.
Consult your Kennametal Sales Representative for more information.



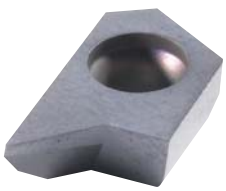
Provide high flexibility to adapt the tool to varying hole geometries.



SEFAS™ Combination Drilling System

- High-performance, self-centring drill and chamfer in one tool.
- Drill diameter range 4–18mm (.156–.750").
- Uses standard solid carbide drills in HP and TX styles as well as modular KenTIP™ drills.
- 90° and 82° angles available for chamfer inserts.
- Various shanks can be used with metric and inch diameter drills.





BF Combination Drilling System

Primary Application

Combines centring, drilling, and countersinking into a single operation, increasing productivity by reducing cycle time and number of tool changes. The modular design provides flexibility to adapt the tool to varying hole geometries in small- and medium-lot-size manufacturing.

With its slim design and full-through-coolant capabilities, the BF combination system can be used in even deeper holes, in critical materials, and with restricted workspace.

Features and Benefits

Productivity

- Reduce the number of tool changes and cycle time by combining drilling and countersinking into one operation.
- Use high-performance solid carbide drills and KenTIP™ drill bodies to achieve high speeds and feeds.
- Avoid the need for reconditioning by using KenTIP blades.

Versatility

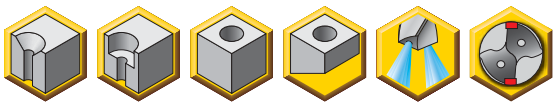
- Choose between solid carbide drills and KenTIP drill bodies.
- Various grades and insert styles.
- Flexible modular system for adjusting the drill length or insert style to manufacture different geometries.

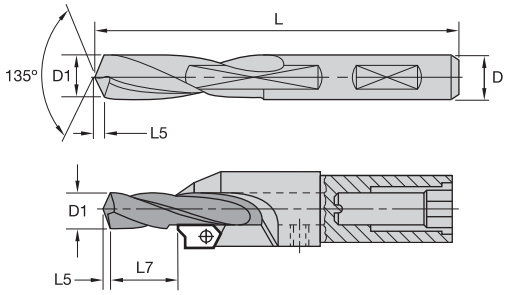
Choose between solid carbide drills and KenTIP™ drill bodies.

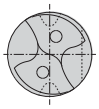


Customisation

- Length variations available as engineered solutions.
- TX drills for aluminium available as engineered solutions.
- BF inserts can be customised to almost any geometry.

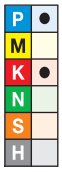








B343_HPG



● first choice
○ alternate choice

KC7315	D1	D	L	L7 min	L7 max	L5
B343S03175HPG	3,18	4	55	1,0	8,6	0,60
B343S03400HPG	3,40	4	55	1,0	10,0	0,63
B343S03500HPG	3,50	4	55	1,6	10,6	0,65
B343S03797HPG *	3,80	4	55	3,3	12,3	0,70
B343S03800HPG	3,80	4	55	3,3	12,3	0,70
B343S03970HPG	3,97	4	55	4,2	13,2	0,73
B343S04000HPG	4,00	4	55	4,4	13,4	0,74
B343S04100HPG	4,10	5	62	3,7	13,7	0,76
B343S04200HPG	4,20	5	62	4,2	14,2	0,78
B343S04300HPG	4,30	5	62	4,7	14,7	0,79
B343S04500HPG	4,50	5	62	5,6	15,6	0,83
B343S04600HPG *	4,60	5	62	5,8	15,8	0,85
B343S04623HPG	4,62	5	62	5,9	15,9	0,85
B343S04763HPG	4,76	5	62	6,6	16,6	0,88
B343S04900HPG *	4,90	5	62	7,2	17,2	0,90
B343S05000HPG	5,00	5	62	7,6	17,6	0,92
B343S05100HPG	5,10	6	66	6,8	17,8	0,60
B343S05200HPG	5,20	6	66	7,2	18,2	0,96
B343S05300HPG	5,30	6	66	7,6	18,6	0,98
B343S05400HPG	5,40	6	66	8,0	19,0	1,00
B343S05410HPG	5,41	6	66	8,0	19,0	1,00
B343S05500HPG	5,50	6	66	8,4	19,4	1,02
B343S05550HPG	5,55	6	66	8,3	19,3	1,02
B343S05558HPG *	5,56	6	66	8,4	19,4	1,03
B343S05600HPG	5,60	6	66	8,5	19,5	1,03
B343S05800HPG	5,80	6	66	9,3	20,3	1,07
B343S06000HPG	6,00	6	66	10,0	21,0	1,11
B343S06100HPG	6,10	7	74	9,1	21,1	1,13
B343S06200HPG	6,20	7	74	9,5	21,5	1,14
B343S06300HPG	6,30	7	74	9,8	21,8	1,16
B343S06350HPG	6,35	7	74	10,0	22,0	1,17
B343S06400HPG	6,40	7	74	10,2	22,2	1,18
B343S06500HPG	6,50	7	74	10,5	22,5	1,20
B343S06528HPG	6,53	7	74	10,6	22,6	1,21
B343S06600HPG	6,60	7	74	10,9	22,9	1,22
B343S06700HPG	6,70	7	74	11,2	23,2	1,24

(continued)

(B343_HPG — continued)



● first choice
○ alternate choice

KC7315	D1	D	L	L7 min	L7 max	L5
B343S06746HPG	6,75	7	74	11,4	23,4	1,25
B343S06800HPG	6,80	7	74	11,5	23,5	1,26
B343S06900HPG	6,90	7	74	11,9	23,9	1,27
B343S07000HPG	7,00	7	74	12,2	24,2	1,29
B343S07145HPG	7,14	8	79	11,1	24,1	1,32
B343S07300HPG	7,30	8	79	11,6	24,6	1,35
B343S07400HPG	7,40	8	79	11,9	24,9	1,37
B343S07500HPG	7,50	8	79	12,3	25,3	1,38
B343S07541HPG *	7,54	8	79	12,4	25,4	1,39
B343S07800HPG	7,80	8	79	13,2	26,2	1,44
B343S07900HPG	7,90	8	79	13,5	26,5	1,46
B343S07938HPG	7,94	8	79	13,6	26,6	1,47
B343S08000HPG	8,00	8	79	13,8	26,8	1,48
B343S08100HPG	8,10	9	84	12,6	26,6	1,50
B343S08200HPG	8,20	9	84	12,8	26,8	1,51
B343S08300HPG	8,30	9	84	13,1	27,1	1,53
B343S08334HPG *	8,33	9	84	13,2	27,2	1,54
B343S08400HPG	8,40	9	84	13,4	27,4	1,55
B343S08433HPG *	8,43	9	84	13,5	27,5	1,56
B343S08500HPG	8,50	9	84	13,7	27,7	1,57
B343S08600HPG	8,60	9	84	14,0	28,0	1,59
B343S08700HPG	8,70	9	84	14,3	28,3	1,61
B343S08733HPG *	8,73	9	84	14,4	28,4	1,61
B343S08800HPG	8,80	9	84	14,5	28,5	1,62
B343S09000HPG	9,00	9	84	15,1	29,1	1,66
B343S09100HPG	9,10	10	89	14,3	28,8	1,68
B343S09347HPG	9,35	10	89	15,0	29,5	1,73
B343S09400HPG *	9,40	10	89	15,1	29,6	1,74
B343S09500HPG *	9,50	10	89	15,4	29,9	1,75
B343S09525HPG *	9,53	10	89	15,4	29,9	1,76
B343S09700HPG *	9,70	10	89	15,9	30,4	1,79
B343S09800HPG	9,80	10	89	16,2	30,7	1,81
B343S09921HPG *	9,92	10	89	16,5	31,0	1,83
B343S10000HPG	10,00	10	89	16,7	31,2	1,85
B343S10100HPG	10,10	11	95	15,9	30,9	1,86
B343S10200HPG	10,20	11	95	16,2	31,2	1,88
B343S10300HPG	10,30	11	95	16,4	31,4	1,90
B343S10320HPG	10,32	11	95	16,5	31,5	1,91
B343S10400HPG	10,40	11	95	16,7	31,7	1,92
B343S10500HPG	10,50	11	95	16,9	31,9	1,94
B343S10600HPG	10,60	11	95	17,2	32,2	1,96
B343S10700HPG	10,70	11	95	17,4	32,4	1,98
B343S10710HPG	10,71	11	95	17,4	32,4	1,98
B343S10800HPG	10,80	11	95	17,7	32,7	1,99
B343S11000HPG	11,00	11	95	18,1	33,1	2,03
B343S11100HPG	11,10	12	102	17,4	32,9	2,05
B343S11110HPG	11,11	12	102	17,4	32,9	2,05
B343S11200HPG *	11,20	12	102	17,6	33,1	2,07
B343S11300HPG *	11,30	12	102	17,9	33,4	2,09
B343S11500HPG	11,50	12	102	18,3	33,8	2,12
B343S11508HPG *	11,51	12	102	18,3	33,8	2,12
B343S11700HPG	11,70	12	102	18,8	34,3	2,16

(continued)

(B343_HPG — continued)



● first choice
○ alternate choice

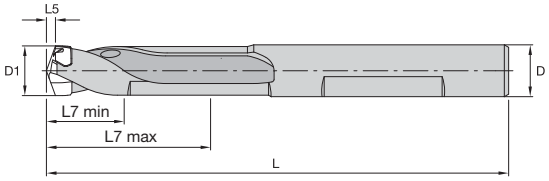
KC7315	D1	D	L	L7 min	L7 max	L5
B343S11800HPG	11,80	12	102	19,0	34,5	2,18
B343S11900HPG	11,90	12	102	19,3	34,8	2,20
B343S12000HPG	12,00	12	102	19,5	35,0	2,22
B343S12200HPG	12,20	13	102	18,9	34,9	2,25
B343S12500HPG	12,50	13	102	19,6	35,6	2,31
B343S12700HPG *	12,70	13	102	20,1	36,1	2,34
B343S12800HPG	12,80	13	102	20,3	36,3	2,36
B343S13000HPG	13,00	13	102	20,7	36,7	2,40
B343S13200HPG	13,20	14	107	20,4	36,9	2,44
B343S13500HPG	13,50	14	107	21,1	37,6	2,49
B343S14000HPG	14,00	14	107	22,1	38,6	2,58
B343S14200HPG	14,20	15	111	21,5	38,5	2,62
B343S14280HPG	14,28	15	111	21,7	38,7	2,64
B343S15000HPG	15,00	15	111	23,2	40,2	2,77
B343S15500HPG	15,50	16	115	23,2	40,7	2,86
B343S15870HPG	15,87	16	115	23,9	41,4	2,93
B343S16000HPG	16,00	16	115	24,2	41,7	2,95
B343S16500HPG	16,50	17	115	24,2	42,2	3,05
B343S16670HPG *	16,67	17	115	24,5	42,5	3,08
B343S17000HPG	17,00	17	115	25,1	43,1	3,14
B343S17500HPG	17,50	18	117	25,1	43,6	3,23
B343S17700HPG	17,70	18	117	25,5	44,0	3,27
B343S18000HPG	18,00	18	117	26,0	44,5	3,32

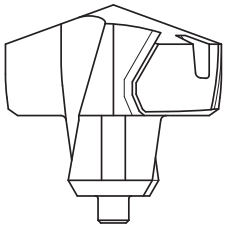
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance			
D1	**Tolerance h7**	**D**	**Tolerance h6**
>3–6	0,000/-0,012	6	0,000/-0,008
>6–10	0,000/-0,016	8–10	0,000/-0,009
>10–18	0,000/-0,018	12–18	0,000/-0,011

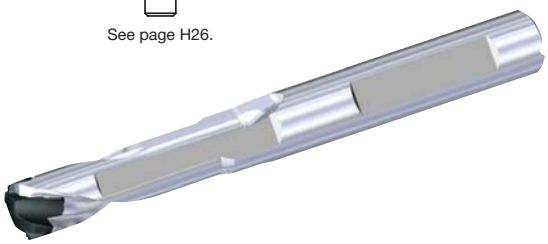
- Tool body with insert wrench included.
- Order KenTIP blades separately.







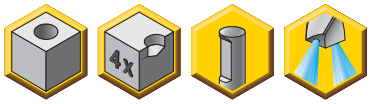
See page H26.

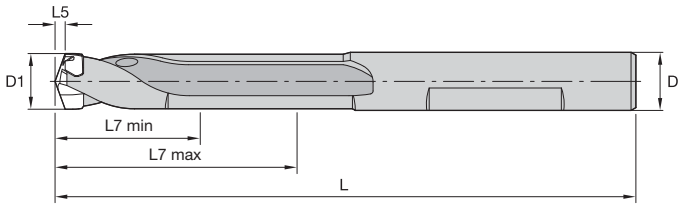


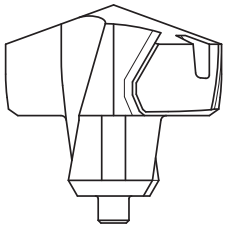
KenTIP • 3 x D • Metric

catalogue number	D1	D1 max	D	L	L7 min	L7 max	L5	insert blade seat size
KTIP080R3BF08M	8,00	8,50	8,0	80,0	11,5	25,5	1,4	F
KTIP080R3BF09M	8,00	8,50	9,0	81,0	11,5	25,5	1,4	F
KTIP085R3BF09M	8,50	9,00	9,0	82,0	12,5	27,0	1,5	G
KTIP090R3BF09M	9,00	9,50	9,0	82,0	13,5	28,5	1,6	H
KTIP090R3BF10M	9,00	9,50	10,0	91,0	13,5	28,5	1,6	H
KTIP095R3BF10M	9,50	10,00	10,0	92,0	15,0	30,0	1,6	I
KTIP100R3BF10M	10,00	10,50	10,0	93,0	16,0	31,5	1,7	J
KTIP100R3BF11M	10,00	10,50	11,0	94,0	16,0	31,5	1,7	J
KTIP105R3BF11M	10,50	11,00	11,0	94,0	17,0	33,0	1,8	K
KTIP110R3BF11M	11,00	11,50	11,0	96,0	18,5	34,5	1,9	L
KTIP110R3BF12M	11,00	11,50	12,0	106,0	18,5	34,5	1,9	L
KTIP115R3BF12M	11,50	12,00	12,0	107,0	19,5	36,0	2,0	M
KTIP120R3BF12M	12,00	12,50	12,0	108,0	20,5	37,5	2,1	N
KTIP120R3BF13M	12,00	12,50	13,0	108,0	20,5	37,5	2,1	N
KTIP125R3BF13M	12,50	13,00	13,0	110,0	22,0	39,0	2,2	O
KTIP130R3BF13M	13,00	13,50	13,0	111,0	23,0	40,5	2,2	P
KTIP130R3BF14M	13,00	13,50	14,0	111,0	23,0	40,5	2,2	P
KTIP135R3BF14M	13,50	14,00	14,0	112,0	24,5	42,0	2,3	Q
KTIP140R3BF14M	14,00	14,50	14,0	113,0	25,5	43,5	2,4	R
KTIP140R3BF15M	14,00	14,50	15,0	118,0	25,5	43,5	2,4	R
KTIP145R3BF15M	14,50	15,00	15,0	118,0	26,5	45,0	2,5	S
KTIP150R3BF15M	15,00	16,00	15,0	121,0	29,0	48,0	2,6	T
KTIP150R3BF16M	15,00	16,00	16,0	121,0	29,0	48,0	2,6	T
KTIP160R3BF16M	16,00	17,00	16,0	123,0	31,5	51,0	2,8	U
KTIP160R3BF17M	16,00	17,00	17,0	124,0	31,5	51,0	2,8	U
KTIP170R3BF17M	17,00	18,00	17,0	127,0	34,0	54,0	2,9	V
KTIP170R3BF18M	17,00	18,00	18,0	127,0	34,0	54,0	2,9	V
KTIP180R3BF18M	18,00	19,00	18,0	130,0	36,5	57,0	3,1	W

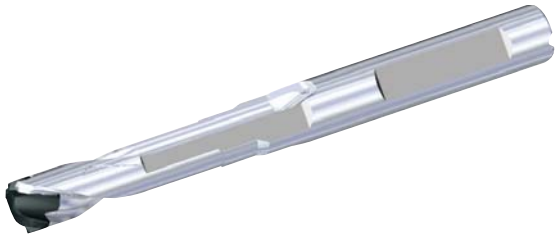
- Tool body with insert wrench included.
- Order KenTIP blades separately.







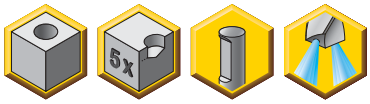
See page H26.

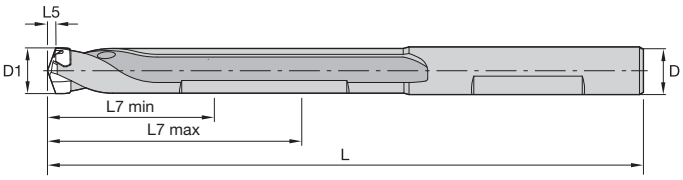


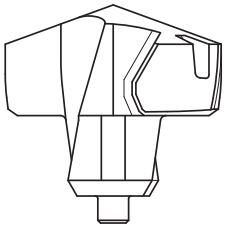
KenTIP • 4 x D • Metric

catalogue number	D1	D1 max	D	L	L7 min	L7 max	L5	insert blade seat size
KTIP080R4BF09M	8,00	8,50	9,0	89,5	20,0	34,0	1,4	F
KTIP085R4BF09M	8,50	9,00	9,0	91,0	21,5	36,0	1,5	G
KTIP090R4BF10M	9,00	9,50	10,0	100,5	23,0	38,0	1,6	H
KTIP095R4BF10M	9,50	10,00	10,0	102,0	25,0	40,0	1,6	I
KTIP100R4BF11M	10,00	10,50	11,0	104,5	26,5	42,0	1,7	J
KTIP105R4BF11M	10,50	11,00	11,0	105,0	28,0	44,0	1,8	K
KTIP110R4BF12M	11,00	11,50	12,0	117,5	30,0	46,0	1,9	L
KTIP115R4BF12M	11,50	12,00	12,0	119,0	31,5	48,0	2,0	M
KTIP120R4BF13M	12,00	12,50	13,0	120,5	33,0	50,0	2,1	N
KTIP125R4BF13M	12,50	13,00	13,0	123,0	35,0	52,0	2,2	O
KTIP130R4BF14M	13,00	13,50	14,0	124,5	36,5	54,0	2,2	P
KTIP135R4BF14M	13,50	14,00	14,0	126,0	38,5	56,0	2,3	Q
KTIP140R4BF15M	14,00	14,50	15,0	132,5	40,0	58,0	2,4	R
KTIP145R4BF15M	14,50	15,00	15,0	133,0	41,5	60,0	2,5	S
KTIP150R4BF16M	15,00	16,00	16,0	137,0	45,0	64,0	2,6	T
KTIP160R4BF17M	16,00	17,00	17,0	141,0	48,5	68,0	2,8	U
KTIP170R4BF18M	17,00	18,00	18,0	145,0	52,0	72,0	2,9	V
KTIP180R4BF18M	18,00	19,00	18,0	149,0	55,5	76,0	3,1	W

- Tool body with insert wrench included.
- Order KenTIP blades separately.







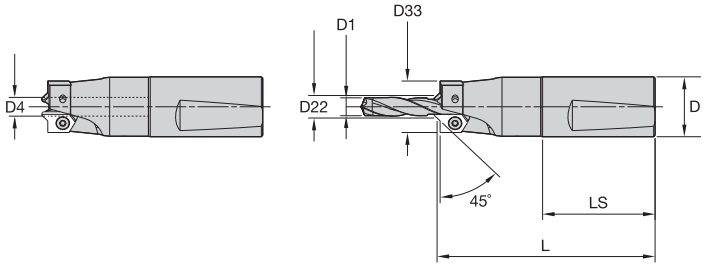
See page H26.



KenTIP • 5 x D • Metric

catalogue number	D1	D1 max	D	L	L7 min	L7 max	L5	insert blade seat size
KTIP080R5BF09M	8,00	8,50	9,0	98,0	28,5	42,5	1,4	F
KTIP085R5BF09M	8,50	9,00	9,0	100,0	30,5	45,0	1,5	G
KTIP090R5BF10M	9,00	9,50	10,0	110,0	32,5	47,5	1,6	H
KTIP095R5BF10M	9,50	10,00	10,0	112,0	35,0	50,0	1,6	I
KTIP100R5BF11M	10,00	10,50	11,0	115,0	37,0	52,5	1,7	J
KTIP105R5BF11M	10,50	11,00	11,0	116,0	39,0	55,0	1,8	K
KTIP110R5BF12M	11,00	11,50	12,0	129,0	41,5	57,5	1,9	L
KTIP115R5BF12M	11,50	12,00	12,0	131,0	43,5	60,0	2,0	M
KTIP120R5BF13M	12,00	12,50	13,0	133,0	45,5	62,5	2,1	N
KTIP125R5BF13M	12,50	13,00	13,0	136,0	48,0	65,0	2,2	O
KTIP130R5BF14M	13,00	13,50	14,0	138,0	50,0	67,5	2,2	P
KTIP135R5BF14M	13,50	14,00	14,0	140,0	52,5	70,0	2,3	Q
KTIP140R5BF15M	14,00	14,50	15,0	147,0	54,5	72,5	2,4	R
KTIP145R5BF15M	14,50	15,00	15,0	148,0	56,5	75,0	2,5	S
KTIP150R5BF16M	15,00	16,00	16,0	153,0	61,0	80,0	2,6	T
KTIP160R5BF17M	16,00	17,00	17,0	158,0	65,5	85,0	2,8	U
KTIP170R5BF18M	17,00	18,00	18,0	163,0	70,0	90,0	2,9	V
KTIP180R5BF18M	18,00	19,00	18,0	168,0	74,5	95,0	3,1	W

- Drill body shipped with all screws and wrenches.
- Order the inserts and drills separately.
- Drills with shanks up to and including 9,10mm use only one insert.





Round Shank • 2° Whistle Notch Shank • Metric

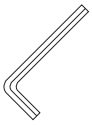



DIN 1835 Form A	DIN 1835 Form E	D1	D1 max	D4	D	D22	D33	L	LS	insert
3.37042R320	**3.37042R820**	3,40	4,00	4,00	20,0	9,0	14,9	87,5	50,0	3.41020..
3.37051R320	**3.37051R820** *	4,10	4,50	5,00	20,0	9,5	15,4	87,5	50,0	3.41020..
3.37052R320	**3.37052R820**	4,60	5,00	5,00	20,0	10,0	15,9	87,5	50,0	3.41020..
3.37061R320	**3.37061R820**	5,10	5,50	6,00	20,0	10,5	16,4	87,5	50,0	3.41020..
3.37062R320	**3.37062R820**	5,55	6,00	6,00	20,0	11,0	16,9	87,5	50,0	3.41020..
3.37071R320	**3.37071R820**	6,10	7,00	7,00	20,0	11,5	17,4	97,3	50,0	3.41020..
3.37081R320	**3.37081R820**	7,30	8,00	8,00	20,0	12,6	18,4	97,3	50,0	3.41020..
3.37091R320	**3.37091R820**	8,10	9,00	9,00	20,0	13,6	19,4	97,3	50,0	3.41020..
3.37092R320	**3.37092R820**	8,10	9,00	9,00	20,0	13,7	19,4	97,3	50,0	3.41020..
3.37101R332	**3.37101R832**	9,10	10,00	10,00	32,0	14,7	27,9	117,4	60,0	3.41220..
3.37111R332	**3.37111R832**	10,10	11,00	11,00	32,0	15,7	28,9	117,4	60,0	3.41220..
3.37121R332	**3.37121R832**	11,10	12,00	12,00	32,0	16,7	29,9	127,4	60,0	3.41220..
3.37131R332	**3.37131R832**	12,20	13,00	13,00	32,0	17,7	31,0	127,4	60,0	3.41220..
3.37141R332	**–**	13,10	14,00	14,00	32,0	18,2	31,5	127,1	60,0	3.41220..
–	**3.37141R832**	13,10	14,00	14,00	32,0	18,2	31,5	127,4	60,0	3.41220..
3.37151R332	**–**	14,10	15,00	15,00	32,0	19,3	32,5	127,4	60,0	3.41220..
–	**3.37151R832**	14,10	15,00	15,00	32,0	19,3	32,5	127,1	60,0	3.41220..
3.37161R332	**3.37161R832**	15,50	16,00	16,00	32,0	20,3	33,5	127,1	60,0	3.41220..
3.37171R332 *	**3.37171R832**	16,50	17,00	17,00	32,0	21,3	34,5	127,1	60,0	3.41220..
3.37181R332	**3.37181R832**	17,50	18,00	18,00	32,0	22,3	35,5	127,1	60,0	3.41220..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



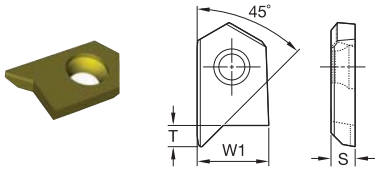




D1	back-up screw	drill clamp screw	hex wrench	insert screw	wrench
3,40	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
4,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
4,60	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
5,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
5,55	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
6,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
7,30	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
8,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
9,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
10,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
11,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
12,20	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
13,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
14,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
15,50	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
16,50	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
17,50	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**

NOTE: Dimensions are factored with a 45° insert positioned in insert pocket.

- Standard steel drill bodies are designed for inserts with 41° and 45° chamfers.

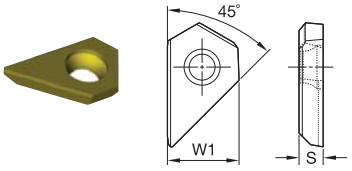


● first choice
○ alternate choice

P		●	●
M		●	
K		●	●
N			
S			
H			

BF Insert R901 • 45° with Spot Face

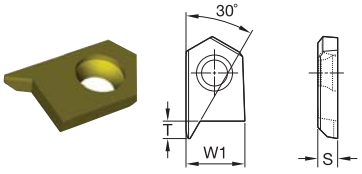
catalogue number	S	W1	T	CS5	KC7315
3.41020R901	3,00	6,10	2,90	●	●
3.41220R901	3,50	10,10	3,05	●	●



BF Insert R902 • 45°

catalogue number	S	W1	CS5	KC7315
3.41020R902	3,00	6,10	●	●
3.41220R902	3,50	10,10	●	●

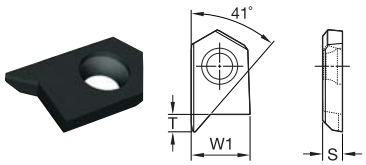
- When using the 60° insert or special insert, the assembled tool should be inspected.
- These insert combinations require that the steel body be altered to provide insert coverage.



BF Insert R903 • 60° with Spot Face

catalogue number	S	W1	T	CS5	KC7315
3.41020R903	3,00	6,10	2,90	●	●
3.41220R903	3,50	10,10	3,05	●	●

- Standard steel drill bodies are designed for inserts with 41° and 45° chamfers.

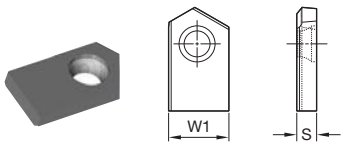


● first choice
○ alternate choice

P	●
M	
K	●
N	
S	
H	

BF Insert R904 • 41° with Spot Face

catalogue number	S	W1	T	KC7315
3.41020R904	3,00	6,10	2,90	●
3.41220R904	3,50	10,10	3,05	●

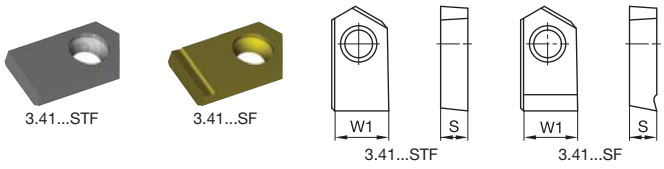


● first choice
○ alternate choice

P	
M	
K	○
N	●
S	
H	

BF Insert R900 • Semi-Finished

catalogue number	S	W1	KMF
3.41020R900	3,00	6,10	●
3.41220R900	3,50	10,10	●



● first choice
○ alternate choice

P	●	
M	●	
K	●	○
N		●
S		
H		

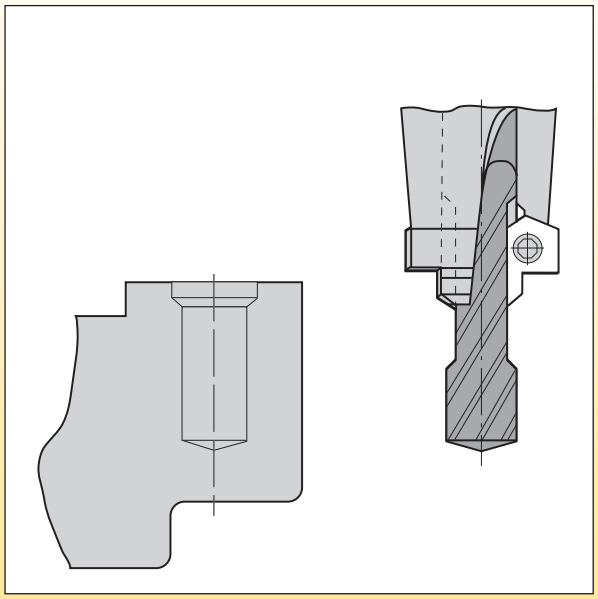
BF Insert R900 S(T)F • Semi-Finished

catalogue number	S	W1	CS5	KMF
3.41020R900STF	3,00	6,10	●	–
3.41220R900SF	3,50	10,10	–	●
3.41220R900STF	3,50	10,10	●	–

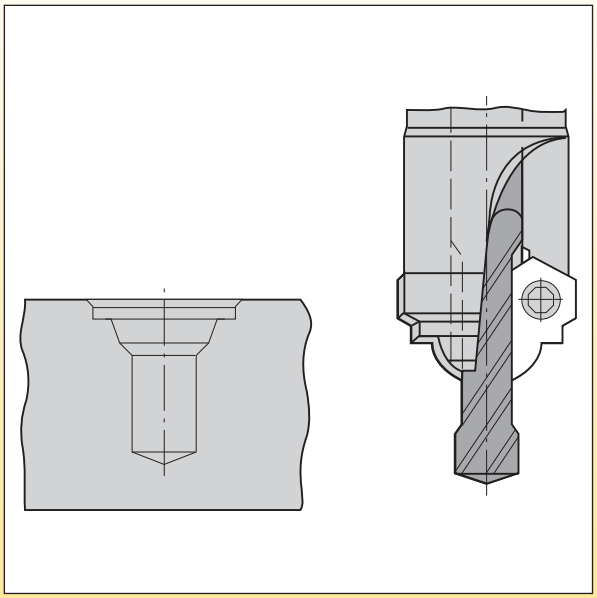
Engineered Solutions Available!



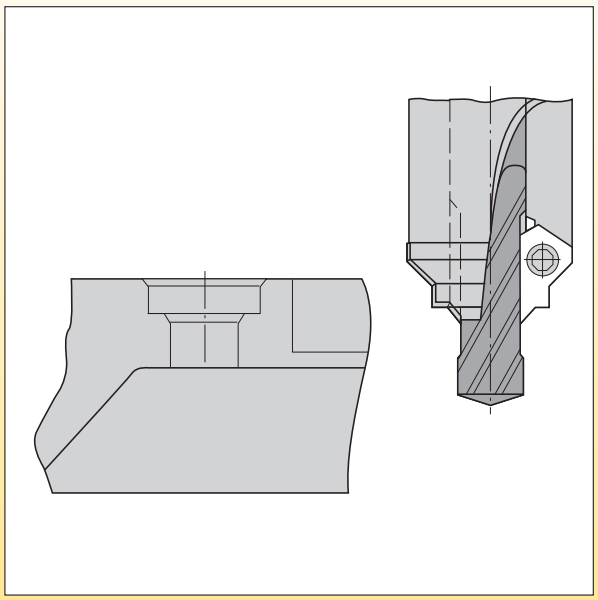
Tapped Hole with Protection Countersinking



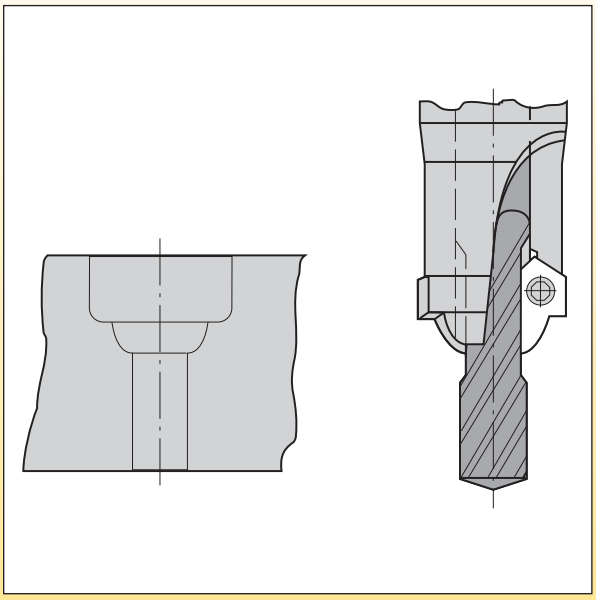
Countersinking for Round Sealing Rings



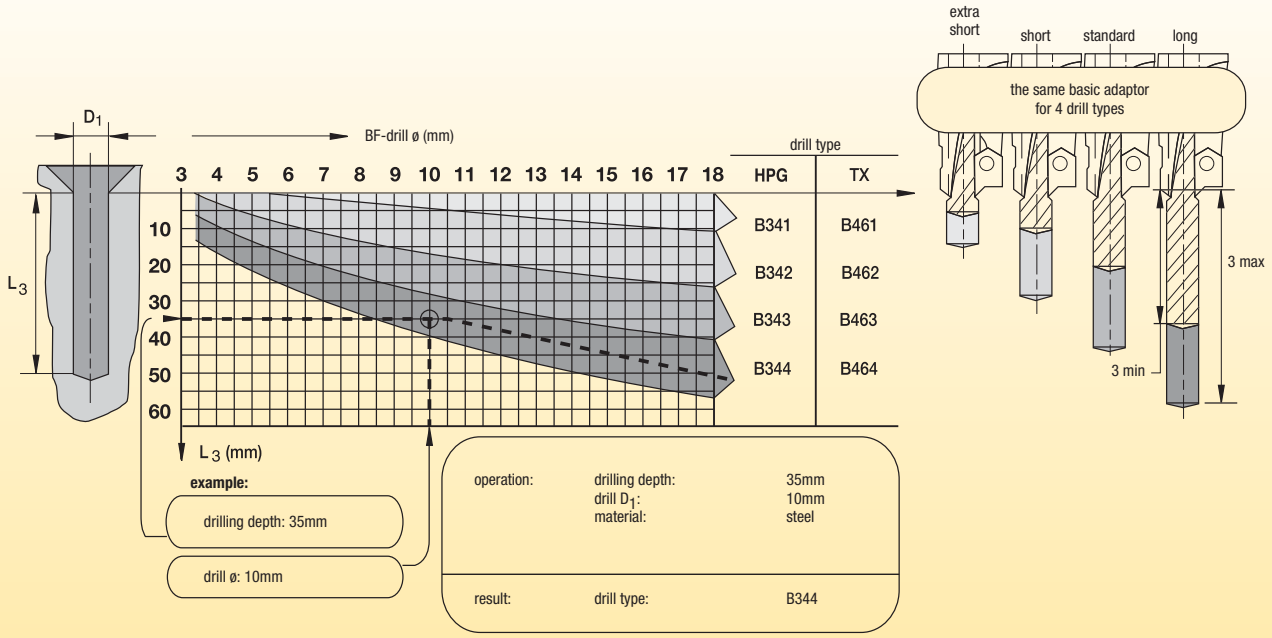
Countersinking for Countersunk Head Screws



Countersinking for Aluminium Rim



Possible Drilling Depths • Semi-Standard Series

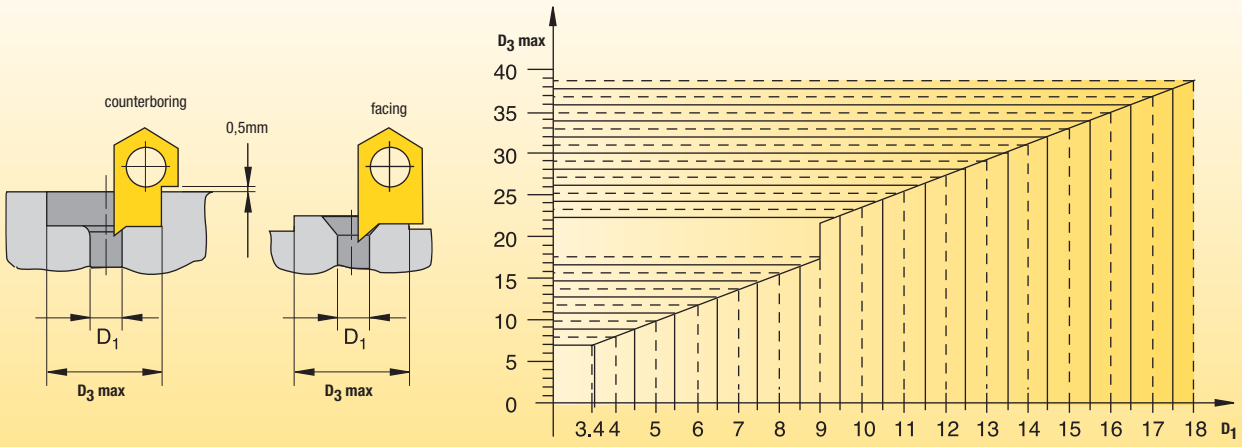


Possible Facing and Counterboring Diameters

90º insert blanks are available to grind special geometry forms for other multiprofile applications. Contact your local Kennametal Representative for special insert profile designs and quoting.

Use the table below to determine the maximum facing or counterboring diameter for a given BF drill diameter. Reference your chosen drill diameter across the bottom axis of the table and then read up and across to the left axis to find the maximum facing or counterboring diameter.

Possible Facing and Countersinking Diameter • Machining Steel



HP Drills • B343HPG Series • Grade KC7315™ • Through Coolant • Metric



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	18,0
P	1	100	**140**	180	mm/r	0,07–0,16	0,08–0,19	0,10–0,23	0,13–0,29	0,15–0,33	0,17–0,37	0,19–0,44	0,22–0,44
	2	90	**115**	140	mm/r	0,07–0,13	0,08–0,17	0,10–0,19	0,13–0,23	0,15–0,27	0,17–0,30	0,19–0,35	0,22–0,39
	3	80	**100**	120	mm/r	0,10–0,16	0,11–0,19	0,13–0,23	0,16–0,29	0,19–0,33	0,21–0,37	0,25–0,44	0,28–0,49
	4	70	**90**	110	mm/r	0,08–0,16	0,10–0,19	0,11–0,22	0,12–0,25	0,14–0,29	0,16–0,32	0,21–0,41	0,24–0,46
	5	70	**85**	110	mm/r	0,07–0,12	0,08–0,14	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,26	0,18–0,31	0,21–0,34
K	1	100	**120**	140	mm/r	0,09–0,17	0,10–0,21	0,12–0,25	0,15–0,31	0,17–0,35	0,20–0,39	0,23–0,46	0,26–0,52
	2	80	**105**	130	mm/r	0,09–0,15	0,10–0,18	0,12–0,21	0,15–0,26	0,18–0,30	0,20–0,33	0,23–0,39	0,26–0,44
	3	70	**85**	100	mm/r	0,08–0,13	0,10–0,15	0,11–0,19	0,14–0,23	0,16–0,26	0,18–0,30	0,21–0,35	0,23–0,39

SEFAS™ Combination Drilling System

Primary Application

Combines centring, drilling, and chamfering into a single operation, increasing productivity by reducing cycle time and number of tool changes.

Achieve productivity gains by still using standard solid carbide or KenTIP™ drills. The SEFAS system provides full through coolant capabilities.



Features and Benefits

Productivity

- Reduce the number of tool changes and cycle time by combining drilling and countersinking into one operation.
- Achieve highest metal removal rates by applying an HP-style drill.
- Reduce inventory and avoid reconditioning by using KenTIP blades.
- Easily change tool within the machine by using KenTIP.

Versatility

- Any style of standard HP drill can be used for highest metal removal rates.
- Use TX drills to achieve excellent hole quality and tool life in non-ferrous materials.
- For increased accuracy and tool life, use the Kennametal hydraulic chuck recommended for cylindrical tool shanks.
- Range of insert styles for use in most workpiece materials.

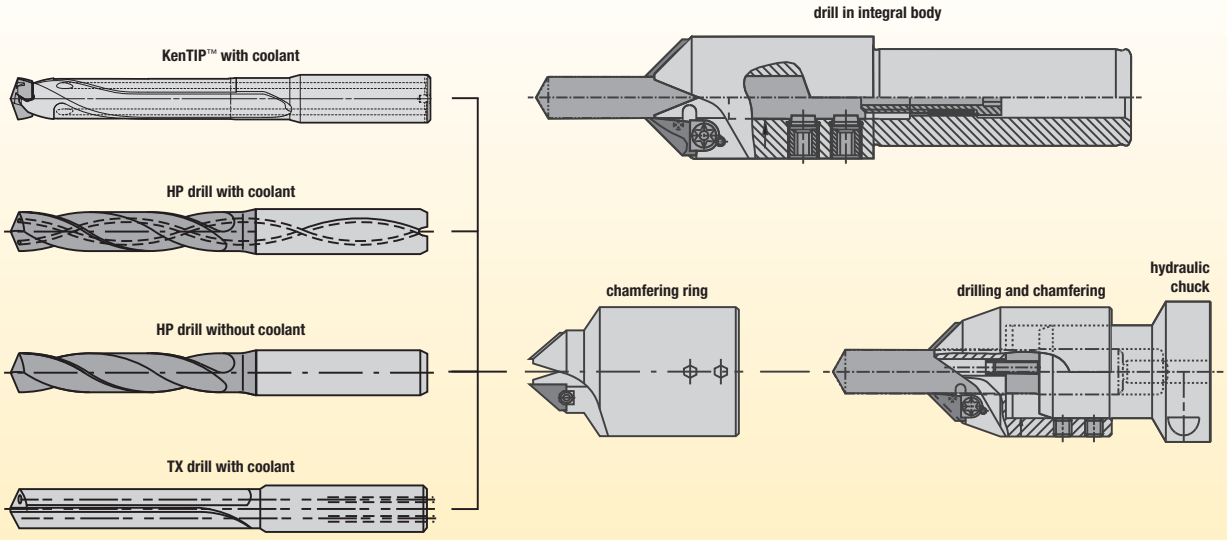
Reduce the number of tool changes and cycle time by combining drilling and countersinking into one operation.





Customisation

- Length variations available as engineered solutions.

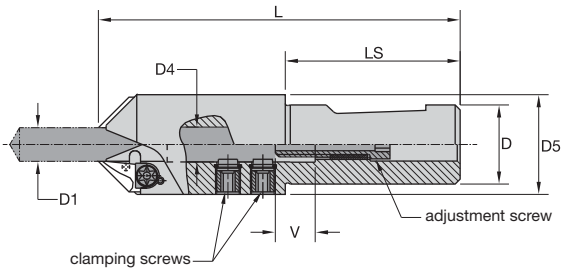


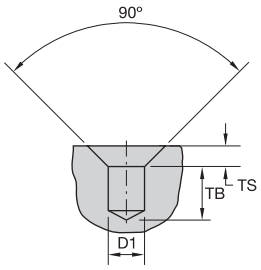
The SEFAS combination drilling system may be used in most workpiece materials. The design and flexibility of the system can be used with a wide variety of solid carbide drills.

Three types of SEFAS chamfering tools are offered: (1) integral bodies with a compact design that provides additional workpiece and work-holding clearance; (2) chamfering rings that may be mounted to Kennametal hydraulic chucks for optimal drill performance and increased productivity; and (3) high-performance HSK bodies (available as customised solutions) for new machine spindles and high-output applications.



- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Two chamfer inserts required per body.



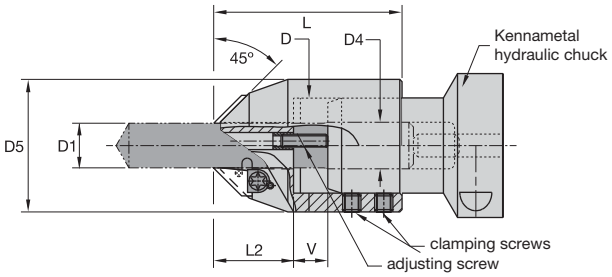


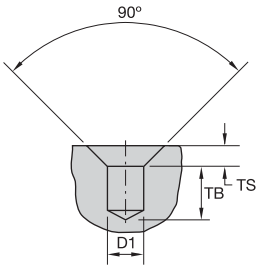


2° Whistle Notch (WN) Shank • For Use with Metric Drills • Metric

catalogue number	D1	D1 max	D	D4	D5	L	LS	V	gage insert	insert clamp	Torx wrench	drill clamp screw	adjusting screw
3.37060R720	4,000	6,0	20,0	6,0	24,0	102,0	52,0	18,0	3.42805..	**360.550**	**170.024**	**360.630**	**360.510**
3.37080R720	>6,000	8,0	20,0	8,0	26,0	108,0	52,0	18,0	3.42805..	**360.550**	**170.024**	**360.634**	**360.510**
3.37100R720	>8,000	10,0	20,0	10,0	29,0	122,0	52,0	17,0	3.42805..	**360.550**	**170.024**	**360.631**	**360.510**
3.37120R732	>10,000	12,0	32,0	12,0	38,0	133,0	62,0	21,0	3.42807..	**360.551**	**170.025**	**360.635**	**360.513**
3.37140R732	>12,000	14,0	32,0	14,0	40,0	137,0	62,0	16,0	3.42807..	**360.551**	**170.025**	**360.636**	**360.511**
3.37160R732	>14,000	16,0	32,0	16,0	41,5	141,0	62,0	19,0	3.42807..	**360.551**	**170.025**	**360.632**	**360.511**
3.37180R732	>16,000	18,0	32,0	18,0	47,0	144,0	62,0	15,0	3.42807..	**360.551**	**170.025**	**360.633**	**360.511**

- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Use only with hydraulic chucks.







Chamfer Rings • For Use with Metric Kennametal Hydraulic Chucks • For Use with Inch or Metric Drills



catalogue number	D1	D1 max	D	D4	D5	L	L2	V	gage insert	insert clamp	Torx wrench	drill clamp screw	adjusting screw	adjusting screw
3.37526R006	4,000	6,0	25,70	6,00	38,00	49,50	21,00	5,00	3.42805..	**360.550**	**170.024**	**190.195**	–	**192.057**
3.37528R008	>6,000	8,0	27,70	8,00	40,00	50,00	21,00	6,00	3.42805..	**360.550**	**170.024**	**190.195**	**190.371**	–
3.37530R010	>8,000	10,0	29,70	10,00	41,50	56,50	22,00	8,00	3.42805..	**360.550**	**170.024**	**190.195**	**193.113**	–
3.37532R012	>10,000	12,0	31,60	12,00	48,00	68,00	29,00	12,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.114**	–
3.37534R014	>12,000	14,0	33,60	14,00	50,00	70,50	29,00	12,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.114**	–
3.37538R016	>14,000	16,0	37,60	16,00	54,00	78,00	32,00	12,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.115**	–
3.37540R018	>16,000	18,0	39,60	18,00	56,00	80,50	34,00	15,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.116**	–
3.37542R020	>18,000	20,0	41,60	20,00	58,00	82,50	35,00	15,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.116**	–

Achievable Drilling (TB) and Sink Depths (TS)



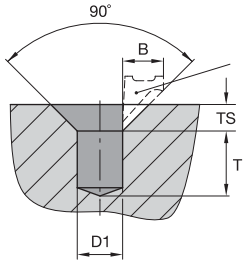
	B210, B221, B224, B254, B284, B291, B707, B966, B976		B211, B222, B225, B285, B292, B411, B708, B977		B212, B256, B709, B978		B269		unalloyed and low-alloy steel; unalloyed and alloy steel, and cast iron, high-alloy steel and stainless steel		
drill diameter D1	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
4,0–4,7	4	17	12	29	20	36	45	62	1,2	1,8	2,5
>4,7–6,0	4	20	20	35	27	43	63	80	1,5	2,2	3,0
>6,0–7,0	11	24	23	40	32	49	71	88	2	3,0	4,0
>7,0–8,0	11	28	23	40	42	59	85	102	2,5	4,0	5,0
>8,0–10,0	13	29	27	43	46	62	109	125	2,5	4,0	5,0
>10,0–12,0	15	35	31	51	54	74	131	151	3,5	5,0	7,0
>12,0–14,0	21	36	38	53	69	84	160	175	4,0	6,0	8,0
>14,0–16,0	22	40	40	58	78	96	184	202	4,0	6,0	8,0
>16,0–18,0	31	45	51	65	93	107	213	227	4,0	6,0	8,0
>18,0–20,0	34	50	56	72	103	119	237	253	4,0	6,0	8,0

(continued)

(Achievable Drilling (TB) and Sink Depths (TS) — continued)

drill diameter D1	K210, K254, K284		K211, K222, K255, K285, K411		K212, K256		unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron, high-alloy steel and stainless steel		
	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
.156–.250	not applicable (drill shank diameter > chamfer ring inside diameter), not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.250–.313									
>.313–.375	.748	1.339	1.229	1.890	2.165	2.756	.098	.157	.197
>.375–.500	not applicable (drill shank diameter > chamfer ring inside diameter), not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.500–.563									
>.563–.625	.906	1.732	1.614	2.441	3.110	3.937	.157	.236	.315
>.625–.709	not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.709–.750	1.142	2.087	1.890	2.835	3.819	4.764	.157	.236	.315

NOTE: TS_{100}: maximum sink depths at which the full feed values can be maintained during chamfering and sinking.
TS_{80}: maximum sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TS_{max}: maximum sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.
When using SEFAS with GOdrill™, please contact your Kennametal Representative for application support.

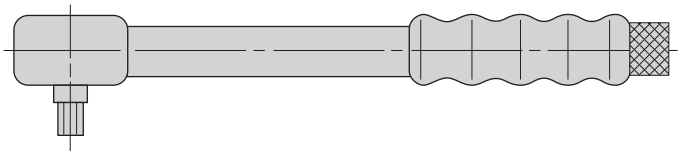




Achievable Drilling (T) and Sink Depths (TS) with KenTIP Tool Bodies

D1 mm	drilling depths (T) with SEFAS compact tools 3x T	3x T_{max}	5x T	5x T_{max}	8x T	8x T_{max}	drilling depths (T) with SEFAS chamfer rings 3x T	3x T_{max}	5x T	5x T_{max}	8x T	8x T_{max}	sink depths (TS) TS_{100}	TS_{80}	TS_{max}
8,00–8,49	11	19	21	37	47	63	11	22	22	40	48	66	2,5	4,0	5,0
8,50–8,99	12	21	24	40	51	67	12	24	25	43	52	70	2,5	4,0	5,0
9,00–9,49	12	23	27	43	56	72	12	26	28	46	57	75	2,5	4,0	5,0
9,50–9,99	13	25	31	47	61	77	13	28	32	50	62	80	2,5	4,0	5,0
10,00–10,49	13	26	28	49	60	81	13	28	29	51	61	83	3,5	5,0	7,0
10,50–10,99	14	28	31	52	64	85	14	30	32	54	65	87	3,5	5,0	7,0
11,00–11,49	14	30	34	55	69	90	14	32	35	57	70	92	3,5	5,0	7,0
11,50–11,99	15	32	37	58	73	94	15	34	38	60	74	96	3,5	5,0	7,0
12,00–12,49	15	30	41	56	79	94	15	32	36	58	74	96	4,0	6,0	8,0
12,50–12,99	17	32	44	59	83	98	16	34	39	61	78	100	4,0	6,0	8,0
13,00–13,49	19	34	47	62	88	103	16	36	42	64	83	105	4,0	6,0	8,0
13,50–13,99	21	36	51	66	93	108	17	38	46	68	88	110	4,0	6,0	8,0
14,00–14,49	19	37	50	68	94	112	18	40	49	71	93	115	4,0	6,0	8,0
14,50–14,99	21	39	53	71	98	116	20	42	52	74	97	119	4,0	6,0	8,0
15,00–15,99	25	43	59	77	107	125	24	46	58	80	106	128	4,0	6,0	8,0
16,00–16,99	29	47	65	83	117	135	28	50	64	85	115	136	4,0	6,0	8,0
17,00–17,99	35	49	73	87	127	141	30	54	68	92	122	146	4,0	6,0	8,0
18,00–18,99	36	52	76	92	133	149	33	57	73	97	130	154	4,0	6,0	8,0
19,00–19,99	40	56	82	98	142	158	37	61	79	103	139	163	4,0	6,0	8,0

NOTE: TS_{100}: maximum sink depths at which the full feed values can be maintained during chamfering and sinking.
TS_{80}: maximum sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TS_{max}: maximum sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.
T: minimum drilling depth that can be achieved due to the protruded length of the drill.
T_{max}: maximum drilling depth that can be achieved due to the protruded length of the drill.



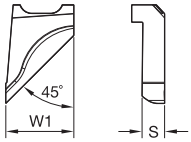
Torque Wrench • Metric





drill diameter D1	torque wrench	tightening torque Nm	SW	drill clamp screw	wrench adaptor
4,0–6,0	**170.190**	7	3	**360.630**	**170.240**
>6,0–8,0	**170.190**	8	3	**360.635**	**170.240**
>8,0–10,0	**170.190**	10	4	**360.631**	**170.232**
>10,0–12,0	**170.190**	15	4	**360.635**	**170.232**
>12,0–14,0	**170.190**	20	5	**360.636**	**170.233**
>14,0–16,0	**170.190**	30	5	**360.632**	**170.233**
>16,0–18,0	**170.190**	45	6	**360.633**	**170.234**
>18,0–20,0	**170.190**	45	6	**360.637**	**170.234**





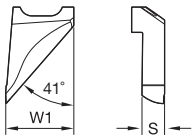
● first choice
○ alternate choice

P	●
M	
K	●
N	●
S	
H	

SEFAS Chamfering Inserts for Solid Carbide Drills • 45°

catalogue number	angle	S	W1	CS5	KC7215	KMF
3.42805R001	45	2,83	8,00	●	●	●
3.42807R001	45	3,98	12,00	●	●	●





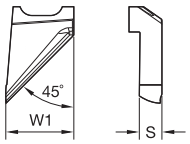
● first choice
○ alternate choice

P	
M	
K	●
N	●
S	
H	

SEFAS Chamfering Inserts for Solid Carbide Drills • 41°

catalogue number	angle	S	W1	KC7215
3.42805R081	41	2,83	8,00	●
3.42807R081	41	3,98	12,00	●





● first choice
○ alternate choice

P	●
M	●
K	●
N	●
S	
H	

SEFAS Chamfering Inserts for KenTIP™ Drills • 45°

catalogue number	angle	S	W1	CS5	KC7015	KC7215	KC7315	KMF
3.42805R001	45	2,83	8,00	●	–	●	–	●
3.42805R021	45	2,83	8,00	–	●	–	●	–
3.42807R001	45	3,98	12,00	●	–	●	–	●
3.42807R021	45	3,98	12,00	–	●	–	●	–



Indexable Drills

Tool Selection Guide **J2–J3**

Drill Fix DFR, DFSP, and DFT **J4–J50**

Drill Fix DFR J4, J8–J18

Drill Fix DFSP J4, J20–J40

Drill Fix DFT J5, J42–J46, J48–J50

HTS Series Indexable Deep-Hole Drilling System **J52–J83**

HTS and HTS-R Indexable Drill System J52–J83

Indexable Drill Inserts **J84–J94**

Drill Fix DFR Inserts J84–J86

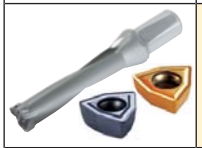
Drill Fix DFT Inserts J85–J88

Drill Fix DFSP Inserts J89–J90

CTR Counterboring Tools **J96–J101**

Counterboring Inserts J99–J101



		standard							standard range		customised solution range	
		● first choice ○ alternate choice							diameter range		diameter range	
		P	M	K	N	S	H	hole tolerance	D1 mm min–max	drilling depth L/D1	D1 mm min–max	drilling depth
	**DFR™** Indexable Drill Body *Short-Hole Drilling*	●	●	●	●	●		IT9–11	12,5–25	2 x D 3 x D 4 X D	12,5–26	1–5 x D
	**DFSP™** Indexable Drill Body *Short-Hole Drilling*	●	●	●	●	●		IT9–11	14–55	2 x D 3 x D 4 x D 5 x D	14–85	1–5 x D
	**DFT™** Indexable Drill Body *Short-Hole Drilling*	●	●	●	●	●		IT9–11	16–83	2.5 x D 4 x D	15,8–83	1–5 x D
	**HTS-R** Indexable Drilling Tool *Deep-Hole Drilling*	●	●	●	●	●		IT9–11	40–55	10 x D	40–55	1–10 x D
	**HTS** Indexable Drilling Tool *Deep-Hole Drilling*	●	●	●	●	●		IT9–11	45–270	10 x D	45–540	1–10 x D
	**S2 S Countersinking** Countersinking Tool	●	●	●	●	●		IT9–11	15,1–46,2	1 x D	11,5–150	1–5 x D

In regard to insert and drill coatings, anything is possible. If a specific insert or drill is not suitable for your workpiece material, please contact our Engineered Solutions Department for an offer about special coatings and edge preparations.
*Except for L/D 5 x D.
[1] Other shank styles available as customised solution.

	coolant		■ standard capabilities [1]						■ standard and □ customised solution capabilities									page(s)
		■		■	■				■	■	■	■	■	□	□			J10–J18
		■		■	■	■			■	■	■	■	■*	□	□		□	J22–J40
		■		■	■	■			■	■	■	■	■	□	□			J44–J50
		■			■		■	■	■									J67–J70
		■			■		■	■	■									J72–J83
		■	■												■	□		J98–J101

Drill Fix™ DFR™, DFSP™, and DFT™

Primary Application

Drill short holes up to 5 x D with DFR, DFSP, and DFT indexable drills in steel, cast iron, ductile iron, stainless steel, and non-ferrous materials. The Drill Fix portfolio covers the diameter range 12,5–85mm (.500–3.250").

Features and Benefits

Drill Fix DFR

- Diameter range of 12,5–24mm (.500–1.000") in 2 x D, 3 x D, and 4 x D.
- Rectangular-shaped inserts offer the highest stability and feed rates at smaller sizes.
- Long tool life due to soft starting cut, short chips, and low cutting forces.
- X-offset design to adjust diameter size on turning machines and optimise tolerances on machining centres.

Drill Fix DFSP

- Combines the benefits of a trigon-style DFT inboard and a square-style SP..X outboard insert.
- Standard diameter range from 14–55mm (.551–2.125") in 2 x D, 3 x D, 4 x D, and new 5 x D.
- Squared-outboard insert has four economic cutting edges.
- Highest feed rates and cutting speeds due to highly stable tool body design.
- X-offset design to adjust diameter size on turning machines and optimise tolerances on machining centres.
- Beyond™ grades to achieve highest productivity and outstanding results in steel, stainless steel, and cast iron.

Use where speed and economy are prime considerations.

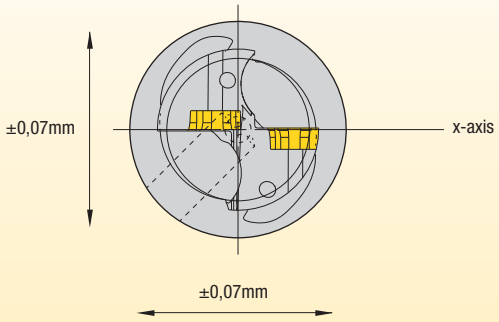


Drill Fix™ DFT™

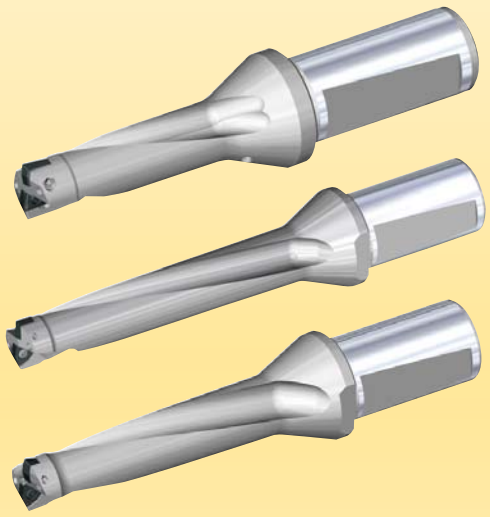
- One drill system that covers a large diameter range, from 24–82mm (1.000–3.250") in 2.5 x D and 4 x D.
- Best centring capabilities due to trigon-shaped inserts used as inboard and outboard inserts.
- Various insert grades and geometries available.
- Balanced cutting forces in the shank centre for highest tool body stability.
- X-offset design to adjust diameter size on turning machines and optimise tolerances on machining centres.
- The Drill Fix DFT system has an inner insert for best centring capabilities.

Stationary Applications

Metric Drill Bodies with 2° Whistle Notch



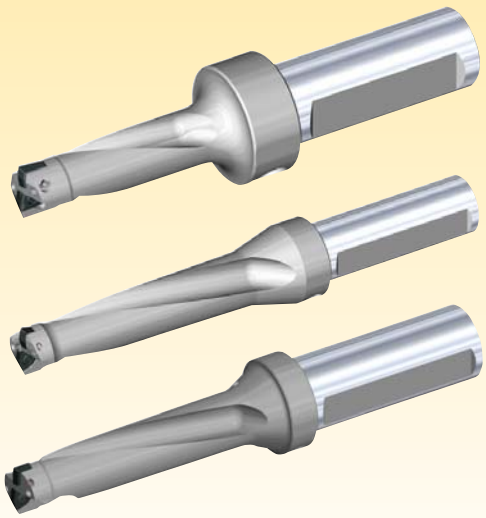
Metric shank drills with a 2° Whistle Notch shank are easily mounted into inch turrets using a WD adaptor. Align the X-axis of the drill with the X-axis of the machine tool as described above. Accurate alignment is absolutely essential for good performance. The drill must be on centre within the tolerance shown above. Angularity must not exceed 0,07mm.



Inch Bodies • Flange

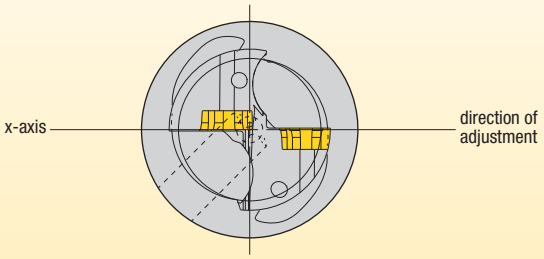
Drill Fix™ inch drills, with a flange, were designed for use on lathes or any machine where the tool remains stationary and the workpiece rotates. An “x” is marked on the flat of the X-axis of the drill to aid insert orientation on the machine tool.

It is important to align the X-axis of the drill with the X-axis on the machine tool. Accurate alignment is absolutely essential for good performance. The drill must be on centre, within the tolerance shown here. Angularity must not exceed 0,07mm within the designated drill depth.



Drill Fix™ X-Adjustment

Application Examples

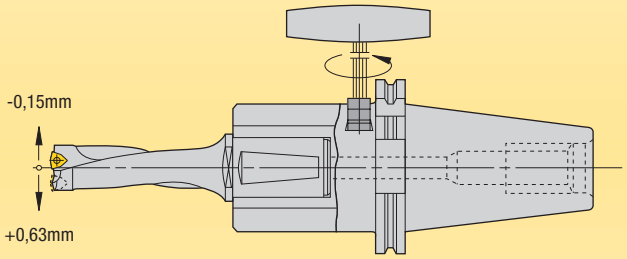


Stationary Tool

The X-adjustment must be made at the outer cutting edge, parallel to the surface of the outer insert when the turret of the turning machine is offset along the X-axis.

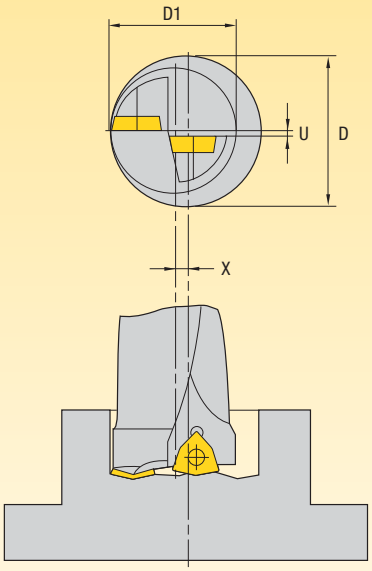
Rotating Tool • Straight Shank

Use an adjustable eccentric chuck with a steep taper to help offset the drill along the X-axis when machining with a rotating tool on a machining centre.



X-Adjustment Description

Different diameter holes can be drilled using the same Drill Fix drill. Holes with a diameter greater than the nominal diameter can be drilled directly into a solid. Intermediate dimensions are produced by means of the X-adjustment.



Benefits

- Eliminates the need for special tools for intermediate dimensions.
- Just a few drills cover a wide application range.
- Once precise adjustment of the desired diameter is made, tolerances of ±0,05mm are achieved.

Additional information on X-adjustment, as well as additional information on Drill Fix tools, is available on the Kennametal website, ***kennametal.com****.*

Drill Fix™ DFR™

The Drill Fix DFR platform offers maximum feed rates at a diameter range of 12,5–24mm (.500–1.000") for 2 x D, 3 x D, and 4 x D applications. Using rectangular-shaped inboard and outboard inserts enables soft starting cuts, short chips, and higher feed rates compared to small-size symmetrical-trigon or square inserts. The Drill Fix DFR platform's low cutting forces provide long tool life and high stability at the smallest diameters.

Features and Benefits

Productivity and Profitability

- Achieve high feed rates with rectangular-shaped inserts that offer a soft starting cut and greater stability.
- Use X-offset on turning machines to adjust drill, and eliminate the need for specials in many applications, and on machining centres to reach tolerance optimisation.
- Same insert size is used in each pocket, reducing inventory costs.

Versatility

- Diameter range covering 12,5–24mm (.500-1.000").
- 2 x D, 3 x D, and 4 x D L/D ratios as standard.
- Various shanks as standard available: WD, SSF, and new WB, a Weldon® shank.
- Multiple insert grades and geometries available.
- Use where feed rates are the limiting factor.
- Apply in straight holes, inclined entries and exits, interrupted cuts, and rough or welded entry surfaces.
- Eccentric chuck available as standard.

Low cutting forces provide long tool body life and high stability at the smallest diameters.



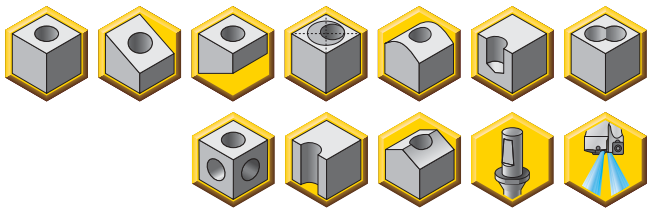
Reliability

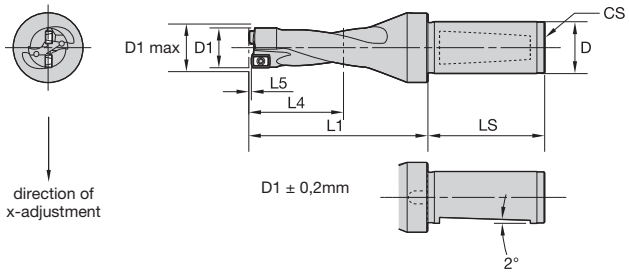
- High stability in smaller sizes due to rectangular-shaped insert.
- Same insert can be used as inboard or outboard insert. No risk of mixing up inner and outer inserts.
- Low cutting forces result in long body tool life.

Customisation

- Intermediate diameters available as semi-standards.
- Engineered solutions available.
- Multistep drills available upon request.
- Left-hand version available.

- Drill shipped with insert screws and Torx wrench.
- See pages J84–J85 for inserts.







WN/WD Shank • 2 x D • Metric

D							
20	32	D1	D1 max	L1	L4 max	L5	gage insert
DFR125R2WD20M	–	12,50	13,50	47,4	25,0	0,5	DFR0202..
DFR127R2WD20M	–	12,70	13,70	47,8	25,4	0,5	DFR0202..
DFR130R2WD20M	–	13,00	14,00	48,4	26,0	0,5	DFR0202..
DFR135R2WD20M	–	13,50	14,50	49,4	27,0	0,5	DFR0202..
DFR140R2WD20M	–	14,00	15,00	50,4	28,0	0,5	DFR0202..
DFR145R2WD20M	–	14,50	15,50	53,4	29,0	0,5	DFR0202..
DFR150R2WD20M	–	15,00	16,00	54,4	30,0	0,5	DFR0202..
DFR155R2WD20M	–	15,50	16,50	55,4	31,0	0,5	DFR0202..
DFR160R2WD20M	–	16,00	17,00	56,4	32,0	0,5	DFR0202..
–	**DFR165R2WD32M**	16,50	17,50	62,4	33,0	0,6	DFR0302..
–	**DFR170R2WD32M**	17,00	18,00	63,4	34,0	0,6	DFR0302..
–	**DFR175R2WD32M**	17,50	18,50	64,4	35,0	0,6	DFR0302..
–	**DFR180R2WD32M**	18,00	19,00	65,4	36,0	0,6	DFR0302..
–	**DFR185R2WD32M**	18,50	19,50	66,4	37,0	0,6	DFR0302..
–	**DFR190R2WD32M**	19,00	20,00	67,4	38,0	0,6	DFR0302..
–	**DFR195R2WD32M**	19,50	20,50	68,4	39,0	0,6	DFR0302..
–	**DFR200R2WD32M**	20,00	21,00	72,4	40,0	0,6	DFR0302..
–	**DFR205R2WD32M**	20,50	21,50	73,6	41,0	0,8	DFR0403..
–	**DFR210R2WD32M**	21,00	22,00	74,6	42,0	0,8	DFR0403..
–	**DFR220R2WD32M**	22,00	23,00	76,6	44,0	0,8	DFR0403..
–	**DFR230R2WD32M**	23,00	24,00	78,6	46,0	0,8	DFR0403..
–	**DFR240R2WD32M**	24,00	25,00	80,6	48,0	0,8	DFR0403..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

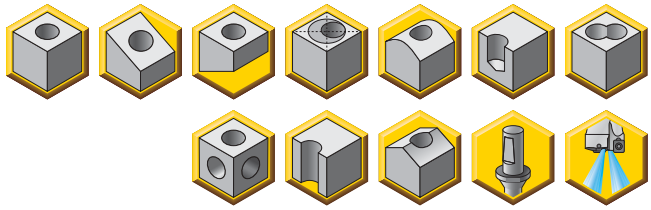


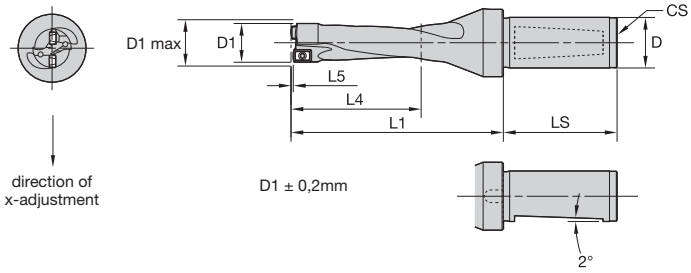


gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

D	LS	CS
20	45	R 1/8 BSP
32	58	R 1/4 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J84–J85 for inserts.







WN/WD Shank • 3 x D • Metric

D								
20	25	32	D1	D1 max	L1	L4 max	L5	gage insert
DFR125R3WD20M	–	–	12,50	13,50	59,9	37,5	0,5	DFR0202..
DFR127R3WD20M	–	–	12,70	13,70	60,5	38,1	0,5	DFR0202..
DFR130R3WD20M	–	–	13,00	14,00	61,4	39,0	0,5	DFR0202..
DFR135R3WD20M	–	–	13,50	14,50	62,9	40,5	0,5	DFR0202..
DFR140R3WD20M	–	–	14,00	15,00	64,4	42,0	0,5	DFR0202..
DFR145R3WD20M	–	–	14,50	15,50	67,9	43,5	0,5	DFR0202..
DFR150R3WD20M	–	–	15,00	16,00	69,4	45,0	0,5	DFR0202..
DFR155R3WD20M	–	–	15,50	16,50	70,9	46,5	0,5	DFR0202..
DFR160R3WD20M	–	–	16,00	17,00	72,4	48,0	0,5	DFR0202..
–	–	DFR165R3WD32M	16,50	17,50	78,9	49,5	0,6	DFR0302..
–	–	DFR170R3WD32M	17,00	18,00	80,4	51,0	0,6	DFR0302..
–	DFR175R3WD25M	DFR175R3WD32M	17,50	18,50	81,9	52,5	0,6	DFR0302..
–	DFR180R3WD25M	DFR180R3WD32M	18,00	19,00	83,4	54,0	0,6	DFR0302..
–	DFR185R3WD25M	DFR185R3WD32M	18,50	19,50	84,9	55,5	0,6	DFR0302..
–	DFR190R3WD25M	DFR190R3WD32M	19,00	20,00	86,4	57,0	0,6	DFR0302..
–	DFR195R3WD25M	DFR195R3WD32M	19,50	20,50	87,9	58,5	0,6	DFR0302..
–	DFR200R3WD25M	DFR200R3WD32M	20,00	21,00	92,4	60,0	0,6	DFR0302..
–	DFR205R3WD25M	DFR205R3WD32M	20,50	21,50	94,1	61,5	0,8	DFR0403..
–	DFR210R3WD25M	DFR210R3WD32M	21,00	22,00	95,6	63,0	0,8	DFR0403..
–	DFR220R3WD25M	DFR220R3WD32M	22,00	23,00	98,6	66,0	0,8	DFR0403..
–	DFR230R3WD25M	DFR230R3WD32M	23,00	24,00	101,6	69,0	0,8	DFR0403..
–	DFR240R3WD25M	DFR240R3WD32M	24,00	25,00	104,6	72,0	0,8	DFR0403..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

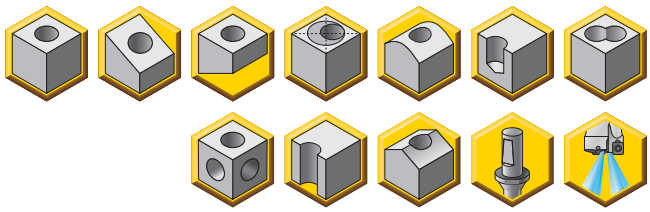


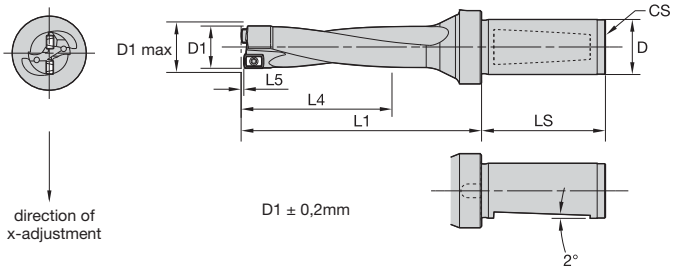


gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

D	LS	CS
20	45	R 1/8 BSP
25	45	R 1/4 BSP
32	58	R 1/4 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J84–J85 for inserts.







WN/WD Shank • 4 x D • Metric

D							
20	32	D1	D1 max	L1	L4 max	L5	gage insert
DFR125R4WD20M	–	12,50	13,50	72,4	50,0	0,5	DFR0202..
DFR127R4WD20M	–	12,70	13,70	73,2	50,8	0,5	DFR0202..
DFR130R4WD20M	–	13,00	14,00	74,4	52,0	0,5	DFR0202..
DFR135R4WD20M	–	13,50	14,50	76,4	54,0	0,5	DFR0202..
DFR140R4WD20M	–	14,00	15,00	78,4	56,0	0,5	DFR0202..
DFR145R4WD20M	–	14,50	15,50	82,4	58,0	0,5	DFR0202..
DFR150R4WD20M	–	15,00	16,00	84,4	60,0	0,5	DFR0202..
DFR155R4WD20M	–	15,50	16,50	86,4	62,0	0,5	DFR0202..
DFR160R4WD20M	–	16,00	17,00	88,4	64,0	0,5	DFR0202..
–	**DFR165R4WD32M**	16,50	17,50	95,4	66,0	0,6	DFR0302..
–	**DFR170R4WD32M**	17,00	18,00	97,4	68,0	0,6	DFR0302..
–	**DFR175R4WD32M**	17,50	18,50	99,4	70,0	0,6	DFR0302..
–	**DFR180R4WD32M**	18,00	19,00	101,4	72,0	0,6	DFR0302..
–	**DFR185R4WD32M**	18,50	19,50	103,4	74,0	0,6	DFR0302..
–	**DFR190R4WD32M**	19,00	20,00	105,4	76,0	0,6	DFR0302..
–	**DFR195R4WD32M**	19,50	20,50	107,4	78,0	0,6	DFR0302..
–	**DFR200R4WD32M**	20,00	21,00	109,4	80,0	0,6	DFR0302..
–	**DFR205R4WD32M**	20,50	21,50	111,6	82,0	0,8	DFR0403..
–	**DFR210R4WD32M**	21,00	22,00	113,6	84,0	0,8	DFR0403..
–	**DFR220R4WD32M**	22,00	23,00	117,6	88,0	0,8	DFR0403..
–	**DFR230R4WD32M**	23,00	24,00	121,6	92,0	0,8	DFR0403..
–	**DFR240R4WD32M**	24,00	25,00	125,6	96,0	0,8	DFR0403..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

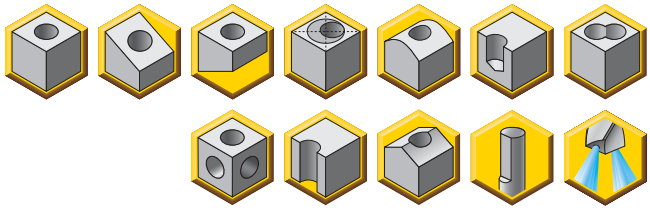


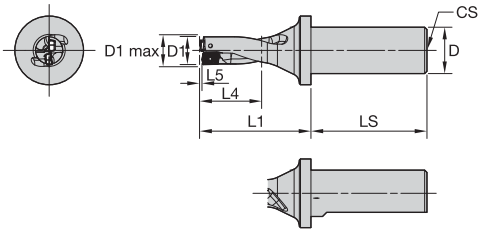


gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

D	LS	CS
20	45	R 1/8 BSP
32	58	R 1/4 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J84–J85 for inserts.







Weldon® Shank • DIN 1835-1 Form B • 2 x D • Metric

D 20	D1	D1 max	L1	L4 max	L5	gage insert
DFR125R2WB20M	12,50	13,50	47,0	25,0	0,5	DFR0202..
DFR127R2WB20M	12,70	13,70	47,4	25,0	0,5	DFR0202..
DFR130R2WB20M	13,00	14,00	48,0	26,0	0,5	DFR0202..
DFR135R2WB20M	13,50	14,50	49,0	27,0	0,5	DFR0202..
DFR140R2WB20M	14,00	15,00	50,0	28,0	0,5	DFR0202..
DFR145R2WB20M	14,50	15,50	53,0	29,0	0,5	DFR0202..
DFR150R2WB20M	15,00	16,00	54,0	30,0	0,5	DFR0202..
DFR155R2WB20M	15,50	16,50	55,0	31,0	0,5	DFR0202..
DFR160R2WB20M	16,00	17,00	56,0	32,0	0,5	DFR0202..
DFR165R2WB20M	16,50	17,50	62,0	33,0	0,6	DFR0302..
DFR170R2WB20M	17,00	18,00	63,0	34,0	0,6	DFR0302..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts



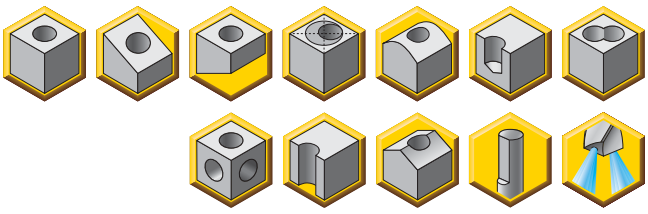


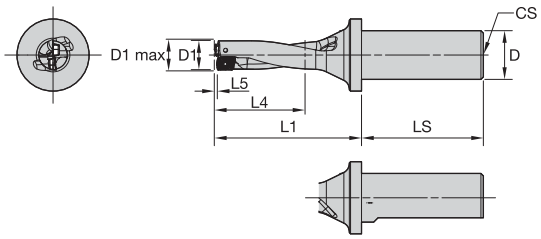
gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	50	R 1/8 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J84–J85 for inserts.







Weldon® Shank • DIN 1835-1 Form B • 3 x D • Metric

D 20	D1	D1 max	L1	L4 max	L5	gage insert
DFR125R3WB20M	12,50	13,50	59,5	37,5	0,5	DFR0202..
DFR127R3WB20M	12,70	13,70	60,5	38,1	0,5	DFR0202..
DFR130R3WB20M	13,00	14,00	61,0	39,0	0,5	DFR0202..
DFR135R3WB20M	13,50	14,50	62,5	40,5	0,5	DFR0202..
DFR140R3WB20M	14,00	15,00	64,0	42,0	0,5	DFR0202..
DFR145R3WB20M	14,50	15,50	67,5	43,5	0,5	DFR0202..
DFR150R3WB20M	15,00	16,00	69,0	45,0	0,5	DFR0202..
DFR155R3WB20M	15,50	16,50	70,5	46,5	0,5	DFR0202..
DFR160R3WB20M	16,00	17,00	72,0	48,0	0,5	DFR0202..
DFR165R3WB20M	16,50	17,50	78,5	49,5	0,6	DFR0302..
DFR170R3WB20M	17,00	18,00	80,0	51,0	0,6	DFR0302..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts



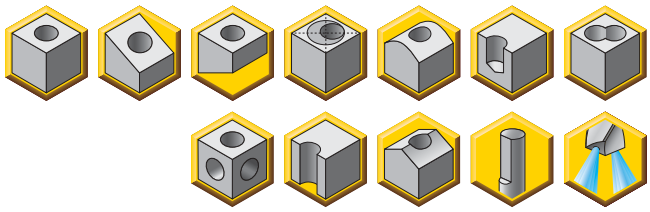


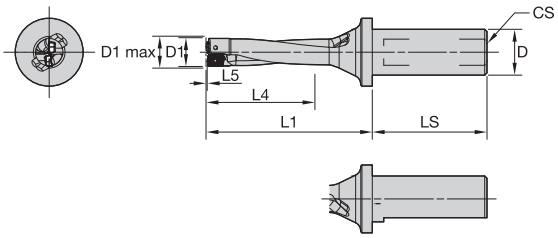
gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7

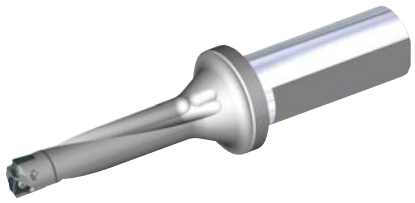
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	50	R 1/8 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J84–J85 for inserts.







Weldon® Shank • DIN 1835-1 Form B • 4 x D • Metric

D 20	D1	D1 max	L1	L4 max	L5	gage insert
DFR125R4WB20M	12,50	13,50	72,0	50,0	0,5	DFR0202..
DFR127R4WB20M	12,70	13,70	72,8	50,8	0,5	DFR0202..
DFR130R4WB20M	13,00	14,00	74,0	52,0	0,5	DFR0202..
DFR135R4WB20M	13,50	14,50	76,0	54,0	0,5	DFR0202..
DFR140R4WB20M	14,00	15,00	78,0	56,0	0,5	DFR0202..
DFR145R4WB20M	14,50	15,50	82,0	58,0	0,5	DFR0202..
DFR150R4WB20M	15,00	16,00	84,0	60,0	0,5	DFR0202..
DFR155R4WB20M	15,50	16,50	86,0	62,0	0,5	DFR0202..
DFR160R4WB20M	16,00	17,00	88,0	64,0	0,5	DFR0202..
DFR165R4WB20M	16,50	17,50	95,0	66,0	0,5	DFR0302..
DFR170R4WB20M	17,00	18,00	97,0	68,0	0,6	DFR0302..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts





gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	50	R 1/8 BSP

Drill Fix™ DFR™ • Metric

Metric												
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter			
						min	Starting Value	max	Ø	DFR02... 12,50–16,00mm	DFR03... 16,50–20,00mm	DFR04... 20,50–24,00mm
P	1	S	O	MD	KCU25	310	**325**	360	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	MD	KC7140							
		U	O	MD	KCU40	200	**215**	230	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	MD	KC7140							
		I	O	MD	KC7140	130	**135**	150	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	MD	KC7140							
	2	S	O	GD	KCPK10	310	**325**	360	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		U	O	GD	KCU40	200	**215**	230	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		I	O	MD	KC7140	130	**135**	150	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
	3	S	O	GD	KCPK10	260	**285**	320	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		U	O	GD	KCU40	180	**195**	220	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		I	O	GD	KC7140	110	**120**	140	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
	4	S	O	GD	KCU25	220	**250**	300	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		U	O	GD	KCU40	150	**180**	220	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		I	O	GD	KC7140	90	**110**	140	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
	5	S	O	GD	KCU25	180	**200**	220	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		U	O	GD	KCU40	120	**135**	150	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		I	O	GD	KC7140	70	**85**	100	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
	6	S	O	GD	KCU25	180	**200**	220	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		U	O	GD	KCU40	120	**135**	150	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		I	O	GD	KC7140	70	**85**	100	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
M	1	S	O	MD	KC7140	150	**190**	230	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		U	O	MD	KC7140	100	**130**	160	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		I	O	MD	KC7140	60	**80**	100	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
	2	S	O	MD	KC7140	150	**180**	210	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		U	O	MD	KC7140	100	**130**	160	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		I	O	MD	KC7140	60	**80**	100	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
	3	S	O	MD	KC7140	100	**130**	160	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		U	O	MD	KC7140	80	**110**	140	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		I	O	MD	KC7140	50	**70**	90	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFR™ • Metric

Metric											
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter			
						min	Starting Value	max	Ø	DFR02... 12,50–16,00mm	DFR03... 16,50–20,00mm	DFR04... 20,50–24,00mm
K	1	S	O	GD	KCPK10	200	**240**	300	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KCU40							
		U	O	GD	KCU25	120	**155**	200	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
		I	O	GD	KCU40	80	**100**	125	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
	2	S	O	GD	KCPK10	180	**220**	260	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KCU40							
		U	O	GD	KCU25	110	**140**	170	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
		I	O	GD	KCU40	80	**100**	120	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
	3	S	O	GD	KCPK10	180	**220**	260	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KCU40							
		U	O	GD	KCU25	110	**140**	170	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
		I	O	GD	KCU40	80	**100**	120	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
N	1	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	300	**400**	500	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	2	S	O	ST	KD1425	375	**550**	775	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	175	**250**	325	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	3	S	O	ST	KD1425	350	**500**	650	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	150	**250**	350	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	4	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	5	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	6	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	GD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	GD	KCU40							
		I	O	GD	KMF	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	GD	KMF							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFR™ • Metric

Metric											
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter		
						min	Starting Value	max	Ø	DFR02... 12,50–16,00mm	DFR03... 16,50–20,00mm	DFR04... 20,50–24,00mm
S	1	S	O	GD	KCU40	60	**70**	75	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	40	**50**	60	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	25	**30**	40	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140							
	2	S	O	GD	KCU40	50	**60**	70	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	30	**40**	50	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	25	**30**	40	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140							
	3	S	O	GD	KCU40	70	**80**	90	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	50	**60**	70	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	30	**40**	50	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	MD	KC7140							
	4	S	O	GD	KCU40	70	**80**	90	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	50	**60**	70	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	30	**40**	50	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	MD	KC7140							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**

Drill Fix™ DFSP™

DFSP is the new name of the now-extended Drill Fix DFS™ indexable drilling platform. The standard diameter range is now expanded starting from 14–55mm (.551–2.125") in L/D ratios 2 x D, 3 x D, 4 x D, and 5 x D. Like the DFS platform, the DFSP platform combines the economically squared outboard insert with the superior centring capabilities of the trigon inboard insert. DFSP indexable drills offer increased metal removal rates combined with high surface quality and hole straightness.

Boost your productivity even further and achieve outstanding results in steel, stainless steel, and cast iron with the latest Beyond™ insert grades.

Features and Benefits

Higher Productivity and Profitability

- Achieve highest metal removal rates and excellent chip evacuation from advanced chip flutes and non-central and increased cooling channels.
- Squared outboard inserts offer four economic cutting edges.
- Complete product portfolio offers standard L/D ratios up to 5 x D.

Versatility

- Drill holes up to 5 x D in steel, cast iron, ductile iron, stainless steel, and non-ferrous materials.
- Use where speed and economy are prime considerations.
- Use DFSP drills in straight holes, inclined entries and exits, interrupted cuts, and rough or welded entry surfaces.
- Use X-offset on turning machines to adjust the drill diameter and eliminate the need for specials in many applications, and on machining centres to reach tolerance optimisation.
- Eccentric chuck available as standard.
- Quick and easy insert grade and/or geometry change to address material and application changes.

Boost your productivity even further with the latest Beyond™ insert grades.



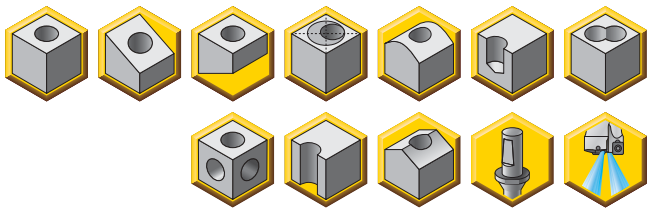
Reliability

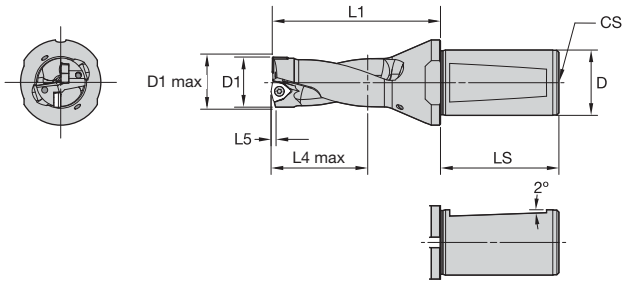
- High accuracy holes in any feed rates.
- Gain outstanding results using Beyond grades for DFT™ and SPGX/SPPX inserts.
- High wear resistance in interrupted cuts due to squared outboard insert.

Customisation

- Use DFSP cartridges to extend diameter range up to 85mm (3.35") in L/D ratios up to 5 x D.
- Intermediate diameters, multistep drills, and other non-standard shanks are available.
- Contact our engineered solutions team for recommendations.

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J89–J90 for inserts.







WD Shank • 2 x D • Metric

D										
20	32	40	50	D1	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP140R2WD20M	–	–	–	14,00	15,00	50,0	28,0	0,3	SPGX0502..	DFTX202..
DFSP145R2WD20M *	–	–	–	14,50	15,50	53,0	29,0	0,4	SPGX0502..	DFTX202..
DFSP150R2WD20M	–	–	–	15,00	16,00	54,0	30,0	0,4	SPGX0502..	DFTX202..
DFSP155R2WD20M	–	–	–	15,50	16,50	55,0	31,0	0,4	SPGX0502..	DFTX202..
DFSP160R2WD20M	–	–	–	16,00	17,00	56,0	32,0	0,4	SPGX0502..	DFTX202..
–	DFSP165R2WD32M	–	–	16,50	17,50	62,0	33,0	0,5	SPGX0502..	DFTX202..
–	DFSP170R2WD32M	–	–	17,00	18,00	63,0	34,0	0,5	SPGX0502..	DFTX202..
–	DFSP175R2WD32M	–	–	17,50	18,50	64,0	35,0	0,5	SPGX0603..	DFT0303..
–	DFSP180R2WD32M	–	–	18,00	19,00	65,0	36,0	0,5	SPGX0603..	DFT0303..
–	DFSP185R2WD32M	–	–	18,50	19,50	66,0	37,0	0,6	SPGX0603..	DFT0303..
–	DFSP190R2WD32M	–	–	19,00	20,00	67,0	38,0	0,6	SPGX0603..	DFT0303..
–	DFSP195R2WD32M	–	–	19,50	20,50	68,0	39,0	0,6	SPGX0603..	DFT0303..
–	DFSP200R2WD32M	–	–	20,00	21,00	72,0	40,0	0,6	SPGX0603..	DFT0303..
–	DFSP210R2WD32M	–	–	21,00	22,00	74,0	42,0	0,7	SPGX0603..	DFT0303..
–	DFSP220R2WD32M	–	–	22,00	23,00	76,0	44,0	0,5	SPGX0703..	DFT05T3..
–	DFSP230R2WD32M	–	–	23,00	24,00	78,0	46,0	0,6	SPGX0703..	DFT05T3..
–	DFSP240R2WD32M	–	–	24,00	25,00	80,0	48,0	0,6	SPGX0703..	DFT05T3..
–	DFSP250R2WD32M	–	–	25,00	26,00	83,0	50,0	0,7	SPGX0703..	DFT05T3..
–	DFSP260R2WD32M	–	–	26,00	27,00	86,0	52,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP265R2WD32M	–	–	26,50	27,50	87,0	53,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP270R2WD32M	–	–	27,00	28,00	89,0	54,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP280R2WD32M	–	–	28,00	29,00	91,0	56,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP290R2WD32M	–	–	29,00	30,00	94,0	58,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP300R2WD32M	–	–	30,00	31,00	97,0	60,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP310R2WD32M	–	–	31,00	32,00	100,0	62,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP320R2WD32M	–	–	32,00	33,00	103,0	64,0	1,0	SPPX09T3..	DFT05T3..
–	DFSP330R2WD32M	–	–	33,00	34,00	105,0	66,0	0,9	SPPX1204..	DFT06T3..
–	DFSP340R2WD32M	–	–	34,00	35,00	108,0	68,0	0,9	SPPX1204..	DFT06T3..
–	DFSP350R2WD32M	–	–	35,00	36,00	111,0	70,0	1,0	SPPX1204..	DFT06T3..
–	DFSP360R2WD32M	–	–	36,00	37,00	114,0	72,0	1,0	SPPX1204..	DFT06T3..
–	DFSP370R2WD32M	–	–	37,00	38,00	117,0	74,0	1,1	SPPX1204..	DFT06T3..
–	DFSP375R2WD32M *	–	–	37,50	38,50	118,0	75,0	1,1	SPPX1204..	DFT06T3..
–	DFSP380R2WD32M	–	–	38,00	39,00	119,0	76,0	1,1	SPPX1204..	DFT06T3..
–	DFSP390R2WD32M	–	–	39,00	40,00	122,0	78,0	1,2	SPPX1204..	DFT06T3..
–	DFSP400R2WD32M	–	–	40,00	41,00	125,0	80,0	1,2	SPPX1204..	DFT06T3..
–	DFSP410R2WD32M	–	–	41,00	42,00	128,0	82,0	1,2	SPPX1204..	DFT0704..

(continued)

(WD Shank • 2 x D • Metric — continued)

D										
20	32	40	50	D1	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
–	**DFSP420R2WD32M**	–	–	42,00	43,00	131,0	84,0	1,3	SPPX1204..	DFT0704..
–	**DFSP430R2WD32M**	–	–	43,00	44,00	133,0	86,0	1,3	SPPX1204..	DFT0704..
–	**DFSP440R2WD32M**	–	–	44,00	45,00	135,0	88,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP450R2WD40M**	–	45,00	46,00	137,0	90,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP460R2WD40M**	–	46,00	47,00	140,0	92,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP470R2WD40M**	–	47,00	48,00	142,0	94,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP480R2WD40M**	–	48,00	49,00	144,0	96,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP490R2WD40M**	–	49,00	50,00	146,0	98,0	1,4	SPPX15T5..	DFT0905..
–	–	**DFSP500R2WD40M**	–	50,00	51,00	148,0	100,0	1,5	SPPX15T5..	DFT0905..
–	–	**DFSP505R2WD40M**	–	50,50	51,50	148,0	100,0	1,5	SPPX15T5..	DFT0905..
–	–	**DFSP510R2WD40M**	–	51,00	52,00	150,0	102,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP520R2WD40M**	–	52,00	53,00	152,0	104,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP530R2WD40M**	–	53,00	54,00	154,0	106,0	1,7	SPPX15T5..	DFT0905..
–	–	**DFSP540R2WD40M**	–	54,00	55,00	156,0	108,0	1,7	SPPX15T5..	DFT0905..
–	–	–	**DFSP550R2WD50M**	55,00	56,00	158,0	110,0	1,8	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts







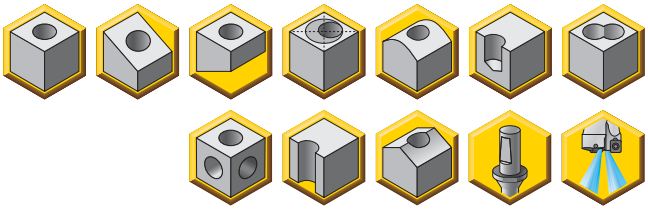
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
14.00–17.00	DFTX202..	**193.281**	0,6	SPGX0502..	**193.281**	0,6	**170.370**	T6
17.50–21.00	DFT0303..	**MS1152**	0,9	SPGX0603..	**MS1152**	0,9	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	SPGX0703..	**192.432**	1,3	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	SPPX09T3..	**191.924**	2,1	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	SPPX1204..	**191.916**	4	**170.025**	T15
41.00–43.00	DFT0704..	**191.916**	6	SPPX1204..	**191.916**	3	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	SPPX15T5..	**192.433**	3	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	SPPX15T5..	**192.433**	6	**170.025**	T15

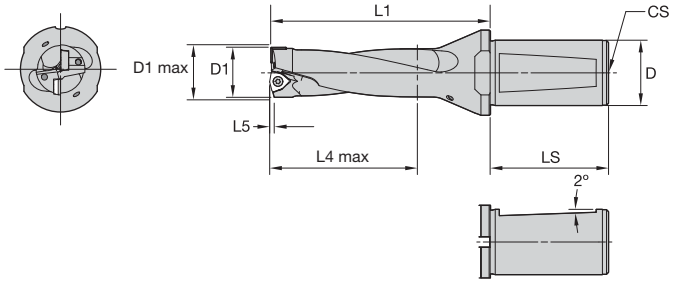
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25,5mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	45	–
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J89–J90 for inserts.







WD Shank • 3 x D • Metric

D										
20	32	40	50	D1	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP140R3WD20M	–	–	–	14,00	15,00	64,0	42,0	0,3	SPGX0502..	DFTX202..
DFSP145R3WD20M	–	–	–	14,50	15,50	67,5	43,5	0,4	SPGX0502..	DFTX202..
DFSP150R3WD20M	–	–	–	15,00	16,00	69,0	45,0	0,4	SPGX0502..	DFTX202..
DFSP155R3WD20M	–	–	–	15,50	16,50	70,5	46,5	0,4	SPGX0502..	DFTX202..
DFSP160R3WD20M	–	–	–	16,00	17,00	72,0	48,0	0,4	SPGX0502..	DFTX202..
–	**DFSP165R3WD32M**	–	–	16,50	17,50	78,5	49,5	0,5	SPGX0502..	DFTX202..
–	**DFSP170R3WD32M**	–	–	17,00	18,00	80,0	51,0	0,5	SPGX0502..	DFTX202..
–	**DFSP175R3WD32M**	–	–	17,50	18,50	81,5	52,5	0,5	SPGX0603..	DFT0303..
–	**DFSP180R3WD32M**	–	–	18,00	19,00	83,0	54,0	0,5	SPGX0603..	DFT0303..
–	**DFSP185R3WD32M**	–	–	18,50	19,50	84,5	55,5	0,6	SPGX0603..	DFT0303..
–	**DFSP190R3WD32M**	–	–	19,00	20,00	86,0	57,0	0,6	SPGX0603..	DFT0303..
–	**DFSP195R3WD32M**	–	–	19,50	20,50	87,5	58,5	0,6	SPGX0603..	DFT0303..
–	**DFSP200R3WD32M**	–	–	20,00	21,00	92,0	60,0	0,6	SPGX0603..	DFT0303..
–	**DFSP210R3WD32M**	–	–	21,00	22,00	95,0	63,0	0,7	SPGX0603..	DFT0303..
–	**DFSP220R3WD32M**	–	–	22,00	23,00	98,0	66,0	0,5	SPGX0703..	DFT05T3..
–	**DFSP230R3WD32M**	–	–	23,00	24,00	101,0	69,0	0,6	SPGX0703..	DFT05T3..
–	**DFSP240R3WD32M**	–	–	24,00	25,00	104,0	72,0	0,6	SPGX0703..	DFT05T3..
–	**DFSP250R3WD32M**	–	–	25,00	26,00	108,0	75,0	0,7	SPGX0703..	DFT05T3..
–	**DFSP260R3WD32M**	–	–	26,00	27,00	112,0	78,0	0,7	SPPX09T3..	DFT05T3..
–	**DFSP265R3WD32M**	–	–	26,50	27,50	113,5	79,5	0,7	SPPX09T3..	DFT05T3..
–	**DFSP270R3WD32M**	–	–	27,00	28,00	116,0	81,0	0,8	SPPX09T3..	DFT05T3..
–	**DFSP280R3WD32M**	–	–	28,00	29,00	119,0	84,0	0,8	SPPX09T3..	DFT05T3..
–	**DFSP290R3WD32M**	–	–	29,00	30,00	123,0	87,0	0,9	SPPX09T3..	DFT05T3..
–	**DFSP300R3WD32M**	–	–	30,00	31,00	127,0	90,0	0,9	SPPX09T3..	DFT05T3..
–	**DFSP310R3WD32M**	–	–	31,00	32,00	131,0	93,0	0,9	SPPX09T3..	DFT05T3..
–	**DFSP320R3WD32M**	–	–	32,00	33,00	135,0	96,0	1,0	SPPX09T3..	DFT05T3..
–	**DFSP330R3WD32M**	–	–	33,00	34,00	138,0	99,0	0,9	SPPX1204..	DFT06T3..
–	**DFSP340R3WD32M**	–	–	34,00	35,00	142,0	102,0	0,9	SPPX1204..	DFT06T3..
–	**DFSP350R3WD32M**	–	–	35,00	36,00	146,0	105,0	1,0	SPPX1204..	DFT06T3..
–	**DFSP360R3WD32M**	–	–	36,00	37,00	150,0	108,0	1,0	SPPX1204..	DFT06T3..
–	**DFSP370R3WD32M**	–	–	37,00	38,00	154,0	111,0	1,1	SPPX1204..	DFT06T3..
–	**DFSP375R3WD32M**	–	–	37,50	38,50	155,5	112,5	1,1	SPPX1204..	DFT06T3..
–	**DFSP380R3WD32M**	–	–	38,00	39,00	157,0	114,0	1,1	SPPX1204..	DFT06T3..
–	**DFSP390R3WD32M**	–	–	39,00	40,00	161,0	117,0	1,2	SPPX1204..	DFT06T3..
–	**DFSP400R3WD32M**	–	–	40,00	41,00	165,0	120,0	1,2	SPPX1204..	DFT06T3..
–	**DFSP410R3WD32M**	–	–	41,00	42,00	169,0	123,0	1,2	SPPX1204..	DFT0704..

(continued)

(WD Shank • 3 x D • Metric — continued)

D										
20	32	40	50	D1	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
–	**DFSP420R3WD32M**	–	–	42,00	43,00	173,0	126,0	1,3	SPPX1204..	DFT0704..
–	**DFSP430R3WD32M**	–	–	43,00	44,00	176,0	129,0	1,3	SPPX1204..	DFT0704..
–	**DFSP440R3WD32M**	–	–	44,00	45,00	179,0	132,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP450R3WD40M**	–	45,00	46,00	182,0	135,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP460R3WD40M**	–	46,00	47,00	186,0	138,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP470R3WD40M**	–	47,00	48,00	189,0	141,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP480R3WD40M**	–	48,00	49,00	192,0	144,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP490R3WD40M**	–	49,00	50,00	195,0	147,0	1,4	SPPX15T5..	DFT0905..
–	–	**DFSP500R3WD40M**	–	50,00	51,00	198,0	150,0	1,5	SPPX15T5..	DFT0905..
–	–	**DFSP505R3WD40M**	–	50,50	51,50	199,5	151,5	1,5	SPPX15T5..	DFT0905..
–	–	**DFSP510R3WD40M**	–	51,00	52,00	201,0	153,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP520R3WD40M**	–	52,00	53,00	204,0	156,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP530R3WD40M**	–	53,00	54,00	207,0	159,0	1,7	SPPX15T5..	DFT0905..
–	–	**DFSP540R3WD40M**	–	54,00	55,00	210,0	162,0	1,7	SPPX15T5..	DFT0905..
–	–	–	**DFSP550R3WD50M**	55,00	56,00	213,0	165,0	1,8	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts







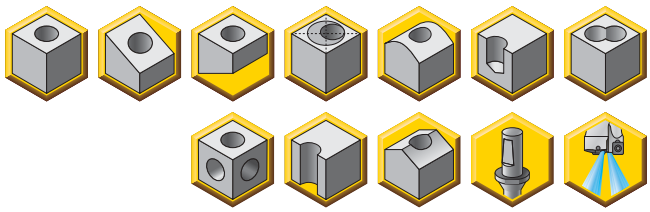
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
14.00–17.00	DFTX202..	**193.281**	0,6	SPGX0502..	**193.281**	0,6	**170.370**	T6
17.50–21.00	DFT0303..	**MS1152**	0,9	SPGX0603..	**MS1152**	0,9	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	SPGX0703..	**192.432**	1,3	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	SPPX09T3..	**191.924**	2,1	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	SPPX1204..	**191.916**	4	**170.025**	T15
41.00–43.00	DFT0704..	**191.916**	6	SPPX1204..	**191.916**	3	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	SPPX15T5..	**192.433**	3	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	SPPX15T5..	**192.433**	6	**170.025**	T15

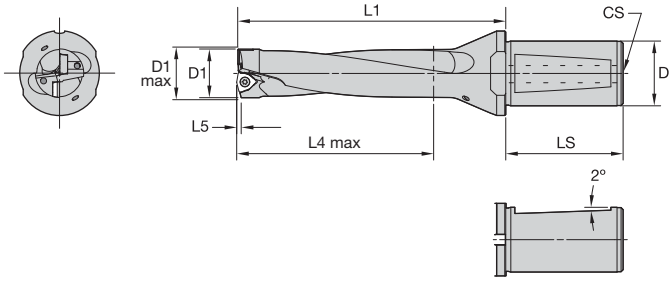
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	45	–
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J89–J90 for inserts.







WD Shank • 4 x D • Metric

D											
20	32	40	50	D1	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP140R4WD20M	–	–	–	14,00	15,00	78,0	56,0	0,3	SPGX0502..	DFTX202..
DFSP145R4WD20M	–	–	–	14,50	15,50	82,0	58,0	0,4	SPGX0502..	DFTX202..
DFSP150R4WD20M	–	–	–	15,00	16,00	84,0	60,0	0,4	SPGX0502..	DFTX202..
DFSP155R4WD20M *	–	–	–	15,50	16,50	86,0	62,0	0,4	SPGX0502..	DFTX202..
DFSP160R4WD20M	–	–	–	16,00	17,00	88,0	64,0	0,4	SPGX0502..	DFTX202..
DFSP165R4WD20M *	–	–	–	16,50	17,50	95,0	66,0	0,5	SPGX0502..	DFTX202..
DFSP170R4WD20M	–	–	–	17,00	18,00	97,0	68,0	0,5	SPGX0502..	DFTX202..
–	DFSP175R4WD32M	–	–	17,50	18,50	99,0	70,0	0,5	SPGX0603..	DFT0303..
–	DFSP180R4WD32M	–	–	18,00	19,00	101,0	72,0	0,5	SPGX0603..	DFT0303..
–	DFSP185R4WD32M	–	–	18,50	19,50	103,0	74,0	0,6	SPGX0603..	DFT0303..
–	DFSP190R4WD32M	–	–	19,00	20,00	105,0	76,0	0,6	SPGX0603..	DFT0303..
–	DFSP195R4WD32M	–	–	19,50	20,50	107,0	78,0	0,6	SPGX0603..	DFT0303..
–	DFSP200R4WD32M	–	–	20,00	21,00	112,0	80,0	0,6	SPGX0603..	DFT0303..
–	DFSP210R4WD32M	–	–	21,00	22,00	96,0	64,0	0,7	SPGX0603..	DFT0303..
–	DFSP220R4WD32M	–	–	22,00	23,00	120,0	88,0	0,5	SPGX0703..	DFT05T3..
–	DFSP230R4WD32M	–	–	23,00	24,00	124,0	92,0	0,6	SPGX0703..	DFT05T3..
–	DFSP240R4WD32M	–	–	24,00	25,00	128,0	96,0	0,6	SPGX0703..	DFT05T3..
–	DFSP250R4WD32M	–	–	25,00	26,00	133,0	100,0	0,7	SPGX0703..	DFT05T3..
–	DFSP260R4WD32M	–	–	26,00	27,00	138,0	104,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP265R4WD32M	–	–	26,50	27,50	140,0	106,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP270R4WD32M	–	–	27,00	28,00	143,0	108,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP280R4WD32M	–	–	28,00	29,00	147,0	112,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP290R4WD32M	–	–	29,00	30,00	152,0	116,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP300R4WD32M	–	–	30,00	31,00	157,0	120,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP310R4WD32M	–	–	31,00	32,00	162,0	124,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP320R4WD32M	–	–	32,00	33,00	167,0	128,0	1,0	SPPX09T3..	DFT05T3..
–	DFSP330R4WD32M	–	–	33,00	34,00	171,0	132,0	0,9	SPPX1204..	DFT06T3..
–	DFSP340R4WD32M	–	–	34,00	35,00	176,0	136,0	0,9	SPPX1204..	DFT06T3..
–	DFSP350R4WD32M	–	–	35,00	36,00	181,0	140,0	1,0	SPPX1204..	DFT06T3..
–	DFSP360R4WD32M	–	–	36,00	37,00	186,0	144,0	1,0	SPPX1204..	DFT06T3..
–	DFSP370R4WD32M	–	–	37,00	38,00	191,0	148,0	1,1	SPPX1204..	DFT06T3..
–	DFSP375R4WD32M	–	–	37,50	38,50	193,0	150,0	1,1	SPPX1204..	DFT06T3..
–	DFSP380R4WD32M	–	–	38,00	39,00	195,0	152,0	1,1	SPPX1204..	DFT06T3..
–	DFSP390R4WD32M	–	–	39,00	40,00	200,0	156,0	1,2	SPPX1204..	DFT06T3..
–	DFSP400R4WD32M	–	–	40,00	41,00	205,0	160,0	1,2	SPPX1204..	DFT06T3..
–	DFSP410R4WD32M	–	–	41,00	42,00	210,0	164,0	1,2	SPPX1204..	DFT0704..

(continued)

(WD Shank • 4 x D • Metric — continued)

D										
20	32	40	50	D1	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
–	**DFSP420R4WD32M**	–	–	42,00	43,00	215,0	168,0	1,3	SPPX1204..	DFT0704..
–	**DFSP430R4WD32M**	–	–	43,00	44,00	219,0	172,0	1,3	SPPX1204..	DFT0704..
–	**DFSP440R4WD32M**	–	–	44,00	45,00	223,0	176,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP450R4WD40M**	–	45,00	46,00	227,0	180,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP460R4WD40M**	–	46,00	47,00	232,0	184,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP470R4WD40M**	–	47,00	48,00	236,0	188,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP480R4WD40M**	–	48,00	49,00	240,0	192,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP490R4WD40M**	–	49,00	50,00	244,0	196,0	1,4	SPPX15T5..	DFT0905..
–	–	**DFSP500R4WD40M**	–	50,00	51,00	248,0	200,0	1,5	SPPX15T5..	DFT0905..
–	–	**DFSP510R4WD40M**	–	51,00	52,00	252,0	204,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP520R4WD40M**	–	52,00	53,00	256,0	208,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP530R4WD40M**	–	53,00	54,00	260,0	212,0	1,7	SPPX15T5..	DFT0905..
–	–	**DFSP540R4WD40M**	–	54,00	55,00	264,0	216,0	1,7	SPPX15T5..	DFT0905..
–	–	–	**DFSP550R4WD50M**	55,00	56,00	268,0	220,0	1,8	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts







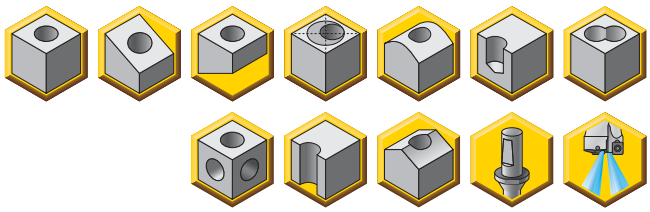
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
–	DFTX202..	–	–	SPGX0502..	–	–	–	T6
17.50–21.00	DFT0303..	**MS1152**	0,9	SPGX0603..	**MS1152**	0,9	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	SPGX0703..	**192.432**	1,3	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	SPPX09T3..	**191.924**	2,1	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	SPPX1204..	**191.916**	4	**170.025**	T15
41.00–43.00	DFT0704..	**192.433**	6	SPPX1204..	**191.698**	3	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	SPPX15T5..	**191.698**	3	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	SPPX15T5..	**192.433**	6	**170.025**	T15

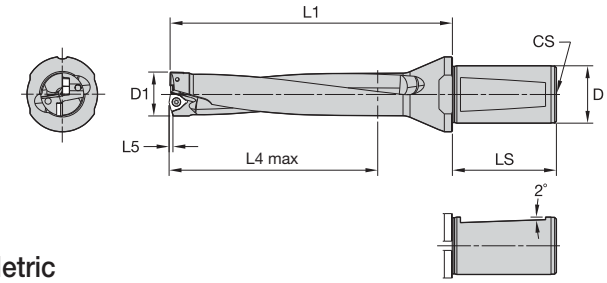
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J89–J90 for inserts.







WD Shank • 5 x D • Metric

D								
32	40	50	D1	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP200R5WD32M	–	–	20,00	132,0	100,0	0,6	SPGX0603..	DFT0303..
DFSP210R5WD32M	–	–	21,00	137,0	105,0	0,7	SPGX0603..	DFT0303..
DFSP220R5WD32M	–	–	22,00	142,0	110,0	0,5	SPGX0703..	DFT05T3..
DFSP230R5WD32M	–	–	23,00	147,0	115,0	0,6	SPGX0703..	DFT05T3..
DFSP240R5WD32M	–	–	24,00	152,0	120,0	0,6	SPGX0703..	DFT05T3..
DFSP250R5WD32M	–	–	25,00	158,0	125,0	0,7	SPGX0703..	DFT05T3..
DFSP260R5WD32M	–	–	26,00	164,0	130,0	0,7	SPPX09T3..	DFT05T3..
DFSP265R5WD32M	–	–	26,50	166,5	132,5	0,7	SPPX09T3..	DFT05T3..
DFSP270R5WD32M	–	–	27,00	170,0	135,0	0,8	SPPX09T3..	DFT05T3..
DFSP280R5WD32M	–	–	28,00	175,0	140,0	0,8	SPPX09T3..	DFT05T3..
DFSP290R5WD32M	–	–	29,00	181,0	145,0	0,9	SPPX09T3..	DFT05T3..
DFSP300R5WD32M	–	–	30,00	187,0	150,0	0,9	SPPX09T3..	DFT05T3..
DFSP310R5WD32M	–	–	31,00	193,0	155,0	0,9	SPPX09T3..	DFT05T3..
DFSP320R5WD32M	–	–	32,00	199,0	160,0	1,0	SPPX09T3..	DFT05T3..
DFSP330R5WD32M	–	–	33,00	204,0	165,0	0,9	SPPX1204..	DFT06T3..
DFSP340R5WD32M	–	–	34,00	210,0	170,0	0,9	SPPX1204..	DFT06T3..
DFSP350R5WD32M	–	–	35,00	216,0	175,0	1,0	SPPX1204..	DFT06T3..
DFSP360R5WD32M	–	–	36,00	222,0	180,0	1,0	SPPX1204..	DFT06T3..
DFSP370R5WD32M	–	–	37,00	228,0	185,0	1,1	SPPX1204..	DFT06T3..
DFSP375R5WD32M	–	–	37,50	230,5	187,5	1,1	SPPX1204..	DFT06T3..
DFSP380R5WD32M	–	–	38,00	233,0	190,0	1,1	SPPX1204..	DFT06T3..
DFSP390R5WD32M	–	–	39,00	239,0	195,0	1,2	SPPX1204..	DFT06T3..
DFSP400R5WD32M	–	–	40,00	245,0	200,0	1,2	SPPX1204..	DFT06T3..
DFSP410R5WD32M	–	–	41,00	251,0	205,0	1,2	SPPX1204..	DFT0704..
DFSP420R5WD32M	–	–	42,00	257,0	210,0	1,3	SPPX1204..	DFT0704..
DFSP430R5WD32M	–	–	43,00	262,0	215,0	1,3	SPPX1204..	DFT0704..
DFSP440R5WD32M	–	–	44,00	267,0	220,0	1,4	SPPX15T5..	DFT0704..
–	DFSP450R5WD40M	–	45,00	272,0	225,0	1,4	SPPX15T5..	DFT0704..
–	DFSP460R5WD40M	–	46,00	278,0	230,0	1,5	SPPX15T5..	DFT0704..
–	DFSP470R5WD40M	–	47,00	283,0	235,0	1,5	SPPX15T5..	DFT0704..
–	DFSP480R5WD40M	–	48,00	288,0	240,0	1,5	SPPX15T5..	DFT0704..
–	DFSP490R5WD40M	–	49,00	293,0	245,0	1,4	SPPX15T5..	DFT0905..
–	DFSP500R5WD40M	–	50,00	298,0	250,0	1,5	SPPX15T5..	DFT0905..
–	DFSP510R5WD40M *	–	51,00	303,0	255,0	1,6	SPPX15T5..	DFT0905..
–	DFSP520R5WD40M	–	52,00	308,0	260,0	1,6	SPPX15T5..	DFT0905..
–	DFSP530R5WD40M	–	53,00	313,0	265,0	1,7	SPPX15T5..	DFT0905..
–	DFSP540R5WD40M	–	54,00	318,0	270,0	1,7	SPPX15T5..	DFT0905..
–	–	DFSP550R5WD50M	55,00	323,0	275,0	1,8	SPPX15T5..	DFT0905..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

(continued)

(WD Shank • 5 x D • Metric — continued)

Spare Parts







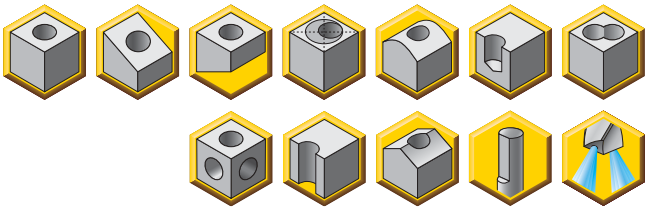
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
17.50–21.00	DFT0303..	**MS1152**	0,9	SPGX0603..	**MS1152**	0,9	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	SPGX0703..	**192.432**	1,3	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	SPPX09T3..	**191.924**	2,1	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	SPPX1204..	**191.916**	4	**170.025**	T15
41.00–43.00	DFT0704..	**192.433**	6	SPPX1204..	**191.698**	3	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	SPPX15T5..	**192.433**	3	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	SPPX15T5..	**192.433**	6	**170.025**	T15

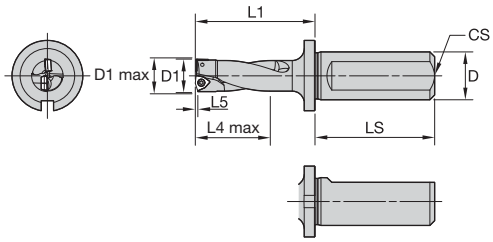
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- Order inserts for DFSP separately.
See pages J89–J90 for inserts.







Weldon® Shank • DIN 1835-1 Form B • 2 x D • Metric

D											
20	25	32	40	D1	D1 max	L1	L4 max	L5	LS	gage insert outside	gage insert inside
DFSP140R2WB20M	–	–	–	14,00	15,00	50,0	28,0	0,3	50	SPGX0502..	DFTX202..
DFSP145R2WB20M	–	–	–	14,50	15,50	53,0	29,0	0,4	50	SPGX0502..	DFTX202..
DFSP150R2WB20M	–	–	–	15,00	16,00	54,0	30,0	0,4	50	SPGX0502..	DFTX202..
DFSP155R2WB20M	–	–	–	15,50	16,50	55,0	31,0	0,4	50	SPGX0502..	DFTX202..
DFSP160R2WB20M	–	–	–	16,00	17,00	56,0	32,0	0,4	50	SPGX0502..	DFTX202..
DFSP165R2WB20M	–	–	–	16,50	17,50	62,0	33,0	0,5	50	SPGX0502..	DFTX202..
DFSP170R2WB20M	–	–	–	17,00	18,00	63,0	34,0	0,5	50	SPGX0502..	DFTX202..
–	DFSP175R2WB25M	–	–	17,50	18,50	64,0	35,0	0,5	56	SPGX0603..	DFT0303..
–	DFSP180R2WB25M	–	–	18,00	19,00	65,0	36,0	0,5	56	SPGX0603..	DFT0303..
–	DFSP185R2WB25M	–	–	18,50	19,50	66,0	37,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP190R2WB25M	–	–	19,00	20,00	67,0	38,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP195R2WB25M	–	–	19,50	20,50	68,0	39,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP200R2WB25M	–	–	20,00	21,00	72,0	40,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP205R2WB25M	–	–	20,50	21,50	73,0	41,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP209R2WB25M	–	–	20,90	21,90	73,8	41,8	0,7	56	SPGX0603..	DFT0303..
–	DFSP210R2WB25M	–	–	21,00	22,00	74,0	42,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP215R2WB25M	–	–	21,50	22,50	75,0	43,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP220R2WB25M	–	–	22,00	23,00	76,0	44,0	0,5	56	SPGX0703..	DFT05T3..
–	DFSP225R2WB25M	–	–	22,50	23,50	77,0	45,0	0,5	56	SPGX0703..	DFT05T3..
–	DFSP230R2WB25M	–	–	23,00	24,00	78,0	46,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP235R2WB25M	–	–	23,50	24,50	79,0	47,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP239R2WB25M	–	–	23,90	24,90	79,8	47,8	0,6	56	SPGX0703..	DFT05T3..
–	DFSP240R2WB25M	–	–	24,00	25,00	80,0	48,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP245R2WB25M	–	–	24,50	25,50	81,0	49,0	0,7	56	SPGX0703..	DFT05T3..
–	DFSP250R2WB25M	–	–	25,00	26,00	83,0	50,0	0,7	56	SPGX0703..	DFT05T3..
–	DFSP255R2WB25M	–	–	25,50	26,50	84,0	51,0	0,7	56	SPGX0703..	DFT05T3..
–	–	DFSP260R2WB32M	–	26,00	27,00	86,0	52,0	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP264R2WB32M	–	26,40	27,40	86,8	52,8	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP265R2WB32M	–	26,50	27,50	87,0	53,0	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP270R2WB32M	–	27,00	28,00	89,0	54,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP280R2WB32M	–	28,00	29,00	91,0	56,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP290R2WB32M	–	29,00	30,00	94,0	58,0	0,9	60	SPPX09T3..	DFT05T3..
–	–	DFSP294R2WB32M	–	29,40	30,40	94,8	58,8	0,9	60	SPPX09T3..	DFT05T3..
–	–	DFSP300R2WB32M	–	30,00	31,00	97,0	60,0	0,9	60	SPPX09T3..	DFT05T3..
–	–	–	DFSP310R2WB40M	31,00	32,00	100,0	62,0	0,9	70	SPPX09T3..	DFT05T3..
–	–	–	DFSP320R2WB40M	32,00	33,00	103,0	64,0	1,0	70	SPPX09T3..	DFT05T3..

(continued)

(Weldon® Shank • DIN 1835-1 Form B • 2 x D • Metric — continued)

D											
20	25	32	40	D1	D1 max	L1	L4 max	L5	LS	gage insert outside	gage insert inside
–	–	–	**DFSP330R2WB40M**	33,00	34,00	105,0	66,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP340R2WB40M**	34,00	35,00	108,0	68,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP350R2WB40M**	35,00	36,00	111,0	70,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP360R2WB40M**	36,00	37,00	114,0	72,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP370R2WB40M**	37,00	38,00	117,0	74,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP380R2WB40M**	38,00	39,00	119,0	76,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP390R2WB40M**	39,00	40,00	122,0	78,0	1,2	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP400R2WB40M**	40,00	41,00	125,0	80,0	1,2	70	SPPX1204..	DFT06T3..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts







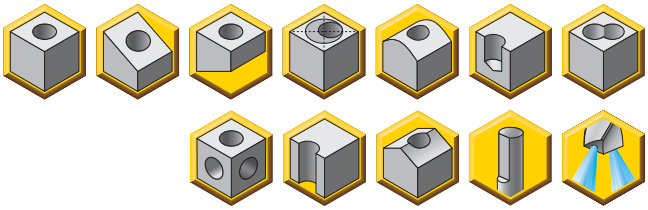
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
14.00–17.00	DFTX202..	**1175225**	0,66	SPGX0502..	**1175225**	0,66	**5694202**	T6
17.50–21.50	DFT0303..	**1021337**	0,90	SPGX0603..	**1021337**	0,90	**1138413**	T7
22.00–25.50	DFT05T3..	**3124549**	2,10	SPGX0703..	**1134385**	1,30	**1138465**	T8
26.00–32.00	DFT05T3..	**1105612**	2,10	SPPX09T3..	**1105612**	2,10	**1138430**	T9
33.00–40.00	DFT06T3..	**1132523**	4,00	SPPX1204..	**1132523**	4,00	**1138438**	T15

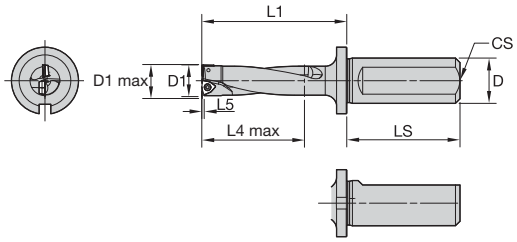
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	50	R 1/4 BSP
25	56	R 1/4 BSP
32	60	R 1/4 BSP
40	70	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- Order inserts for DFSP separately.
See pages J89–J90 for inserts.







Weldon® Shank • DIN 1835-1 Form B • 3 x D • Metric

D											
20	25	32	40	D1	D1 max	L1	L4 max	L5	LS	gage insert outside	gage insert inside
DFSP140R3WB20M	–	–	–	14,00	15,00	64,0	42,0	0,3	50	SPGX0502..	DFTX202..
DFSP145R3WB20M	–	–	–	14,50	15,50	67,5	43,5	0,4	50	SPGX0502..	DFTX202..
DFSP150R3WB20M	–	–	–	15,00	16,00	69,0	45,0	0,4	50	SPGX0502..	DFTX202..
DFSP155R3WB20M	–	–	–	15,50	16,50	70,5	46,5	0,4	50	SPGX0502..	DFTX202..
DFSP160R3WB20M	–	–	–	16,00	17,00	72,0	48,0	0,4	50	SPGX0502..	DFTX202..
DFSP165R3WB20M	–	–	–	16,50	17,50	78,5	49,5	0,5	50	SPGX0502..	DFTX202..
DFSP170R3WB20M	–	–	–	17,00	18,00	80,0	51,0	0,5	50	SPGX0502..	DFTX202..
–	DFSP175R3WB25M	–	–	17,50	18,50	81,5	52,5	0,5	56	SPGX0603..	DFT0303..
–	DFSP180R3WB25M	–	–	18,00	19,00	83,0	54,0	0,5	56	SPGX0603..	DFT0303..
–	DFSP185R3WB25M	–	–	18,50	19,50	84,5	55,5	0,6	56	SPGX0603..	DFT0303..
–	DFSP190R3WB25M	–	–	19,00	20,00	86,0	57,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP195R3WB25M	–	–	19,50	20,50	87,5	58,5	0,6	56	SPGX0603..	DFT0303..
–	DFSP200R3WB25M	–	–	20,00	21,00	92,0	60,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP205R3WB25M	–	–	20,50	21,50	93,5	61,5	0,7	56	SPGX0603..	DFT0303..
–	DFSP209R3WB25M	–	–	20,90	21,90	94,7	62,7	0,7	56	SPGX0603..	DFT0303..
–	DFSP210R3WB25M	–	–	21,00	22,00	95,0	63,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP215R3WB25M	–	–	21,50	22,50	96,5	64,5	0,7	56	SPGX0603..	DFT0303..
–	DFSP220R3WB25M	–	–	22,00	23,00	98,0	66,0	0,5	56	SPGX0703..	DFT05T3..
–	DFSP225R3WB25M	–	–	22,50	23,50	99,5	67,5	0,5	56	SPGX0703..	DFT05T3..
–	DFSP230R3WB25M	–	–	23,00	24,00	101,0	69,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP235R3WB25M	–	–	23,50	24,50	102,5	70,5	0,6	56	SPGX0703..	DFT05T3..
–	DFSP239R3WB25M	–	–	23,90	24,90	103,7	71,7	0,6	56	SPGX0703..	DFT05T3..
–	DFSP240R3WB25M	–	–	24,00	25,00	104,0	72,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP245R3WB25M	–	–	24,50	25,50	105,5	73,5	0,7	56	SPGX0703..	DFT05T3..
–	DFSP250R3WB25M	–	–	25,00	26,00	108,0	75,0	0,7	56	SPGX0703..	DFT05T3..
–	DFSP255R3WB25M	–	–	25,50	26,50	109,5	76,5	0,7	56	SPGX0703..	DFT05T3..
–	–	DFSP260R3WB32M	–	26,00	27,00	112,0	78,0	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP264R3WB32M	–	26,40	27,40	113,2	79,2	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP265R3WB32M	–	26,50	27,50	113,5	79,5	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP270R3WB32M	–	27,00	28,00	116,0	81,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP280R3WB32M	–	28,00	29,00	119,0	84,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP290R3WB32M	–	29,00	30,00	123,0	87,0	0,9	60	SPPX09T3..	DFT05T3..

(continued)

(Weldon® Shank • DIN 1835-1 Form B • 3 x D • Metric — continued)

D											
20	25	32	40	D1	D1 max	L1	L4 max	L5	LS	gage insert outside	gage insert inside
–	–	**DFSP294R3WB32M**	–	29,40	30,40	124,2	88,2	0,9	60	SPPX09T3..	DFT05T3..
–	–	**DFSP300R3WB32M**	–	30,00	31,00	127,0	90,0	0,9	60	SPPX09T3..	DFT05T3..
–	–	–	**DFSP310R3WB40M**	31,00	32,00	131,0	93,0	0,9	70	SPPX09T3..	DFT05T3..
–	–	–	**DFSP320R3WB40M**	32,00	33,00	135,0	96,0	1,0	70	SPPX09T3..	DFT05T3..
–	–	–	**DFSP330R3WB40M**	33,00	34,00	138,0	99,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP340R3WB40M**	34,00	35,00	142,0	102,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP350R3WB40M**	35,00	36,00	146,0	105,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP360R3WB40M**	36,00	37,00	150,0	108,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP370R3WB40M**	37,00	38,00	154,0	111,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP380R3WB40M**	38,00	39,00	157,0	114,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP390R3WB40M**	39,00	40,00	161,0	117,0	1,2	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP400R3WB40M**	40,00	41,00	165,0	120,0	1,2	70	SPPX1204..	DFT06T3..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts







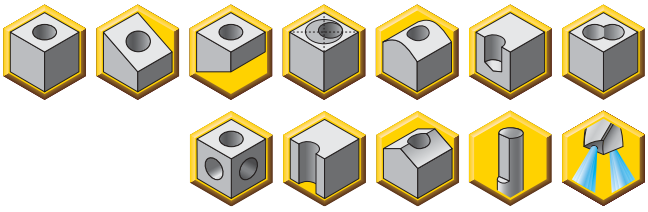
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
14.00–17.00	DFTX202..	**1175225**	0,66	SPGX0502..	**1175225**	0,66	**5694202**	T6
17.50–21.50	DFT0303..	**1021337**	0,90	SPGX0603..	**1021337**	0,90	**1138413**	T7
22.00–25.50	DFT05T3..	**3124549**	2,10	SPGX0703..	**1134385**	1,30	**1138465**	T8
26.00–32.00	DFT05T3..	**1105612**	2,10	SPPX09T3..	**1105612**	2,10	**1138430**	T9
33.00–40.00	DFT06T3..	**1132523**	4,00	SPPX1204..	**1132523**	4,00	**1138438**	T15

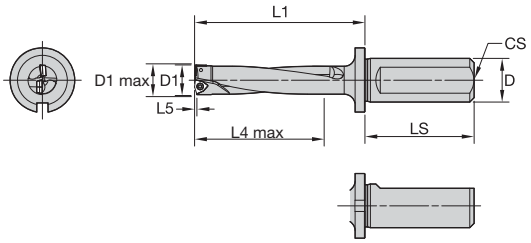
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	50	R 1/4 BSP
25	56	R 1/4 BSP
32	60	R 1/4 BSP
40	70	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- Order inserts for DFSP separately.
See pages J89–J90 for inserts.







Weldon® Shank • DIN 1835-1 Form B • 4 x D • Metric

D											
20	25	32	40	D1	D1 max	L1	L4 max	L5	LS	gage insert outside	gage insert inside
DFSP140R4WB20M	–	–	–	14,00	15,00	78,0	56,0	0,3	50	SPGX0502..	DFTX202..
DFSP145R4WB20M	–	–	–	14,50	15,50	82,0	58,0	0,4	50	SPGX0502..	DFTX202..
DFSP150R4WB20M	–	–	–	15,00	16,00	84,0	60,0	0,4	50	SPGX0502..	DFTX202..
DFSP155R4WB20M	–	–	–	15,50	16,50	86,0	62,0	0,4	50	SPGX0502..	DFTX202..
DFSP160R4WB20M	–	–	–	16,00	17,00	88,0	64,0	0,4	50	SPGX0502..	DFTX202..
DFSP165R4WB20M	–	–	–	16,50	17,50	95,0	66,0	0,5	50	SPGX0502..	DFTX202..
DFSP170R4WB20M	–	–	–	17,00	18,00	97,0	68,0	0,5	50	SPGX0502..	DFTX202..
–	DFSP175R4WB25M	–	–	17,50	18,50	99,0	70,0	0,5	56	SPGX0603..	DFT0303..
–	DFSP180R4WB25M	–	–	18,00	19,00	101,0	72,0	0,5	56	SPGX0603..	DFT0303..
–	DFSP185R4WB25M	–	–	18,50	19,50	103,0	74,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP190R4WB25M	–	–	19,00	20,00	105,0	76,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP195R4WB25M	–	–	19,50	20,50	107,0	78,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP200R4WB25M	–	–	20,00	21,00	112,0	80,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP205R4WB25M	–	–	20,50	21,50	114,0	82,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP209R4WB25M	–	–	20,90	21,90	115,6	83,6	0,7	56	SPGX0603..	DFT0303..
–	DFSP210R4WB25M	–	–	21,00	22,00	116,0	84,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP215R4WB25M	–	–	21,50	22,50	118,0	86,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP220R4WB25M	–	–	22,00	23,00	120,0	88,0	0,5	56	SPGX0703..	DFT05T3..
–	DFSP225R4WB25M	–	–	22,50	23,50	122,0	90,0	0,5	56	SPGX0703..	DFT05T3..
–	DFSP230R4WB25M	–	–	23,00	24,00	124,0	92,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP235R4WB25M	–	–	23,50	24,50	126,0	94,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP239R4WB25M	–	–	23,90	24,90	127,6	95,6	0,6	56	SPGX0703..	DFT05T3..
–	DFSP240R4WB25M	–	–	24,00	25,00	128,0	96,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP245R4WB25M	–	–	24,50	25,50	130,0	98,0	0,7	56	SPGX0703..	DFT05T3..
–	DFSP250R4WB25M	–	–	25,00	26,00	133,0	100,0	0,7	56	SPGX0703..	DFT05T3..
–	DFSP255R4WB25M	–	–	25,50	26,50	135,0	102,0	0,7	56	SPGX0703..	DFT05T3..
–	–	DFSP260R4WB32M	–	26,00	27,00	138,0	104,0	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP264R4WB32M	–	26,40	27,40	139,6	105,6	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP265R4WB32M	–	26,50	27,50	140,0	106,0	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP270R4WB32M	–	27,00	28,00	143,0	108,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP280R4WB32M	–	28,00	29,00	147,0	112,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP290R4WB32M	–	29,00	30,00	152,0	116,0	0,9	60	SPPX09T3..	DFT05T3..

(continued)

(Weldon® Shank • DIN 1835-1 Form B • 4 x D • Metric — continued)

D											
20	25	32	40	D1	D1 max	L1	L4 max	L5	LS	gage insert outside	gage insert inside
–	–	**DFSP294R4WB32M**	–	29,40	30,40	153,6	117,6	0,9	60	SPPX09T3..	DFT05T3..
–	–	**DFSP300R4WB32M**	–	30,00	31,00	157,0	120,0	0,9	60	SPPX09T3..	DFT05T3..
–	–	–	**DFSP310R4WB40M**	31,00	32,00	162,0	124,0	0,9	70	SPPX09T3..	DFT05T3..
–	–	–	**DFSP320R4WB40M**	32,00	33,00	167,0	128,0	1,0	70	SPPX09T3..	DFT05T3..
–	–	–	**DFSP330R4WB40M**	33,00	34,00	171,0	132,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP340R4WB40M**	34,00	35,00	176,0	136,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP350R4WB40M**	35,00	36,00	181,0	140,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP360R4WB40M**	36,00	37,00	186,0	144,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP370R4WB40M**	37,00	38,00	191,0	148,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP380R4WB40M**	38,00	39,00	195,0	152,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP390R4WB40M**	39,00	40,00	200,0	156,0	1,2	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP400R4WB40M**	40,00	41,00	205,0	160,0	1,2	70	SPPX1204..	DFT06T3..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts







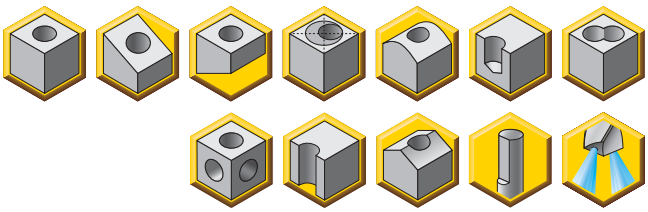
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
14.00–17.00	DFTX202..	**1175225**	0,66	SPGX0502..	**1175225**	0,66	**5694202**	T6
17.50–21.50	DFT0303..	**1021337**	0,90	SPGX0603..	**1021337**	0,90	**1138413**	T7
22.00–25.50	DFT05T3..	**3124549**	2,10	SPGX0703..	**1134385**	1,30	**1138465**	T8
26.00–32.00	DFT05T3..	**1105612**	2,10	SPPX09T3..	**1105612**	2,10	**1138430**	T9
33.00–40.00	DFT06T3..	**1132523**	4,00	SPPX1204..	**1132523**	4,00	**1138438**	T15

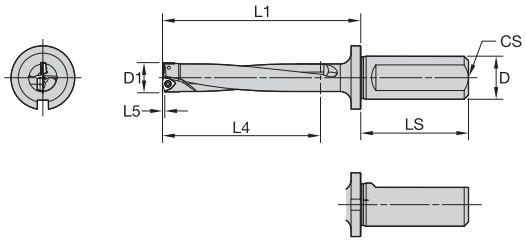
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	50	R 1/4 BSP
25	56	R 1/4 BSP
32	60	R 1/4 BSP
40	70	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centring capabilities of the trigon inboard insert.
- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- Order inserts for DFSP separately.
See pages J89–J90 for inserts.







Weldon® Shank • DIN 1835-1 Form B • 5 x D • Metric

D										
20	25	32	40	D1	L1	L4 max	L5	LS	gage insert outside	gage insert inside
DFSP140R5WB20M	–	–	–	14,00	92,0	70,0	0,3	50	SPGX0502..	DFTX202..
DFSP145R5WB20M	–	–	–	14,50	96,5	72,5	0,4	50	SPGX0502..	DFTX202..
DFSP150R5WB20M	–	–	–	15,00	99,0	75,0	0,4	50	SPGX0502..	DFTX202..
DFSP155R5WB20M	–	–	–	15,50	101,5	77,5	0,4	50	SPGX0502..	DFTX202..
DFSP160R5WB20M	–	–	–	16,00	104,0	80,0	0,5	50	SPGX0502..	DFTX202..
DFSP165R5WB20M	–	–	–	16,50	111,5	82,5	0,5	50	SPGX0502..	DFTX202..
DFSP170R5WB20M	–	–	–	17,00	114,0	85,0	0,5	50	SPGX0502..	DFTX202..
–	DFSP175R5WB25M	–	–	17,50	116,5	87,5	0,5	56	SPGX0603..	DFT0303..
–	DFSP180R5WB25M	–	–	18,00	119,0	90,0	0,5	56	SPGX0603..	DFT0303..
–	DFSP185R5WB25M	–	–	18,50	121,5	92,5	0,6	56	SPGX0603..	DFT0303..
–	DFSP190R5WB25M	–	–	19,00	124,0	95,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP195R5WB25M	–	–	19,50	126,5	97,5	0,6	56	SPGX0603..	DFT0303..
–	DFSP200R5WB25M	–	–	20,00	132,0	100,0	0,6	56	SPGX0603..	DFT0303..
–	DFSP205R5WB25M	–	–	20,50	134,5	102,5	0,7	56	SPGX0603..	DFT0303..
–	DFSP209R5WB25M	–	–	20,90	136,5	104,5	0,7	56	SPGX0603..	DFT0303..
–	DFSP210R5WB25M	–	–	21,00	137,0	105,0	0,7	56	SPGX0603..	DFT0303..
–	DFSP215R5WB25M	–	–	21,50	139,5	107,5	0,7	56	SPGX0603..	DFT0303..
–	DFSP220R5WB25M	–	–	22,00	142,0	110,0	0,5	56	SPGX0703..	DFT05T3..
–	DFSP225R5WB25M	–	–	22,50	144,5	112,5	0,5	56	SPGX0703..	DFT05T3..
–	DFSP230R5WB25M	–	–	23,00	147,0	115,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP235R5WB25M	–	–	23,50	149,5	117,5	0,6	56	SPGX0703..	DFT05T3..
–	DFSP239R5WB25M	–	–	23,90	151,5	119,5	0,6	56	SPGX0703..	DFT05T3..
–	DFSP240R5WB25M	–	–	24,00	152,0	120,0	0,6	56	SPGX0703..	DFT05T3..
–	DFSP245R5WB25M	–	–	24,50	154,5	122,5	0,7	56	SPGX0703..	DFT05T3..
–	DFSP250R5WB25M	–	–	25,00	158,0	125,0	0,7	56	SPGX0703..	DFT05T3..
–	DFSP255R5WB25M	–	–	25,50	160,5	127,5	0,7	56	SPGX0703..	DFT05T3..
–	–	DFSP260R5WB32M	–	26,00	163,0	130,0	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP264R5WB32M	–	26,40	165,0	132,0	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP265R5WB32M	–	26,50	165,5	132,5	0,7	60	SPPX09T3..	DFT05T3..
–	–	DFSP270R5WB32M	–	27,00	170,0	135,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP280R5WB32M	–	28,00	175,0	140,0	0,8	60	SPPX09T3..	DFT05T3..
–	–	DFSP290R5WB32M	–	29,00	181,0	145,0	0,9	60	SPPX09T3..	DFT05T3..

(continued)

(Weldon® Shank • DIN 1835-1 Form B • 5 x D • Metric — continued)

D										
20	25	32	40	D1	L1	L4 max	L5	LS	gage insert outside	gage insert inside
–	–	**DFSP294R5WB32M**	–	29,40	183,0	147,0	0,9	60	SPPX09T3..	DFT05T3..
–	–	**DFSP300R5WB32M**	–	30,00	187,0	150,0	0,9	60	SPPX09T3..	DFT05T3..
–	–	–	**DFSP310R5WB40M**	31,00	193,0	155,0	0,9	70	SPPX09T3..	DFT05T3..
–	–	–	**DFSP320R5WB40M**	32,00	199,0	160,0	1,0	70	SPPX09T3..	DFT05T3..
–	–	–	**DFSP330R5WB40M**	33,00	204,0	165,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP340R5WB40M**	34,00	210,0	170,0	0,9	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP350R5WB40M**	35,00	216,0	175,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP360R5WB40M**	36,00	222,0	180,0	1,0	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP370R5WB40M**	37,00	228,0	18,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP380R5WB40M**	38,00	233,0	190,0	1,1	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP390R5WB40M**	39,00	239,0	195,0	1,2	70	SPPX1204..	DFT06T3..
–	–	–	**DFSP400R5WB40M**	40,00	245,0	200,0	1,2	70	SPPX1204..	DFT06T3..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +1mm.

Spare Parts







diameter range	gage insert inside	inboard insert screw	tightening torque Nm	gage insert outside	outboard insert screw	tightening torque Nm	Torx driver	Torx size
14.00–17.00	DFTX202..	**1175225**	0,66	SPGX0502..	**1175225**	0,66	**5694202**	T6
17.50–21.50	DFT0303..	**1021337**	0,90	SPGX0603..	**1021337**	0,90	**1138413**	T7
22.00–25.50	DFT05T3..	**3124549**	2,10	SPGX0703..	**1134385**	1,30	**1138465**	T8
26.00–32.00	DFT05T3..	**1105612**	2,10	SPPX09T3..	**1105612**	2,10	**1138430**	T9
33.00–40.00	DFT06T3..	**1132523**	4,00	SPPX1204..	**1132523**	4,00	**1138438**	T15

NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges 22–25mm and 41–48mm are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	50	R 1/4 BSP
25	56	R 1/4 BSP
32	60	R 1/4 BSP
40	70	R 1/4 BSP

Drill Fix™ DFSP™ • Metric

Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min min	Starting Value	max	Ø	Recommended Feed Rate (fz) by Diameter SPGX05 DFTX2 14,00–18,00mm	SPGX06 DFT03 18,00–21,99mm	SPGX07 DFT05 22,00–25,99mm	SPGX09 DFT05 26,00–32,99mm	SPGX12 DFT06/..07 33,00–43,99mm	SPGX15 DFT07/..09 44,00–55,00mm
P	0	S	O	LP	KCU40	310	**325**	360	mm/r	0,06–0,10	0,06–0,11	0,08–0,14	0,12–0,21	0,14–0,26	0,16–0,26
			I	DS	KCU40										
		U	O	LP	KCU40	200	**215**	230	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,07–0,12	0,09–0,15	0,11–0,21
			I	HP	KCU40										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,07–0,12	0,09–0,15	0,11–0,21
			I	HP	KCU40										
	1	S	O	FP	KCPK10	310	**325**	360	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	FP	KCU25	200	**215**	230	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	2	S	O	FP	KCPK10	310	**325**	360	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	FP	KCU25	200	**215**	230	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	3	S	O	FP	KCPK10	260	**285**	320	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU25	180	**195**	220	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	110	**120**	140	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	4	S	O	FP	KCPK10	220	**250**	300	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU25	150	**180**	220	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	90	**110**	140	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	5	S	O	HP	KCU25	180	**200**	220	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	6	S	O	HP	KCU25	180	**200**	220	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
M	1	S	O	LP	KCU40	150	**190**	230	mm/r	0,05–0,08	0,06–0,10	0,07–0,12	0,10–0,16	0,12–0,21	0,14–0,24
			I	DS	KCU40										
		U	O	LP	KCU40	100	**130**	160	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,13	0,08–0,16
			I	DS	KCU40										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140										
	2	S	O	LP	KCU40	150	**180**	210	mm/r	0,05–0,08	0,06–0,10	0,07–0,12	0,10–0,16	0,12–0,21	0,14–0,24
			I	DS	KCU40										
		U	O	MD	KCU40	100	**130**	160	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,20
			I	MD	KC7140										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140										
	3	S	O	LP	KCU40	100	**130**	160	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,13	0,08–0,16
			I	DS	KCU40										
		U	O	HP	KCU40	80	**110**	140	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,20
			I	HP	KC7140										
		I	O	MD	KC7140	50	**70**	90	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140										

NOTE: Applying Drill Fix™ DFSP 5 x D requires high stability. It is highly recommended to be conservative in regard to speeds and feeds, and start with minimum values indicated.

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™ • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter					
						min	Starting Value	max	Ø	SPGX05 DFTX2 14,00–18,00mm	SPGX06 DFT03 18,00–21,99mm	SPGX07 DFT05 22,00–25,99mm	SPGX09 DFT05 26,00–32,99mm	SPGX12 DFT06/..07 33,00–43,99mm	SPGX15 DFT07/..09 44,00–55,00mm
K	1	S	O	FP	KCPK10	200	**240**	300	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KCU40										
		U	O	FP	KCU25	120	**155**	200	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	FP	KC7140	80	**100**	125	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	2	S	O	FP	KCPK10	180	**220**	260	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KC7140	80	**100**	120	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	3	S	O	HP	KCPK10	180	**220**	260	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KC7140	80	**100**	120	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
N	1	S	O	HP	KCPK10	350	**500**	650	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	300	**400**	500	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										
	2	S	O	HP	KCPK10	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	175	**250**	325	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										
	3	S	O	HP	KCPK10	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	150	**250**	350	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										
	4	S	O	HP	KCU25	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KC7140										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	5	S	O	HP	KCU25	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KC7140										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	6	S	O	HP	KCU40	400	**450**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										

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Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™ • Metric

Metric															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter						
						min	Starting Value	max	Ø	SPGX05 DFTX2 14,00–18,00mm	SPGX06 DFT03 18,00–21,99mm	SPGX07 DFT05 22,00–25,99mm	SPGX09 DFT05 26,00–32,99mm	SPGX12 DFT06/..07 33,00–43,99mm	SPGX15 DFT07/..09 44,00–55,00mm
S	1	S	O	HP	KCU40	60	**70**	75	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	MD	KC7140										
		U	O	HP	KCU40	40	**50**	60	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
		I	O	HP	KCU40	25	**30**	40	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
	2	S	O	HP	KCU40	50	**60**	70	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	MD	KC7140										
		U	O	HP	KCU40	30	**40**	50	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
		I	O	HP	KCU40	25	**30**	40	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
	3	S	O	LP	KCU40	70	**80**	90	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	DS	KC7140										
		U	O	LP	KCU40	50	**60**	70	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	DS	KC7140										
		I	O	HP	KCU40	30	**40**	50	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
	4	S	O	LP	KCU40	70	**80**	90	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	DS	KC7140										
		U	O	LP	KCU40	50	**60**	70	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	DS	KC7140										
		I	O	HP	KCU40	30	**40**	50	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										

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Pocket seat: I = Inboard insert;
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Drill Fix™ DFT™

Primary Application

The Drill Fix DFT system is available in diameter range 24–82mm (.625–3.250") as a versatile and reliable tool solution with a large portfolio of lengths, insert geometries, and grades.

Balanced cutting forces, improved chip flute, and coolant-channel design enable high metal removal rates and long tool body life. The trigon-shaped DFT inserts are used for both inboard and outboard inserts and offer the highest centring capabilities. Each insert has three cutting edges.

Features and Benefits

Productivity and Profitability

- Achieve high hole accuracy with trigon-shaped inboard inserts that offer the highest centring capabilities.
- Use X-offset on turning machines to adjust the drill diameter and eliminate the need for specials in many applications, and on machining centres to reach tolerance optimisation.
- Same insert size is used in each pocket, reducing inventory costs.

Versatility

- Diameter range covering 24–82mm (.625–3.250").
- 2.5 x D and 4 x D L/D ratios are standard.
- Various shanks available as standard: WD and SSF.
- Trigon-shaped inserts feature three cutting edges.
- Large variety of DFT insert grades and geometries available.
- Use DFT drills in straight holes, inclined entries and exits, interrupted cuts, and rough or welded entry surfaces.
- Eccentric chuck available as standard.

Versatile and reliable tool solution with a large portfolio of lengths, insert geometries, and grades.



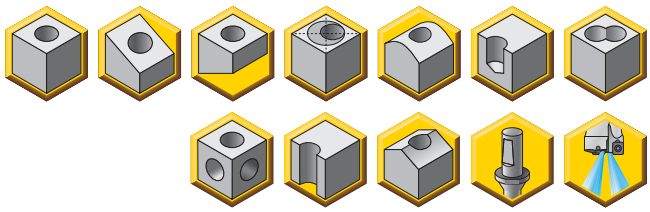
Reliability

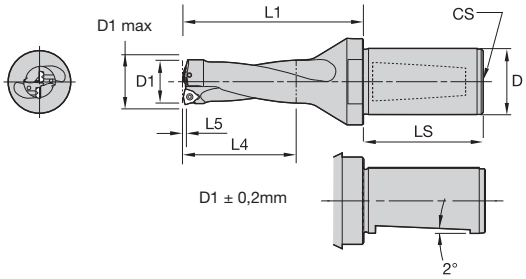
- Highest centring capabilities due to trigon-shaped insert.
- Same insert can be used as inboard or outboard insert — no risk of mixing up inner and outer inserts.
- Improved chip flute and coolant-channel design result in long tool body life and excellent chip evacuation.

Customisation

- Intermediate diameters available as semi-standards.
- Engineered solutions available.
- Multistep drills available upon request.
- Stacked material version.

- Drill shipped with insert screws and Torx wrench.
- See pages J85 and J87–J88 for inserts.







WN/WD Shank • 2,5 x D • Metric

D								
32	40	50	D1	D1 max	L1	L4 max	L5	gage insert
DFT250R2WD32M	DFT250R2WD40M	–	25,00	27,00	90,0	58,9	0,9	DFT05T3..
DFT260R2WD32M	DFT260R2WD40M	–	26,00	27,00	90,0	59,1	1,1	DFT05T3..
DFT270R2WD32M	DFT270R2WD40M	–	27,00	29,00	100,0	66,1	1,1	DFT05T3..
DFT280R2WD32M	DFT280R2WD40M	–	28,00	29,00	100,0	66,3	1,3	DFT05T3..
DFT290R2WD32M	DFT290R2WD40M	–	29,00	31,00	100,0	66,3	1,3	DFT05T3..
DFT300R2WD32M	DFT300R2WD40M	–	30,00	31,00	115,0	76,4	1,4	DFT05T3..
DFT310R2WD32M	DFT310R2WD40M	–	31,00	33,00	115,0	76,4	1,4	DFT05T3..
DFT320R2WD32M	DFT320R2WD40M	–	32,00	33,00	115,0	76,5	1,5	DFT05T3..
DFT330R2WD32M	DFT330R2WD40M	–	33,00	35,00	115,0	76,4	1,4	DFT06T3..
DFT340R2WD32M	DFT340R2WD40M	–	34,00	35,00	115,0	76,5	1,5	DFT06T3..
DFT350R2WD32M	DFT350R2WD40M	–	35,00	38,00	115,0	76,6	1,6	DFT06T3..
DFT360R2WD32M	DFT360R2WD40M	–	36,00	37,00	115,0	76,8	1,8	DFT06T3..
DFT370R2WD32M	DFT370R2WD40M	–	37,00	38,00	135,0	96,7	1,7	DFT06T3..
DFT380R2WD32M	DFT380R2WD40M	–	38,00	41,00	135,0	96,8	1,8	DFT06T3..
DFT390R2WD32M	DFT390R2WD40M	–	39,00	40,00	135,0	96,9	1,9	DFT06T3..
DFT400R2WD32M	DFT400R2WD40M	–	40,00	41,00	135,0	97,0	2,0	DFT06T3..
DFT410R2WD32M	DFT410R2WD40M	–	41,00	44,00	135,0	96,9	1,9	DFT0704..
DFT420R2WD32M	DFT420R2WD40M	–	42,00	43,00	135,0	96,9	2,0	DFT0704..
DFT430R2WD32M	DFT430R2WD40M	–	43,00	44,00	150,0	112,1	2,1	DFT0704..
DFT440R2WD32M	DFT440R2WD40M	–	44,00	47,00	150,0	112,1	2,1	DFT0704..
–	DFT450R2WD40M	DFT450R2WD50M	45,00	46,00	150,0	112,2	2,2	DFT0704..
–	DFT460R2WD40M	DFT460R2WD50M	46,00	47,00	150,0	112,0	2,3	DFT0704..
–	DFT470R2WD40M	DFT470R2WD50M *	47,00	50,00	150,0	111,5	2,4	DFT0704..
–	DFT480R2WD40M	DFT480R2WD50M	48,00	49,00	150,0	111,0	2,4	DFT0704..
–	DFT490R2WD40M	DFT490R2WD50M	49,00	50,00	165,0	117,2	2,2	DFT0905..
–	DFT500R2WD40M	DFT500R2WD50M	50,00	54,00	165,0	117,2	2,2	DFT0905..
–	DFT510R2WD40M	DFT510R2WD50M	51,00	52,00	165,0	117,4	2,5	DFT0905..
–	DFT520R2WD40M	DFT520R2WD50M	52,00	53,00	165,0	117,5	2,6	DFT0905..
–	DFT530R2WD40M	DFT530R2WD50M	53,00	54,00	165,0	117,6	2,6	DFT0905..
–	DFT540R2WD40M	DFT540R2WD50M	54,00	58,00	165,0	117,7	2,7	DFT0905..
–	–	DFT550R2WD50M	55,00	56,00	180,0	125,0	2,7	DFT0905..
–	–	DFT560R2WD50M	56,00	57,00	180,0	125,0	2,8	DFT0905..
–	–	DFT570R2WD50M	57,00	58,00	180,0	125,0	2,9	DFT0905..
–	–	DFT580R2WD50M	58,00	62,00	180,0	125,0	3,0	DFT0905..
–	–	DFT590R2WD50M	59,00	60,00	180,0	125,0	3,0	DFT0905..
–	–	DFT600R2WD50M	60,00	61,00	180,0	125,0	3,1	DFT0905..

(continued)

(WN/WD Shank • 2,5 x D • Metric — continued)

D								
32	40	50	D1	D1 max	L1	L4 max	L5	gage insert
–	–	**DFT610R2WD50M**	61,00	62,00	180,0	125,0	3,2	DFT0905..
–	–	**DFT620R2WD50M**	62,00	65,00	180,0	125,0	3,2	DFT0905..
–	–	**DFT630R2WD50M**	63,00	64,00	180,0	125,0	3,3	DFT0905..
–	–	**DFT640R2WD50M**	64,00	65,00	180,0	125,0	3,4	DFT0905..
–	–	**DFT650R2WD50M**	65,00	66,00	180,0	125,0	3,4	DFT0905..
–	–	**DFT660R2WD50M**	66,00	69,00	180,0	125,0	3,5	DFT0905..
–	–	**DFT670R2WD50M**	67,00	67,00	180,0	125,0	3,5	DFT0905..
–	–	**DFT680R2WD50M**	68,00	69,00	180,0	125,0	3,6	DFT0905..
–	–	**DFT690R2WD50M**	69,00	73,00	205,0	140,0	3,6	DFT1105..
–	–	**DFT700R2WD50M**	70,00	71,00	205,0	140,0	3,6	DFT1105..
–	–	**DFT710R2WD50M**	71,00	72,00	205,0	140,0	3,9	DFT1105..
–	–	**DFT720R2WD50M**	72,00	73,00	205,0	140,0	3,9	DFT1105..
–	–	**DFT730R2WD50M**	73,00	79,00	205,0	140,0	4,0	DFT1105..
–	–	**DFT740R2WD50M**	74,00	75,00	205,0	140,0	4,1	DFT1105..
–	–	**DFT750R2WD50M**	75,00	76,00	205,0	140,0	4,2	DFT1105..
–	–	**DFT760R2WD50M**	76,00	77,00	205,0	140,0	4,2	DFT1105..
–	–	**DFT770R2WD50M**	77,00	78,00	205,0	140,0	4,3	DFT1105..
–	–	**DFT780R2WD50M**	78,00	79,00	205,0	140,0	4,3	DFT1105..
–	–	**DFT790R2WD50M**	79,00	82,00	205,0	140,0	4,4	DFT1105..
–	–	**DFT800R2WD50M**	80,00	81,00	205,0	140,0	4,5	DFT1105..
–	–	**DFT810R2WD50M** *	81,00	82,00	205,0	140,0	4,5	DFT1105..
–	–	**DFT820R2WD50M**	82,00	83,00	205,0	140,0	4,5	DFT1105..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

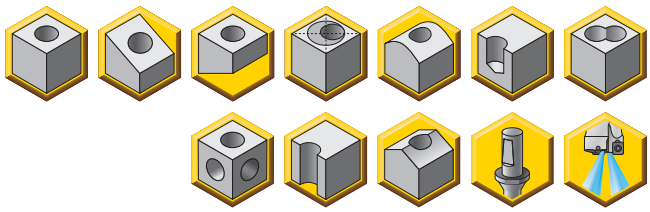
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

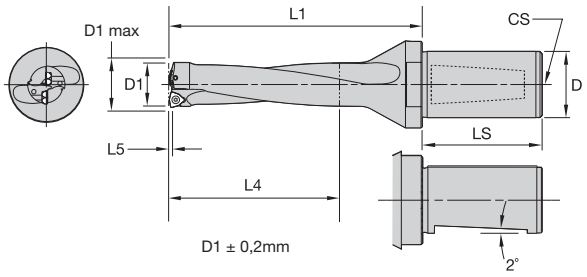



gage insert	insert screw	Torx wrench	Torx size
DFT05T3..	**191.924**	**170.024**	9
DFT06T3..	**191.848**	**170.025**	15
DFT0704..	**191.698**	**170.025**	15
DFT0905..	**191.726**	**170.026**	20
DFT1105..	**191.375**	**170.026**	20

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J85 and J87–J88 for inserts.







WN/WD Shank • 4 x D • Metric

D							
32	40	D1	D1 max	L1	L4 max	L5	gage insert
DFT250R4WD32M	**DFT250R4WD40M**	25,00	27,00	135,0	100,0	0,8	DFT05T3..
DFT260R4WD32M	**DFT260R4WD40M**	26,00	27,00	139,0	104,0	0,9	DFT05T3..
DFT270R4WD32M	**DFT270R4WD40M**	27,00	29,00	143,0	108,0	1,0	DFT05T3..
DFT280R4WD32M	**DFT280R4WD40M**	28,00	29,00	156,0	112,0	1,1	DFT05T3..
DFT290R4WD32M	**DFT290R4WD40M**	29,00	31,00	151,0	116,0	1,1	DFT05T3..
DFT300R4WD32M	**DFT300R4WD40M**	30,00	31,00	160,0	120,0	1,2	DFT05T3..
DFT310R4WD32M	**DFT310R4WD40M**	31,00	33,00	164,0	124,0	1,3	DFT05T3..
DFT320R4WD32M	**DFT320R4WD40M**	32,00	33,00	168,0	128,0	1,3	DFT05T3..
–	**DFT330R4WD40M**	33,00	35,00	177,0	132,0	1,1	DFT06T3..
–	**DFT340R4WD40M**	34,00	35,00	181,0	136,0	1,3	DFT06T3..
–	**DFT350R4WD40M**	35,00	38,00	185,0	140,0	1,3	DFT06T3..
–	**DFT360R4WD40M**	36,00	37,00	189,0	144,0	1,4	DFT06T3..
–	**DFT370R4WD40M**	37,00	38,00	198,0	148,0	1,5	DFT06T3..
–	**DFT380R4WD40M**	38,00	41,00	202,0	152,0	1,5	DFT06T3..
–	**DFT390R4WD40M**	39,00	40,00	206,0	156,0	1,6	DFT06T3..
–	**DFT400R4WD40M**	40,00	41,00	210,0	160,0	1,7	DFT06T3..
–	**DFT410R4WD40M**	41,00	44,00	214,0	164,0	1,6	DFT0704..
–	**DFT420R4WD40M**	42,00	43,00	223,0	168,0	1,7	DFT0704..
–	**DFT430R4WD40M**	43,00	44,00	227,0	172,0	1,7	DFT0704..
–	**DFT440R4WD40M**	44,00	47,00	231,0	176,0	1,8	DFT0704..
–	**DFT450R4WD40M**	45,00	46,00	240,0	180,0	1,9	DFT0704..
–	**DFT460R4WD40M**	46,00	47,00	244,0	184,0	1,9	DFT0704..
–	**DFT470R4WD40M**	47,00	50,00	248,0	188,0	2,0	DFT0704..
–	**DFT480R4WD40M**	48,00	49,00	252,0	192,0	2,0	DFT0704..

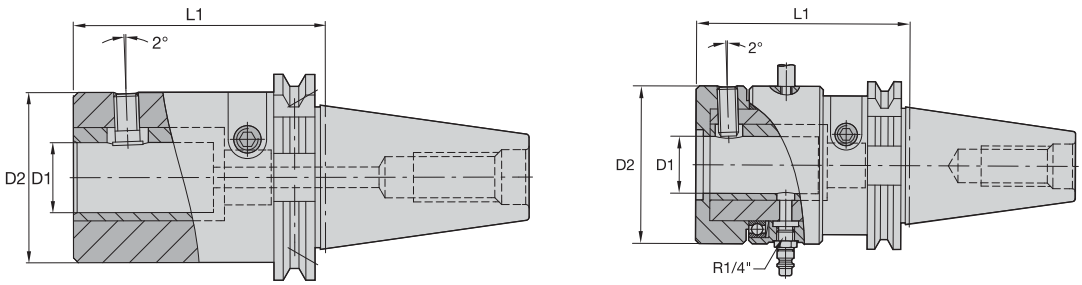
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.





gage insert	insert screw	Torx wrench	Torx size
DFT05T3..	**191.924**	**170.024**	9
DFT06T3..	**191.848**	**170.025**	15
DFT0704..	**191.698**	**170.025**	15

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP

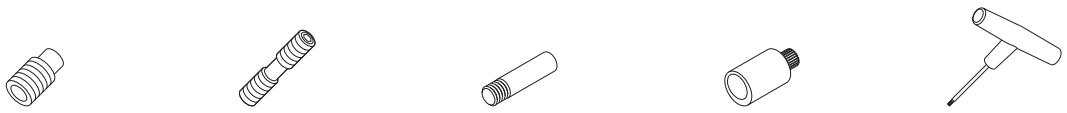


Drill Fix Chucks • Eccentric Adjustment Mechanism

				SK 40		SK 50				
catalogue number	D1	D2	L1	DIN 69871 A	MAS 403 BT	DIN 69871 A	MAS 403 BT	coolant ring	kg	lbs
BT40BEWD20096M	20,00	63.000	96.000	–	●	–	–	–	3.00	6.6
DV40BEWD20090M	20,00	63.000	96.000	●	–	–	–	–	3.00	6.6
DV50BEWD32108M	32,00	63.000	108.000	–	–	●	–	–	4.30	9.5
BT50BEWD32127M	32,00	63.000	108.000	–	–	–	●	–	4,3	9.5
DV40BEWD32108M	32,00	63.000	108.000	●	–	–	–	–	4.00	8.8
BT40BEWD32114M	32,00	63.000	114.000	–	●	–	–	–	3.40	7.5
BT40RMEWD32114M	32,00	90.000	114.000	–	●	–	–	●	4.00	8.8
DV50RMEWD32108M	32,00	90.000	108.000	–	–	●	–	●	6.90	15.2

NOTE: n_{max}: 4800 U/min
Pmax: 20 bar

With Coolant Ring



D1	clamping screw	adjusting screw	bumper bar	eccentric bushing	dial key
32	**192.941**	**570.850**	**169.974**	**536.088**	**170.236**

Without Coolant Ring



D1	clamping screw	adjusting screw	eccentric bushing	dial key
20	**193.203**	**570.850**	**536.090**	**170.236**
32	**193.204**	**570.850**	**536.091**	**170.236**

SAFETY NOTE: Use only the supplied plug-in nipple with nominal breakage point: R 6,35mm, catalogue number 191.469.
Intermediate sleeve with dial key included (for coolant ring version, use dial key, bumper bar, and plug-in nipple with predetermined breaking point).

Drill Fix™ DFT™ • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 16–24mm	DFT05 25–32mm	DFT06 32–40mm	DFT07 41–48mm	DFT09... 49–68mm	DFT11 69–82mm
P	0	S	O	DS	KCU40	280	**300**	320	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,17–0,27
			I	DS	KCU40										
		U	O	DS	KCU40	200	**215**	230	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,17–0,27
			I	DS	KCU40										
		I	O	DS	KCU40	130	**135**	150	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,19–0,31
			I	DS	KCU40										
	1	S	O	MD	KCU25	310	**325**	360	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,19–0,31
			I	MD	KC7140										
		U	O	MD	KCU25	200	**215**	230	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	MD	KC7140										
		I	O	MD	KCU40	130	**135**	150	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	MD	KC7140										
	2	S	O	HP	KCPK10	310	**325**	360	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		U	O	HP	KCU25	200	**215**	230	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
	3	S	O	HP	KCPK10	260	**285**	320	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		U	O	HP	KCU25	180	**195**	220	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		I	O	HP	KCU40	110	**120**	140	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
	4	S	O	HP	KCU25	220	**250**	300	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		U	O	HP	KCU40	150	**180**	220	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		I	O	HP	KC7140	90	**110**	140	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
	5	S	O	HP	KCU25	180	**200**	220	mm/r	0,06–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,06–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
	6	S	O	HP	KCU25	180	**200**	220	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
M	1	S	O	DS	KCU40	150	**190**	230	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		U	O	DS	KCU40	100	**130**	160	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										
	2	S	O	DS	KCU40	150	**180**	210	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		U	O	MD	KCU40	100	**130**	160	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										
	3	S	O	DS	KCU40	100	**130**	160	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		U	O	HP	KCU40	80	**110**	140	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	HP	KC7140										
		I	O	MD	KC7140	50	**70**	90	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFT™ • Metric

Metric															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter						
						min	Starting Value	max	Ø	DFT03 16–24mm	DFT05 25–32mm	DFT06 32–40mm	DFT07 41–48mm	DFT09... 49–68mm	DFT11 69–82mm
K	1	S	O	HP	KCPK10	200	**240**	300	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		U	O	HP	KCU25	120	**155**	200	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		I	O	HP	KCU40	80	**100**	125	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
	2	S	O	HP	KCPK10	180	**220**	260	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
		I	O	HP	KCU40	80	**100**	120	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
	3	S	O	HP	KCPK10	180	**220**	260	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
		I	O	HP	KCU40	80	**100**	120	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
N	1	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	300	**400**	500	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	2	S	O	ST	KD1425	375	**550**	775	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	175	**250**	325	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	3	S	O	ST	KD1425	350	**500**	650	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	150	**250**	350	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	4	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	5	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	6	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFT™ • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 16–24mm	DFT05 25–32mm	DFT06 32–40mm	DFT07 41–48mm	DFT09... 49–68mm	DFT11 69–82mm
S	1	S	O	HP	KCU40	60	**70**	75	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KCU40										
		U	O	HP	KCU40	40	**50**	60	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KC7140										
		I	O	MD	KC7140	25	**30**	40	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	MD	KC7140										
	2	S	O	HP	KCU40	50	**60**	70	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	HP	KCU40										
		U	O	HP	KCU40	30	**40**	50	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,06–0,1	0,09–0,15	0,09–0,15
			I	HP	KC7140										
		I	O	MD	KC7140	25	**30**	40	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	MD	KC7140										
	3	S	O	HP	KCU40	70	**80**	90	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KCU40										
		U	O	HP	KCU40	50	**60**	70	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KCU40										
		I	O	MD	KC7140	30	**40**	50	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	MD	KC7140										
	4	S	O	HP	KCU40	70	**80**	90	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	HP	KCU40										
		U	O	HP	KCU40	50	**60**	70	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,06–0,1	0,09–0,15	0,09–0,15
			I	HP	KCU40										
		I	O	MD	KC7140	30	**40**	50	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	MD	KC7140										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

The Most Cost-Effective
Way to Drill a Hole...

Indexable Drilling with Drill Fix™ DFSP™





COST-EFFECTIVE INSERTS

Versatile squared outboard inserts have four economic cutting edges to achieve high metal removal rates and excellent chip evacuation.

ONE COMPREHENSIVE PLATFORM

Standard diameter range covering 14–55mm (.551–2.125") in 2 x D, 3 x D, 4 x D, and 5 x D.

WIDE RANGE OF MATERIALS

P M K N S

APPLICATION CAPABILITIES

Drilling into Solid	Drilling: Inclined Entry	Drilling: Inclined Exit	Drilling: X-Offset	Drilling: Convex
Drilling: Blind	Chain Drilling	Drilling: Cross Hole	Drilling: Half Cylinder	Drilling: Corner Drilling 45°

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HTS Series Indexable Deep-Hole Drilling System

Primary Application

HTS series indexable drills are designed for deep-hole drilling up to 10 x D in steel, stainless steel, ductile iron, cast iron, and non-ferrous materials. The two HTS systems — HTS and HTS-R — cover a diameter range of 40–270mm (1.575–10.629").



Features and Benefits

HTS Indexable Drill System

- Large diameter range from 45–270mm (1.750–10.629") with standard drill heads.
- Drill Fix™ DFT™ trigon inserts as outboard and inboard insert offer the best centring capabilities; square-outboard insert cartridges offer increased surface and hole quality.
- Various insert geometries and grades available as standard.
- Adjust drilling depth and diameter range with suitable extensions and reducers.
- Diameter adjustment by shortening outer cartridge.
- Customised drilling heads up to 540mm (21.259").



HTS-R Indexable Drill System

- Modular system uses drill heads equipped with DFR™ insert cartridges.
- Five drill heads cover the diameter range 40–55mm (1.575–2.165").
- Drill Fix™ DFR rectangular inboard and outboard inserts offer the highest feed rates at small diameters.
- Various insert geometries and grades available as standard.
- Adjust drilling depth and diameters by using extensions and reducers.
- Diameter adjustment by shortening outer cartridge.

HTS Indexable Drill System

The HTS indexable drill system is one of the most reliable deep-hole drilling systems available. Drilling up to 10 x D can be easily achieved in materials like steel, stainless steel, ductile iron, cast iron, and non-ferrous materials. Various drilling heads cover the diameter range 45–270mm (1.77–10.63").

HTS drill heads are equipped with pilot drills and cartridges using trigon-shaped Drill Fix™ DFT™ inserts. Use HTS extensions and reducers to achieve various diameters and depths of drilling.

For improved surface qualities and increased reliability, finishing HTS cartridges with a squared-outboard insert are available as standard.

Features and Benefits

Productivity

- Achieve high hole accuracy by using pilot drills and trigon-shaped inserts.
- Benefit from improved surface qualities using finishing cartridges with squared-outboard inserts.
- Adjust outer cartridge to desired cutting diameter, reducing inventory.
- Same insert size is used in each insert cartridge, reducing inventory costs.

Versatility

- Diameter range covering 45–270mm (1.77–10.63").
- L/D ratio up to 10 x D as standard.
- Inserts and pilot drills can be used with various heads and cartridges, covering various diameters.
- Large variety of DFT insert grades and geometries available.
- Finishing cartridge with squared-outboard insert offering four cutting edges for high process stability.
- Carbide pilot drills are available upon request.

Use HTS extensions and reducers to achieve various diameters and depths of drilling.

Customisation

- Wear pads can be added for increased stability.
- Fully engineered solutions available.
- Custom solutions covering diameter range up to 540mm (21.259") are possible.



HTS-R Indexable Drill System

HTS-R extends the HTS system by covering diameters between 40–55mm (1.575–2.165").

Up to 30% higher feed rates achievable with rectangular-shaped Drill Fix™ DFR™ inserts with the added benefit of improved chip control.

Features and Benefits

Productivity

- Benefit from better chip control and higher insert stability for longer tool body life.
- Same insert size is used in each insert cartridge.

Versatility

- Diameter range covering 40–55mm (1.575–2.165") with five drilling heads.
- Large variety of DFR insert grades and geometries available.
- Outer cartridges can be adjusted to the desired cutting diameter.
- Extensions and reducers are available as standard.
- Solid carbide and HSS pilot drills are available to match the cutting conditions of specific applications.

Benefit from better chip control and higher insert stability for longer tool body life.



Pilot drill should be installed and set to the proper length before installing the inner cartridge.



Install inner cartridge, then the outer insert.



Install inner insert into cartridge.

Customisation

- Wear pads can be added for increased stability.
- Fully engineered solutions available.



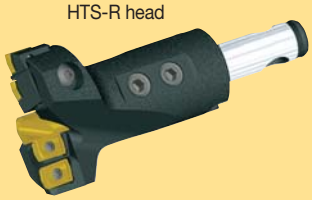
HTS-R


inner cartridge


pilot drill


outer cartridge

HTS-R head



HTS Ø 45–102mm


inner cartridge*

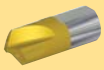

pilot drill


outer cartridge*

* for Ø 180–186mm:
2 inner and outer
cartridges are used

HTS Ø 102–170mm


inner cartridge


pilot drill


outer cartridge

HTS Ø 195–270mm


inner cartridge


pilot drill


outer cartridge

HTS with SPHX outboard insert


inner cartridge

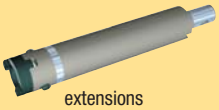

pilot drill

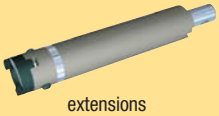

outer cartridge**

** for Ø 102–170mm & Ø 195–240mm:
the outer cartridge uses 3 inserts

HTS head




extensions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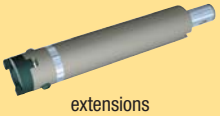
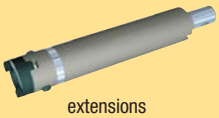

extensions


extensions


reducer


reducer

WARNING
- **DO NOT exceed 2 extensions or 1 extension plus reducer.**


DV


BT


CV with rotary ring


CV


HSK


KM™


HTS coolant coupling

HTS-R



inner cartridge



pilot drill



outer cartridge

HTS-R head



HTS Ø 45–102mm



inner cartridge*



pilot drill



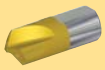
outer cartridge*

* for Ø 180–186mm:
2 inner and outer
cartridges are used

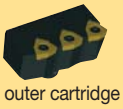
HTS Ø 102–170mm



inner cartridge



pilot drill



outer cartridge

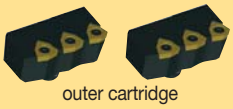
HTS Ø 195–270mm



inner cartridge



pilot drill

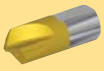


outer cartridge

HTS with SPHX outboard insert



inner cartridge



pilot drill

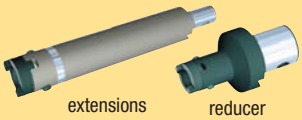


outer cartridge**

** for Ø 102–170mm & Ø 195–240mm:
the outer cartridge uses 3 inserts

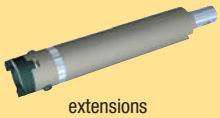
HTS head





extensions

reducer



extensions



reducer



basic shanks



DV



BT



BT with coolant ring



CV

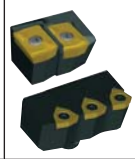
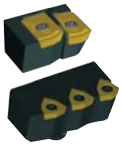


CV with coolant ring

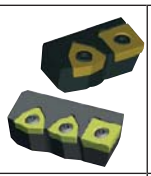
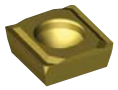


HSK

To assemble your HTS(-R) head, choose the desired drill diameter range from the left-hand column.
Next, follow the columns to the right, and select the appropriate component from each column to complete your HTS(-R) head.

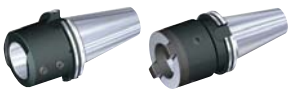
						HTS(-R) head with DFR™/DFT™ inserts								
						inner cartridge				outer cartridge				
	drilling range			L1										
	mm	in	HTS head	mm	in	cartridge	n	insert	n	cartridge	n	insert	n	pilot drill
HTS heads with DFR inserts	40–43	1.57–1.69	HTSR040R025M	60	2.36	HTSR10CI	1	DFR0302.	2	HTSR10CE	1	DFR0302.	2	B513S08.
	43–46	1.69–1.81	HTSR043R025M	70	2.76	HTSR11CI	1	DFR0302.	2	HTSR11CE	1	DFR0302.	2	B513S10.
	46–49	1.81–1.93	HTSR046R028M			HTSR12CI	1	DFR0403.	2	HTSR12CE	1	DFR0403.	2	B513S10.
	49–52	1.93–2.05	HTSR049R028M			HTSR13CI	1	DFR0403.	2	HTSR13CE	1	DFR0403..	2	B513S10.
	52–55	2.05–2.17	HTSR052R028M			HTSR14CI	1	DFR0403.	2	HTSR14CE	1	DFR0403..	2	B513S10.
HTS heads with DFT/SPHX inserts	45–50	1.77–1.97	3.76045R028V	50	1.97	3.77000R050V	1	DFT0303.	2	3.77000R051V	1	DFT0303.	2	B510S08.
	50–55	1.97–2.17	3.76050R028V			3.77000R052V	1	DFT0303.	2	3.77000R053V	1	DFT0303.	2	B510S08.
	55–58	2.17–2.28	3.76055R032V	60	2.36	3.77000R038V	1	DFT05T3.	2	3.77000R039V	1	DFT05T3.	2	B510S08.
	58–63	2.28–2.48	3.76058R032V			3.77000R023V	1	DFT05T3.	2	3.77000R024V	1	DFT05T3.	2	B510S10.
	63–68	2.48–2.68	3.76063R032V			3.77000R025V	1	DFT05T3.	2	3.77000R024V	1	DFT05T3.	2	B510S10.
	63–68	2.48–2.68	**3.76063R040V***	70	2.76	3.77000R025V	1	DFT05T3.	2	3.77000R024V	1	DFT05T3.	2	B510S10.
	68–73	2.68–2.87	3.76068R040V			3.77000R026V	1	DFT05T3.	2	3.77000R027V	1	DFT05T3.	2	B510S10.
	73–78	2.87–3.07	3.76073R040V			3.77000R026V	1	DFT05T3.	2	3.77000R027V	1	DFT05T3.	2	B510S15.
	78–84	3.07–3.31	3.76078R040V			3.77000R028V	1	DFT06T3.	2	3.77000R029V	1	DFT06T3.	2	B510S15.
	78–84	3.07–3.31	**3.76078R048V***	70	2.76	3.77000R028V	1	DFT06T3.	2	3.77000R029V	1	DFT06T3.	2	B510S15.
	84–90	3.31–3.54	3.76084R048V			3.77000R028V	1	DFT06T3.	2	3.77000R029V	1	DFT06T3.	2	B510S15.
	90–94°	3.54–3.70	3.76090R048V			–	–	–	–	–	–	–	–	–
	90–96	3.54–3.78	3.76090R048V			3.77000R030V	1	DFT06T3.	2	3.77000R031V	1	DFT06T3.	2	B510S15.
	96–100°	3.78–3.93	3.76096R048V			–	–	–	–	–	–	–	–	–
	96–102	3.78–4.02	3.76096R048V			3.77000R030V	1	DFT06T3.	2	3.77000R031V	1	DFT06T3.	2	B510S20.
	96–100°	3.78–3.93	**3.76096R058V***	80	3.15	–	–	–	–	–	–	–	–	–
	96–102	3.78–4.02	**3.76096R058V***			3.77000R030V	1	DFT06T3.	2	3.77000R031V	1	DFT06T3.	2	B510S20.
	102–108	4.02–4.25	3.76102R058V			3.77000R081V	1	DFT05T3.	3	3.77000R082V	1	DFT05T3.	3	B510S20.
	108–115	4.25–4.53	3.76108R058V			3.77000R083V	1	DFT06T3.	3	3.77000R084V	1	DFT06T3.	3	B510S20.
	115–122	4.53–4.80	3.76115R070V	90	3.54	3.77000R085V	1	DFT06T3.	3	3.77000R086V	1	DFT06T3.	3	B510S25.
	122–130	4.80–5.12	3.76122R070V			3.77000R079V	1	DFT06T3.	3	3.77000R080V	1	DFT06T3.	3	B510S25.
	130–140	5.12–5.51	3.76130R070V			3.77000R087V	1	DFT06T3.	3	3.77000R088V	1	DFT06T3.	3	B510S25.
	140–150	5.51–5.91	3.76140R080V	100	3.94	3.77000R077V	1	DFT0704.	3	3.77000R078V	1	DFT0704.	3	B510S25.
	150–158	5.91–6.22	3.76150R080V			3.77000R075V	1	DFT0704.	3	3.77000R076V	1	DFT0704.	3	B510S25.
	158–162	6.22–6.38	3.76158R080V			3.77000R073V	1	DFT0704.	3	3.77000R074V	1	DFT0704.	3	B510S25.
	162–170	6.38–6.70	3.76162R080V			3.77000R048V	1	DFT0704.	3	3.77000R049V	1	DFT0704.	3	B510S30.
	180–184°	7.08–7.24	3.76180R110	125	4.92	–	–	–	–	–	–	–	–	–
	180–186	7.08–7.32	3.76180R110			3.77000R030V	3	DFT06T3.	4	3.77000R031V	1	DFT06T3.	4	B510S30.
	195–201	7.68–7.91	3.76195R110			3.77000R081V	3	DFT05T3.	6	3.77000R082V	1	DFT05T3	6	B510S30.
	213–220	8.39–8.66	3.76213R125			3.77000R083V	3	DFT06T3.	6	3.77000R084V	1	DFT06T3.	6	B510S30.
	230–240	9.06–9.45	3.76230R160	150	5.91	3.77000R079V	2	DFT06T3.	6	3.77000R080V	2	DFT06T3.	6	B510S30.
	260–270	10.24–10.63	3.76260R160			3.77000R077V	2	DFT06T3.	6	3.77000R078V	2	DFT06T3.	6	B510S30.

° Decreased diameter range by using SPHX insert in exterior cartridge.
* Drill heads with reinforced body for short-chipping materials.
n = Required quantity.

	HTS head with DFT™ inserts and SPHX outboard insert												
	inner cartridge						outer cartridge						
													
	cartridge	n	cartridge	n	insert	n	cartridge	n	insert	n	insert	n	pilot drill
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R250V	1	–	–	DFT0303.	2	3.77000R251V	1	DFT0303.	1	SPHX0703.	1	B510S08.
	3.77000R252V	1	–	–	DFT0303.	2	3.77000R253V	1	DFT0303.	1	SPHX0703.	1	B510S08.
	3.77000R038V	1	–	–	DFT05T3.	2	3.77000R239V	1	DFT05T3.	1	SPHX0903.	1	B510S08.
	3.77000R023V	1	–	–	DFT05T3.	2	3.77000R224V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R025V	1	–	–	DFT05T3.	2	3.77000R224V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R025V	1	–	–	DFT05T3.	2	3.77000R224V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R026V	1	–	–	DFT05T3.	2	3.77000R227V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R026V	1	–	–	DFT05T3.	2	3.77000R227V	1	DFT05T3.	1	SPHX0903.	1	B510S15.
	3.77000R028V	1	–	–	DFT06T3.	2	3.77000R229V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	3.77000R028V	1	–	–	DFT06T3.	2	3.77000R229V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	3.77000R228V	1	–	–	DFT06T3.	2	3.77000R229V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	3.77000R230V	1	–	–	DFT06T3.	2	3.77000R231V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R230V	1	–	–	DFT06T3.	2	3.77000R231V	1	DFT06T3.	1	SPHX0903.	1	B510S20.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R230V	1	–	–	DFT06T3.	2	3.77000R231V	1	DFT06T3.	1	SPHX0903.	1	B510S20.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R081V	1	–	–	DFT05T3.	3	3.77000R282V	1	DFT05T3.	2	SPHX0903.	1	B510S20.
	3.77000R083V	1	–	–	DFT06T3.	3	3.77000R284V	1	DFT06T3.	2	SPHX1204.	1	B510S20.
	3.77000R085V	1	–	–	DFT06T3.	3	3.77000R286V	1	DFT06T3.	2	SPHX1204.	1	B510S25.
	3.77000R079V	1	–	–	DFT06T3.	3	3.77000R280V	1	DFT06T3.	2	SPHX1204.	1	B510S25.
	3.77000R087V	1	–	–	DFT06T3.	3	3.77000R288V	1	DFT06T3.	2	SPHX1204.	1	B510S25.
	3.77000R077V	1	–	–	DFT0704.	3	3.77000R278V	1	DFT0704.	2	SPHX1505.	1	B510S25.
	3.77000R075V	1	–	–	DFT0704.	3	3.77000R276V	1	DFT0704.	2	SPHX1204.	1	B510S25.
	3.77000R073V	1	–	–	DFT0704.	3	3.77000R274V	1	DFT0704.	2	SPHX1204.	1	B510S25.
	3.77000R248V	1	–	–	DFT0704.	3	3.77000R249V	1	DFT0704.	2	SPHX1505.	1	B510S30.
	3.77000R230V	3	–	–	DFT06T3.	4	3.77000R231V	1	DFT06T3.	3	SPHX0903.	1	B510S30.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R081V	3	–	–	DFT05T3.	9	3.77000R282V	1	DFT05T3.	2	SPHX0903.	1	B510S30.
	3.77000R083V	3	–	–	DFT06T3.	9	3.77000R284V	1	DFT06T3.	2	SPHX1204.	1	B510S30.
	3.77000R079V	2	3.77000R080V	1	DFT06T3.	9	3.77000R280V	1	DFT06T3.	2	SPHX1204.	1	B510S30.
	–	–	–	–	–	–	–	–	–	–	–	–	B510S30

HTS Tool Assembly Combinations

- Select your appropriate drill diameter range.
- Choose the appropriate adaptor and shank size.
- Follow the columns to the right, and select the appropriate components from each column to complete your HTS(-R) tool.

	drilling range		shank		DV		BT		CV		HSK	
												
					assembly details		assembly details		assembly details		assembly details	
	mm	in		D1	40	50	40	50	40	50	50/63/100	
HTS heads with DFR™ inserts	40–43 43–46	1.57–1.69 1.69–1.81	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	BT40BWD32070M	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	HSK50ASWN32110M HSK63ASWN32090M HSK100ASWN32100M	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	–	
			SS(F)	1.50	–	–	–	–	CV40BSSF150575	CV50SS150400 (AD) CV50SS150600 (AD) CV50SS150800 (AD) CV50BSSF150450	–	
	46–49 49–52 52–55	1.81–1.93 1.93–2.05 2.05–2.17	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	–	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	–	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	–	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
HTS heads with DFT™/SPHX inserts	45–50 50–55	1.77–1.97 1.97–2.17	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	BT40BWD32070M	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	HSK50ASWN32110M HSK63ASWN32090M HSK100ASWN32100M	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
	55–58 58–63 63–68	2.17–2.28 2.28–2.48 2.48–2.68	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	BT40BWD32070	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	HSK50ASWN32110M HSK63ASWN32090M HSK100ASWN32100M	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
	63–68* 68–73 73–78 78–84	2.48–2.68 2.68–2.87 2.87–3.07 3.07–3.31	WD/ WN	50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	V50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	

* HTS drilling head with reinforced body for short-chipping materials.
** Adaptor with coolant ring.
The shown combinations are not complete. Ask your Kennametal representative to get the most reasonable solution for your application.
Please note that the assembled total length of the drilling tool is not necessarily the total achievable drilling depth.

	KM™	basic shank				reducer					extension			HTS head
														
	assembly details		L4		L4		L1		for use with coolant adaptor			L1		
	80	metric	mm	inch	in		mm	in	coolant adaptor	shell mill DV/BT		mm	in	
	–	5.34032–025115 5.34032–025200	110 195	–	–	–	–	–	–	–	5.34125R025150	160	6.30	HTSR040R025M HTSR043R025M
	–	5.34050–025300 5.34050–025450	270 420	–	–	–	–	–	–	–				
	–	–	–	SSF150HTS130239 SSF150HTS130664 SSF150HTS131114 SSF150HTS131764	.39 4.65 9.14 15.64	–	–	–	–	–				
	–	5.34032–028115 5.34032–028200	110 195	–	–	–	–	–	–	–	5.34128R028150	160	6.30	HTSR046R028M HTSR049R028M HTSR052R028M
	–	5.34050-028300 5.34050-028450	265 415	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS130239 SSF200HTS130664 SSF200HTS131114 SSF200HTS131764	.39 4.65 9.14 15.64	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R028080	90	3.54	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34032–025115 5.34032–025200	110 195	–	–	–	–	–	–	–	5.34128R028150	160	6.30	3.76045R028V 3.76050R028V
	–	5.34050–028300 5.34050–028450	265 415	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS130239 SSF200HTS130664 SSF200HTS131114 SSF200HTS131764	.39 4.65 9.14 15.64	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R028080	90	3.54	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34032–032125	120	–	–	–	–	–	–	–	5.34132R032100 5.34132R032200	110 210	4.33 8.27	3.76055R032V 3.76058R032V 3.76063R032V
	–	5.34050-032500 5.34050-032350 5.34050-032350	165 315 465	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS160239 SSF200HTS160714 SSF200HTS161214 SSF200HTS161964	.39 5.14 10.14 17.64	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R032080	90	3.5	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34050–040148 5.34050–040300 5.34050–040450 5.34050–040600	140 267 417 567	–	–	–	–	–	–	–	5.34140R040200	212	8.35	3.76063R040V* 3.76068R040V 3.76073R040V 3.76078R040V
	–	–	–	SSF200HTS220297 SSF200HTS220922 SSF200HTS221572 SSF200HTS222572	.47 7.22 13.72 23.72	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R040080	90	3.62	5.34350–090100	DV50SM60070M BT50SM60090M				

(continued)

(HTS Tool Assembly Combinations — continued)

HTS Tool Assembly Combinations

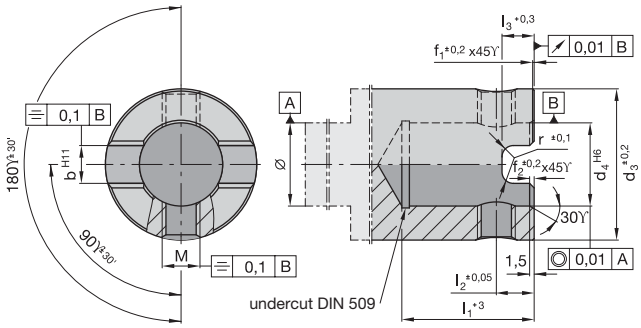
- Select your appropriate drill diameter range.
- Choose the appropriate adaptor and shank size.
- Follow the columns to the right, and select the appropriate components from each column to complete your HTS(-R) tool.

	drilling range		shank		DV assembly details		BT assembly details		CV assembly details		HSK assembly details	
	mm	in		D1	40	50	40	50	40	50	50/63/100	
HTS heads with DFT™/SPHX inserts	**78–84*** 84–90 90–96 96–102	3.07–3.31 3.31–3.54 3.54–3.70 3.78–4.02	WD/ WN	50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
	96–102* 102–108 108–115	3.78–4.02 4.02–4.25 4.25–4.53	WD/ WN	50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
	115–122 122–130 130–140	4.53–4.80 4.80–5.12 5.12–5.51	SS(F)	40	–	–	–	–	–	CV50SS250800	–	
			HTS	40	5.36050154040	–	BT50BHTS40080M	–	CV50BHTS40M314 **CV50RMHTS40M412****	–	HSK100AHTS40085M	
				50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	HSK100AHTS50090M	
	140–150 150–158 158–162 162–170	5.51–5.91 5.91–6.22 6.22–6.38 6.38–6.70	HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	HSK100AHTS50090M	
	180–186 195–201 213–220	7.08–7.32 7.68–7.91 8.39–8.66	customised solutions available upon request									
	230–240 260–270	9.06–9.45 10.24–10.63	customised solutions available upon request									

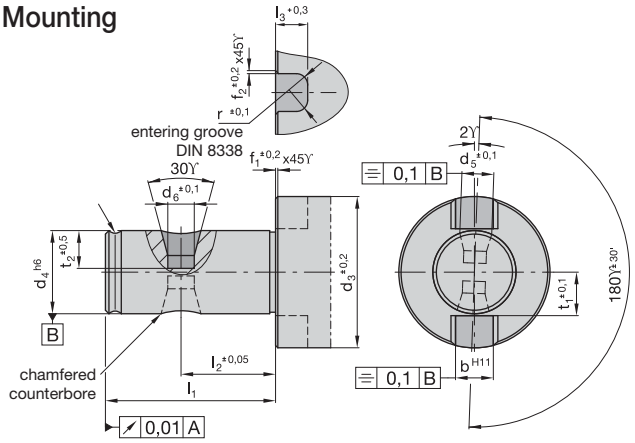
* HTS drilling head with reinforced body for short-chipping materials.
** Adaptor with coolant ring.
The shown combinations are not complete. Ask your Kennametal representative to get the most reasonable solution for your application.
Please note that the assembled total length of the drilling tool is not necessarily the total achievable drilling depth.

	KM™	basic shank				reducer					extension			HTS head
														
	assembly details		L4		L4		L1		for use with coolant adaptor			L1		
	80	metric	mm	inch	in		mm	in	coolant adaptor	shell mill DV/BT		mm	in	
	–	5.34050–048168 5.34050–048300 5.34050–048450 5.34050–048600	160 267 417 567	–	–	–	–	–	–	–	5.34140R048200	212	8.35	**3.76078R048V*** 3.76084R048V 3.76090R048V 3.76096R048V
	–	–	–	SSF200HTS270297 SSF200HTS271122 SSF200HTS271922 SSF200HTS273122	1.47 9.22 17.22 29.22	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R048080	92	3.62	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34050–058186 5.34050–058300 5.34050–058450 5.34050–058600	180 254 404 554	–	–	–	–	–	–	–	5.34158R058300	314	12.36	**3.76096R058V*** 3.76102R058V 3.76108R058V
	–	–	–	SSF200HTS160239 SSF200HTS160714 SSF200HTS161214 SSF200HTS161964	.39 5.14 10.14 17.64	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R058080	94	3.70	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	–	–	SSF250HTS400355 SSF250HTS401055 SSF250HTS401555 SSF250HTS402555	1.63 8.21 13.21 23.21	–	–	–	–	–	–	–	–	3.76115R070V 3.76122R070V 3.76130R070V
	KM80ATCHTS40085M KM80ATCHTS40100M	–	–	–	–	5.34280R070150	164	6.45	5.34350–090100	DV50SM60070M BT50SM60090M	5.34170R070300 5.34170R070500	314 514	12.36 20.24	
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	SSF300HTS500413 SSF300HTS501313 SSF300HTS502113 SSF300HTS503113	1.87 10.55 18.55 28.55	–	–	–	5.34350–090100	DV50SM60070M BT50SM60090M	5.34180R080204 5.34180R080300 5.34180R080500	220 316 516	8.66 12.44 20.32	3.76140R080V 3.76150R080V 3.76158R080V 3.76162R080V
customised solutions available upon request														3.76180R110 3.76195R110 3.76213R125
customised solutions available upon request														3.76230R160 3.76260R160

Adaptor



Mounting



Adaptor Dimensions

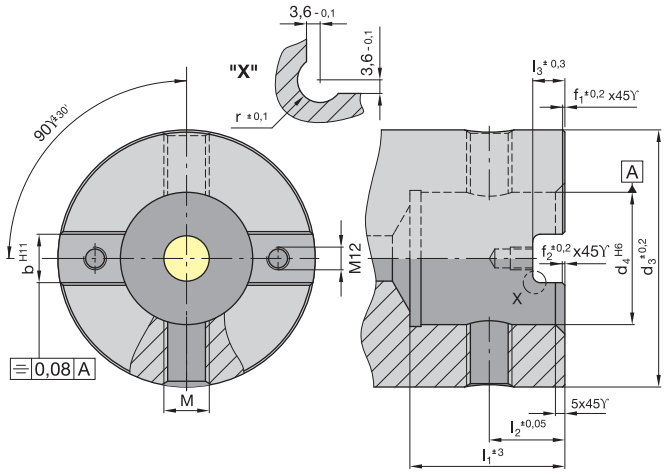


d3	d4	l1	l2	l3	M	b	r	f1	f2	drive ring	clamping screw	thread	MAn* Nm	sliding block	clamping screw M 12 x 25 for sliding block
25	13	28	12,4	7,0	M8 x 1,0	8,0	3	0,5	0,5	**193.371**	**193.372**	M8 x 1,0	10	–	–
28	13	28	12,4	7,0	M8 x 1,0	8,0	3	0,5	0,5	**192.419**	**193.372**	M8 x 1,0	10	–	–
32	16	32	14,4	7,5	M8 x 1,0	8,0	3	0,5	0,5	**192.420**	**192.156**	M8 x 1,0	10	–	–
40	22	35	13,4	8,5	M10 x 1,0	10,0	3	0,5	0,5	**192.421**	**192.157**	M10 x 1,0	16	–	–
48	27	40	15,4	9,0	M12 x 1,0	12,0	3	1,0	1,0	**192.422**	**191.727**	M12 x 1,0	16	–	–
58	32	38	15,4	10,0	M12 x 1,0	14,0	3	1,0	1,0	**192.423**	**191.727**	M12 x 1,0	20	–	–
70	40	43	16,4	10,0	M16 x 1,5	16,0	3	1,0	1,0	**192.424**	**191.728**	M16 x 1,5	34	–	–
80	50	46	20,4	12,5	M16 x 1,5	18,0	4	1,0	1,0	**192.425**	**191.728**	M16 x 1,5	34	–	–
90	50	46	20,4	12,5	M16 x 1,5	18,0	4	1,0	1,0	**192.426**	**191.729**	M16 x 1,5	34	–	–
110	60	46	20,4	12,5	M16 x 1,5	20,0	4	1,0	1,0	**192.427**	**191.729**	M16 x 1,5	34	–	–
125 1)	60	77	40,0	12,5	M24 x 2,0	25,5	4	1,0	1,0	–	**193.107**	M24 x 2,0	120	**191.019**	**125.225**
140 1)	70	82	40,0	12,5	M24 x 2,0	25,5	4	1,0	1,0	–	**193.107**	M24 x 2,0	120	**191.019**	**125.225**
160 1)	80	82	40,0	12,5	M24 x 2,0	25,5	4	1,0	1,0	–	**193.107**	M24 x 2,0	120	**191.019**	**125.225**

* MAn = Clamping torque of clamping screw in Nm.

Mounting Dimensions

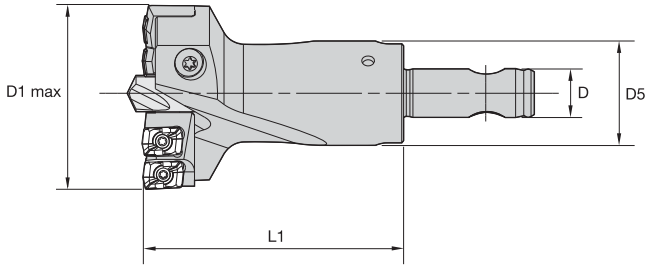
d3	d4	d5	d6	l1	l2	l3	t1	t2	b	r	f1	f2
25	13	8,50	6,5	35	22,0	7,00	6,7	6,50	8,0	3	0,5	0,5
28	13	8,50	6,5	35	22,0	7,00	7,0	6,50	8,0	3	0,5	0,5
32	16	8,30	6,5	40	24,0	7,50	8,5	7,50	8,0	3	0,5	0,5
40	22	10,50	7,0	45	25,0	8,50	11,5	10,00	10,0	3	0,5	0,5
48	27	12,75	9,0	50	27,0	9,00	14,0	12,00	12,0	3	1,0	1,0
58	32	11,50	9,0	50	29,0	10,00	16,5	7,25	14,0	3	1,0	1,0
70	40	15,25	12,2	55	30,0	10,50	20,5	10,00	16,0	3	1,0	1,0
80	50	15,25	12,2	60	36,0	12,50	25,5	12,50	18,0	4	1,0	1,0
90	50	16,50	12,2	60	36,0	12,50	25,5	12,50	18,0	4	1,0	1,0
110	60	14,50	12,2	60	36,0	13,65	30,5	10,00	20,0	4	1,0	1,0
125 1)	60	25,00	18,0	75	39,5	17,00	35,0	20,25	25,5	6	1,0	1,0
140 1)	70	25,00	18,0	80	39,5	17,00	42,0	20,25	25,5	6	1,0	1,0
160 1)	80	25,00	18,0	80	39,5	17,00	42,0	20,25	25,5	6	1,0	1,0



1) Adaptor for d3 = 125, 140, and 160

- Head shipped with clamping and adjusting screws.
- Order pilot drill and cartridges separately; see page J68 for pilot drill.





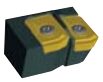


HTS Adjustable Heads with DFR™ Inserts









catalogue number	D1	D1 max	D5	D	L1	pilot drill HSS	pilot drill carbide	cartridge interior	n	cartridge exterior	n	gage insert	ni
HTSR040R025M	40	43	25	13A	60	B513S08..	B514S08..	**HTSR10CI**	1	**HTSR10CE**	1	DFR0302..	4
HTSR043R025M	43	46	25	13A	70	B513S10..	B514S10..	**HTSR11CI**	1	**HTSR11CE**	1	DFR0302..	4
HTSR046R028M	46	49	28	13B	70	B513S10..	B514S10..	**HTSR12CI**	1	**HTSR12CE**	1	DFR0403..	4
HTSR049R028M	49	52	28	13B	70	B513S10..	B514S10..	**HTSR13CI**	1	**HTSR13CE**	1	DFR0403..	4
HTSR052R028M	52	55	28	13B	70	B513S10..	B514S10..	**HTSR14CI**	1	**HTSR14CE**	1	DFR0403..	4

NOTE: n: number of cartridges required by head.
ni: number of inserts required by head.





D1 diameter		clamping screw	adjusting screw
mm	in		
40–42	1.57–1.68	**190.116**	**128.610**
43–52	1.69–2.05	**193.397**	**190.458**





HTS DFR Cartridges

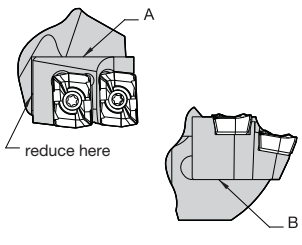




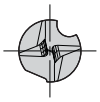


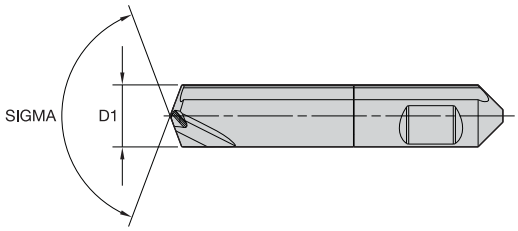
catalogue number	gage insert	Nm	ft. lbs.	insert screw	cartridge screw	washer
HTSR10CE	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR10CI	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR11CE	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR11CI	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR12CE	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR12CI	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR13CE	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR13CI	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR14CE	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR14CI	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**

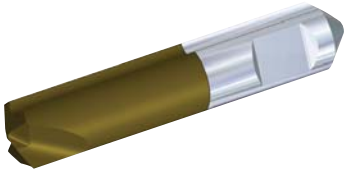
- Change drill diameter by shortening the outer cartridge.
- Shorten at 90° to the contact face A and the support face B.
- Shortening reduces the effective drill diameter by 2x the amount removed.



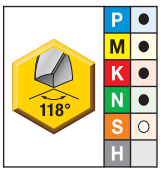
- Choose between HSS and solid carbide.

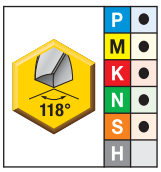


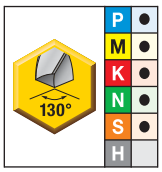




HTS DFR™ • Pilot Drills

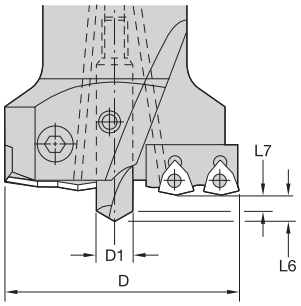






● first choice
○ alternate choice

high-speed steel uncoated	high-speed steel coated	solid carbide coated	
A30	AS3	KC7030	D1
B513S08000 A30	B513S08000 AS3	B514S08000 KC7030	8
B513S10000 A30	B513S10000 AS3	B514S10000 KC7030	10



HTS DFR • Pilot Drills

		high-speed steel				solid carbide			
D1		L6		L7		L6		L7	
mm	in	mm	in	mm	in	mm	in	mm	in
8,00	.315	4,14	.163	1,73	.068	3,61	.142	1,73	.068
10,00	.394	4,88	.192	1,88	.074	4,19	.165	1,88	.074

HTS DFR™ • Metric

Metric										
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter		
						min	Starting Value	max	Ø	DFR03... 40,00–46,00mm	DFR04 46,00–55,00mm
P	1	S	O	MD	KCU25	79	**190**	229	mm/r	0,10–0,14	0,12–0,18
			I	MD	KCU25						
		U	O	MD	KCU40	71	**130**	171	mm/r	0,10–0,14	0,12–0,18
			I	MD	KCU40						
		I	O	MD	KC7140	44	**80**	106	mm/r	0,10–0,14	0,12–0,18
			I	MD	KC7140						
	2	S	O	GD	KCU25	75	**180**	217	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU25						
		U	O	GD	KCU40	71	**120**	271	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU40						
		I	O	GD	KC7140	44	**70**	106	mm/r	0,10–0,14	0,12–0,18
			I	GD	KC7140						
	3	S	O	GD	KCU25	60	**140**	169	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU25						
		U	O	GD	KCU40	50	**100**	121	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU40						
		I	O	GD	KC7140	30	**60**	72	mm/r	0,10–0,14	0,12–0,18
			I	GD	KC7140						
	4	S	O	GD	KCU25	79	**120**	229	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU25						
		U	O	GD	KCU40	71	**100**	171	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU40						
		I	O	GD	KC7140	44	**80**	106	mm/r	0,10–0,14	0,12–0,18
			I	GD	KC7140						
	5	S	O	GD	KCU40	62	**100**	190	mm/r	0,06–0,11	0,07–0,14
			I	GD	KCU40						
		U	O	GD	KC7140	47	**60**	114	mm/r	0,06–0,11	0,07–0,14
			I	GD	KC7140						
		I	O	GD	KC7140	31	**40**	76	mm/r	0,06–0,11	0,07–0,14
			I	GD	KC7140						
	6	S	O	GD	KCU40	59	**95**	180	mm/r	0,07–0,11	0,08–0,13
			I	GD	KCU40						
		U	O	GD	KC7140	45	**57**	108	mm/r	0,07–0,11	0,08–0,13
			I	GD	KC7140						
		I	O	GD	KC7140	30	**38**	72	mm/r	0,07–0,11	0,08–0,13
			I	GD	KC7140						
M	1	S	O	MD	KCU40	40	**110**	134	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		U	O	MD	KC7140	31	**70**	86	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		I	O	MD	KC7140	22	**50**	61	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
	2	S	O	MD	KCU40	38	**99**	127	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		U	O	MD	KC7140	31	**63**	86	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		I	O	MD	KC7140	22	**45**	61	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
	3	S	O	MD	KCU40	32	**88**	107	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		U	O	MD	KC7140	31	**56**	86	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		I	O	MD	KC7140	22	**40**	61	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

HTS DFR™ • Metric

Metric										
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter		
						min	Starting Value	max	Ø	DFR03... 40,00–46,00mm	DFR04... 46,00–55,00mm
K	1	S	O	GD	KCPK10	79	**171**	229	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCPK10						
		U	O	LD	KCU25	64	**117**	156	mm/r	0,11–0,20	0,13–0,27
			I	LD	KCU25						
		I	O	LD	KCU40	40	**72**	96	mm/r	0,11–0,20	0,13–0,27
			I	LD	KCU40						
	2	S	O	GD	KCPK10	75	**162**	217	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCPK10						
		U	O	GD	KCU25	64	**111**	156	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCU25						
		I	O	LD	KCU40	40	**68**	96	mm/r	0,11–0,20	0,13–0,27
			I	LD	KCU40						
	3	S	O	GD	KCPK10	68	**146**	195	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCPK10						
		U	O	GD	KCU25	59	**100**	144	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCU25						
		I	O	GD	KCU40	35	**62**	84	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCU40						
N	1	S	O	ST	KD1425	128	**240**	358	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**160**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**104**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	2	S	O	ST	KD1425	119	**223**	333	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**149**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**97**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	3	S	O	ST	KD1425	110	**206**	308	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**138**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**89**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	4	S	O	ST	KD1425	119	**223**	333	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**149**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**97**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	5	S	O	ST	KD1425	92	**220**	262	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	72	**140**	167	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	46	**90**	107	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Difficult Applications Made Easy

Use DS and LP geometries to avoid bird nesting and long, stringy chips in low-carbon steel applications.



- The new DS insert style can be used on Drill Fix™ DFT™, HTS, and KSEM PLUS™ tooling systems.
- LP-style inserts can be used on Drill Fix DFSP™ as outboard inserts.
- Use the new geometries in all applications where long chips are an issue.

See pages J4–J50 for Drill Fix indexable drills.

See pages H80–H82 and H84–H101, and H106 for KSEM PLUS A1 and B1 head systems.

Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

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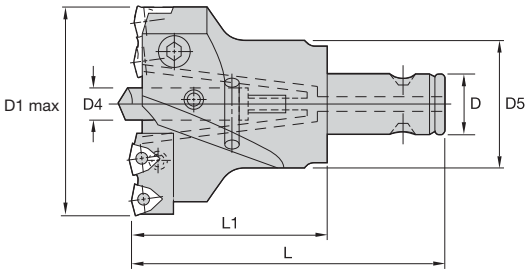
- Head shipped with clamping and adjusting screws.
- Order pilot drill separately; see page J76.
- Order cartridges separately; see pages J74.



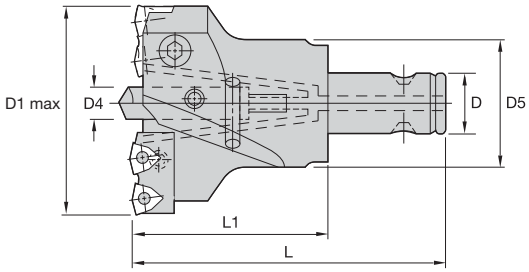


HTS Adjustable Heads • DFT™ inserts

catalogue number	D1	D1 max	D5	D	L	L1	kg	pilot drill	cartridge interior	n	cartridge exterior	n	gage insert	ni
3.76045R028V	45	50	28	13	85	50	0.3	B510S08.	3.77000R050V	1	3.77000R051V	1	DFT0303.	4
3.76050R028V	50	55	28	13	85	50	0.4	B510S08.	3.77000R052V	1	3.77000R053V	1	DFT0303.	4
3.76055R032V	55	58	33	16	100	60	0.4	B510S08.	3.77000R038V	1	3.77000R039V	1	DFT05T3.	4
3.76058R032V	58	63	33	16	100	60	0.4	B510S10.	3.77000R023V	1	3.77000R024V	1	DFT05T3.	4
3.76063R032V	63	68	33	16	100	60	0.4	B510S10.	3.77000R025V	1	3.77000R024V	1	DFT05T3.	4
3.76063R040V	63	68	41	22	115	70	0.5	B510S10.	3.77000R025V	1	3.77000R024V	1	DFT05T3.	4
3.76068R040V	68	73	41	22	115	70	0.8	B510S10.	3.77000R026V	1	3.77000R027V	1	DFT05T3.	4
3.76073R040V	73	78	41	22	115	70	0.8	B510S15.	3.77000R026V	1	3.77000R027V	1	DFT05T3.	4
3.76078R040V	78	84	41	22	115	70	0.8	B510S15.	3.77000R028V	1	3.77000R029V	1	DFT06T3.	4
3.76078R048V	78	84	49	27	120	70	0.9	B510S15.	3.77000R028V	1	3.77000R029V	1	DFT06T3.	4
3.76084R048V	84	90	49	27	120	70	1.0	B510S15.	3.77000R028V	1	3.77000R029V	1	DFT06T3.	4
3.76090R048V	90	96	49	27	120	70	1.0	B510S15.	3.77000R030V	1	3.77000R031V	1	DFT06T3.	4
3.76096R048V	96	102	49	27	120	70	1.1	B510S20.	3.77000R030V	1	3.77000R031V	1	DFT06T3.	4
3.76096R058V	96	102	59	32	130	80	1.2	B510S20.	3.77000R030V	1	3.77000R031V	1	DFT06T3.	4
3.76102R058V	102	108	59	32	130	80	1.7	B510S20.	3.77000R081V	1	3.77000R082V	1	DFT05T3.	6
3.76108R058V	108	115	59	32	130	80	1.8	B510S20.	3.77000R083V	1	3.77000R084V	1	DFT06T3.	6
3.76115R070V	115	122	71	40	145	90	2.9	B510S20.	3.77000R085V	1	3.77000R086V	1	DFT06T3.	6
3.76122R070V	122	130	71	40	145	90	2.9	B510S25.	3.77000R079V	1	3.77000R080V	1	DFT06T3.	6
3.76130R070V	130	140	71	40	145	90	3.0	B510S25.	3.77000R087V	1	3.77000R088V	1	DFT06T3.	6
3.76140R080V	140	150	81	50	160	100	4.3	B510S25.	3.77000R077V	1	3.77000R078V	1	DFT0704.	6
3.76150R080V	150	158	81	50	160	100	4.5	B510S25.	3.77000R075V	1	3.77000R076V	1	DFT0704.	6
3.76158R080V	158	162	81	50	160	100	4.5	B510S25.	3.77000R073V	1	3.77000R074V	1	DFT0704.	6
3.76162R080V	162	170	80	50	160	100	4.5	B510S30.	3.77000R048V	1	3.77000R049V	1	DFT0704.	6
3.76180R110	180	186	110	60	185	125	6.0	B510S30.	3.77000R030V	3	3.77000R031V	1	DFT06T3.	8
3.76195R110	195	201	110	60	185	125	6.5	B510S30.	3.77000R081V	3	3.77000R082V	1	DFT05T3.	12
3.76213R125	213	220	125	60	200	125	7.5	B510S30.	3.77000R083V	3	3.77000R084V	1	DFT06T3.	12
3.76230R160	230	240	160	80	230	150	8.5	B510S30.	3.77000R079V	2	3.77000R080V	2	DFT06T3.	12
3.76260R160 *	260	270	160	80	230	150	9.0	B510S30.	3.77000R077V	2	3.77000R078V	2	DFT06T3.	12

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
n: number of cartridges required by head.
ni: number of inserts required by head.

- Head shipped with clamping and adjusting screws.
- Order pilot drill separately; see page J76.
- Order cartridges separately; see pages J74–J75.





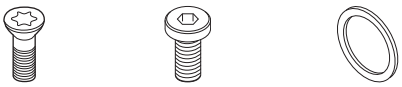
HTS Adjustable Heads • DFT™ and SPHX Inserts

catalogue number	D1	D1 max	pilot drill	cartridge interior	n	cartridge interior 2	n	insert	ni	cartridge exterior SPHX	n	gage insert	ni
3.76045R028V	45	50	B510S08.	**3.77000R250V**	1	–	–	DFT0303.	3	3.77000R251V	1	SPHX0703.	1
3.76050R028V	50	55	B510S08.	**3.77000R252V**	1	–	–	DFT0303.	3	3.77000R253V	1	SPHX0703.	1
3.76055R032V	55	58	B510S08.	**3.77000R038V**	1	–	–	DFT05T3.	3	3.77000R239V	1	SPHX0903.	1
3.76058R032V	58	63	B510S10.	**3.77000R023V**	1	–	–	DFT05T3.	3	3.77000R224V	1	SPHX0903.	1
3.76063R032V	63	68	B510S10.	**3.77000R025V**	1	–	–	DFT05T3.	3	3.77000R224V	1	SPHX0903.	1
3.76063R040V	63	68	B510S10.	**3.77000R025V**	1	–	–	DFT05T3.	3	3.77000R224V	1	SPHX0903.	1
3.76068R040V	68	73	B510S10.	**3.77000R026V**	1	–	–	DFT05T3.	3	3.77000R227V	1	SPHX0903.	1
3.76073R040V	73	78	B510S15.	**3.77000R026V**	1	–	–	DFT05T3.	3	3.77000R227V	1	SPHX0903.	1
3.76078R040V	78	84	B510S15.	**3.77000R028V**	1	–	–	DFT06T3.	3	3.77000R229V	1	SPHX0903.	1
3.76078R048V	78	84	B510S15.	**3.77000R028V**	1	–	–	DFT06T3.	3	3.77000R229V	1	SPHX0903.	1
3.76084R048V	84	90	B510S15.	**3.77000R228V**	1	–	–	DFT06T3.	3	3.77000R229V	1	SPHX0903.	1
3.76090R048V	90	96	B510S15.	**3.77000R230V**	1	–	–	DFT06T3.	3	3.77000R231V	1	SPHX0903.	1
3.76096R048V	96	102	B510S20.	**3.77000R230V**	1	–	–	DFT06T3.	3	3.77000R231V	1	SPHX0903.	1
3.76096R058V	96	102	B510S20.	**3.77000R230V**	1	–	–	DFT06T3.	3	3.77000R231V	1	SPHX0903.	1
3.76102R058V	102	108	B510S20.	**3.77000R081V**	1	–	–	DFT05T3.	5	3.77000R282V	1	SPHX0903.	1
3.76108R058V	108	115	B510S20.	**3.77000R083V**	1	–	–	DFT06T3.	5	3.77000R284V	1	SPHX1204.	1
3.76115R070V	115	122	B510S20.	**3.77000R085V**	1	–	–	DFT06T3.	5	3.77000R286V	1	SPHX1204.	1
3.76122R070V	122	130	B510S25.	**3.77000R079V**	1	–	–	DFT06T3.	5	3.77000R280V	1	SPHX1204.	1
3.76130R070V	130	140	B510S25.	**3.77000R087V**	1	–	–	DFT06T3.	5	3.77000R288V	1	SPHX1204.	1
3.76140R080V	140	150	B510S25.	**3.77000R077V**	1	–	–	DFT0704.	5	3.77000R278V	1	SPHX1505.	1
3.76150R080V	150	158	B510S25.	**3.77000R075V**	1	–	–	DFT0704.	5	3.77000R276V	1	SPHX1204.	1
3.76158R080V	158	162	B510S25.	**3.77000R073V**	1	–	–	DFT0704.	5	3.77000R274V	1	SPHX1204.	1
3.76162R080V	162	170	B510S30.	**3.77000R248V**	1	–	–	DFT0704.	5	3.77000R249V	1	SPHX1505.	1
3.76180R110	180	186	B510S30.	**3.77000R230V**	3	–	–	DFT06T3.	7	3.77000R231V	1	SPHX0903.	1
3.76195R110	195	201	B510S30.	**3.77000R081V**	3	–	–	DFT05T3.	11	3.77000R282V	1	SPHX0903.	1
3.76213R125	213	220	B510S30.	**3.77000R083V**	3	–	–	DFT06T3.	11	3.77000R284V	1	SPHX1204.	1
3.76230R160	230	240	B510S30.	**3.77000R079V**	2	**3.77000R080V**	1	DFT06T3.	11	3.77000R280V	1	SPHX1204.	1
3.76260R160 *	260	270	B510S30.	–	2	–	1	DFT06T3.	11	3.77000R078V	1	SPHX1204.	1

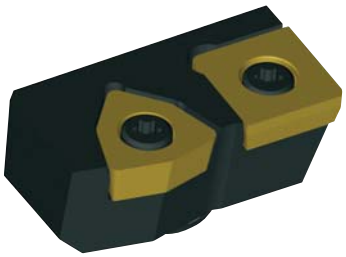
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
n: number of cartridges required by head.
ni: number of inserts required by head.



HTS Interior and Exterior Cartridges • DFT™ Inserts



catalogue number	gage insert	number of inserts	insert screw	cartridge screw	fan washer	Nm	ft. lbs.
3.77000R023V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R024V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R025V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R026V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R027V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R028V	DFT06T3..	2	**191.848**	**129.612**	**192.111**	10,0	7.38
3.77000R029V	DFT06T3..	2	**191.848**	**129.612**	**192.111**	10,0	7.38
3.77000R030V	DFT06T3..	2	**191.848**	**129.616**	**192.111**	10,0	7.38
3.77000R031V	DFT06T3..	2	**191.848**	**129.616**	**192.111**	10,0	7.38
3.77000R038V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R039V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R048V	DFT0704..	3	**191.698**	**125.830**	**192.112**	35,0	25.81
3.77000R049V	DFT0704..	3	**191.698**	**125.830**	**192.112**	35,0	25.81
3.77000R050V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R051V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R052V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R053V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R073V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R074V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R075V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R076V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R077V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R078V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R079V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R080V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R081V	DFT05T3..	3	**191.924**	**125.820**	**192.112**	35,0	25.81
3.77000R082V	DFT05T3..	3	**191.924**	**125.820**	**192.112**	35,0	25.81
3.77000R083V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R084V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R085V	DFT06T3..	3	**191.848**	**–**	**192.112**	35,0	25.81
3.77000R086V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R087V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R088V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81



HTS Finishing Interior Cartridges • For Use with Exterior Cartridges Equipped with SPHX Inserts




catalogue number	gage insert	number of inserts	insert screw	washer	Nm	ft. lbs.
3.77000R228V	DFT06T3..	2	**191.848**	**192.111**	10,0	7.38
3.77000R230V	DFT06T3..	2	**191.848**	**192.111**	10,0	7.38
3.77000R248V	DFT0704..	3	**191.698**	**192.112**	35,0	25.81
3.77000R250V	DFT0303..	2	**192.432**	**192.902**	5,0	3.69
3.77000R252V	DFT0303..	2	**192.432**	**192.902**	5,0	3.69

NOTE: Modified interior cartridges for use with SPHX-equipped exterior cartridges only.

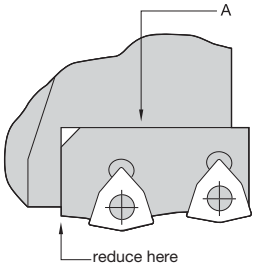
HTS Finishing Exterior Cartridges • SPHX Inserts

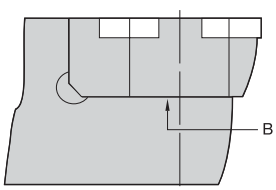


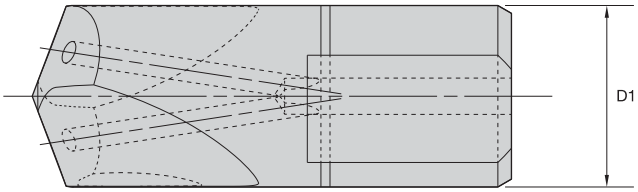


catalogue number	gage insert inside	number of inserts	gage insert outside	number of inserts	insert screw	screw	washer	Nm	ft. lbs.
3.77000R224V	DFT05T3..	2	SPHX0903..	1	**191.924**	**193.451**	**192.903**	5,0	3.69
3.77000R227V	DFT05T3..	2	SPHX0903..	1	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R229V	DFT06T3..	2	SPHX0903..	1	**191.916**	**129.612**	**192.111**	10,0	7.38
3.77000R231V	DFT06T3..	2	SPHX0903..	1	**191.916**	**129.616**	**192.111**	10,0	7.38
3.77000R239V	DFT05T3..	2	SPHX0903..	1	**191.924**	**193.451**	**192.903**	5,0	3.69
3.77000R249V	DFT0704..	3	SPHX1505..	1	**191.698**	**125.830**	**192.112**	35,0	25.81
3.77000R251V	DFT0303..	2	SPHX0703..	1	**192.432**	**193.450**	**192.902**	5,0	3.69
3.77000R253V	DFT0303..	2	SPHX0703..	1	**192.432**	**193.450**	**192.902**	5,0	3.69
3.77000R274V	DFT0704..	3	SPHX1505..	1	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R276V	DFT0704..	3	SPHX1505..	1	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R278V	DFT0704..	3	SPHX1505..	1	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R280V	DFT06T3..	3	SPHX1204..	1	**191.916**	**125.820**	**192.112**	35,0	25.81
3.77000R282V	DFT05T3..	3	SPHX0903..	1	**191.924**	**125.820**	**192.112**	35,0	25.81
3.77000R284V	DFT06T3..	3	SPHX1204..	1	**191.916**	**125.820**	**192.112**	35,0	25.81
3.77000R286V	DFT06T3..	3	SPHX1204..	1	**191.916**	**–**	**192.112**	35,0	25.81
3.77000R288V	DFT06T3..	3	SPHX1204..	1	**191.916**	**125.820**	**192.112**	35,0	25.81

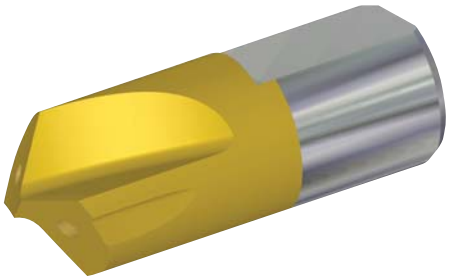
- Change drill diameter by shortening the outer cartridge.
- Shorten at 90° to the contact face A and the support face B.
- Shortening reduces the effective drill diameter by two times the amount removed.



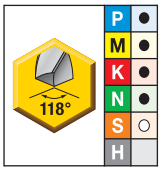


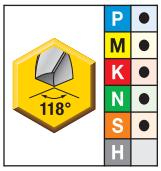


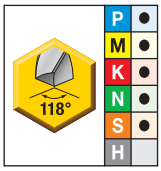
8–10mm sizes are without coolant.



HTS DFT™ • Pilot Drills

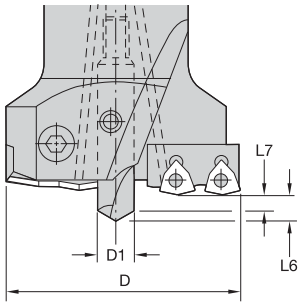






● first choice
○ alternate choice

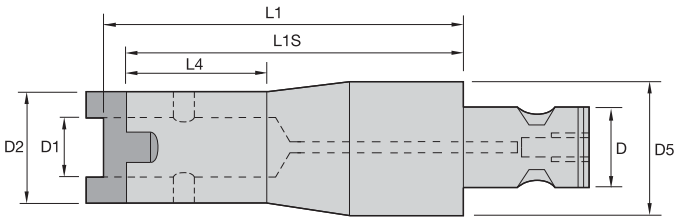
high-speed steel uncoated	high-speed steel coated	carbide drills	
A30	AS3	KC7315	D1
B510S08000 A30	B510S08000 AS3	B511S08000 KC7315	8,00
B510S10000 A30	B510S10000 AS3	B511S10000 KC7315	10,00
B510S15000 A30	B510S15000 AS3	B511S15000 KC7315	15,00
B510S20000 A30	B510S20000 AS3	B511S20000 KC7315	20,00
B510S25000 A30	B510S25000 AS3	B511S25000 KC7315	25,00
B510S30000 A30	B510S30000 AS3	B511S30000 KC7315	30,00

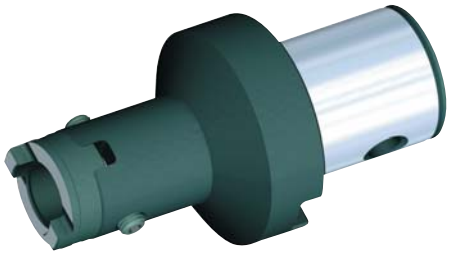


Pilot Drill Setting Lengths

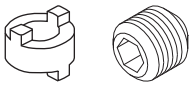
D1		2–4 x D				4–6 x D				>6 x D			
		L6		L7		L6		L7		L6		L7	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
8,00	.315	3,00	.118	0,80	.032	3,40	.134	1,20	.047	3,80	.150	1,60	.063
10,00	.394	4,00	.158	1,30	.051	4,30	.169	1,60	.063	4,60	.181	1,90	.075
15,00	.591	6,20	.244	2,10	.083	6,50	.256	2,40	.095	6,80	.268	2,70	.106
20,00	.787	8,10	.319	2,60	.102	8,40	.331	2,90	.114	8,70	.343	3,20	.126
25,00	.984	10.50	.413	3,50	.138	7,40	.429	3,90	.154	11,30	.445	4,30	.169
30,00	1181	12,30	.484	4,10	.158	12,80	.504	4,50	.177	13,20	.520	5,00	.197

- Reducers are shipped with drive ring and clamping screws.





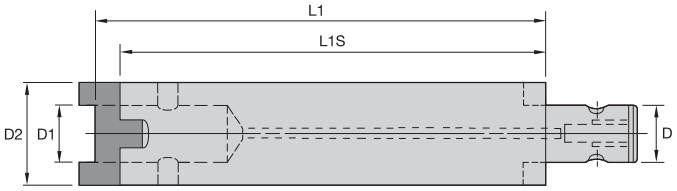
Reducers



catalogue number	D1 coupling size	D coupling size	D2	D5	L1	L1S	L4	drive ring	clamping screw	Nm	ft. lbs.
5.34280R028080	13B	50	27,6	80,0	90,0	80,0	50,0	**192.419**	**192.156**	10,2	7.5
5.34280R032080	16	50	31,6	80,0	90,0	80,0	55,0	**192.420**	**192.156**	10,2	7.5
5.34280R040080	22	50	39,6	80,0	92,0	80,0	57,0	**192.421**	**192.157**	16,3	12.0
5.34280R048080	27	50	47,6	80,0	92,0	80,0	57,0	**192.422**	**191.727**	20,3	15.0
5.34280R058080	32	50	57,6	80,0	93,9	80,0	58,9	**192.423**	**191.727**	20,3	15.0
5.34240R032100	16	22	31,6	40,0	110,0	100,0	55,0	**192.420**	**192.156**	10,2	7.5
5.34248R040100	22	27	39,6	48,0	112,0	100,0	57,0	**192.421**	**192.157**	16,3	12.0
5.34258R048100	27	32	47,6	58,0	112,0	100,0	57,0	**192.422**	**191.727**	20,3	15.0
5.34270R058100	32	40	57,6	70,0	113,9	100,0	58,9	**192.423**	**191.727**	20,3	15.0
5.34280R070150	40	50	69,6	80,0	163,9	150,0	68,9	**192.424**	**191.728**	33,9	25.0

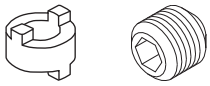
NOTE: Assemble components using recommended torque values.

- Extensions are shipped with drive ring and clamping screws.





Extensions

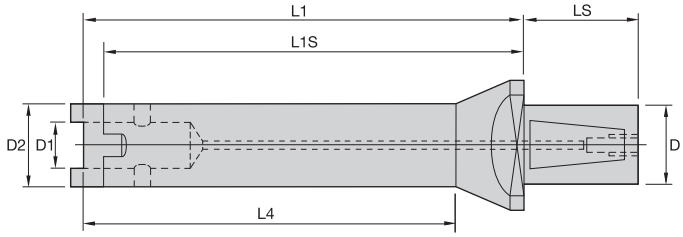


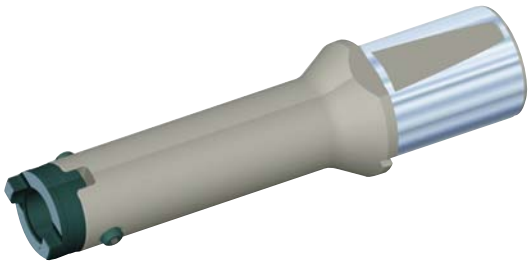
catalogue number	D1 coupling size	D coupling size	D2	L1	L1S	drive ring	clamping screw	Nm	ft. lbs.
5.34132R032100	16	16	32,0	110,0	100,0	**192.420**	**192.156**	10,2	7.5
5.34125R025150	13A	13A	25,0	160,0	150,0	**193.371**	**193.372**	10,2	7.5
5.34128R028150	13B	13B	28,0	160,0	150,0	**192.419**	**192.156**	10,2	7.5
5.34170R070186	40	40	70,0	200,0	186,0	**192.424**	**191.728**	33,9	25.0
5.34132R032200	16	16	32,0	210,0	200,0	**192.420**	**192.156**	10,2	7.5
5.34140R040200	22	22	40,0	212,0	200,0	**192.421**	**192.157**	16,3	12.0
5.34148R048200	27	27	48,0	212,0	200,0	**192.422**	**191.727**	20,3	15.0
5.34180R080204	50	50	80,0	220,0	204,0	**192.425**	**191.728**	33,9	25.0
5.34158R058300	32	32	58,0	314,0	300,0	**192.423**	**191.727**	33,9	25.0
5.34170R070300	40	40	70,0	314,0	300,0	**192.424**	**191.728**	33,9	25.0
5.34180R080300	50	50	80,0	316,0	300,0	**192.425**	**191.728**	33,9	25.0
5.34170R070500	40	40	70,0	514,0	500,0	**192.424**	**191.728**	33,9	25.0
5.34180R080500	50	50	80,0	516,0	500,0	**192.425**	**191.728**	33,9	25.0

NOTE: Assemble components using recommended torque values.

- Shanks are shipped with drive ring and clamping screws.







Basic Shank WN/WD • Metric

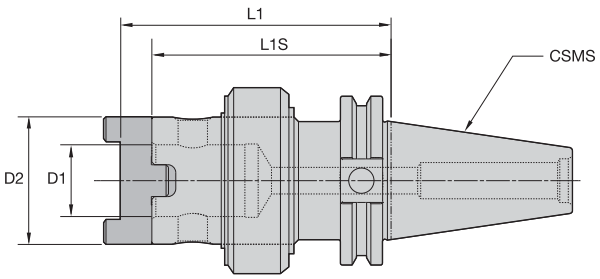



catalogue number	D1 coupling size	D	D2	L1	L1S	L4	LS	drive ring	clamping screw	Nm
5.34032-025115	13A	32,0	25,0	125,0	115,0	110,0	58,0	**193.371**	**193.372**	10,2
5.34032-028115	13B	32,0	28,0	125,0	115,0	110,0	58,0	**192.419**	**192.156**	10,2
5.34032-032125	16	32,0	32,0	135,0	125,0	120,0	58,0	**192.420**	**192.156**	10,2
5.34050-040148	22	50,0	40,0	160,0	148,0	140,0	68,0	**192.421**	**192.157**	16,3
5.34050-048168	27	50,0	48,0	175,0	168,0	160,0	68,0	**192.422**	**191.727**	20,3
5.34050-058186	32	50,0	58,0	200,0	186,0	180,0	68,0	**192.423**	**191.727**	20,3
5.34032-025200	13A	32,0	25,0	210,0	200,0	195,0	58,0	**193.371**	**193.372**	10,2
5.34032-028200	13B	32,0	28,0	210,0	200,0	195,0	58,0	**192.419**	**192.156**	10,2
5.34050-032200	16	50,0	32,0	210,0	200,0	165,0	68,0	**192.420**	**192.156**	10,2
5.34050-025300	13A	50,0	25,0	310,0	300,0	270,0	68,0	**193.371**	**193.372**	10,2
5.34050-028300	13B	50,0	28,0	310,0	300,0	265,0	68,0	**192.419**	**192.156**	10,2
5.34050-040300	22	50,0	40,0	312,0	300,0	267,0	68,0	**192.421**	**192.157**	10,2
5.34050-048300	27	50,0	48,0	312,0	300,0	267,0	68,0	**192.422**	**191.727**	16,3
5.34050-058300	32	50,0	58,0	314,0	300,0	254,0	68,0	**192.423**	**191.727**	20,3
5.34050-032350	16	50,0	32,0	360,0	350,0	315,0	68,0	**192.420**	**192.156**	10,2
5.34050-025450	13A	50,0	25,0	460,0	450,0	420,0	68,0	**193.371**	**193.372**	10,2
5.34050-028450	13B	50,0	28,0	460,0	450,0	415,0	68,0	**192.419**	**192.156**	10,2
5.34050-040450	22	50,0	40,0	462,0	450,0	417,0	68,0	**192.421**	**192.157**	10,2
5.34050-048450	27	50,0	48,0	462,0	450,0	417,0	68,0	**192.422**	**191.727**	16,3
5.34050-058450	32	50,0	58,0	464,0	450,0	404,0	68,0	**192.423**	**191.727**	20,3
5.34050-032500	16	50,0	32,0	510,0	500,0	465,0	68,0	**192.420**	**192.156**	10,2
5.34050-040600	22	50,0	40,0	612,0	600,0	567,0	68,0	**192.422**	**192.157**	10,2
5.34050-048600	27	50,0	48,0	612,0	600,0	567,0	68,0	**192.422**	**191.727**	16,3
5.34050-058600	32	50,0	58,0	614,0	600,0	554,0	68,0	**192.423**	**191.727**	20,3

NOTE: Assemble components using recommended torque values.

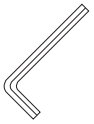
- Shanks are shipped with drive ring and clamping screws.







CV Taper Shank • Form AD • Rotary Coolant Ring

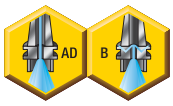



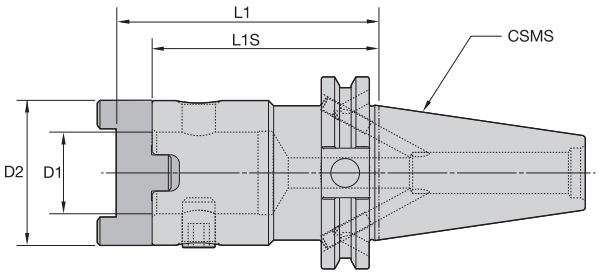


catalogue number	CSMS system size	D1 coupling size	clamping screw	hex wrench	drive ring	coolant ring	ft. lbs.
CV50RMHTS13M394	CV50	13B	**192.156**	**170.004**	**192.419**	**302.011**	7.5
CV50RMHTS16M394	CV50	16	**192.156**	**170.004**	**192.420**	**302.011**	7.5
CV50RMHTS22M394	CV50	22	**192.157**	**170.004**	**192.421**	**302.011**	12.0
CV50RMHTS27M394	CV50	27	**191.727**	**170.006**	**192.422**	**302.011**	15.0
CV50RMHTS32M394 *	CV50	32	**191.727**	**170.006**	**192.423**	**302.011**	15.0
CV50RMHTS40M413	CV50	40	**191.728**	**170.008**	**192.424**	**302.009**	26.0
CV50RMHTS50M413	CV50	50	**191.728**	**170.008**	**192.425**	**302.010**	26.0

NOTE: Assemble components using recommended torque values.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

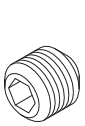
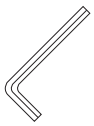
- Shanks are shipped with drive ring and clamping screws.







CV Taper Shank • Form B/AD Coolant

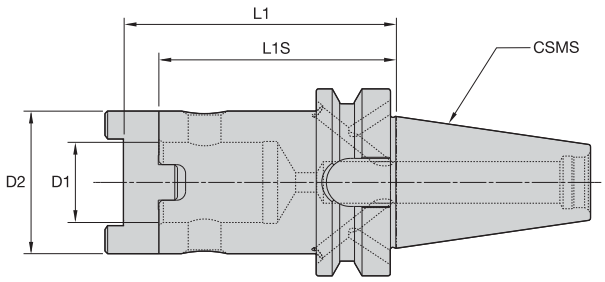




catalogue number	CSMS system size	D1 coupling size	clamping screw	hex wrench	drive ring	ft. lbs.
CV50BHTS13M295	CV50	13B	**192.156**	**170.004**	**192.419**	7.5
CV50BHTS16M295	CV50	16	**192.156**	**170.004**	**192.420**	7.5
CV50BHTS22M295	CV50	22	**192.157**	**170.004**	**192.421**	12.0
CV50BHTS27M295	CV50	27	**191.727**	**170.006**	**192.422**	15.0
CV50BHTS32M314	CV50	32	**191.727**	**170.006**	**192.423**	15.0
CV50BHTS40M314	CV50	40	**191.728**	**170.008**	**192.424**	26.0
CV50BHTS50M314	CV50	50	**191.728**	**170.008**	**192.425**	26.0

NOTE: Assemble components using recommended torque values.

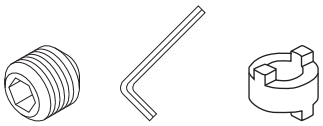
- Shanks are shipped with drive ring and clamping screw.







BT Taper Shank • Form B/AD Coolant

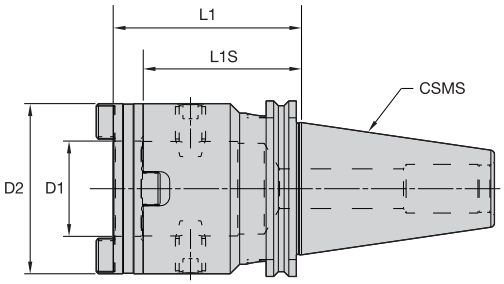


catalogue number	CSMS system size	D1 coupling size	D2	L1	L1S	clamping screw	hex wrench	drive ring	Nm	ft. lbs.
BT50BHTS22075M	BT50	22	40,0	87,0	75,0	**192.157**	**170.005**	**192.421**	16,0	12.0
BT50BHTS32080M	BT50	32	58,0	94,0	80,0	**MS1276**	**170.006**	**192.423**	20,0	15.0
BT50BHTS40080M	BT50	40	70,0	94,0	80,0	**191.728**	**170.008**	**192.424**	34,0	26.0
BT50BHTS50080M	BT50	50	80,0	96,0	80,0	**191.728**	**170.008**	**192.425**	34,0	26.0

NOTE: Assemble components using recommended torque values.

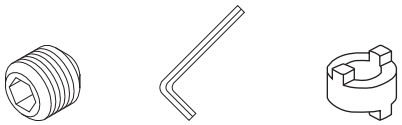
- Shanks are shipped with drive ring and clamping screw.





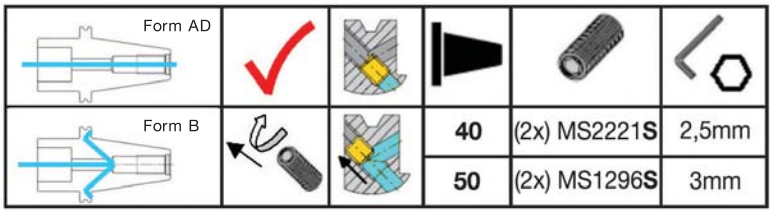


DV Taper Shank • Form B/AD Coolant

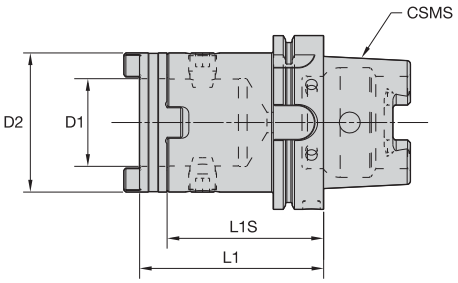


catalogue number	CSMS system size	D1 coupling size	D2	L1	L1S	clamping screw	hex wrench	drive ring
5.36050-154040	DV50	40	70,0	100,0	84,0	**191.728**	**170.008**	**192.424**
5.36050-154050	DV50	50	90,0	100,0	84,0	**191.729**	**170.008**	**192.426**

NOTE: Assemble components using recommended torque values.

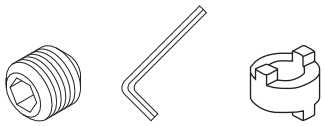


- Shanks are shipped with drive ring and clamping screw.





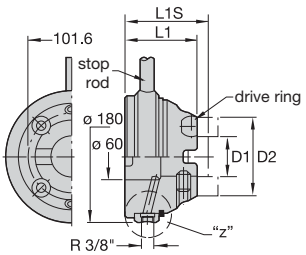
HSK100A Taper Shank

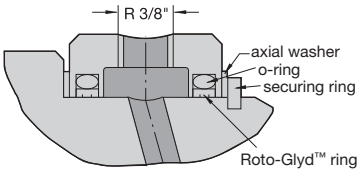


catalogue number	CSMS system size	D1 coupling size	D2	L1	L1S	clamping screw	hex wrench	drive ring	Nm	ft. lbs.
HSK100AHTS40085M	HSK100A	40	70,0	99,0	85,0	**191.728**	**170.008**	**192.424**	35,0	25.0
HSK100AHTS50090M	HSK100A	50	80,0	106,0	90,0	**191.728**	**170.008**	**192.425**	35,0	25.0

NOTE: Assemble components using recommended torque values.

- Shanks are shipped with drive ring and clamping screws.







Flanged Adaptor (Including Drive Ring)

catalogue number	D1
5.34350-090100	50,00

NOTE: Adaptor includes all items shown except the nipple. Nipple must be ordered separately.
If replacement becomes necessary, the nipple is manufactured with a predetermined breaking point for safety purposes.
Maximum RPM is 1500. Maximum pressure is 72 psi or 5 bar.

Spare Parts



drive ring	clamping screw	coolant ring	O-ring	securing ring	axial washer	ROTO-GLYD ring	stop bar	nipple
192.426	**191.729**	**302.014**	**192.731**	**192.126**	**192.158**	**192.730**	**460.716**	**192.759**

HTS DFT™ • Metric

Metric													
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter				
						min	Starting Value	max	Ø	DFT03... 45,00–55,00mm	DFT05... 55,00–78,00mm	DFT06... 78,00–140,00mm	DFT07... 140,00–270,00mm
P	1	S	O	MD	KCU25	94	**190**	229	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,13–0,19
			I	MD	KCU40								
		U	O	MD	KCU40	71	**130**	171	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,13–0,19
			I	MD	KC7140								
		I	O	MD	KCU40	44	**80**	106	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,13–0,19
			I	MD	KC7140								
	2	S	O	HP	KCU25	94	**180**	229	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KCU40								
		U	O	HP	KCU40	71	**120**	1714	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
		I	O	HP	KCU40	44	**70**	106	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
	3	S	O	HP	KCU25	70	**140**	169	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KCU40								
		U	O	HP	KCU40	50	**100**	121	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
		I	O	HP	KCU40	30	**60**	72	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
	4	S	O	HP	KCU25	94	**120**	229	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KCU40								
		U	O	HP	KCU40	71	**100**	171	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
		I	O	HP	KCU40	44	**80**	106	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
	5	S	O	HP	KCU25	78	**100**	190	mm/r	0,05–0,07	0,06–0,08	0,06–0,10	0,08–0,12
			I	HP	KCU40								
		U	O	HP	KCU40	47	**60**	114	mm/r	0,05–0,07	0,06–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
		I	O	HP	KCU40	31	**40**	76	mm/r	0,05–0,07	0,06–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
	6	S	O	HP	KCU25	74	**95**	180	mm/r	0,04–0,07	0,05–0,08	0,06–0,10	0,08–0,12
			I	HP	KCU40								
		U	O	HP	KCU40	45	**57**	108	mm/r	0,04–0,07	0,05–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
		I	O	HP	KCU40	30	**38**	72	mm/r	0,04–0,07	0,05–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
M	1	S	O	MD	KCU25	48	**110**	134	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KCU40								
		U	O	MD	KCU40	31	**70**	86	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
		I	O	MD	KC7140	22	**50**	61	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
	2	S	O	MD	KCU25	48	**99**	134	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KCU40								
		U	O	MD	KCU40	31	**63**	86	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
		I	O	MD	KC7140	22	**45**	61	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
	3	S	O	MD	KCU25	48	**88**	134	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KCU40								
		U	O	MD	KCU40	31	**56**	86	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
		I	O	MD	KC7140	22	**40**	61	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

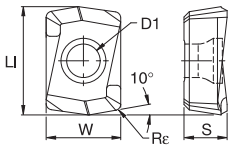
HTS DFT™ • Metric

Metric												
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter			
						min	Starting Value	max	Ø	DFT03... 45,00–55,00mm	DFT05... 55,00–78,00mm	DFT06... 78,00–140,00mm	DFT07... 140,00–270,00mm
K	1	S	O	HP	KCPK10	94	**171**	229	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCPK10								
		U	O	HP	KCU25	64	**117**	156	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU25								
		I	O	HP	KCU40	40	**72**	96	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU40								
	2	S	O	HP	KCPK10	94	**162**	229	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCPK10								
		U	O	HP	KCU25	64	**111**	156	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU25								
		I	O	HP	KCU40	40	**68**	96	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU40								
	3	S	O	HP	KCPK10	90	**146**	217	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,15–0,31
			I	HP	KCPK10								
		U	O	HP	KCU25	59	**100**	144	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,15–0,31
			I	HP	KCU25								
		I	O	HP	KCU40	35	**62**	84	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,15–0,31
			I	HP	KCU40								
N	1	S	O	ST	KD1425	154	**240**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KC7140	102	**160**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KC7140								
		I	O	HP	KC7140	67	**104**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KC7140								
	2	S	O	ST	KD1425	154	**223**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KCU40	102	**149**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
		I	O	HP	KCU40	67	**97**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
	3	S	O	ST	KD1425	154	**206**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KCU40	102	**138**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
		I	O	HP	KCU40	67	**89**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
	4	S	O	ST	KD1425	154	**223**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	LD	KC7140	102	**149**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	LD	KC7140								
		I	O	LD	KC7140	67	**97**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	LD	KC7140								
	5	S	O	ST	KD1425	112	**220**	262	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KCU40	72	**140**	167	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
		I	O	HP	KCU40	46	**90**	107	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
S	1	S	O	HP	KC7140	24	**40**	49	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		U	O	HP	KC7140	18	**30**	37	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		I	O	HP	KC7140	15	**25**	30	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
	2	S	O	HP	KC7140	25	**35**	48	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		U	O	HP	KC7140	18	**25**	34	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		I	O	HP	KC7140	14	**20**	27	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert





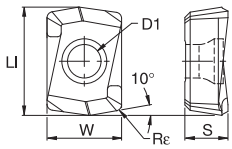
● first choice
○ alternate choice

P		●	●	●	●
M		○	○	○	○
K		●	●	○	○
N		○		○	○
S		○		●	●
H				○	○

DFR-GD

catalogue number	LI	W	D1	S	Rε	KCPK10	KCU25	KCU40	KC7140
DFR020204GD	7,12	4,90	2,30	2,79	0,40	●	●	●	●
DFR030204GD	8,71	6,00	2,50	2,88	0,40	●	●	●	●
DFR040304GD	10,76	7,38	2,85	3,79	0,40	●	●	●	●



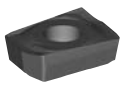


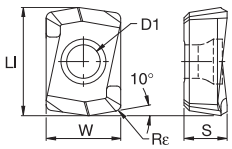
● first choice
○ alternate choice

P		●	●	●	●
M		○	●	●	●
K		○	○	○	○
N		○	○	○	○
S		○	●	●	●
H					

DFR-MD

catalogue number	LI	W	D1	S	Rε	KCU25	KCU40	KC7140
DFR020204MD	7,12	4,90	2,30	2,79	0,40	●	●	●
DFR030204MD	8,71	6,00	2,50	2,88	0,40	●	●	●
DFR040304D28MD	10,76	7,26	2,85	3,79	0,40	–	–	●
DFR040304MD	10,76	7,38	2,85	3,79	0,40	●	●	●





● first choice
○ alternate choice

P		○	●	○	●
M			○	●	●
K		●	●	●	○
N			○	●	○
S			○	●	○
H				○	

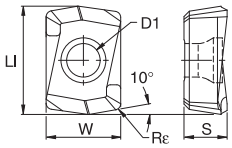
DFR-LD

catalogue number	LI	W	D1	S	Rε	KCPK10	KCU25	KCU40	KC7140
DFR020204LD	7,12	4,90	2,30	2,79	0,40	●	●	●	●
DFR030204LD	8,71	6,00	2,50	2,86	0,40	●	●	●	●
DFR040304LD	10,76	7,38	2,85	3,76	0,40	●	●	●	●

● first choice
○ alternate choice

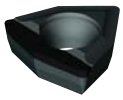
P		
M		
K		
N		●
S		
H		

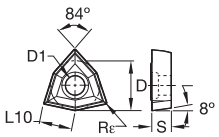




DFR • PCD • Single-Tipped

catalogue number	LI	W	D1	S	Rε	KD1425
DFR040304ST	10,50	7,40	2,85	3,18	0,40	●





DFT • PCD • Single-Tipped

catalogue number	L10	D	D1	S	Rε	KD1425
DFT05T308ST	5,19	8,00	3,40	3,75	0,80	●
DFT06T308ST	6,52	10,00	4,40	3,75	0,80	●
DFT070408ST	7,84	12,00	4,40	4,75	0,80	●
DFT090508ST	9,83	15,00	5,50	5,19	0,80	●
DFT110508ST	11,53	17,60	5,85	4,81	0,80	●

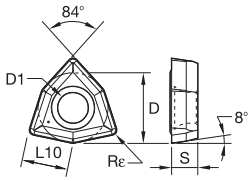
DFR™ • PCD • Metric

Metric										
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter	
						min	Starting Value	max	Ø	DFR04 20,50–24,00mm
N	1	S	O	ST	KD1425	396	**720**	841	mm/r	0,06–0,08
			I	ST	KD1425					
	2	S	O	ST	KD1425	369	**670**	782	mm/r	0,12–0,18
			I	ST	KD1425					
	3	S	O	ST	KD1425	341	**619**	723	mm/r	0,12–0,18
			I	ST	KD1425					
	4	S	O	ST	KD1425	475	**720**	841	mm/r	0,12–0,18
			I	ST	KD1425					
	5	S	O	ST	KD1425	480	**720**	864	mm/r	0,06–0,08
			I	ST	KD1425					

DFT™ • PCD • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 16–24,00mm	DFT05 25–32,00mm	DFT06 33–40,00mm	DFT07 41–48,00mm	DFT09 49–68,00mm	DFT11 69–82,00mm
N	1	S	O	ST/C	KD1425	480	**720**	864	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	2	S	O	ST/C	KD1425	447	**670**	804	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	3	S	O	ST/C	KD1425	413	**619**	743	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	4	S	O	ST/C	KD1425	447	**670**	804	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	5	S	O	ST/C	KD1425	480	**720**	864	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										





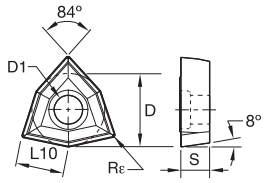
● first choice
○ alternate choice

P	●	●	●	●	
M	○	○	○	●	
K	●	●	●	○	
N	○		○	○	
S	○		●	○	
H			○		

DFT-GD

catalogue number	L10	D	D1	S	Rε	KCPK10	KCU25	KCU40	KC7140
DFT030204GD	3,97	6,00	2,25	2,45	0,40	●	●	●	–
DFT030304GD	3,97	6,00	2,65	2,95	0,40	●	●	●	●
DFT05T308GD	5,29	8,00	3,40	3,75	0,80	●	●	●	●
DFT06T308GD	6,62	10,00	4,40	3,75	0,80	●	●	●	●
DFT070408GD	7,94	12,00	4,40	4,75	0,80	●	●	●	●
DFT090508GD	9,92	15,00	5,50	5,25	0,85	●	●	●	●





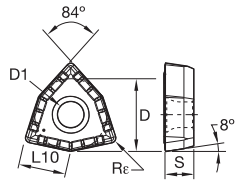
● first choice
○ alternate choice

P	●	●	●	●	
M	○	○	○	●	
K	●	●	●	○	
N	○		○	○	●
S	○		●	○	
H			○		

DFT-HP

catalogue number	L10	D	D1	S	Rε	KCPK10	KCU25	KCU40	KC7140	KMF
DFTX20204HP	3,31	5,00	2,25	2,45	0,40	–	●	●	●	–
DFT030204HP	3,97	6,00	2,25	2,45	0,40	●	●	●	●	●
DFT030304HP	3,97	6,00	2,65	2,95	0,40	●	●	●	●	●
DFT05T308HP	5,29	8,00	3,50	3,75	0,80	●	●	●	●	●
DFT06T308HP	6,62	10,00	4,40	3,75	0,80	●	●	●	●	●
DFT070408HP	7,94	12,00	4,40	4,75	0,80	●	●	●	●	●
DFT090508HP	9,92	15,00	5,50	5,25	0,85	●	●	●	●	●





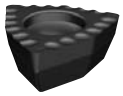
● first choice
○ alternate choice

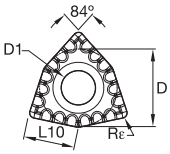
P	●	●	●	
M	○	○	●	
K	●	●	○	
N		○	○	
S		●	○	
H		○		

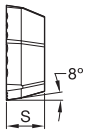
DFT-MD

catalogue number	L10	D	D1	S	Rε	KCU25	KCU40	KC7140
DFTX20204MD	3,31	5,00	2,25	2,45	0,40	●	●	●
DFT030204MD	3,97	6,00	2,25	2,45	0,40	●	●	●
DFT030304MD	3,97	6,00	2,65	2,95	0,40	●	●	●
DFT05T308MD	5,29	8,00	3,40	3,75	0,80	●	●	●
DFT06T308MD	6,62	10,00	4,40	3,75	0,80	●	●	●
DFT070408MD	7,94	12,00	4,40	4,75	0,80	●	●	●
DFT090508MD	9,92	15,00	5,50	5,25	0,80	●	●	●
DFT110508MD	11,64	17,60	5,85	4,88	0,80	–	–	●

- DS geometry for improved control of chip flow, chip breakage, and chip curling.
- These inserts support drilling in P0 and P1 steel, higher alloyed tool steels, and stainless steels where high feed rates cannot be used to provide short chips.







● first choice
○ alternate choice

P		●
M		○
K		
N		○
S		○
H		

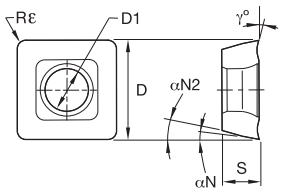
NEW!

Indexable Drills

DFT • DS

catalogue number	L10	D	D1	S	Rε	KCU40
DFTX20204DS	3,31	5,00	2,25	2,45	0,40	●
DFT030304DS	3,97	6,00	2,65	2,95	0,40	●
DFT05T308DS	5,29	8,00	3,40	3,75	0,80	●
DFT06T308DS	6,62	10,00	4,40	3,75	0,80	●
DFT070408DS	7,94	12,00	4,40	4,75	0,80	●
DFT090508DS	9,92	15,00	5,50	5,25	0,80	●





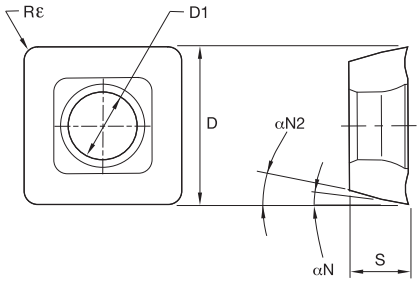
● first choice
○ alternate choice

P	●	●	●	●	
M		○	●	●	
K	●	●	●	○	
N		○	○	○	
S		○	●	○	
H					

SP..X..(R)HP

catalogue number	D	D1	S	Rε	γ°	αN	αN2	KCPK10	KCU25	KCU40	KC7140
SPGX050204HP	5,56	2,25	2,38	0,40	10	7	11	–	●	●	●
SPGX060304RHP	6,35	2,65	3,18	0,40	10	7	11	–	●	●	●
SPGX070304RHP	7,94	2,85	3,18	0,40	10	7	11	–	●	●	●
SPGX070308HP	7,94	2,85	3,18	0,80	10	7	11	●	●	●	–
SPPX09T308RHP	9,53	3,60	3,97	0,80	10	7	11	–	●	●	●
SPPX09T310HP	9,53	3,60	3,97	1,00	10	7	11	●	●	●	–
SPPX120408RHP	12,70	4,60	4,76	0,80	10	7	11	–	●	●	●
SPPX120412HP	12,70	4,60	4,76	1,20	10	7	11	●	●	●	–
SPPX15T508RHP	15,73	5,50	5,95	0,80	10	7	11	–	●	●	●
SPPX15T512HP	15,73	5,50	5,95	1,20	10	7	11	●	●	●	–

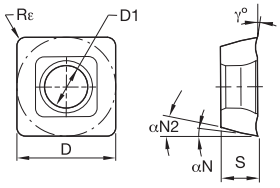




SP..X..MD

catalogue number	D	D1	S	Rε	γ°	αN	αN2	KCPK10	KCU25	KCU40	KC7140
SPGX050204MD	5,56	2,25	2,38	0,40	16	7	11	–	●	●	●
SPGX060304MD	6,35	2,65	3,18	0,40	20	7	11	●	●	●	●
SPGX070304MD	7,94	2,85	3,18	0,40	16	7	11	●	●	●	●
SPGX070308MD	7,94	2,85	3,18	0,80	16	7	11	●	●	●	–
SPPX09T308MD	9,53	3,60	3,97	0,80	16	7	11	–	●	●	●
SPPX09T310MD	9,53	3,60	3,97	1,00	16	7	11	●	●	●	–
SPPX120408MD	12,70	4,60	4,76	0,80	16	7	11	–	●	●	●
SPPX120412MD	12,70	4,60	4,76	1,20	16	7	11	●	●	●	–
SPPX15T508MD	15,73	5,50	5,95	0,80	16	7	11	–	●	●	●
SPPX15T512MD	15,73	5,50	5,95	1,20	16	7	11	●	●	●	–





● first choice
○ alternate choice

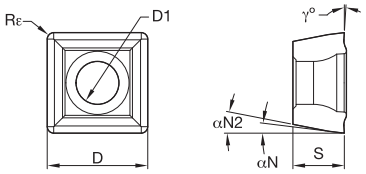
P	●	●	●
M		○	●
K	●	●	●
N		○	○
S		○	●
H			

SP..X..FP

catalogue number	D	D1	S	Rε	γ°	αN	αN2	KCPK10	KCU25	KCU40
SPGX060304FP	6,35	2,85	3,18	0,40	6	7	11	●	●	●
SPGX070304FP	7,94	2,85	3,18	0,40	6	7	11	●	●	●
SPGX070308FP	7,94	2,85	3,18	0,80	6	7	11	●	●	●
SPPX09T308FP	9,53	3,60	3,97	0,80	6	7	11	●	●	●
SPPX09T310FP	9,53	3,60	3,97	1,00	6	7	11	●	●	●
SPPX120408FP	12,70	4,60	4,76	0,80	6	7	11	●	●	●
SPPX120412FP	12,70	4,60	4,76	1,20	6	7	11	●	●	●
SPPX15T508FP	15,73	5,50	5,95	0,80	6	7	11	●	●	●
SPPX15T512FP	15,73	5,50	5,95	1,20	6	7	11	●	●	●

- LP geometry for improved control of chip flow, chip breakage, and chip curling.
- These inserts support drilling in P0 and P1 steel, higher alloyed tool steels, and stainless steels where high feed rates cannot be used to provide short chips.





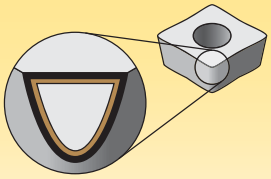
● first choice
○ alternate choice

P		●
M		○
K		
N		○
S		○
H		

NEW!

SP..X..LP

catalogue number	D	D1	S	Rε	γ°	αN	αN2	KCU40
SPGX050204LP	5,42	2,25	2,38	0,40	4	7	11	●
SPGX060304LP	6,35	2,65	3,18	0,40	4	7	11	●
SPPX070304LP	7,80	2,85	3,18	0,40	4	7	11	●
SPPX09T308LP	9,38	3,60	3,97	0,80	4	7	11	●
SPPX120408LP	12,56	4,60	4,76	0,80	4	7	11	●

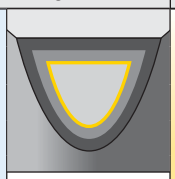
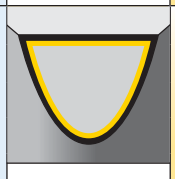


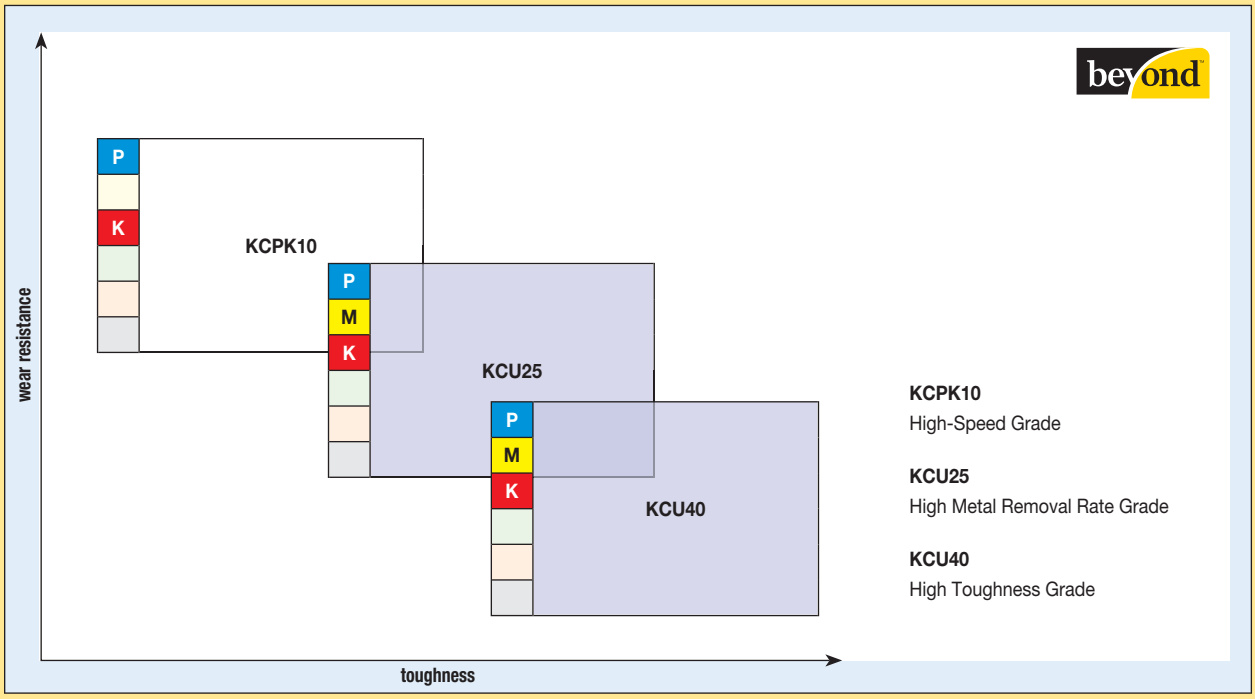
Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

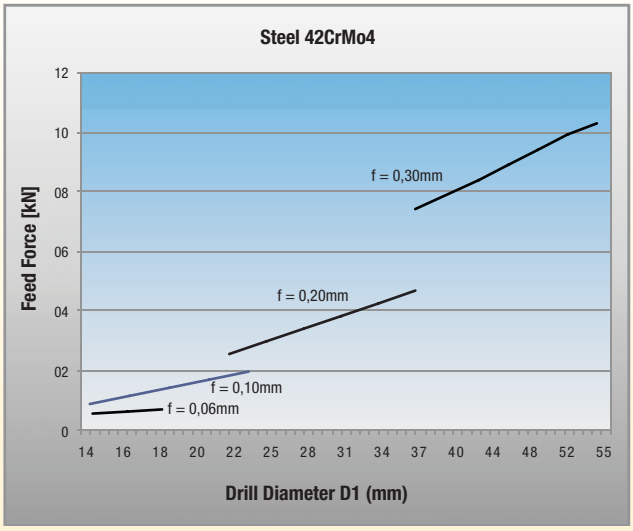
wear resistance ← → toughness

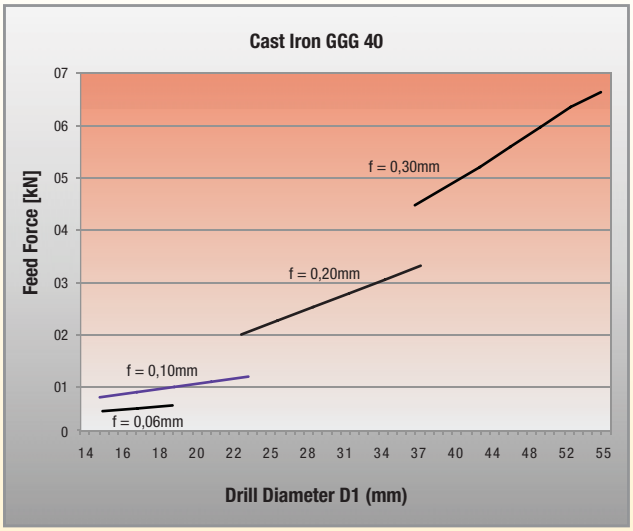
Grade

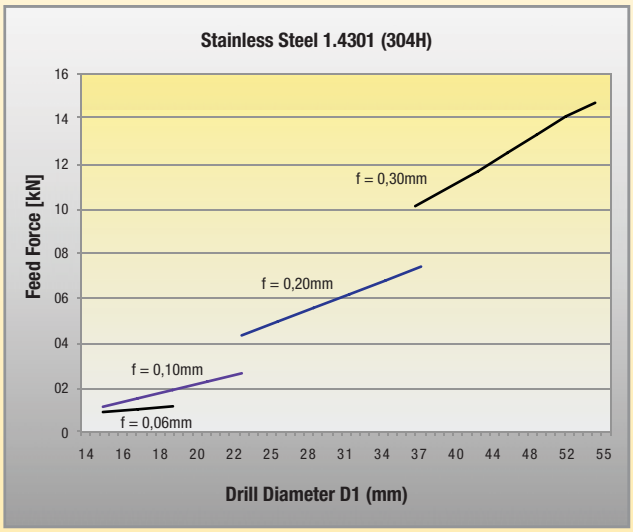
Coating	Grade Description	05	10	15	20	25	30	35	40	45
KCPK10  Al_2O_3 TiCN	**Composition:** With an advanced CVD TiCN-Al_2O_3 coating combined with a cobalt-enriched carbide substrate, this grade offers a balanced combination of deformation-resistance and edge toughness. **Application:** The KCPK10™ grade offers outstanding abrasion and crater wear resistance for high-speed machining of steels and cast irons. Use for very high cutting speeds with low to medium feed rates.	P	P	P	P					
		K	K	K	K					
KCU25  Al_2O_3 TiCN	**Composition:** This advanced CVD TiCN-Al_2O_3 coating, together with a newly engineered tough carbide substrate, ensures adequate deformation resistance along with excellent edge strength, and offers very good wear resistance over a wide range of machining conditions. **Application:** KCU25, as a high productivity grade with high speeds and feeds, is the first choice for productive process with very good reliability in steels, stainless steels, and cast irons.	P	P	P	P	P	P	P	P	P
		M	M	M	M	M	M	M	M	M
		K	K	K	K	K	K	K	K	K
KCU40  PVD TiN_TiAlN	**Composition:** With a multilayered PVD TiN-TiAlN coating and a tough substrate, this grade withstands interruptions and provides high wear resistance for long tool life. **Application:** The KCU40 grade is the first choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper edges, and as a grade for high toughness applications. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.	P	P	P	P	P	P	P	P	P
		M	M	M	M	M	M	M	M	M
		K	K	K	K	K	K	K	K	K

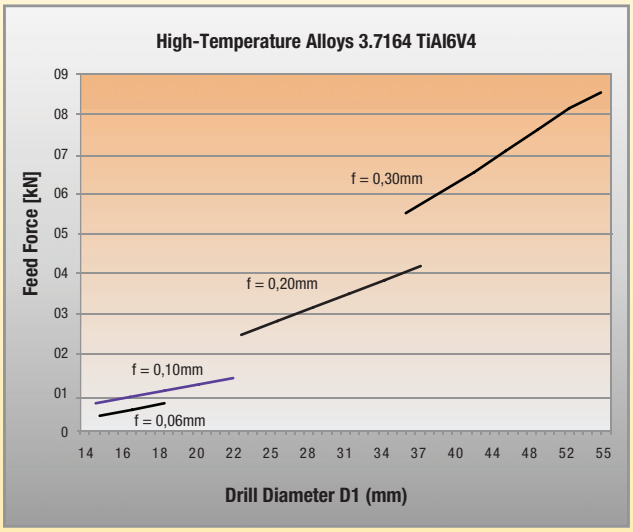


Feed Force Requirement

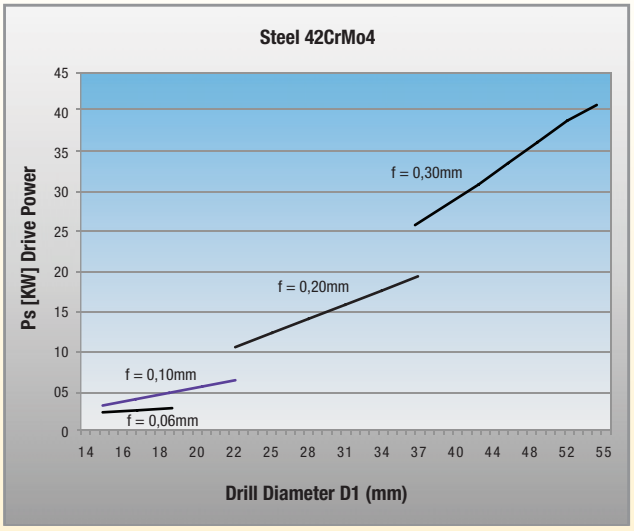


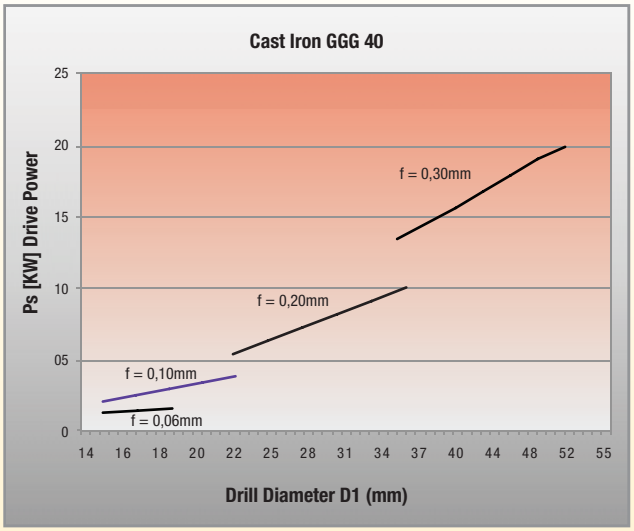


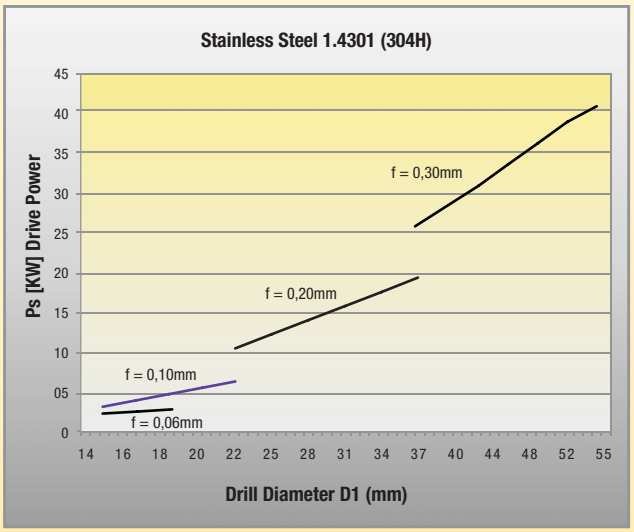


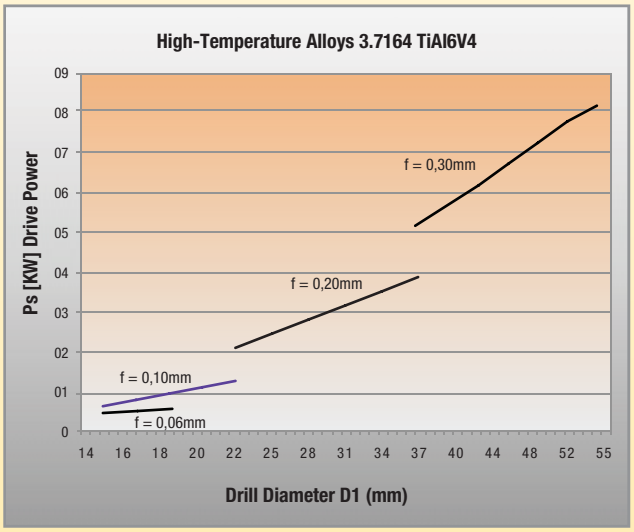


Power Recommendation

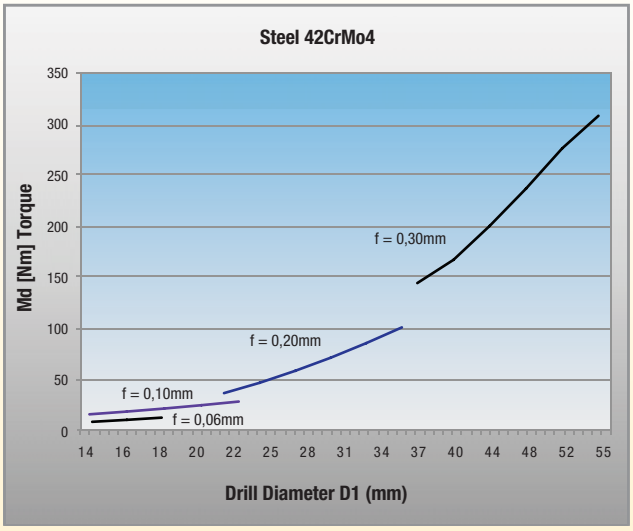


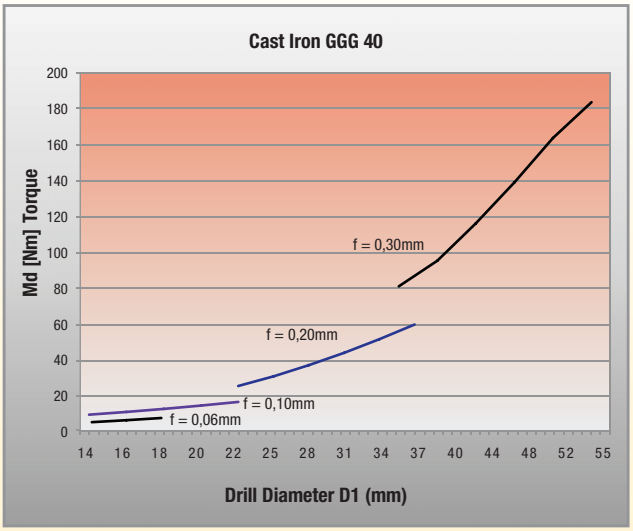


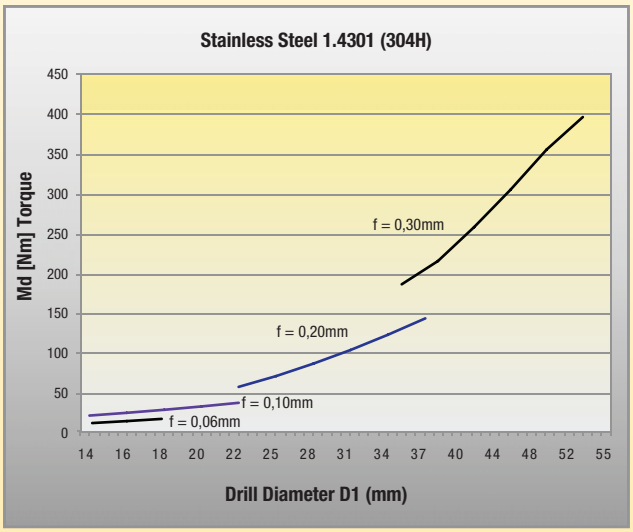


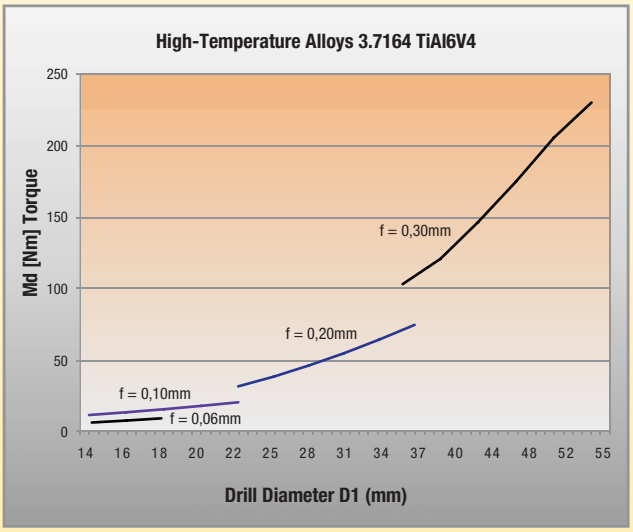


Torque Recommendation









NOVO KNOWS CAD/CAM

With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalogue, and then manually inputting the tooling information from the catalogue into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**



CTR™ Counterboring Tools

CTR counterboring tools are designed for high-production screw-head counterbores and similar counterboring operations. Tools can be adapted to almost all applications for optimum cutting performance and long tool life.

Extremely unequal insert positioning and flutes prevent chattering and generate less noise. A precise 90° bottom can be achieved with the S2 S inserts.

Features and Benefits

Productivity and Reliability

- S2 S inserts reduce additional drill operations to achieve a precise 90° bottom.
- Chatter-free operations for improved surface quality due to extremely unequal insert positioning and flutes.
- Achieve high metal removal rates to reduce machine time and manufacturing costs.

Versatility

- Counterboring tools can be used in steel, stainless steel, non-ferrous materials, cast irons, and heat-resistant alloy applications.
- Toolholders are double- or triple-fluted at a diameter range of 15–46mm (.591–1.811") with through-coolant capabilities.
- S2 S standard inserts are double-edged and available in various grades and geometries.

Achieve high metal removal rates to reduce machine time and manufacturing costs.

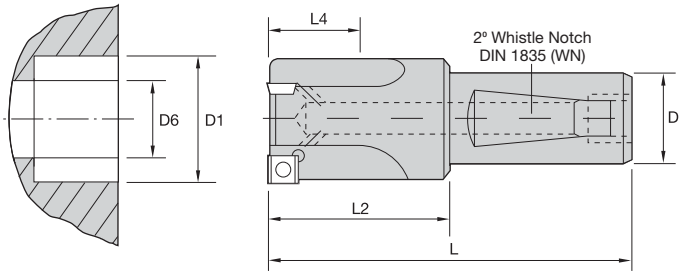


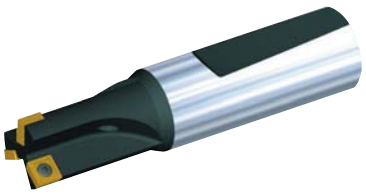
Customisation

- Length and diameter variations with and without adjustable cartridges available.
- Combination and multistep tooling based on drilling tools, like the Drill Fix™ system, with short distance and small diameter steps.
- Various radii and customised grades available upon request.

- Counterboring tool shipped with insert screws and Torx wrench.
- Order inserts separately; see pages J99–J101.







S2 S Whistle Notch WN Shank • Metric

catalogue number	D1	tol min D1	tol max D1	D	D6	L	L2	L4 max	gage insert	number of inserts
CBTF150R2WD20N2M	15,14	-0,120	0,120	20	6,0	81	31	8,5	SPHX060204R..	2
CBTF160R2WD20N2M	16,14	-0,120	0,120	20	7,0	81	31	8,5	SPHX060204R..	2
CBTF170R2WD20N2M	17,14	-0,120	0,120	20	8,0	86	36	13,5	SPHX060204R..	2
CBTF180R2WD20N2M	18,14	-0,120	0,120	20	8,4	86	36	13,5	SPHX070304R..	2
CBTF180R2WD20N3M	18,14	-0,120	0,120	20	8,4	86	36	13,5	SPHX060204R..	3
CBTF200R2WD20N2M	20,17	-0,120	0,120	20	8,5	86	36	16,0	SPHX070304R..	2
CBTF200R2WD20N3M	20,17	-0,120	0,120	20	8,5	86	36	16,0	SPHX060204R..	3
CBTF210R2WD20N2M	21,17	-0,120	0,120	20	8,5	86	36	16,0	SPHX070304R..	2
CBTF210R2WD20N3M	21,17	-0,120	0,120	20	10,5	86	36	11,0	SPHX060204R..	3
CBTF220R2WD20N2M	22,17	-0,120	0,120	20	10,4	86	36	16,0	SPHX070304R..	2
CBTF220R2WD20N3M	22,17	-0,120	0,120	20	10,5	86	36	16,0	SPHX060204R..	3
CBTF230R2WD20N2M	23,17	-0,120	0,120	20	10,5	91	41	21,0	SPHX090304R..	2
CBTF230R2WD20N3M	23,17	-0,120	0,120	20	10,5	91	41	16,0	SPHX070304R..	3
CBTF240R2WD20N2M	24,17	-0,120	0,120	20	10,5	91	41	18,5	SPHX090304R..	2
CBTF240R2WD20N3M	24,17	-0,120	0,120	20	10,5	91	41	16,0	SPHX070304R..	3
CBTF250R2WD20N2M	25,17	-0,120	0,120	20	12,0	96	46	23,5	SPHX090304R..	2
CBTF250R2WD20N3M	25,17	-0,120	0,120	20	10,5	96	46	21,0	SPHX070304R..	3
CBTF260R2WD20N2M	26,17	-0,120	0,120	20	13,0	96	46	23,5	SPHX090304R..	2
CBTF270R2WD20N3M	27,17	-0,120	0,120	20	10,5	96	46	21,0	SPHX090304R..	3
CBTF280R2WD20N3M	28,17	-0,120	0,120	20	15,0	101	51	23,5	SPHX090304R..	3
CBTF300R2WD20N3M	30,17	-0,120	0,120	20	15,0	101	51	23,0	SPHX090304R..	3
CBTF320R2WD20N3M	32,20	-0,120	0,120	20	17,0	101	51	23,0	SPHX090304R..	3
CBTF330R2WD20N3M	33,20	-0,120	0,120	20	17,0	101	51	25,5	SPHX090304R..	3
CBTF340R2WD32N3M	34,20	-0,120	0,120	32	18,0	111	51	25,5	SPHX090304R..	3
CBTF350R2WD32N3M	35,20	-0,120	0,120	32	19,0	111	51	25,5	SPHX090304R..	3
CBTF360R2WD32N3M	36,20	-0,120	0,120	32	19,0	116	56	27,5	SPHX090304R..	3
CBTF380R2WD32N3M	38,20	-0,120	0,120	32	22,0	121	61	30,0	SPHX120404R..	3
CBTF400R2WD32N3M	40,20	-0,120	0,120	32	21,0	121	61	30,5	SPHX120404R..	3
CBTF420R2WD32N3M	42,20	-0,120	0,120	32	22,0	126	66	33,5	SPHX120404R..	3
CBTF460R2WD32N3M	46,20	-0,120	0,120	32	25,0	126	66	33,5	SPHX120404R..	3

Spare Parts



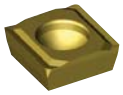


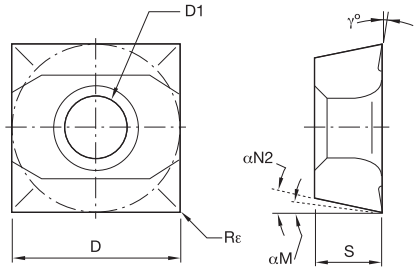
gage insert	insert screw	wrench	Torx size
SPHX060204R..	**192.432**	**170.028**	T8
SPHX070304R..	**192.432**	**170.028**	T8
SPHX090304R..	**191.924**	**170.024**	T9
SPHX120404R..	**191.916**	**170.025**	T15

- Double-sided insert style.

● first choice
○ alternate choice

		KCU25	KCU40	KC7215	KC7140
P		●	●	●	●
M		○	○	○	●
K		○	○	○	○
N					○
S					○
H					

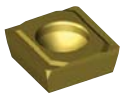


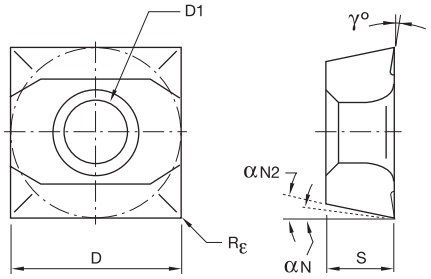


SPHX..R-20

catalogue number	D	D1	S	Rε	γ°	αN2	αN M	KCU25	KCU40	KC7215	KC7140
SPHX060202R20	6,35	2,85	2,38	0,20	12	11	7	–	–	●	–
SPHX060204R20	6,35	2,85	2,38	0,40	12	11	7	●	●	–	●
SPHX060206R20	6,35	2,85	2,38	0,60	12	11	7	–	–	●	–
SPHX060208R20	6,35	2,85	2,38	0,80	12	11	7	–	–	●	–
SPHX070302R20	7,94	2,85	3,18	0,20	12	11	7	–	–	●	–
SPHX070304R20	7,94	2,85	3,18	0,40	12	11	7	●	●	–	●
SPHX070306R20	7,94	2,85	3,18	0,60	12	11	7	–	–	●	–
SPHX070308R20	7,94	2,85	3,18	0,80	12	11	7	–	–	●	–
SPHX070310R20	7,94	2,85	3,18	1,00	12	11	7	–	–	●	–
SPHX070312R20	7,94	2,85	3,18	1,20	12	11	7	–	–	●	–
SPHX090304R20	9,53	3,50	3,18	0,40	12	11	7	●	●	●	●
SPHX090308R20	9,53	3,50	3,18	0,80	12	11	7	●	●	–	–
SPHX090310R20	9,53	3,50	3,18	1,00	12	11	7	–	–	●	–
SPHX090312R20	9,53	3,50	3,18	1,20	12	11	7	–	–	●	–
SPHX090316R20	9,53	3,50	3,18	1,60	12	11	7	–	–	●	–
SPHX120404R20	12,70	4,50	4,76	0,40	12	11	7	●	●	–	●
SPHX120408R20	12,70	4,50	4,76	0,80	12	11	7	●	●	–	–
SPHX120410R20	12,70	4,50	4,76	1,00	12	11	7	–	–	●	–
SPHX120412R20	12,70	4,50	4,76	1,20	12	11	7	–	–	●	–
SPHX120416R20	12,70	4,50	4,76	1,60	12	11	7	–	–	●	–
SPHX120420R20	12,70	4,50	4,76	2,00	12	11	7	–	–	●	–
SPHX150504R20	15,88	5,50	5,95	0,40	12	11	7	●	●	–	–
SPHX150508R20	15,88	5,50	5,95	0,80	12	11	7	●	●	–	–
SPHX150512R20	15,88	5,50	5,95	1,20	12	11	7	–	–	●	–
SPHX150516R20	15,88	5,50	5,95	1,60	12	11	7	–	–	●	–
SPHX150520R20	15,88	5,50	5,95	2,00	12	11	7	–	–	●	–

NOTE: SPHX...R-20: This geometry is first choice for steel applications.





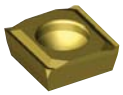
● first choice
○ alternate choice

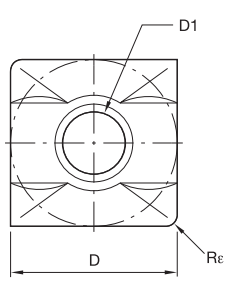
		KCPK10	KCU25	KCU40	KC7215	KM1
P		○	○	○	○	○
M				○	○	○
K		●	●	●	●	●
N						○
S				○	○	
H						

SPHX..R-21

catalogue number	D	D1	S	Rε	γ°	αN2	αN	KCPK10	KCU25	KCU40	KC7215	KM1
SPHX060202R21	6,35	2,85	2,38	0,20	4	11	7	–	–	–	●	–
SPHX060204R21	6,35	2,85	2,38	0,40	4	11	7	●	●	●	–	–
SPHX060204R-21	6,35	2,85	2,38	0,40	4	11	7	–	–	–	–	●
SPHX060206R21	6,35	2,85	2,38	0,60	4	11	7	–	–	–	●	–
SPHX060208R21	6,35	2,85	2,38	0,80	4	11	7	–	–	–	●	–
SPHX070304R21	7,94	2,85	3,18	0,40	4	11	7	●	●	●	–	–
SPHX070304R-21	7,94	2,85	3,18	0,40	4	11	7	–	–	–	–	●
SPHX070306R21	7,94	2,85	3,18	0,60	4	11	7	–	–	–	●	–
SPHX070308R21	7,94	2,85	3,18	0,80	4	11	7	●	–	●	–	–
SPHX070310R21	7,94	2,85	3,18	1,00	4	11	7	–	–	–	●	–
SPHX090304R21	9,53	3,50	3,18	0,40	4	11	7	●	●	●	–	–
SPHX090304R-21	9,53	3,50	3,18	0,40	4	11	7	–	–	–	–	●
SPHX090308R21	9,53	3,50	3,18	0,80	4	11	7	●	●	●	–	–
SPHX090310R21	9,53	3,50	3,18	1,00	4	11	7	–	–	–	●	–
SPHX090312R21	9,53	3,50	3,18	1,20	4	11	7	–	–	–	●	–
SPHX090316R21	9,53	3,50	3,18	1,60	4	11	7	–	–	–	●	–
SPHX120404R21	12,70	4,50	4,76	0,40	4	11	7	●	●	●	–	–
SPHX120404R-21	12,70	4,50	4,76	0,40	4	11	7	–	–	–	–	●
SPHX120408R21	12,70	4,50	4,76	0,80	4	11	7	–	–	–	●	–
SPHX120410R21	12,70	4,50	4,76	1,00	4	11	7	–	–	–	●	–
SPHX120412R21	12,70	4,50	4,76	1,20	4	11	7	–	–	–	●	–
SPHX120416R21	12,70	4,50	4,76	1,60	4	11	7	–	–	–	●	–
SPHX120420R21	12,70	4,50	4,76	2,00	4	11	7	–	–	–	●	–
SPHX150504R-21	15,88	5,50	5,95	0,40	4	11	7	–	–	–	–	●

NOTE: SPHX...R-21: This geometry is first choice for cast iron applications.





● first choice
○ alternate choice

P		
M		
K		○
N		●
S		
H		

SPHX..R-22

catalogue number	D	D1	S	Rε	γ°	αN2	αN M	KM1
SPHX060204R-22	6,35	2,85	2,38	0,40	25	11	–	●
SPHX070304R-22	7,94	2,85	3,18	0,40	25	11	–	●
SPHX090304R-22	9,53	3,50	3,18	0,40	25	11	–	●
SPHX120404R-22	12,70	4,50	4,76	0,40	25	11	–	●
SPHX150504R-22	15,88	5,50	5,95	0,40	25	11	7	●

NOTE: SPHX...R-22: This geometry is first choice for aluminium applications.



Hole Finishing

Introduction **K2–K5**

Tool Selection Guide K4–K5

RMS Solid Carbide Reaming **K6–K10**

RMR, RMB, and RMB-E Tipped Reaming **K12–K23**

RMR Disc Tipped Reaming K12, K15–K16, K22

RMB Cermet Tipped Reaming K13, K17–K18, K22

RMB-E Expansion Reaming K14, K19–K22

RHR, RHM, and RHM-E Modular Reaming **K24–K41**

RHR Disc Tipped Reaming K24, K27–K28, K36

RHM Cermet Tipped Reaming K25, K29–K32, K36

RHM-E Expansion Reaming K26, K33–K36

Modular Reaming Bodies K38–K41

SIF Steerable Toolholder **K42–K48**

RIR and RIQ Guided Reaming **K50–K67**

Romicron High-Performance Boring System **K68–K113**

ModBORE Boring Systems **K114–K145**

PCD Customised Tooling **K146–K150**

Application Examples **K152–K212**

Hole Finishing with Kennametal

Owning the entire process chain from raw materials to reconditioning makes Kennametal one of the few sources in the metalworking industry where you can get complete hole finishing tooling, from reaming and fine boring to motion tooling. Kennametal provides customised solutions that are the best fit for any application or machining challenge, without limitations from product portfolio or capacity.



PCD Tooling

- Extremely productive and tailored for satisfying your high-volume production needs.
- Several standard PCD grades, like KD1415™ and KD1425™, are available to provide the highest tool life and cutting data as well as unmatched surface and diameter tolerance quality.
- Platforms are available depending on your application and preference from steel to carbide based, adjustable pocket seats, fine-boring components like Romicron™ or FB cartridges, spindle couplings, or SIF™ steerable adaptors.



Multi-flute Reaming

- RMR™, RMB™, and RMB-E™ tipped reaming.
- RHR™, RHM™, and RHM-E™ modular reaming.
- Highly productive and easy to apply.
- Large, standard, off-the-shelf portfolio of solid carbide, cermet, carbide-tipped, and modular reaming tools, all ground to achieve H7 without any customisation.
- Complex specials with multiple steps, coupling, and length variations are available.
- Intermediate sizes, grades, and lead chamfers available with short delivery.

Motion Tooling

- Sophisticated tooling achieves most challenging tasks.
- Large, customised complex solution portfolio of:
  - — Linear feed-out heads.
  - — Eccentric actuating heads.
  - — Pivot heads.
  - — Cylinder boring tools.
  - — Line boring bars.
  - — Bottle boring tools.
  - — Valve seat and guide tools.
  - — Machining centre tools.
- Depending on your application and preference, tools are based on the positive-stop principle; use drawbars, like with engineered solution machines; or don't require machining centre modification.



Padded Reaming

- RIQ™ Quattro Cut™ and RIR™ reaming systems.
- Highest precision and surface quality achievable but still easy to apply.
- RIQ is the market-leading reaming technology that eliminates back taper adjustment, dramatically reduces setup time while still offering highest accuracy and surface quality, and offers four cutting edges with PCD, CBN, carbide, or cermet.
- RIR provides the most stable pocket seat and fail-safe clamping, from smallest to largest diameters.
- Combine the large, standard RIQ and RIR insert offering with your customised tool body.

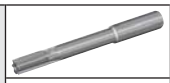


Fine Boring

- Romicron™ and ModBORE™ systems.
- Extremely flexible, with an extensive diameter and length range.
- Offers the latest grade technology using standard turning inserts.
- Romicron enables diameter modifications by hand directly at the machine without setup equipment or affecting lock screw accuracy.
- The ModBORE system offers a very large diameter range with each tool along, with roughing to finishing tooling, and can be easily and safely adapted to every KM™ spindle.



● first choice
○ alternate choice

			P	M	K	N	S	H	standard diameter range	standard diameter accuracy	custom solution diameter range	custom solution diameter accuracy	⊕	⌭
reaming tools		**RMS™** Solid *Carbide*	●	●	●	●	○		5–14mm	IT7	1,4–25,4mm	IT6 >10mm	10 µm	7 µm
		**RMR™** Disc Style *Carbide*	●	●	●	●	○		14–20mm	IT7	14–42mm	IT6	10 µm	7 µm
		**RMB™** Cermet Tipped *Cermet*	●		○	○			14–20mm	IT7	14–65mm	IT6	10 µm	7 µm
		**RMB-E™** Expandable Reamer *Carbide/Cermet*	●	●	●	●	○		14–42mm	IT6	14–42mm	IT5–IT6	10 µm	7 µm
		**RHR™** Modular Disc Style *Carbide*	●	●	●	●	○		14–42mm	IT7	14–42mm	IT6	10 µm	7 µm
		**RHM™** Modular Cermet Tipped *Cermet*	●		○	○			14–42mm	IT7	14–50mm	IT6	10 µm	7 µm
		**RHM-E™ (Expandable)** Modular Expandable Reamer *Carbide/Cermet*	●	●	●	●	○		14–42mm	IT6	14–42mm	IT5–IT6	10 µm	7 µm
		**RIR™** Reamer Insert Rectangular *Carbide*	●	●	●	●	●	○	–	–	6–300mm	IT5	10 µm	4 µm
		**Quattro Cut™ RIQ™** Reamer Insert Quattro Cut *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	–	–	16–300mm	IT5	10 µm	4 µm
boring/fine-boring tools		**Romicron™ SVU BB** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	4–100mm	IT6	1,6–100mm	IT6	5 µm	5–10 µm
		**Romicron AVS00B–3B/SVS4B–6B** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	●	25–139mm	IT6	25–183mm	IT6	5 µm	5–10 µm
		**Romicron SVU65/92** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	71–213mm	IT6	10–326mm	IT6	5 µm	5–10 µm
		**Romicron SVS M** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	○	●	○	>40mm	IT6	40–1600mm	IT6	5 µm	5–10 µm
		**ModBORE™ RBHT** Roughing *Carbide/Cermet/PCD/CBN*	●	●	●	●	●		23,5–153mm	IT9	23,5–153mm	IT9	10 µm	>20 µm
		**ModBORE FBHO** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	9,75–88,1mm	IT7	3,0–88,1mm	IT7	5 µm	5–10 µm
		**ModBORE FBHM** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	9,75–320mm	IT7	3,0–320mm	IT7	5 µm	5–10 µm
		**ModBORE FBHS** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	23,5–153mm	IT7	23,5–153mm	IT7	5 µm	5–10 µm
		**ModBORE Bridge Tools** Roughing *Carbide/Cermet/PCD/CBN*	●	●	●	●	●		150–2205mm	IT9	150–2205mm	IT9	10 µm	>20 µm
		**ModBORE Bridge Tools** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●		150–2205mm	IT7	150–2205mm	IT7	5 µm	>10 µm
		**Fine Boring Cartridges** Fine Boring *Carbide/Cermet/PCD/CBN*	●	○	●	●	○		>28mm	IT7	>28mm	IT7	5 µm	5–10 µm
PCD		**PCD** Round Tools *Steel Base*				●			–	–	10–100mm	IT6	10 µm	10 µm
		**PCD** Round Tools *Carbide Base*				●			–	–	5–25mm	IT6	5 µm	7 µm

⌭ Cylindricity
NOTE: Process- and application-dependent.
Highly dependent on the pre-machine hole accuracy.
Use of high-performance drilling/pre-machining tools mandatory to reach values.

⊕ Position
NOTE: Process- and application-dependent.
Highly dependent on the pre-machine hole accuracy.
Use of high-performance drilling/pre-machining tools mandatory to reach values.

achievable surface quality Ra						capability				cost/part	cycle time	required operator experience	page(s)
P	M	K	N	S	H								
0,5–1,0 µm	0,5–1,0 µm	0,5–1,5 µm	–	0,5–1,0 µm	–	●	●	●	●	moderate	low	low	K6–K10
0,2–0,6 µm	0,5–1,0 µm	0,5–1,0 µm	–	0,5–1,0 µm	–	●	●	●	●	low	low	low	K12, K15–K16, K22
0,2–0,6 µm	–	0,5–1,5 µm	0,1–0,6 µm	–	–	●	●	●	●	moderate	low	low	K13, K17–K18, K22
0,5–1,0 µm	0,5–1,0 µm	0,5–1,5 µm	–	0,5–1,0 µm	–	●	●	●	●	moderate	low	moderate	K14, K19–K22
0,2–0,6 µm	0,5–1,0 µm	0,5–1,0 µm	–	0,5–1,0 µm	–	●	●	●	●	moderate	low	low	K24, K27–K28, K36
0,2–0,6 µm	–	0,5–1,5 µm	0,1–0,6 µm	–	–	●	●	●	●	moderate	low	low	K25, K29–K32, K36
0,5–1,0 µm	0,5–1,0 µm	0,5–1,5 µm	–	0,5–1,0 µm	–	●	●	●	●	moderate	low	moderate	K26, K33–K36
0,2–0,6 µm	0,5–1,6 µm	0,5–1,8 µm	0,1–0,6 µm	<08 µm	<08 µm	●	●	●	●	low	moderate	high	K50–K54, K57–K61
0,2–0,6 µm	0,5–1,6 µm	0,5–1,8 µm	0,1–0,6 µm	<08 µm	<08 µm	●	●	●	●	low	moderate	moderate	K50–K52, K54–K61
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	●	●	○	○	low	moderate	low	K72–K76
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	●	●	●	●	low	moderate	low	K78–K82
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	●	●	○	○	low	moderate	low	K84–K85
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	●	●	●	●	low	moderate	low	please contact us
1,0–5,0 µm	1,0–5,0 µm	1,0–5,0 µm	1,0–2,0 µm	1,0–5,0 µm	–	●	●	●	●	low	low	low–moderate	K118–K122
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	●	●	●	●	low	moderate	low–moderate	K124–K125
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	●	●	●	●	low	moderate	low–moderate	K128–K132
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	●	●	●	●	low	moderate	low–moderate	K133–K137
1,0–5,0 µm	1,0–5,0 µm	1,0–5,0 µm	1,0–2,0 µm	1,0–5,0 µm	–	●	●	●	●	low	low	low–moderate	K137–K141
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	–	●	●	●	●	low	moderate	low–moderate	K137–K141
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	–	●	●	○	○	low	moderate	low–moderate	K111–K113
–	–	–	0,1–0,8 µm	–	–	●	●	●	●	low	very low	moderate	K146–K150
–	–	–	0,1–0,8 µm	–	–	●	●	●	●	low	very low	moderate	K146–K150

Ra Surface roughness

NOTE: Surface roughness values are guidelines and depend on the application, coolant situation, machine, and cutting data applied.

RMS™ Multi-Flute Reaming Tools

RMS™ multi-flute reaming tools achieve the highest metal removal rates in 5–14mm (.197–.551") diameters. All standard reamers are ground to an ISO H7 tolerance class hole to address common applications. Specific coatings and lead configurations enable high-speed machining of steel, stainless steel, cast iron, and non-ferrous materials at accelerated speeds.



Primary Application

Use standard SIF™ steerable hydraulic chucks or SIF adaptors for easy compensation of radial runout and angular inaccuracies of the spindle to achieve the highest possible hole straightness and surface quality.

Features and Benefits

Higher Productivity and Profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Highest metal removal rates at higher speeds and feeds due to reaming-specific grades and substrates.
- Improved straightness and cylindrical form compared to competitive tools, and reduced vibration due to unequal flutes.
- All RMS reamers have internal coolant capability.

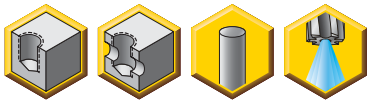
RMS™ multi-flute reaming tools achieve highest metal removal rates from 5–14mm (.197–.551").

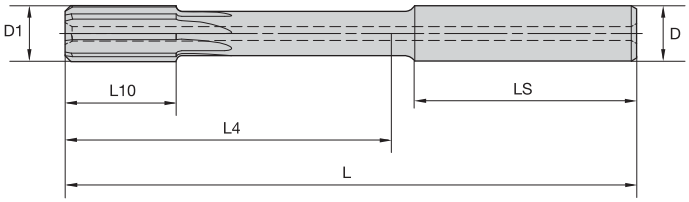


Customisation

- Diameters 1,40–14,15mm (.055–.557") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters of standard programme available as simple specials with short delivery time.
- Solid cermet reaming tools and tooling for heat-resistant materials are available on request.

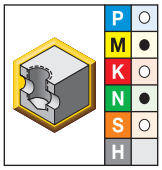
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT7 hole tolerance class available.
- Starting with Ø 10mm in IT6 hole tolerance available.

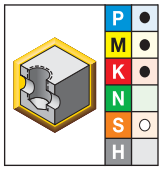






RMS • Blind Hole Solid Carbide Reamer with Internal Coolant





● first choice
○ alternate choice

K605	KC6305	D1	D	L	L4	L10	LS	Z
RMS05000H7SF	RMS05000H7SF	5,00	6,00	74,0	32,0	12,0	36,0	4
RMS05500H7SF *	RMS05500H7SF	5,50	6,00	74,0	32,0	12,0	36,0	4
RMS06000H7SF	RMS06000H7SF	6,00	6,00	74,0	32,0	12,0	36,0	4
RMS06500H7SF	RMS06500H7SF	6,50	8,00	91,0	49,0	16,0	36,0	4
RMS07000H7SF	RMS07000H7SF	7,00	8,00	91,0	49,0	16,0	36,0	4
RMS08000H7SF	RMS08000H7SF	8,00	8,00	91,0	49,0	16,0	36,0	6
RMS09000H7SF	RMS09000H7SF	9,00	10,00	103,0	57,0	20,0	40,0	6
RMS10000H7SF	RMS10000H7SF	10,00	10,00	103,0	57,0	20,0	40,0	6
RMS11000H7SF	RMS11000H7SF	11,00	12,00	118,0	67,0	24,0	45,0	6
RMS12000H7SF	RMS12000H7SF	12,00	12,00	118,0	67,0	24,0	45,0	6
RMS13000H7SF	RMS13000H7SF	13,00	14,00	132,0	81,0	28,0	45,0	6
RMS14000H7SF	RMS14000H7SF	14,00	14,00	132,0	81,0	28,0	45,0	6

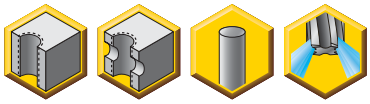
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

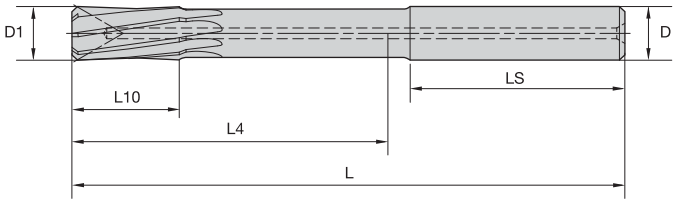
Dimensions for Engineered-Solution Reamers

D1 min	D1 max	D	L	L4	L10	LS	
mm	mm	mm	mm	mm	mm	mm	Z
14,000	15,999	16	147,4	92,4	7,5	49	6
16,000	17,999	20	159,4	102,4	7,5	51	6
18,000	20,000	20	173,4	116,4	7,5	51	6
20,001	22,499	20	202,4	145,4	7,5	51	6
22,500	24,999	20	212,4	155,4	7,5	51	6
25,000	27,499	25	232,4	169,4	7,5	57	8
27,500	29,999	25	242,4	179,4	7,5	57	8
30,000	32,499	25	272,4	209,4	7,5	57	8
32,500	34,999	32	272,4	205,4	7,5	61	8
35,000	37,499	32	272,4	205,4	7,5	61	8
37,500	39,999	32	272,4	205,4	7,5	61	8
40,000	42,500	32	272,4	205,4	7,5	61	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

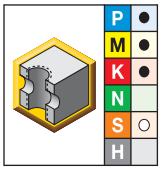
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT7 hole tolerance class available.
- Starting with Ø 10mm in IT6 hole tolerance available.

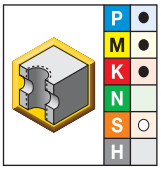






RMS • Through Hole Solid Carbide Reamer with Internal Coolant





● first choice
○ alternate choice

K605	KC6305	D1	D	L	L4	L10	LS	Z
RMS05000H7HF	RMS05000H7HF	5,00	6,00	74,0	32,0	12,0	36,0	4
RMS05500H7HF	RMS05500H7HF	5,50	6,00	74,0	32,0	12,0	36,0	4
RMS06000H7HF	RMS06000H7HF	6,00	6,00	74,0	32,0	12,0	36,0	4
RMS06500H7HF	RMS06500H7HF	6,50	8,00	91,0	49,0	16,0	36,0	4
RMS07000H7HF	RMS07000H7HF	7,00	8,00	91,0	49,0	16,0	36,0	4
RMS08000H7HF	RMS08000H7HF	8,00	8,00	91,0	49,0	16,0	36,0	6
RMS09000H7HF *	RMS09000H7HF	9,00	10,00	103,0	57,0	20,0	40,0	6
RMS10000H7HF	RMS10000H7HF	10,00	10,00	103,0	57,0	20,0	40,0	6
RMS11000H7HF	RMS11000H7HF	11,00	12,00	118,0	67,0	24,0	45,0	6
RMS12000H7HF	RMS12000H7HF	12,00	12,00	118,0	67,0	24,0	45,0	6
RMS13000H7HF	RMS13000H7HF	13,00	14,00	132,0	81,0	28,0	45,0	6
RMS14000H7HF	RMS14000H7HF	14,00	14,00	132,0	81,0	28,0	45,0	6

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Dimensions for Engineered-Solution Reamers

D1 min	D1 max	D	L	L4	L10	LS	
mm	mm	mm	mm	mm	mm	mm	Z
14,000	15,999	16	147,4	92,4	7,5	49	6
16,000	17,999	20	159,4	102,4	7,5	51	6
18,000	20,000	20	173,4	116,4	7,5	51	6
20,001	22,499	20	202,4	145,4	7,5	51	6
22,500	24,999	20	212,4	155,4	7,5	51	6
25,000	27,499	25	232,4	169,4	7,5	57	8
27,500	29,999	25	242,4	179,4	7,5	57	8
30,000	32,499	25	272,4	209,4	7,5	57	8
32,500	34,999	32	272,4	205,4	7,5	61	8
35,000	37,499	32	272,4	205,4	7,5	61	8
37,500	39,999	32	272,4	205,4	7,5	61	8
40,000	42,500	32	272,4	205,4	7,5	61	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

RMS™ • Metric

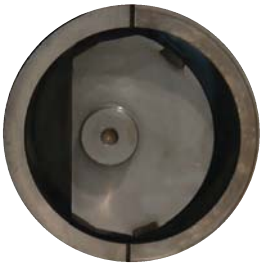
Material Group		straight flute			helical flute			Metric						
		K605			KC6305			Cutting Speed — vc						
		Range — m/min						Tool Diameter (mm)	Recommended Feed Rate per Tooth					
									4,16–7,15mm		7,16–9,59mm		9,60–14,00mm	
		min	Starting Value	max	min	Starting Value	max	Feed/ Tooth	min	max	min	max	min	max
P	1	40	**60**	70	90	**120**	155	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	2	40	**60**	70	90	**120**	155	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	3	35	**50**	60	75	**100**	130	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	4	25	**40**	45	60	**80**	105	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	5	15	**20**	25	30	**40**	55	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	6	15	**20**	25	30	**40**	55	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
M	1	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
	2	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
	3	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
K	1	35	**50**	60	75	**100**	130	mm/z	0,05	0,16	0,05	0,18	0,05	0,20
	2	25	**40**	50	60	**90**	110	mm/z	0,05	0,14	0,05	0,16	0,05	0,18
	3	20	**30**	45	60	**80**	105	mm/z	0,05	0,12	0,05	0,14	0,05	0,16
N	1	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	2	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	3	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	4	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	5	105	**140**	180	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
S	1	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	2	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	3	15	**20**	30	20	**30**	40	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	4	15	**20**	30	20	**30**	40	mm/z	0,05	0,10	0,05	0,12	0,05	0,15

Revolution in **Crank Boring**

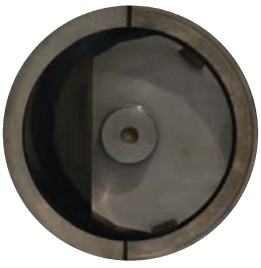


Our asymmetrical line boring bar (LBB) is an ideal solution for crank bore machining. It has the same advantages of a regular LBB, but can be used on machining centres. Setup is done outside of the machine on standard optical presetters. Asymmetrical LBBs feature RI8 inserts made from PCD or carbide, with eight cutting edges per insert for highly economical machining.





Feed in/out



Machining

Ask your Kennametal specialist about asymmetrical line boring.

Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

RMR™ Disc Reaming

Primary Application

In comparison to solid carbide reamers or single-tipped reamers, RMR disc reamers are the economic alternative without disadvantages to productivity or hole quality. Combine RMR disc reamers with the Kennametal SIF™ steerable holder for best results.



Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating specifically for reaming applications.
- High-speed and high-performance ready.
- Superior surface finish due to lapped ground leads.
- Improved hole straightness and roundness due to unequal flute spacing (less vibrations) and runout <3 microns.
- Helical and straight flutes for chip control in through and blind holes.
- Adjustment screw with straight-fluted RMR reamers to change internal coolant supply from axial to radial.

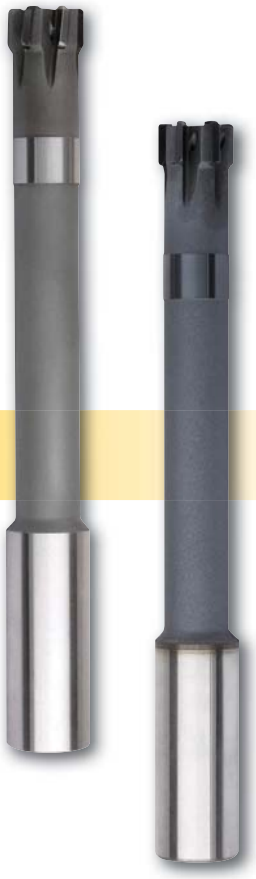
Customisation

- All diameters between 14–42,5mm (.5512–1.6732").
- Variation of leads and cylindrical margin for application-specific optimisation.

RMB™ Cermet Tipped Reamers

Primary Application

RMB™ multi-flute reamers are tipped with cermet blanks and are available in 14–20mm (.5512–.7874") diameters off-the-shelf and up to 50mm (1.968") as custom solutions. Cermet reamers provide excellent tool life and surface finishes in steel applications. Combine RMB reamers with the Kennametal SIF™ steerable holder for best results.



Features and Benefits

Higher productivity and profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Cermet enables highest metal removal rates at higher speeds and feeds in steel.
- Improved straightness and cylindrical form compared to competitive tools and reduced vibration due to unequal flutes.
- Adjustment screw with straight-fluted RMB reamers to change internal coolant supply from axial to radial.

Customisation

- Diameters up to 50mm (1.968") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters from standard offering available as simple specials with short delivery time.
- RMB tooling for machining heat-resistant materials available on request.

RMB-E™ Expandable Reamers

Primary Application

The original idea behind an expansion reamer is to achieve more regrinds. The expansion mechanism is designed for this purpose only.

The Kennametal expandable reaming system is different. It offers a completely linear expansion rate of 2 microns per 30° turn, over an expansion rate of 48 microns. The micron adjustability of this system eliminates manufacturing tolerances and enables machining to the tightest tolerances, typically achieved only by using an uncoated tool or guide pad reaming. No presetting equipment is required.



Features and Benefits

Precision and Productivity

- Use with SIF™ steerable chucks for KST toolholders for easy compensation of radial runout and angular inaccuracies.
- Tools are preadjusted to hit IT6 tolerance.
- Expansion range of 48 microns.
- Completely linear expansion.
- 2 microns per 30° turn.

Increased Tool Life

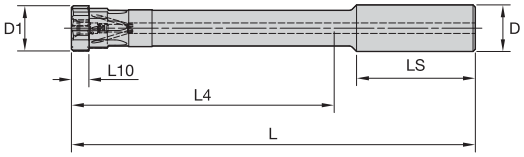
- Longer tool life at smaller tolerances.

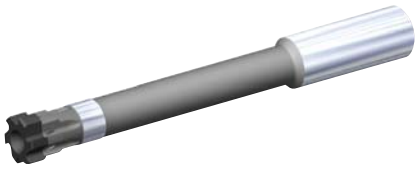
Customisation

- Diameters up to 42mm (1.65") available with helical and straight flutes in 0,001mm (.00004") increments.

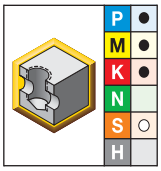
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.







RMR • Disc Style Reamer • Straight Fluted for Blind Holes with Internal Coolant



● first choice
○ alternate choice

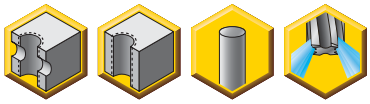
KCU05	D1	D	L	L4	L10	LS	Z
RMR14000H7SF	14,00	16,000	147,4	92,4	7,50	49,00	6
RMR15000H7SF	15,00	16,000	147,4	92,4	7,50	49,00	6
RMR16000H7SF	16,00	20,000	159,4	102,4	7,50	51,00	6
RMR17000H7SF	17,00	20,000	159,4	102,4	7,50	51,00	6
RMR18000H7SF	18,00	20,000	173,4	116,4	7,50	51,00	6
RMR19000H7SF	19,00	20,000	173,4	116,4	7,50	51,00	6
RMR20000H7SF	20,00	20,000	173,4	116,4	7,50	51,00	6

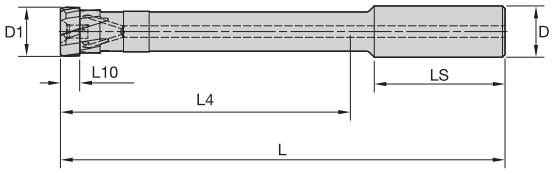
Dimensions for Engineered-Solution Reamers

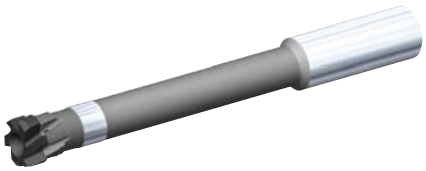
D1 min	D1 max	D	L	L4	L10	LS	
mm	mm	mm	mm	mm	mm	mm	Z
14,000	15,999	16	147,4	92,4	7,5	49	6
16,000	17,999	20	159,4	102,4	7,5	51	6
18,000	20,000	20	173,4	116,4	7,5	51	6
20,001	22,499	20	202,4	145,4	7,5	51	6
22,500	24,999	20	212,4	155,4	7,5	51	6
25,000	27,499	25	232,4	169,4	7,5	57	8
27,500	29,999	25	242,4	179,4	7,5	57	8
30,000	32,499	25	272,4	209,4	7,5	57	8
32,500	34,999	32	272,4	205,4	7,5	61	8
35,000	37,499	32	272,4	205,4	7,5	61	8
37,500	39,999	32	272,4	205,4	7,5	61	8
40,000	42,500	32	272,4	205,4	7,5	61	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

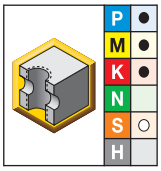
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.







RMR • Disc Style Reamer • Helical Fluted for Through Holes with Internal Coolant



● first choice
○ alternate choice

KCU05	D1	D	L	L4	L10	LS	Z
RMR14000H7HF	14,00	16,00	147,4	92,4	7,5	49,00	6
RMR15000H7HF	15,00	16,00	147,4	92,4	7,5	49,00	6
RMR16000H7HF	16,00	20,00	159,4	102,4	7,5	51,00	6
RMR17000H7HF	17,00	20,00	159,4	102,4	7,5	51,00	6
RMR18000H7HF	18,00	20,00	173,4	116,4	7,5	51,00	6
RMR19000H7HF	19,00	20,00	173,4	116,4	7,5	51,00	6
RMR20000H7HF	20,00	20,00	173,4	116,4	7,5	51,00	6

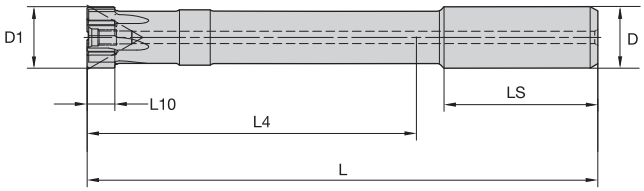
Dimensions for Engineered-Solution Reamers

D1 min	D1 max	D	L	L4	L10	LS	
mm	mm	mm	mm	mm	mm	mm	Z
14,000	15,999	16	147,4	92,4	7,5	49	6
16,000	17,999	20	159,4	102,4	7,5	51	6
18,000	20,000	20	173,4	116,4	7,5	51	6
20,001	22,499	20	202,4	145,4	7,5	51	6
22,500	24,999	20	212,4	155,4	7,5	51	6
25,000	27,499	25	232,4	169,4	7,5	57	8
27,500	29,999	25	242,4	179,4	7,5	57	8
30,000	32,499	25	272,4	209,4	7,5	57	8
32,500	34,999	32	272,4	205,4	7,5	61	8
35,000	37,499	32	272,4	205,4	7,5	61	8
37,500	39,999	32	272,4	205,4	7,5	61	8
40,000	42,500	32	272,4	205,4	7,5	61	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

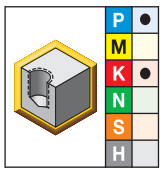
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.







RMB • Blind Hole Cermet-Tipped Reamer



● first choice
○ alternate choice

KT6215	D1	D	L	L4	L10	LS	Z
RMB14000H7SF *	14,00	16,00	145,0	76,0	8,0	49,0	6
RMB15000H7SF	15,00	16,00	145,0	76,0	8,0	49,0	6
RMB16000H7SF	16,00	20,00	157,0	86,0	8,0	51,0	6
RMB17000H7SF *	17,00	20,00	157,0	86,0	8,0	51,0	6
RMB18000H7SF *	18,00	20,00	171,0	100,0	8,0	51,0	6
RMB19000H7SF *	19,00	20,00	171,0	100,0	8,0	51,0	6
RMB20000H7SF *	20,00	20,00	200,0	129,0	8,0	51,0	6

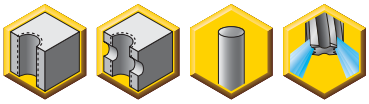
NOTE: Uncoated carbide grade K605™ and uncoated cermet grade KT325™ are available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

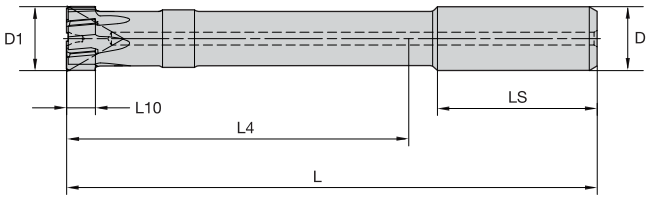
Dimensions for Engineered-Solution Reamers

D1 min	D1 max	D	L	L4	L10	LS	
mm	mm	mm	mm	mm	mm	mm	Z
14,000	15,999	16	145	76	8	49	6
16,000	17,999	20	157	86	8	51	6
18,000	19,999	20	171	100	8	51	6
20,000	21,999	20	200	129	8	51	6
22,000	25,999	20	210	139	10	51	6
26,000	29,999	25	240	163	10	57	8
30,000	32,000	25	270	193	12	57	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

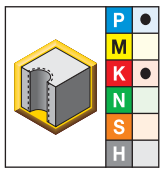
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.







RMB • Through Hole Cermet-Tipped Reamer



● first choice
○ alternate choice

KT6215	D1	D	L	L4	L10	LS	Z
RMB14000H7HF *	14,00	16,00	145,0	76,0	7,6	49,0	6
RMB15000H7HF *	15,00	16,00	145,0	76,0	7,6	49,0	6
RMB16000H7HF	16,00	20,00	157,0	86,0	7,6	51,0	6
RMB18000H7HF *	18,00	20,00	171,0	100,0	7,6	51,0	6
RMB19000H7HF *	19,00	20,00	171,0	100,0	7,6	51,0	6
RMB20000H7HF *	20,00	20,00	200,0	129,0	7,6	51,0	6

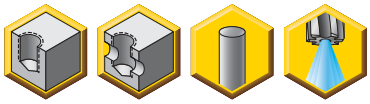
NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

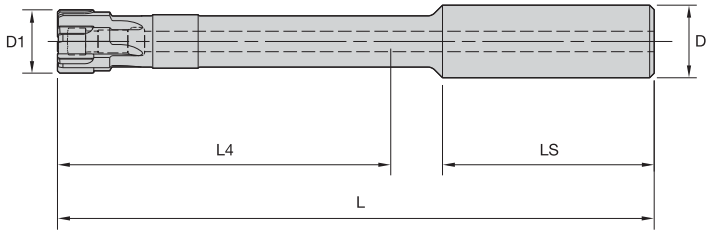
Dimensions for Engineered-Solution Reamers

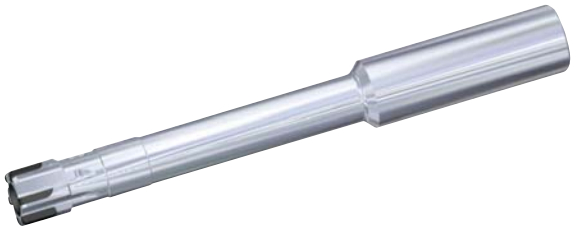
D1 min	D1 max	D	L	L4	L10	LS	
mm	mm	mm	mm	mm	mm	mm	Z
14,000	15,999	16	145	76	8	49	6
16,000	17,999	20	157	86	8	51	6
18,000	19,999	20	171	100	8	51	6
20,000	21,999	20	200	129	8	51	6
22,000	25,999	20	210	139	10	51	6
26,000	29,999	25	240	163	10	57	8
30,000	32,000	25	270	193	12	57	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

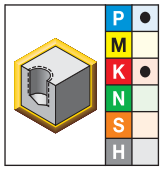
- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.

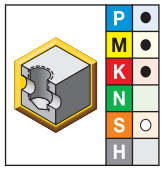






RMB-E • Blind Hole Expansion Reamer





● first choice
○ alternate choice

KC6005	KC6305	D1	D	L	L4	LS	Z
RMBE14000H6SF *	RMBE14000H6SF	14,00	16,00	131,5	72,5	49,0	6
RMBE15000H6SF *	RMBE15000H6SF *	15,00	16,00	136,5	77,5	49,0	6
RMBE16000H6SF *	RMBE16000H6SF *	16,00	20,00	143,5	82,5	54,4	6
RMBE17000H6SF *	RMBE17000H6SF *	17,00	20,00	148,5	87,5	51,0	6
RMBE18000H6SF *	RMBE18000H6SF *	18,00	20,00	153,5	92,5	51,0	6
RMBE19000H6SF *	RMBE19000H6SF	19,00	20,00	158,5	97,5	51,0	6
RMBE20000H6SF *	RMBE20000H6SF *	20,00	25,00	169,8	102,5	57,0	6

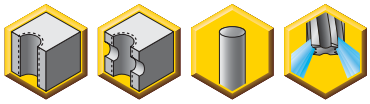
NOTE: Uncoated carbide grade K605™ and uncoated cermet grade KT325™ are available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

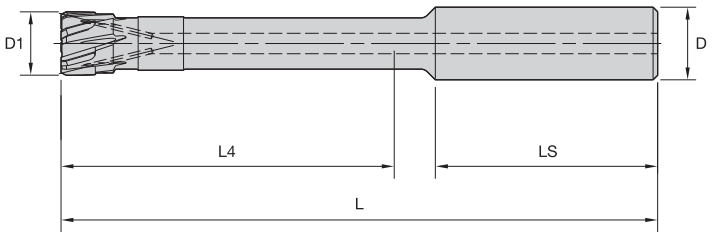
Dimensions for Engineered-Solution Reamers

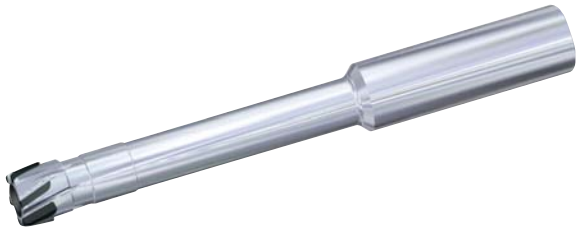
D1 min	D1 max	D	L	L4	LS	
mm	mm	mm	mm	mm	mm	Z
14,000	14,499	16	131,5	72,5	49	6
14,500	14,999	16	134,0	75,0	49	6
15,000	15,499	16	136,5	77,5	49	6
15,500	15,999	16	139,0	80,0	49	6
16,000	16,499	20	143,5	82,5	51	6
16,500	16,999	20	146,0	85,0	51	6
17,000	17,499	20	148,5	87,5	51	6
17,500	17,999	20	151,0	90,0	51	6
18,000	18,499	20	153,5	92,5	51	6
18,500	18,999	20	156,0	95,0	51	6
19,000	19,499	20	158,5	97,5	51	6
19,500	19,999	20	161,0	100,0	51	6
20,000	20,499	25	169,8	102,5	57	6

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.
Custom expandable reamers available starting from a diameter of 8mm.

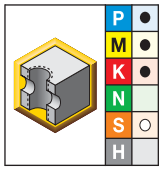
- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.

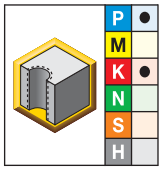






RMB-E • Through Hole Expansion Reamer





● first choice
○ alternate choice

KC6005	KC6305	D1	D	L	L4	LS	Z
RMBE14000H6HF	**RMBE14000H6HF** *	14,00	16,00	131,5	72,5	49,0	6
RMBE15000H6HF *	**RMBE15000H6HF**	15,00	16,00	136,5	77,5	49,0	6
RMBE16000H6HF *	**RMBE16000H6HF**	16,00	20,00	143,5	82,5	51,0	6
RMBE17000H6HF *	**RMBE17000H6HF** *	17,00	20,00	148,5	87,5	51,0	6
RMBE18000H6HF *	**RMBE18000H6HF**	18,00	20,00	153,5	92,5	51,0	6
RMBE19000H6HF *	**RMBE19000H6HF** *	19,00	20,00	158,5	97,5	51,0	6
RMBE20000H6HF *	**RMBE20000H6HF**	20,00	25,00	169,8	102,5	57,0	6

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

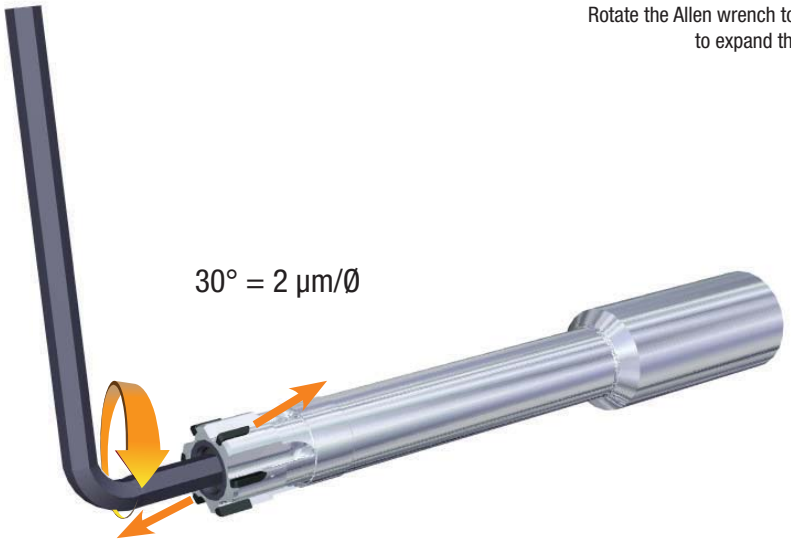
Dimensions for Engineered-Solution Reamers

D1 min	D1 max	D	L	L4	LS	
mm	mm	mm	mm	mm	mm	Z
14,000	14,499	16	131,5	72,5	49	6
14,500	14,999	16	134,0	75,0	49	6
15,000	15,499	16	136,5	77,5	49	6
15,500	15,999	16	139,0	80,0	49	6
16,000	16,499	20	143,5	82,5	51	6
16,500	16,999	20	146,0	85,0	51	6
17,000	17,499	20	148,5	87,5	51	6
17,500	17,999	20	151,0	90,0	51	6
18,000	18,499	20	153,5	92,5	51	6
18,500	18,999	20	156,0	95,0	51	6
19,000	19,499	20	158,5	97,5	51	6
19,500	19,999	20	161,0	100,0	51	6
20,000	20,499	25	169,8	102,5	57	6

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.
Custom expandable reamers available starting with a diameter of 8mm.

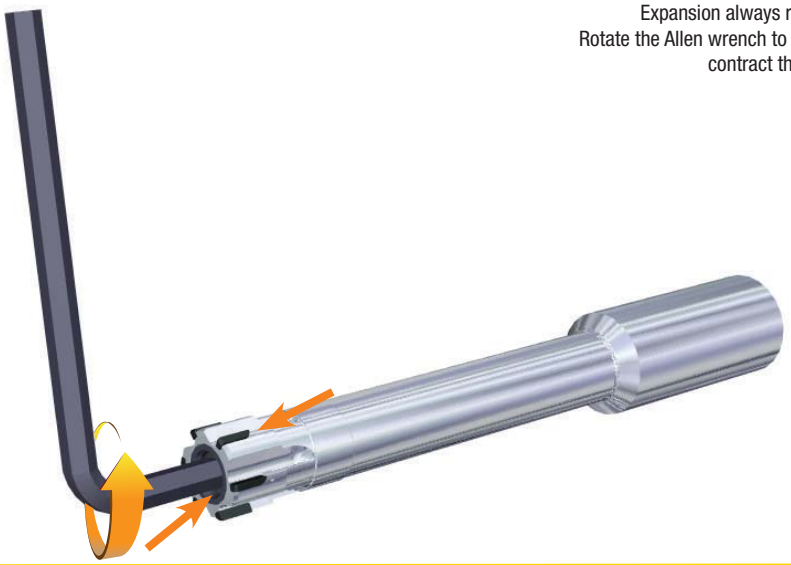
To Expand

Rotate the Allen wrench to the right to expand the reamer.



To Contract

Expansion always reversible:
Rotate the Allen wrench to the left to contract the reamer.



- 30° = 2 µm linear expansion.
- 720° = 2 revolutions; = 48µm maximum expansion.
- Hard stop after 720° expansion. You cannot over expand!
- The expansion occurs in the elastic material behaviour.
- You cannot reduce the diameter below D1.

RMR • Metric

Material Group		KCU05 Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate per Tooth Tool Diameter (mm) Feed/Tooth	14,00–19,99mm min	max	20,00–32,00mm min	max
P	1	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	2	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	3	75	**100**	130	mm/z	0,10	0,22	0,10	0,25
	4	50	**80**	105	mm/z	0,10	0,22	0,10	0,25
	5	30	**40**	60	mm/z	0,10	0,22	0,10	0,25
	6	30	**40**	60	mm/z	0,08	0,20	0,08	0,22
M	1	15	**20**	40	mm/z	0,08	0,18	0,08	0,20
	2	15	**20**	30	mm/z	0,08	0,18	0,08	0,20
	3	15	**20**	30	mm/z	0,08	0,18	0,08	0,20
K	1	80	**110**	130	mm/z	0,10	0,22	0,10	0,25
	2	65	**90**	110	mm/z	0,10	0,22	0,10	0,25
	3	50	**70**	90	mm/z	0,10	0,20	0,10	0,25
S	1	15	**20**	30	mm/z	0,10	0,18	0,10	0,20
	2	15	**20**	30	mm/z	0,10	0,18	0,10	0,20
	3	20	**30**	40	mm/z	0,10	0,20	0,10	0,20
	4	20	**30**	40	mm/z	0,10	0,20	0,10	0,20

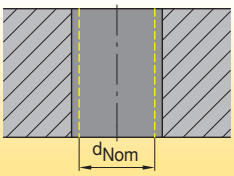
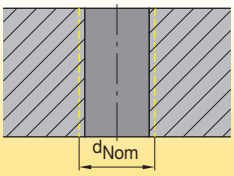
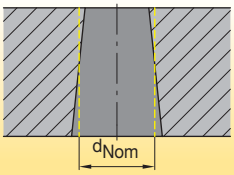
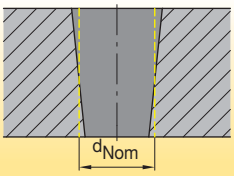
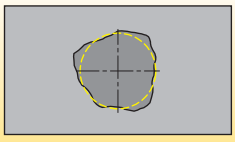
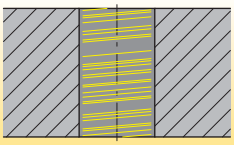
RMB™ and RMB-E™ • Metric

Material Group		RMB — Cermet Tipped straight flute KT6215 Cutting Speed — vc Range — m/min min	Starting Value	max	RMB — Cermet Tipped helical flute KT6215 min	Starting Value	max	RMB-E straight flute K605 min	Starting Value	max	RMB-E helical flute KC6305 min	Starting Value	max	Metric Recommended Feed Rate per Tooth Tool Diameter (mm) Feed/ Tooth	14,00–19,99mm min	max	20,00–32,00mm min	max
P	1	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	2	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	3	130	**160**	180	150	**180**	210	30	**40**	50	75	**100**	130	mm/z	0,10	0,22	0,10	0,25
	4	100	**130**	150	120	**150**	170	25	**40**	45	50	**80**	105	mm/z	0,10	0,22	0,10	0,25
	5	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,20	0,08	0,22
	6	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,20	0,08	0,22
M	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,18	0,08	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,18	0,08	0,20
	3	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,18	0,08	0,20
K	1	150	**180**	200	180	**210**	240	30	**50**	60	80	**110**	130	mm/z	0,10	0,22	0,10	0,25
	2	130	**160**	180	150	**180**	210	25	**40**	45	65	**90**	110	mm/z	0,10	0,22	0,10	0,25
	3	100	**130**	160	120	**150**	170	20	**30**	40	50	**70**	90	mm/z	0,10	0,20	0,10	0,22
N	1	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	2	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	3	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	4	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	5	–	**–**	–	–	**–**	–	105	**140**	180	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
S	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,10	0,18	0,10	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,10	0,18	0,10	0,20
	3	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,10	0,20	0,10	0,20
	4	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,10	0,20	0,10	0,20

Reaming Allowances for Multi-Blade Reaming

	reaming allowances in diameter mm		
mm	min	middle	max
1,40–4,80	0,08	0,12	0,20
4,81–9,59	0,10	0,15	0,25
9,60–15,00	0,15	0,20	0,30
15,00–20,00	0,15	0,25	0,35
20,00–50,00	0,20	0,30	0,40

Troubleshooting

Problem		Cause	Possible Remedy
Hole diameter too large.		• Reaming tool running out-of-centre. • Concentricity of pilot hole and ream machining unsatisfactory. • Built-up edge. • Unsuitable cooling lubricant. • Reaming tool diameter too large.	• Use equalising adaptor. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Hole diameter too small.		• Reamer worn. • Unsuitable cooling lubricant. • Reaming allowance too small.	• Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
Conical hole profile wider towards drill runout.		• Concentricity of pilot hole and reaming unsatisfactory. • Positioning accuracy of pilot hole to reaming.	• Re-align, use equalising adaptor. • Correct positioning accuracy.
Conical hole profile wider at drill entry point.		• Concentricity of pilot hole and reaming unsatisfactory. • Reaming tool skim cutting with ledger.	• Re-align, use floating head. • Securely clamp reaming tool axially.
Hole out-of-centre and/or showing chatter marks.		• Reaming tool running out-of-centre. • Slanted cutting surface/asymmetrical cutting. • Workpiece twisted.	• Use equalising adaptor. • Spot face as drilling preparation. • Take the direction of impact into account when clamping the workpiece.
Surface quality does not meet specification.		• Tool cutters worn. • Reaming tool running out-of-centre. • Incorrect technology data (cutting parameters). • Inadequate chip evacuation.	• Use equalising adaptor. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Feed grooves.		• Built-up edge.	• Change cooling lubricant. • Change cutting speed.

RHR™ Disc Reaming

Primary Application

The RHR modular disc reaming system combines the productivity of disc reamers with the idea of interchangeable reaming heads. Only five coupling sizes cover the whole diameter range, a comfortable interchange mechanism, and no need for setting fixtures or repeat measurements makes this system very attractive. Combine RHR disc reamers with the Kennametal SIF™ steerable holder for the best results.



Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating specifically for reaming applications.
- Unique patented coupling system enables same runout accuracy as monoblock systems (<3 microns), eliminating repeat runout checking.
- Quick radial clamping change-outs, even in narrow situations.
- No fixture for clamping or dismounting necessary.
- Helical and straight flutes for chip control in through and blind holes.
- Bodies available with straight shank, HSK back end, and SIF connection.

Customisation

- All diameters between 14–42,5mm (.5512–1.6732").
- Variation of leads and cylindrical margin for application-specific optimisation.

RHM™ Modular Cermet-Tipped System

Primary Application

RHM modular reamers are tipped with cermet blanks and available in diameters from 14–42,5mm (.5512–1.6732") as standards, and up to 50mm (1.968") as custom solutions. Cermet reamers provide excellent tool life and surface finishes in steel applications. Combine RHM modular reamers with the Kennametal SIF™ steerable holder for best results.

Use SIF steerable hydraulic chucks or SIF adapters for easy compensation of radial runout and angular inaccuracies of the spindle to achieve the highest possible hole straightness and surface quality. Radial or axial tool bodies are available at diameter 20mm.



Features and Benefits

Taper-Face Contact with KST Coupling

- Symmetrical torque transmission near head.
- Higher feed rate than conventional reaming tools.
- Better surface quality and tool life due to less tendency to vibrate.
- No need for head to body orientation.

Customisation

- Diameters up to 50mm (1.968") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters from standard offering available with short delivery time.
- RHM tooling for machining heat-resistant materials, as well as different lengths and couplings or shanks, available on request.

Higher productivity and profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Cermet enables highest metal removal rates at higher speeds and feeds in steel.
- Improved straightness and cylindrical form compared to competitive tools and reduced vibration tendency due to unequal flutes.

RHM-E™ Expandable Reamers

Primary Application

The original idea behind an expansion reamer is to achieve more regrinds. The expansion mechanism is designed for this purpose only.

The Kennametal expandable reaming system is different. Over an expansion range of 48 microns, it comes with a completely linear expansion rate of 2 microns per 30° turn. The micron-adjustability of this system eliminates manufacturing tolerances and thus allows for machining tightest tolerances, usually only achievable by using an uncoated tool or guide pad reaming. No pre-setting equipment is required.



Features and Benefits

Precision and Productivity

- Use with SIF™ steerable chucks for KST toolholders for easy compensation of radial runout and angular inaccuracies.
- Tools are preadjusted to hit IT6 tolerance.
- Expansion range of 48 microns.
- Completely linear expansion.
- 2 microns per 30° turn.

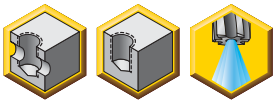
Increased Tool Life

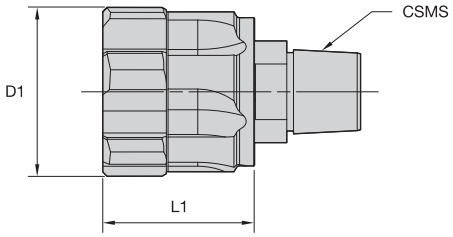
- Longer tool life at smaller tolerances.

Customisation

- Diameters up to 42mm (1.65") available with helical and straight flutes in 0,001mm (.00004") increments.

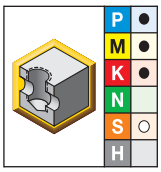
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw and retention knob separately.







RHR • Disc Style Reamer Head • Straight Fluted for Blind Holes with Internal Coolant

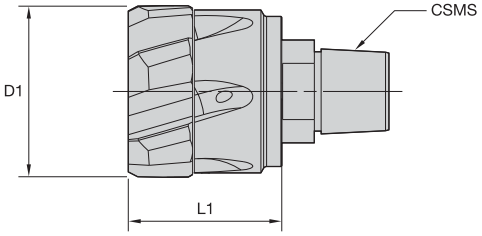


● first choice
○ alternate choice

KCU05	CSMS system size	D1	L1	Z
RHR14000KST115H7SF	KST115	14,00	17,90	6
RHR15000KST115H7SF	KST115	15,00	17,90	6
RHR16000KST135H7SF	KST135	16,00	17,90	6
RHR17000KST135H7SF	KST135	17,00	17,90	6
RHR18000KST155H7SF	KST155	18,00	17,90	6
RHR19000KST155H7SF	KST155	19,00	17,90	6
RHR20000KST175H7SF	KST175	20,00	17,90	6
RHR21000KST175H7SF	KST175	21,00	17,90	6
RHR22000KST175H7SF	KST175	22,00	17,90	6
RHR23000KST200H7SF	KST200	23,00	18,90	6
RHR24000KST200H7SF	KST200	24,00	18,90	6
RHR25000KST200H7SF	KST200	25,00	18,90	8
RHR26000KST200H7SF	KST200	26,00	18,90	8
RHR27000KST200H7SF	KST200	27,00	18,90	8
RHR28000KST250H7SF	KST250	28,00	18,90	8
RHR29000KST250H7SF	KST250	29,00	18,90	8
RHR30000KST250H7SF	KST250	30,00	18,90	8
RHR31000KST250H7SF	KST250	31,00	18,90	8
RHR32000KST250H7SF	KST250	32,00	18,90	8
RHR33000KST300H7SF	KST300	33,00	20,40	8
RHR34000KST300H7SF	KST300	34,00	20,40	8
RHR35000KST300H7SF	KST300	35,00	20,40	8
RHR36000KST300H7SF	KST300	36,00	20,40	8
RHR37000KST300H7SF	KST300	37,00	20,40	8
RHR38000KST350H7SF	KST350	38,00	20,40	8
RHR39000KST350H7SF	KST350	39,00	20,40	8
RHR40000KST350H7SF	KST350	40,00	20,40	8
RHR41000KST350H7SF	KST350	41,00	20,40	8
RHR42000KST350H7SF	KST350	42,00	20,40	8

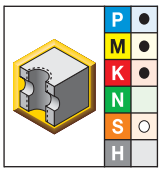
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw and retention knob separately.







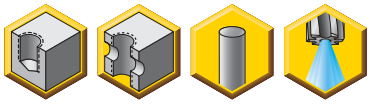
RHR • Disc Style Reamer Head • Helical Fluted for Through Holes with Internal Coolant

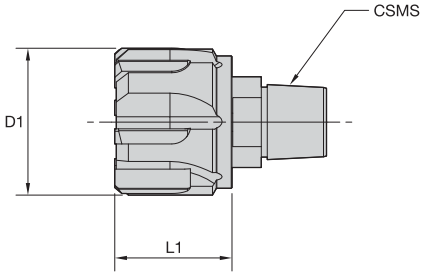


● first choice
○ alternate choice

KCU05	CSMS system size	D1	L1	Z
RHR14000KST115H7HF	KST115	14,00	17,90	6
RHR15000KST115H7HF	KST115	15,00	17,90	6
RHR16000KST135H7HF	KST135	16,00	17,90	6
RHR17000KST135H7HF	KST135	17,00	17,90	6
RHR18000KST155H7HF	KST155	18,00	17,90	6
RHR19000KST155H7HF	KST155	19,00	17,90	6
RHR20000KST175H7HF	KST175	20,00	17,90	6
RHR21000KST175H7HF	KST175	21,00	17,90	6
RHR22000KST175H7HF	KST175	22,00	17,90	6
RHR23000KST200H7HF	KST200	23,00	18,90	6
RHR24000KST200H7HF	KST200	24,00	18,90	6
RHR25000KST200H7HF	KST200	25,00	18,90	8
RHR26000KST200H7HF	KST200	26,00	18,90	8
RHR27000KST200H7HF	KST200	27,00	18,90	8
RHR28000KST250H7HF	KST250	28,00	18,90	8
RHR29000KST250H7HF	KST250	29,00	18,90	8
RHR30000KST250H7HF	KST250	30,00	18,90	8
RHR31000KST250H7HF	KST250	31,00	18,90	8
RHR32000KST250H7HF	KST250	32,00	18,90	8
RHR33000KST300H7HF	KST300	33,00	20,40	8
RHR34000KST300H7HF	KST300	34,00	20,40	8
RHR35000KST300H7HF	KST300	35,00	20,40	8
RHR36000KST300H7HF	KST300	36,00	20,40	8
RHR37000KST300H7HF	KST300	37,00	20,40	8
RHR38000KST350H7HF	KST350	38,00	20,40	8
RHR39000KST350H7HF	KST350	39,00	20,40	8
RHR40000KST350H7HF	KST350	40,00	20,40	8
RHR41000KST350H7HF	KST350	41,00	20,40	8
RHR42000KST350H7HF	KST350	42,00	20,40	8

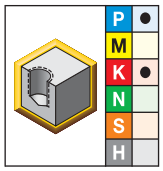
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw for axial use or retention knob separately.

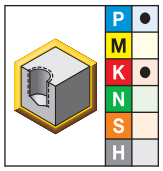






RHM • Blind Hole Cermet Tipped Reamer



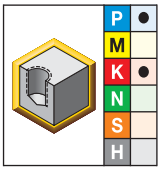


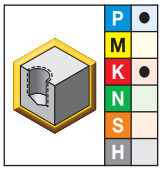
● first choice
○ alternate choice

KT325	KT6215	CSMS system size	D1	L1	Z
RHM14000KST115H7SF *	RHM14000KST115H7SF	KST115	14,00	13,50	6
RHM14288KST115H7SF *	RHM14288KST115H7SF	KST115	14,29	13,50	6
RHM15000KST115H7SF *	–	KST115	15,00	13,50	6
RHM15875KST115H7SF *	RHM15875KST115H7SF	KST115	15,88	13,50	6
RHM16000KST135H7SF *	RHM16000KST135H7SF	KST135	16,00	13,50	6
RHM17000KST135H7SF *	RHM17000KST135H7SF *	KST135	17,00	15,50	6
RHM17463KST135H7SF *	–	KST135	17,46	15,50	6
RHM18000KST155H7SF	RHM18000KST155H7SF	KST155	18,00	15,50	6
RHM19000KST155H7SF *	–	KST155	19,00	15,50	6
–	RHM19050KST155H7SF *	KST155	19,05	15,50	6
RHM20000KST175H7SF	RHM20000KST175H7SF	KST175	20,00	15,50	6
RHM20640KST175H7SF *	RHM20640KST175H7SF *	KST175	20,64	15,50	6
RHM21000KST175H7SF *	RHM21000KST175H7SF	KST175	21,00	15,50	6
–	RHM22000KST175H7SF *	KST175	22,00	15,50	6
RHM22230KST175H7SF *	RHM22230KST175H7SF *	KST175	22,23	15,50	6
RHM22500KST200H7SF *	RHM22500KST200H7SF *	KST200	22,50	16,50	6
RHM23000KST200H7SF *	RHM23000KST200H7SF *	KST200	23,00	16,50	6
RHM23810KST200H7SF *	RHM23810KST200H7SF *	KST200	23,81	16,50	6
RHM24000KST200H7SF *	RHM24000KST200H7SF *	KST200	24,00	16,50	6
RHM25000KST200H7SF *	RHM25000KST200H7SF	KST200	25,00	16,50	6
RHM25400KST200H7SF *	RHM25400KST200H7SF *	KST200	25,40	16,50	6
RHM26000KST200H7SF *	–	KST200	26,00	16,50	8
RHM26990KST200H7SF *	RHM26990KST200H7SF *	KST200	26,99	16,50	8
RHM27000KST200H7SF	RHM27000KST200H7SF *	KST200	27,00	16,50	8

(continued)

(RHM • Blind Hole Cermet Tipped Reamer — continued)



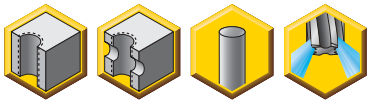


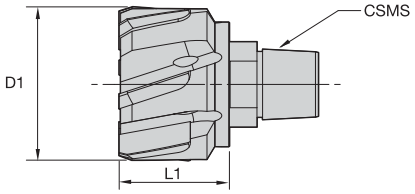
● first choice
○ alternate choice

KT325	KT6215	CSMS system size	D1	L1	Z
RHM27500KST250H7SF *	**RHM27500KST250H7SF** *	KST250	27,50	16,50	8
RHM28000KST250H7SF *	**RHM28000KST250H7SF**	KST250	28,00	16,50	8
RHM28580KST250H7SF *	**RHM28580KST250H7SF** *	KST250	28,58	16,50	8
RHM29000KST250H7SF	**RHM29000KST250H7SF** *	KST250	29,00	16,50	8
RHM30000KST250H7SF	**RHM30000KST250H7SF** *	KST250	30,00	16,50	8
RHM30160KST250H7SF *	–	KST250	30,16	16,50	8
RHM31000KST250H7SF *	**RHM31000KST250H7SF** *	KST250	31,00	16,50	8
RHM31750KST250H7SF *	**RHM31750KST250H7SF** *	KST250	31,75	16,50	8
RHM32000KST250H7SF *	–	KST250	32,00	16,50	8
RHM32500KST300H7SF *	**RHM32500KST300H7SF** *	KST300	32,50	18,00	8
RHM33000KST300H7SF *	**RHM33000KST300H7SF** *	KST300	33,00	18,00	8
RHM33340KST300H7SF *	**RHM33340KST300H7SF** *	KST300	33,34	18,00	8
RHM34000KST300H7SF *	–	KST300	34,00	18,00	8
RHM34930KST300H7SF *	**RHM34930KST300H7SF** *	KST300	34,93	18,00	8
RHM35000KST300H7SF *	**RHM35000KST300H7SF** *	KST300	35,00	18,00	8
RHM36000KST300H7SF *	**RHM36000KST300H7SF** *	KST300	36,00	18,00	8
RHM36510KST300H7SF *	**RHM36510KST300H7SF** *	KST300	36,51	18,00	8
RHM37000KST300H7SF *	–	KST300	37,00	18,00	8
RHM37500KST350H7SF *	**RHM37500KST350H7SF** *	KST350	37,50	18,00	8
RHM38000KST350H7SF *	**RHM38000KST350H7SF** *	KST350	38,00	18,00	8
RHM38100KST350H7SF *	**RHM38100KST350H7SF** *	KST350	38,10	18,00	8
RHM39000KST350H7SF *	**RHM39000KST350H7SF** *	KST350	39,00	18,00	8
RHM39690KST350H7SF *	**RHM39690KST350H7SF** *	KST350	39,69	18,00	8
–	**RHM40000KST350H7SF** *	KST350	40,00	18,00	8
RHM41000KST350H7SF *	**RHM41000KST350H7SF** *	KST350	41,00	18,00	8
RHM41280KST350H7SF *	**RHM41280KST350H7SF** *	KST350	41,28	18,00	8
RHM42000KST350H7SF	**RHM42000KST350H7SF** *	KST350	42,00	18,00	8

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

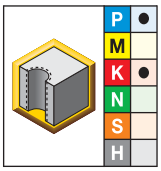
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw for axial use or retention knob separately.

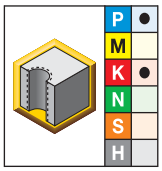






RHM • Through Hole Cermet Tipped Reamer



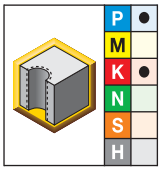


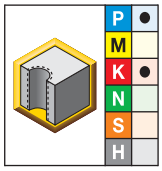
● first choice
○ alternate choice

KT325	KT6215	CSMS system size	D1	L1	Z
RHM14000KST115H7HF *	**RHM14000KST115H7HF**	KST115	14,00	13,50	6
RHM14288KST115H7HF *	**RHM14288KST115H7HF** *	KST115	14,29	13,50	6
RHM15875KST115H7HF *	–	KST115	15,88	13,50	6
RHM16000KST135H7HF	**RHM16000KST135H7HF**	KST135	16,00	13,50	6
RHM17000KST135H7HF *	**RHM17000KST135H7HF**	KST135	17,00	15,50	6
RHM17463KST135H7HF *	**RHM17463KST135H7HF** *	KST135	17,46	15,50	6
RHM18000KST155H7HF *	**RHM18000KST155H7HF**	KST155	18,00	15,50	6
RHM19000KST155H7HF *	**RHM19000KST155H7HF**	KST155	19,00	15,50	6
RHM19050KST155H7HF *	**RHM19050KST155H7HF**	KST155	19,05	15,50	6
RHM20000KST175H7HF	**RHM20000KST175H7HF**	KST175	20,00	15,50	6
RHM20640KST175H7HF *	**RHM20640KST175H7HF**	KST175	20,64	15,50	6
RHM21000KST175H7HF	**RHM21000KST175H7HF**	KST175	21,00	15,50	6
RHM22000KST175H7HF	**RHM22000KST175H7HF** *	KST175	22,00	15,50	6
RHM22230KST175H7HF *	**RHM22230KST175H7HF** *	KST175	22,23	15,50	6
RHM22500KST200H7HF *	**RHM22500KST200H7HF** *	KST200	22,50	16,50	6
RHM23000KST200H7HF *	**RHM23000KST200H7HF** *	KST200	23,00	16,50	6
RHM23810KST200H7HF *	**RHM23810KST200H7HF** *	KST200	23,81	16,50	6
RHM24000KST200H7HF	**RHM24000KST200H7HF** *	KST200	24,00	16,50	6
RHM25000KST200H7HF	**RHM25000KST200H7HF**	KST200	25,00	16,50	6
RHM25400KST200H7HF *	**RHM25400KST200H7HF**	KST200	25,40	16,50	6
RHM26000KST200H7HF *	–	KST200	26,00	16,50	8
RHM26990KST200H7HF *	**RHM26990KST200H7HF** *	KST200	26,99	16,50	8
RHM27000KST200H7HF *	**RHM27000KST200H7HF** *	KST200	27,00	16,50	8
RHM27500KST250H7HF *	**RHM27500KST250H7HF** *	KST250	27,50	16,50	8

(continued)

(RHM • Through Hole Cermet Tipped Reamer — continued)

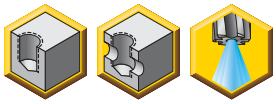


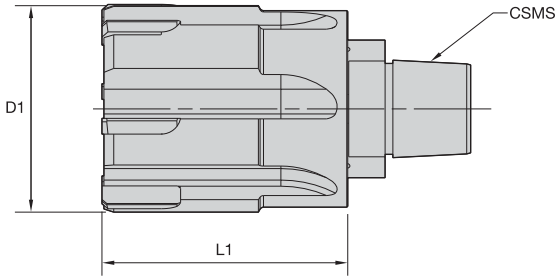


KT325	KT6215	CSMS system size	D1	L1	Z
RHM28000KST250H7HF	**RHM28000KST250H7HF**	KST250	28,00	16,50	8
RHM28580KST250H7HF *	–	KST250	28,58	16,50	8
RHM29000KST250H7HF *	**RHM29000KST250H7HF** *	KST250	29,00	16,50	8
RHM30000KST250H7HF	**RHM30000KST250H7HF**	KST250	30,00	16,50	8
RHM30160KST250H7HF *	**RHM30160KST250H7HF** *	KST250	30,16	16,50	8
RHM31000KST250H7HF *	**RHM31000KST250H7HF** *	KST250	31,00	16,50	8
RHM31750KST250H7HF *	**RHM31750KST250H7HF** *	KST250	31,75	16,50	8
RHM32000KST250H7HF *	**RHM32000KST250H7HF** *	KST250	32,00	16,50	8
RHM32500KST300H7HF *	**RHM32500KST300H7HF** *	KST300	32,50	18,00	8
RHM33000KST300H7HF *	**RHM33000KST300H7HF** *	KST300	33,00	18,00	8
RHM33340KST300H7HF *	**RHM33340KST300H7HF** *	KST300	33,34	18,00	8
–	**RHM34000KST300H7HF**	KST300	34,00	18,00	8
RHM34930KST300H7HF *	**RHM34930KST300H7HF** *	KST300	34,93	18,00	8
RHM35000KST300H7HF	**RHM35000KST300H7HF**	KST300	35,00	18,00	8
RHM36000KST300H7HF	–	KST300	36,00	18,00	8
RHM36510KST300H7HF *	**RHM36510KST300H7HF** *	KST300	36,51	18,00	8
RHM37000KST300H7HF *	**RHM37000KST300H7HF**	KST300	37,00	18,00	8
RHM37500KST350H7HF *	**RHM37500KST350H7HF** *	KST350	37,50	18,00	8
RHM38100KST350H7HF *	–	KST350	38,10	18,00	8
RHM39000KST350H7HF *	**RHM39000KST350H7HF** *	KST350	39,00	18,00	8
RHM39690KST350H7HF *	**RHM39690KST350H7HF** *	KST350	39,69	18,00	8
RHM40000KST350H7HF	**RHM40000KST350H7HF**	KST350	40,00	18,00	8
RHM41000KST350H7HF *	**RHM41000KST350H7HF** *	KST350	41,00	18,00	8
RHM41280KST350H7HF *	**RHM41280KST350H7HF** *	KST350	41,28	18,00	8
RHM42000KST350H7HF	**RHM42000KST350H7HF** *	KST350	42,00	18,00	8

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

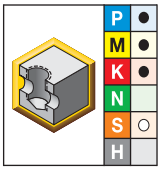
- For hole tolerance H6.
- Intermediate sizes available.
- Lock screw for axial use or retention knob comes with holder.
- Allen expansion screw.

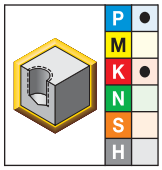






RHM-E • Blind Hole Expansion Reamer





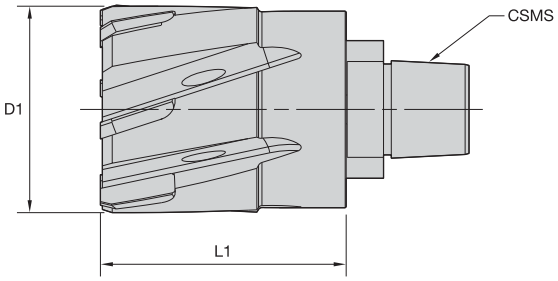
● first choice
○ alternate choice

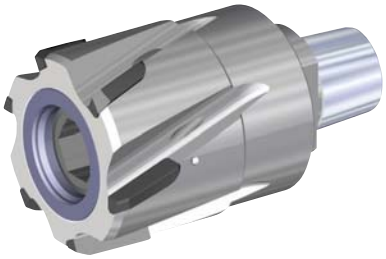
KC6005	KC6305	CSMS system size	D1	L1	Z
RHME14000KST115H6SF *	RHME14000KST115H6SF	KST115	14,00	25,00	6
RHME14288KST115H6SF *	RHME14288KST115H6SF *	KST115	14,29	25,00	6
RHME15000KST115H6SF *	RHME15000KST115H6SF	KST115	15,00	25,00	6
RHME16000KST135H6SF	RHME16000KST135H6SF	KST135	16,00	25,00	6
RHME17000KST135H6SF *	RHME17000KST135H6SF	KST135	17,00	25,00	6
RHME17463KST135H6SF *	RHME17463KST135H6SF *	KST135	17,46	25,00	6
RHME18000KST155H6SF *	RHME18000KST155H6SF *	KST155	18,00	25,00	6
RHME19000KST155H6SF *	RHME19000KST155H6SF *	KST155	19,00	25,00	6
RHME19050KST155H6SF *	RHME19050KST155H6SF *	KST155	19,05	25,00	6
RHME20000KST175H6SF *	RHME20000KST175H6SF	KST175	20,00	25,00	6
RHME21000KST175H6SF	RHME21000KST175H6SF *	KST175	21,00	25,00	6
RHME22000KST175H6SF *	RHME22000KST175H6SF *	KST175	22,00	25,00	6
RHME22225KST175H6SF *	RHME22225KST175H6SF	KST175	22,23	25,00	6
RHME23000KST200H6SF *	RHME23000KST200H6SF *	KST200	23,00	25,00	6
RHME23813KST200H6SF *	RHME23813KST200H6SF *	KST200	23,81	25,00	6
RHME24000KST200H6SF	RHME24000KST200H6SF *	KST200	24,00	25,00	6
RHME25000KST200H6SF	RHME25000KST200H6SF	KST200	25,00	30,00	6
RHME25400KST200H6SF *	RHME25400KST200H6SF *	KST200	25,40	30,00	6
RHME26000KST200H6SF *	RHME26000KST200H6SF *	KST200	26,00	30,00	8
RHME27000KST200H6SF *	RHME27000KST200H6SF	KST200	27,00	30,00	8
RHME28000KST250H6SF	RHME28000KST250H6SF	KST250	28,00	36,00	8
RHME30000KST250H6SF	RHME30000KST250H6SF	KST250	30,00	36,00	8
RHME31750KST250H6SF *	RHME31750KST250H6SF *	KST250	31,75	36,00	8
RHME32000KST250H6SF *	RHME32000KST250H6SF *	KST250	32,00	36,00	8
RHME34000KST300H6SF *	RHME34000KST300H6SF *	KST300	34,00	36,00	8
RHME36000KST300H6SF *	RHME36000KST300H6SF *	KST300	36,00	36,00	8
RHME38000KST350H6SF *	RHME38000KST350H6SF *	KST350	38,00	36,00	8
RHME40000KST350H6SF *	RHME40000KST350H6SF *	KST350	40,00	36,00	8
RHME42000KST350H6SF	RHME42000KST350H6SF *	KST350	42,00	36,00	8

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

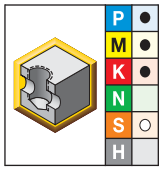
- For hole tolerance H6.
- Intermediate sizes available.
- Lock screw for axial use or retention knob comes with holder.
- Allen expansion screw.

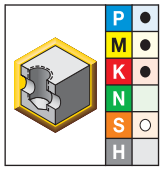






RHM-E • Through Hole Expansion Reamer





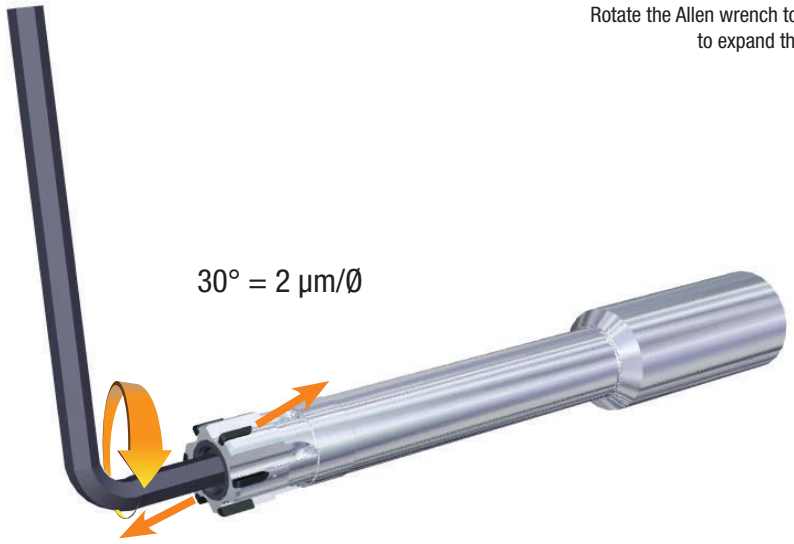
● first choice
○ alternate choice

KC6005	KC6305	CSMS system size	D1	L1	Z
RHME14000KST115H6HF *	RHME14000KST115H6HF *	KST115	14,00	25,00	6
RHME14288KST115H6HF *	RHME14288KST115H6HF *	KST115	14,29	25,00	6
RHME15000KST115H6HF *	RHME15000KST115H6HF *	KST115	15,00	25,00	6
RHME16000KST135H6HF	RHME16000KST135H6HF	KST135	16,00	25,00	6
RHME17000KST135H6HF	RHME17000KST135H6HF *	KST135	17,00	25,00	6
RHME17463KST135H6HF	RHME17463KST135H6HF *	KST135	17,46	25,00	6
RHME18000KST155H6HF *	RHME18000KST155H6HF	KST155	18,00	25,00	6
RHME19000KST155H6HF *	RHME19000KST155H6HF *	KST155	19,00	25,00	6
RHME19050KST155H6HF *	RHME19050KST155H6HF	KST155	19,05	25,00	6
RHME20000KST175H6HF	RHME20000KST175H6HF	KST175	20,00	25,00	6
RHME21000KST175H6HF *	RHME21000KST175H6HF *	KST175	21,00	25,00	6
RHME22000KST175H6HF	RHME22000KST175H6HF	KST175	22,00	25,00	6
RHME22225KST175H6HF *	RHME22225KST175H6HF	KST175	22,23	25,00	6
RHME23000KST200H6HF *	RHME23000KST200H6HF *	KST200	23,00	25,00	6
RHME23813KST200H6HF *	RHME23813KST200H6HF *	KST200	23,81	25,00	6
RHME24000KST200H6HF *	RHME24000KST200H6HF *	KST200	24,00	25,00	6
RHME25000KST200H6HF *	RHME25000KST200H6HF	KST200	25,00	30,00	6
RHME25400KST200H6HF	RHME25400KST200H6HF	KST200	25,40	30,00	6
RHME26000KST200H6HF *	RHME26000KST200H6HF	KST200	26,00	30,00	8
RHME27000KST200H6HF *	RHME27000KST200H6HF *	KST200	27,00	30,00	8
RHME28000KST250H6HF	RHME28000KST250H6HF	KST250	28,00	36,00	8
RHME30000KST250H6HF	RHME30000KST250H6HF	KST250	30,00	36,00	8
RHME31750KST250H6HF *	RHME31750KST250H6HF	KST250	31,75	36,00	8
RHME32000KST250H6HF *	RHME32000KST250H6HF *	KST250	32,00	36,00	8
RHME34000KST300H6HF *	RHME34000KST300H6HF *	KST300	34,00	36,00	8
RHME36000KST300H6HF *	RHME36000KST300H6HF *	KST300	36,00	36,00	8
RHME38000KST350H6HF *	RHME38000KST350H6HF *	KST350	38,00	36,00	8
RHME40000KST350H6HF *	–	KST350	39,99	36,00	8
–	RHME40000KST350H6HF *	KST350	40,00	36,00	8
RHME42000KST350H6HF *	RHME42000KST350H6HF *	KST350	42,00	36,00	8

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

To Expand

Rotate the Allen wrench to the right to expand the reamer.



To Contract

Expansion always reversible: Rotate the Allen wrench to the left to contract the reamer.

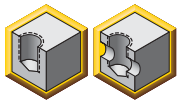
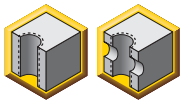


- 30° = 2 µm linear expansion.
- 720° = 2 revolutions; = 48µm maximum expansion.
- Hard stop after 720° expansion. You cannot over expand!
- The expansion occurs in the elastic material behaviour.
- You cannot reduce the diameter below D1.

RHR • Metric

Material Group		KCU05 Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate per Tooth						
					Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm		32,50–42,00mm	
		min	Starting Value	max	Feed/Tooth	min	max	min	max	min	max
P	1	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	75	**100**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	4	50	**80**	105	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	5	30	**40**	60	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
	6	30	**40**	60	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
M	1	15	**20**	40	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	2	15	**20**	30	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	3	15	**20**	30	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
K	1	80	**110**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	65	**90**	110	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	50	**70**	90	mm/z	0,10	0,18	0,10	0,20	0,10	0,22
S	1	15	**20**	30	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	2	15	**20**	30	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	3	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20
	4	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20

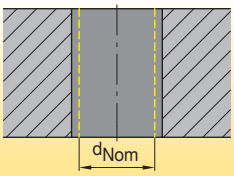
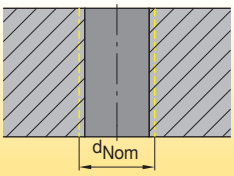
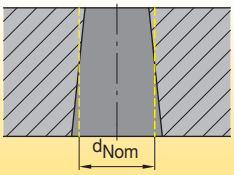
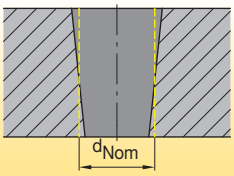
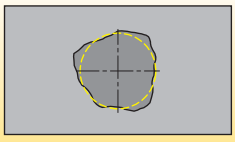
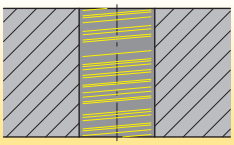
RHM™ and RHM-E™ • Metric

Material Group		Cermet Tipped						Carbide Tipped						Metric						
																				
		straight flute			helical flute			straight flute			helical flute									
		KT325			KT6215			K605			KC6305			Metric						
		Cutting Speed — vc												Recommended Feed Rate per Tooth						
		Range — m/min												Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm		32,50–42,00mm	
		min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	Feed/ Tooth	min	max	min	max	min	max
P	1	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	130	**160**	180	150	**180**	210	30	**40**	50	75	**100**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	4	100	**130**	150	120	**150**	170	25	**40**	45	50	**80**	105	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	5	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
	6	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
M	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	3	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
K	1	150	**180**	200	180	**210**	240	30	**50**	60	80	**110**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	130	**160**	180	150	**180**	210	25	**40**	45	65	**90**	110	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	100	**130**	160	120	**150**	170	20	**30**	40	50	**70**	90	mm/z	0,10	0,18	0,10	0,20	0,10	0,22
N	1	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	2	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	3	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	4	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	5	–	**–**	–	–	**–**	–	105	**140**	180	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
S	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	3	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20
	4	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20

Reaming Allowances for Multi-Blade Reaming

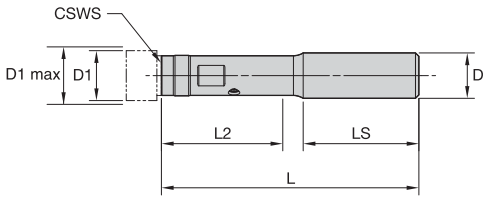
	reaming allowances in diameter mm		
mm	min	middle	max
1,40–4,80	0,08	0,12	0,20
4,81–9,59	0,10	0,15	0,25
9,60–15,00	0,15	0,20	0,30
15,00–20,00	0,15	0,25	0,35
20,00–50,00	0,20	0,30	0,40

Troubleshooting

Problem		Cause	Possible Remedy
Hole diameter too large.		• Reaming tool running out-of-centre. • Concentricity of pilot hole and ream machining unsatisfactory. • Built-up edge. • Unsuitable cooling lubricant. • Reaming tool diameter too large.	• Use equalising adaptor. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Hole diameter too small.		• Reamer worn. • Unsuitable cooling lubricant. • Reaming allowance too small.	• Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
Conical hole profile wider towards drill runout.		• Concentricity of pilot hole and reaming unsatisfactory. • Positioning accuracy of pilot hole to reaming.	• Re-align, use equalising adaptor. • Correct positioning accuracy.
Conical hole profile wider at drill entry point.		• Concentricity of pilot hole and reaming unsatisfactory. • Reaming tool skim cutting with ledger.	• Re-align, use floating head. • Securely clamp reaming tool axially.
Hole out-of-centre and/or showing chatter marks.		• Reaming tool running out-of-centre. • Slanted cutting surface/asymmetrical cutting. • Workpiece twisted.	• Use equalising adaptor. • Spot face as drilling preparation. • Take the direction of impact into account when clamping the workpiece.
Surface quality does not meet specification.		• Tool cutters worn. • Reaming tool running out-of-centre. • Incorrect technology data (cutting parameters). • Inadequate chip evacuation.	• Use equalising adaptor. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Feed grooves.		• Built-up edge.	• Change cooling lubricant. • Change cutting speed.

- Tool body shipped with lock screw and wrench.
- Order reamer head separately.







Straight Shank • Axial Clamping • 3 x D

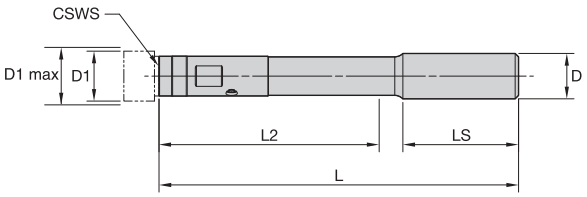




order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	central lock screw	Torx wrench	Nm	ft. lbs.
4056174	**SS16KST115AR3M**	KST115	14,00	15,999	16,00	91,00	36,00	48,00	**KST115115AS**	**FT8**	3,0	2.2
4056175	**SS20KST135AR3M**	KST135	16,00	17,999	20,00	99,00	39,00	51,00	**KST135155AS**	**FT10**	4,0	3.0
4056176	**SS20KST155AR3M**	KST155	18,00	19,999	20,00	106,00	45,00	51,00	**KST135155AS**	**FT10**	4,0	3.0
3861185	**SS20KST175AR3M**	KST175	20,00	22,499	20,00	113,50	51,50	51,00	**KST175200AS**	**TT15**	5,0	3.7
3861186	**SS20KST200AR3M**	KST200	22,50	27,499	20,00	130,50	65,50	51,00	**KST175200AS**	**TT15**	5,0	3.7
3861187	**SS25KST250AR3M**	KST250	27,50	32,499	25,00	152,50	80,50	56,00	**KST250250AS**	**TT25**	9,0	6.7
3861188	**SS32KST300AR3M**	KST300	32,50	37,499	32,00	174,00	94,00	61,00	**KST300350AS**	**TT30**	13,0	9.7
3861189	**SS32KST350AR3M**	KST350	37,50	42,000	32,00	190,00	108,00	61,00	**KST300350AS**	**TT30**	13,0	9.7

- Tool body shipped with lock screw and wrench.
- Order reamer head separately.







Straight Shank • Axial Clamping • 5 x D

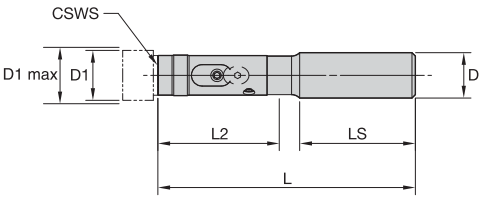




order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	central lock screw	Torx wrench	Nm	ft. lbs.
4056177	**SS16KST115AR5M**	KST115	14,00	15,999	16,00	123,00	68,00	48,00	**KST115115AS**	**FT8**	3,0	2.2
4056178	**SS20KST135AR5M**	KST135	16,00	17,999	20,00	135,00	75,00	51,00	**KST135155AS**	**FT10**	4,0	3.0
4056179	**SS20KST155AR5M**	KST155	18,00	19,999	20,00	146,00	85,00	51,00	**KST135155AS**	**FT10**	4,0	3.0
3861190	**SS20KST175AR5M**	KST175	20,00	22,499	20,00	158,50	96,50	51,00	**KST175200AS**	**TT15**	5,0	3.7
3861191	**SS20KST200AR5M**	KST200	22,50	27,499	20,00	185,50	120,50	51,00	**KST175200AS**	**TT15**	5,0	3.7
3861192	**SS25KST250AR5M**	KST250	27,50	32,499	25,00	217,50	145,50	56,00	**KST250250AS**	**TT25**	9,0	6.7
3861193	**SS32KST300AR5M**	KST300	32,50	37,499	32,00	249,00	169,00	61,00	**KST300350AS**	**TT30**	13,0	9.7
3861194	**SS32KST350AR5M**	KST350	37,50	42,000	32,00	274,00	192,00	61,00	**KST300350AS**	**TT30**	13,0	9.7

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.







Straight Shank • Radial Clamping • 3 x D

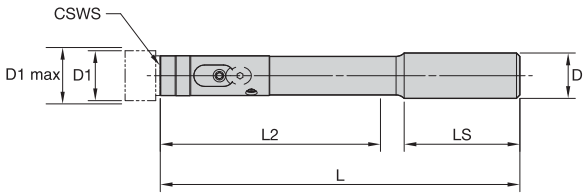




order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	retention knob	clamp set	Torx wrench	Nm	ft. lbs.
3861195	**SS20KST175RR3M**	KST175	20,00	22,499	20,00	113,50	51,50	51,00	**KST175200RK**	**KST175CS**	**TT15**	5,0	3.7
3861196	**SS20KST200RR3M**	KST200	22,50	27,499	20,00	130,50	65,50	51,00	**KST175200RK**	**KST200CS**	**TT15**	5,0	3.7
3861197	**SS25KST250RR3M**	KST250	27,50	32,499	25,00	152,50	80,50	56,00	**KST250250RK**	**KST250CS**	**TT25**	9,0	6.7
3861198	**SS32KST300RR3M**	KST300	32,50	37,499	32,00	174,00	94,00	61,00	**KST300350RK**	**KST300CS**	**TT30**	13,0	9.7
3861199	**SS32KST350RR3M**	KST350	37,50	42,000	32,00	190,00	108,00	61,00	**KST300350RK**	**KST350CS**	**TT30**	13,0	9.7

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.







Straight Shank • Radial Clamping • 5 x D

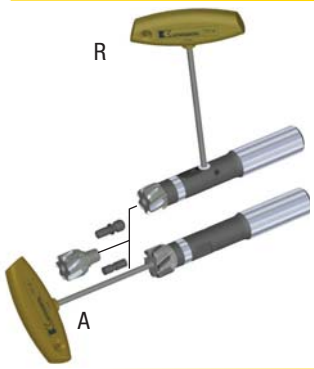




order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	retention knob	clamp set	Torx wrench	Nm	ft. lbs.
3861200	**SS20KST175RR5M**	KST175	20,00	22,499	20,00	158,50	96,50	51,00	**KST175200RK**	**KST175CS**	**TT15**	5,0	3.7
3861201	**SS20KST200RR5M**	KST200	22,50	27,499	20,00	185,50	120,50	51,00	**KST175200RK**	**KST200CS**	**TT15**	5,0	3.7
3861202	**SS25KST250RR5M**	KST250	27,50	32,499	25,00	217,50	145,50	56,00	**KST250250RK**	**KST250CS**	**TT25**	9,0	6.7
3861203	**SS32KST300RR5M**	KST300	32,50	37,499	32,00	249,00	169,00	61,00	**KST300350RK**	**KST300CS**	**TT30**	13,0	9.7
3861204	**SS32KST350RR5M**	KST350	37,50	42,000	32,00	274,00	192,00	61,00	**KST300350RK**	**KST350CS**	**TT30**	13,0	9.7

Assemble

1



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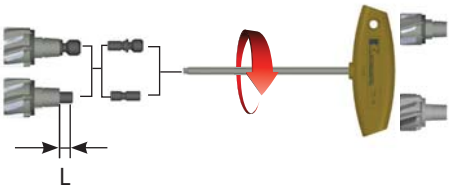
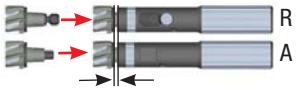
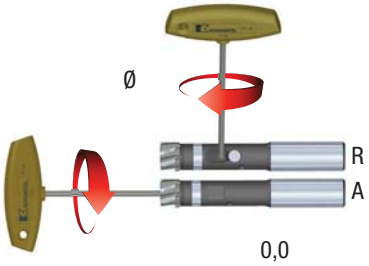


Ø (mm)		L (mm)
14,000	27,499	5–5,5
27,500	42,000	5,5–6

3



4

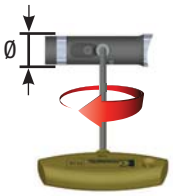


Ø (mm)			(Nm)
14,000	15,999	DT - 8	2
16,000	19,999	DT - 10	3
20,000	27,499	TT - 15	4
27,500	32,499	TT - 25	5
32,500	42,000	TT- 30	13

Disassemble 4 → 3 → 2 → 1

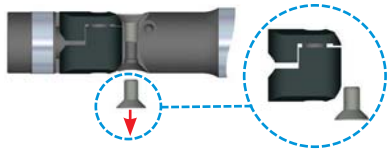
Disassemble

1

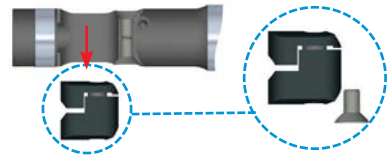


Ø (mm)	Ø (in)			(Nm)	(ft. lbs.)
17,5	0.686	KST175CS	2,5	2,5	1.9
20	0.784	KST200CS	2,5	2,5	1.9
25	0.980	KST250CS	3	5	3.7
30	1.176	KST300CS	4	9	6.7
35	1.373	KST350CS	4	9	9.7

2

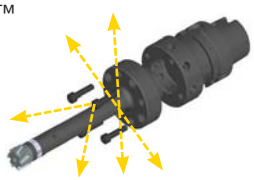


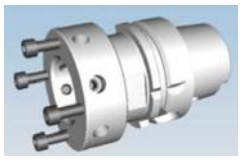
3



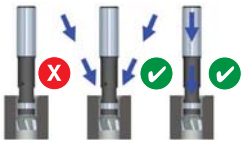
Assemble 3 → 2 → 1

SIF™



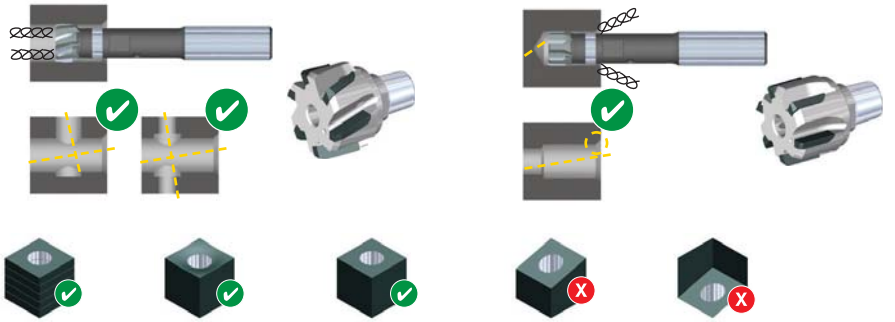


Coolant flow





Application



SIF™ Steerable Toolholder

Primary Application

SIF steerable toolholders should be used for easy compensation of radial runout and angular inaccuracies caused by the machine spindle or gravity. SIF tooling improves hole roundness for highest possible hole straightness and surface quality. Runout-optimised reaming tools provide higher process stability and longer tool life.

Use a separate SIF tooling package for each machine to ensure best configuration between reaming tool and spindle and HSK bushes. This enables faster tool change to avoid repeating adjustments.



Features and Benefits

Higher Productivity and Profitability

- Easy compensation of radial runout and angular inaccuracies increases process control and tool life.
- Less time-consuming adjustment due to eight radial screws.
- Increased rigidity by using a SIF back-end as a monoblock solution with the reamer.

Versatility

- Use standard DV, BT, CV, and HSK adaptors in combination with SIF hydraulic chucks for precise concentric clamping, highest accuracy, and flexible clamping using hydraulic chuck sleeves.
- HSK bushes with SIF coupling enable fast tool exchange and eliminate repeated runout adjustment, reducing adjustment and downtime.

SIF™ adaptation practically eliminates all spindle errors in terms of runout and angular misalignment.

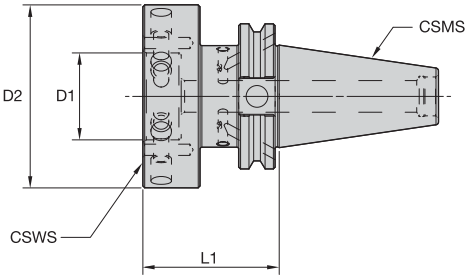


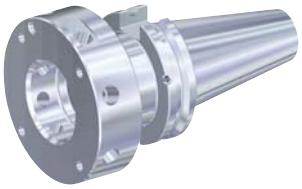
Customisation

- Different length versions and coupling size combinations are available.

- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adaptors.

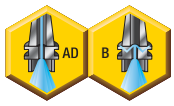






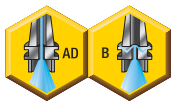
SIF-CV50 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738506	**CV50BSIF70236**	CV50	SIF70	70	38	60	**121.808**	**170.004**	**170.005**	**125.625**	3,49	7.700
3738507	**CV50BSIF100236**	CV50	SIF100	100	58	60	**121.812**	**170.004**	**170.006**	**–**	4,14	9.140



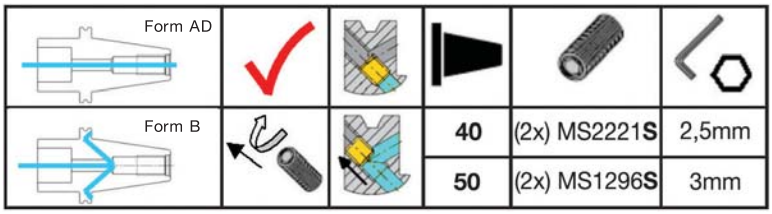
SIF-CV40 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738505	**CV40BSIF80248**	CV40	SIF80	80	38	63	**121.812**	**170.004**	**170.005**	**125.625**	1,77	3.900



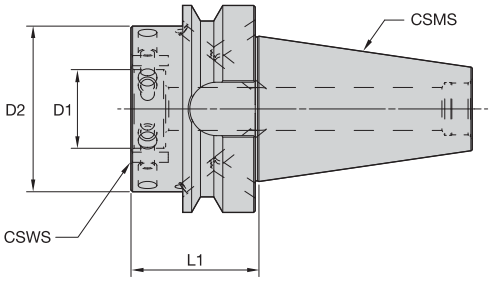
SIF-BT40 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738492	**BT40BSIF80063M**	BT40	SIF80	80	38	63	**121.812**	**170.004**	**170.005**	**125.625**	1,86	4.110



- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adaptors.

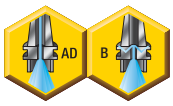






SIF-BT50 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738503	**BT50BSIF70063M**	BT50	SIF70	70	38	63	**121.808**	**170.004**	**170.005**	**125.625**	4,08	9.000
3738504	**BT50BSIF100068M**	BT50	SIF100	100	58	68	**121.812**	**170.004**	**170.006**	**–**	4,94	10.890



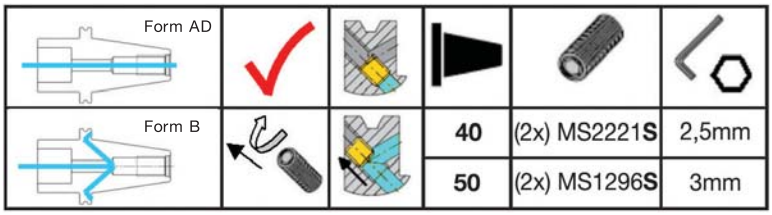
SIF-DV40 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738488	**DV40BSIF80061M**	DV40	SIF80	80	38	61	**121.812**	**170.004**	**170.005**	**125.625**	1,83	4.020



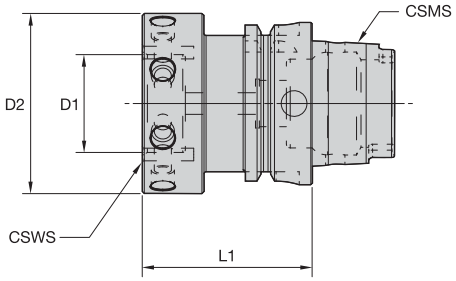
SIF-DV50 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738490	**DV50BSIF70060M**	DV50	SIF70	70	38	60	**121.808**	**170.004**	**170.005**	**125.625**	3,60	7.930
3738491	**DV50BSIF100060M**	DV50	SIF100	100	58	60	**121.812**	**170.004**	**170.006**	**–**	4,30	9.480



- Through-the-toolholder coolant capability.
- Suitable for SIF adaptors.







SIF-HSK63 Form A

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738508	**HSK63ASIF70066M**	HSK63A	SIF70	70	38	66	**121.808**	**170.004**	**170.005**	**125.625**	1,44	3.180
3878347	**HSK63ASIF80063M**	HSK63A	SIF80	80	38	63	**121.812**	**170.004**	**170.005**	**125.625**	1,48	3.250

SIF-HSK80 Form A

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738510	**HSK80ASIF70066M**	HSK80A	SIF70	70	38	66	**121.808**	**170.004**	**170.005**	**125.625**	2,05	4.520

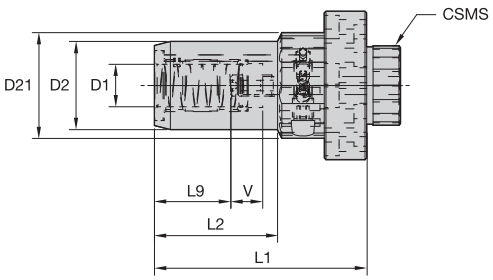
NOTE: HSK coolant unit and wrench are available and must be ordered separately.

SIF-HSK100 Form A

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738511	**HSK100ASIF70050M**	HSK100A	SIF70	70	38	50	**121.808**	**170.004**	**170.005**	**125.625**	2,43	5.360
3738512	**HSK100ASIF100070M**	HSK100A	SIF100	100	58	70	**121.812**	**170.004**	**170.006**	–	3,84	8.460

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

- Runout < 0,003mm.
- External side actuation adjustment stop, giving 10mm axial adjustment.





HC HP Line • SIF70

order number	catalogue number	CSMS system size	D1	D2	D21	L1	L2	L9	V	hex wrench	T-handle hex wrench	kg	lbs
3667056	**SIF70HC12090M**	SIF70	12	32	44	90	45	36	10	**170.002**	**170.135**	1,13	2.49
3667057	**SIF70HC20100M**	SIF70	20	42	44	100	58	41	10	**170.003**	**170.135**	2,00	4.41

NOTE: HSK coolant unit and wrench are available and must be ordered separately.
IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

HC HP Line • SIF80

order number	catalogue number	CSMS system size	D1	D2	D21	L1	L2	L9	V	hex wrench	T-handle hex wrench	kg	lbs
3667058	**SIF80HC12090M**	SIF80	12	32	50	90	45	36	10	**170.002**	**170.135**	9,00	19.84
3667059	**SIF80HC20100M**	SIF80	20	42	50	100	58	41	10	**170.003**	**170.135**	1,60	3.53
3667060	**SIF80HC25100M**	SIF80	25	50	54	100	51	47	10	**170.003**	**170.136**	1,83	4.03

NOTE: HSK coolant unit and wrench are available and must be ordered separately.
IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

HC HP Line • SIF100

order number	catalogue number	CSMS system size	D1	D2	D21	L1	L2	L9	V	hex wrench	T-handle hex wrench	kg	lbs
3667061	**SIF100HC12090M**	SIF100	12	32	50	90	45	36	10	**170.002**	**170.135**	1,98	4.37
3667062	**SIF100HC20100M**	SIF100	20	42	50	100	58	41	10	**170.003**	**170.135**	2,19	4.84
3668023	**SIF100HC25100M**	SIF100	25	50	63	100	51	47	10	**170.004**	**170.136**	2,56	5.64

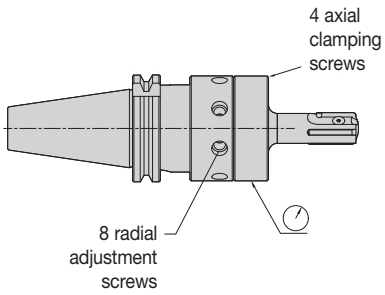
NOTE: HSK coolant unit and wrench are available and must be ordered separately.
IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

SIF Tooling Setup

Step 1: Rough setup of runout at flange

1

- Set gage (TIR) at SIF flange.
- Tight axial clamping screws 6–8 Nm.
- Use radial adjustment screws to achieve 5 µm runout.

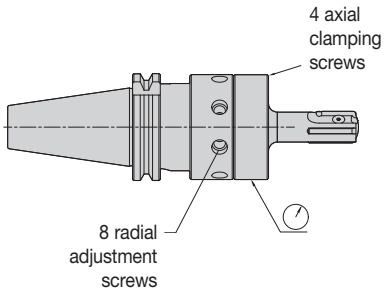




Step 2: Fine setup of runout at the flange

2

- Tight axial clamping screws crosswise:
  SIF70/80 18 Nm.
  SIF100 32 Nm.
- Use radial adjustment screws to achieve 2 µm runout.
- All radial adjustment screws to be clamped tight at 4 Nm.

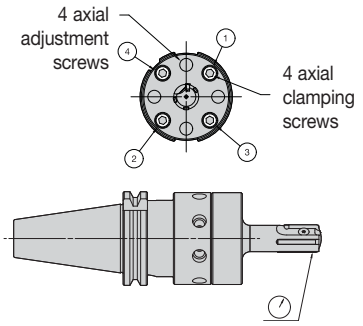




Step 3: Adjustment of runout at front

3

- Set gage (TIR) at control grind, cylindrical land, or guide pads.
- Use axial adjustment screws to achieve a maximum runout error of 2 µm.
- All axial adjustment screws to be clamped tight at 4 Nm.

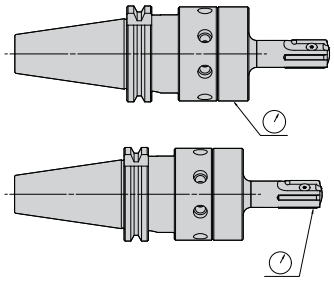




Step 4: Final runout check

4

- Check using gage (TIR) at flange; no deviation by theory.
- If needed, use radial adjustment screws to set runout below 2 µm.
- Any modification of radial setup demands an axial runout check and adjustment, if necessary.



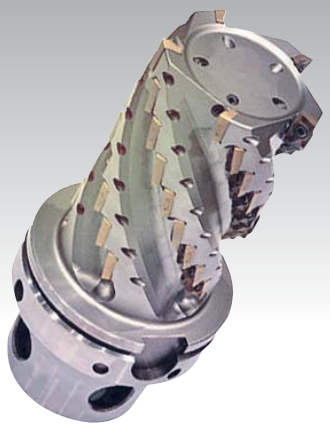


Engineered Solutions

You Won't Find These Solutions in a Catalogue

Kennametal engineered solutions pinpoint and address specific needs of customers, workpiece materials, or workpiece configurations. Solutions include standard products, custom designs, and old-fashioned process know-how that can only come from many decades of tooling expertise.

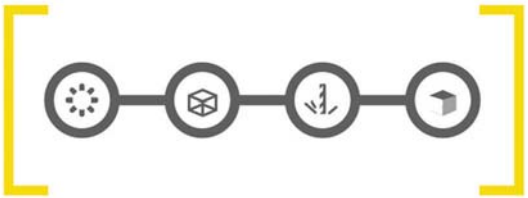
They are the result of coordinated global resources and are available anywhere in the world, no matter how small or large the project.



MANUFACTURING PROCESS

We Look at the Entire Production Process, Not Just Portions of It

From the machine tool to the last stop in production, we can optimise the manufacturing process throughout every step. The result is low implementation time and costs, and rapid return on investment.



RIQ™ (Quattro Cut™) and RIR™

Padded Reamers

Primary Application

Master the highest precision reaming with standard inserts in almost all materials with two unique systems:
RIR padded reamers for small-diameter applications and RIQ padded reamers for easy setup in large-diameters applications.

RIQ reamers are available starting at diameter 16mm (.630") with four cutting edges for lowest cost per hole. The proprietary pocket seat only requires setup of the diameter, which is a huge benefit in simplicity compared to systems that require the diameter and back taper to be adjusted simultaneously. RIR padded reamers are also proprietary and available starting at diameter 6mm (.236") with one cutting edge, and diameter 8mm (.315") with two edges.



Features and Benefits

Higher Productivity and Profitability

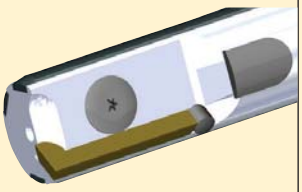
- Longer tool life with Kennametal grades.
- User friendly — RIQ padded reamers reduce setup time.
- Use four full edges even in PCD or PcBN styles of RIQ inserts.

Complete Insert Portfolio

- Large standard offering of lead geometries — E13, EDS, EDR, EGU, EGR, radius, and taper inserts.
- Large offering of grades — coated and uncoated carbide, cermet, PcBN, and PCD.

Customisation

- All RIQ tooling engineered to specific needs in diameters 16–245mm (.630–9.645") with internal coolant.
- All RIR tooling engineered to specific needs in diameters 6–245mm (.236–9.645") with internal coolant.
- RIR taper reamers available upon request.
- Multiflute and step reaming applications and special blade shapes available upon request.
- Measuring and adjustment equipment available as standard.

Application recommendation	RIR	RIQ
	Bore tolerances less than 10 µm (can be greater). Geometric tolerances down to 2 µm. Skilled workforce experience required. 	Bore tolerances less than 10 µm. Geometric tolerances down to 2 µm. Lower skilled workforce, easier adjustment. Multidiameter bores. 
Pocket seat	Flat with clamping groove in blade.	Serrated. Greater insert stability.
Cutting edges	2 (1 with PCD or CBN and 1 within diameter range 6–8mm [.236–.315"])	4 (SC, cermet, PCD, CBN)
Special blade forms	yes	yes
Multiple inserts on diameter	no	yes
Blade adjustment	Diameter and back taper.	Diameter only (back taper defined by serration).
Blade adjusting screws	2	1
Chamfer or valve seat machining	Yes, but adjustment required on position and angle.	Yes, only adjustment of position. Angle adjustment not required due to precision of serrated pocket seat.
General comments	For small diameters with high setup effort.	For larger diameters with low setup effort.

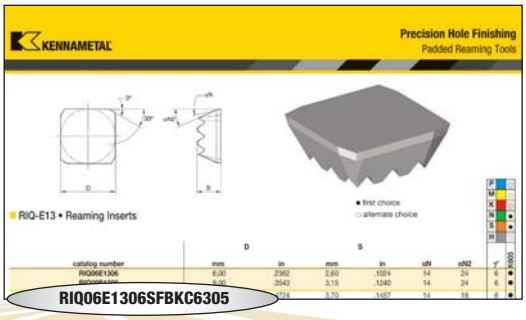

RIR™ Reamer


RIQ™ Reamer


RIQ™ Valve Seat Tool

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



RIQ	06	E13	06	S	FB	KC6305
Type	Size	Lead	Rake	Edge	Chipbreaker	Grade

RIR = Reamer Insert Rectangular

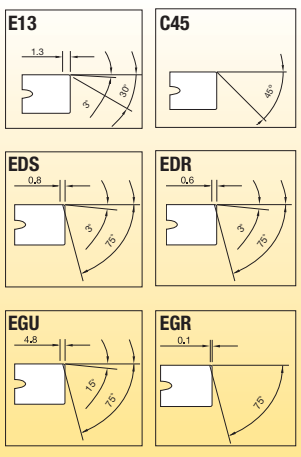
RIQ = Reamer Insert Quattro Cut™

Blade Size

Ø [mm]	RIQ	
16,0–24,99	**06**	6,0 x 6,0mm
Valve Seat	**B6**	6,0 x 6,0mm
Valve Seat	**B7**	6,5 x 6,5mm
Valve Seat	**07**	7,0 x 7,0mm
Valve Seat	**08**	8,0 x 8,0mm
>25	**09**	9,0 x 9,0mm
>25	**12**	12,0 x 12,0mm

Ø [mm]	RIR	
6,0–7,99	**A0**	10,5 x 2,50mm
8,0–10,99	**01**	15,0 x 2,80mm
11,0–13,99	**02**	18,0 x 4,00mm
14,0–17,99	**03**	20,0 x 4,76mm
18,0–45,99	**04**	27,0 x 5,56mm
>46	**05**	27,0 x 6,75mm
Taper Reamer	**T4**	45,0 x 5,56mm

Cutting Lead



Rake Angle

00



06



12



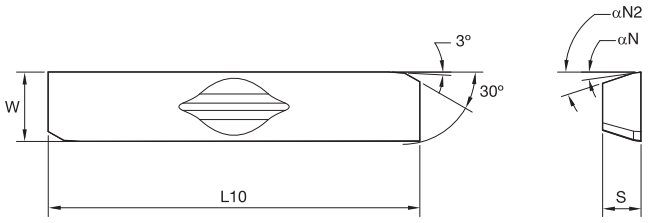
S  Chamfered and Rounded

R = Radius Blade
R02
R04
R05

FB = Finishing Blind Hole

FT = Finishing Through Hole

Grade	
Carbide	KC6005
Carbide	KC6105
Carbide	KC6305
Cermet	KT6225
Cermet	KT6315
PCD	KD1415
CBN	KB1610





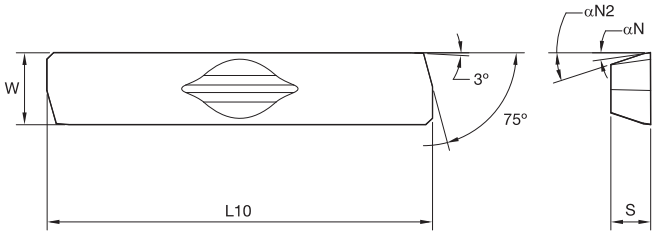
● first choice
○ alternate choice

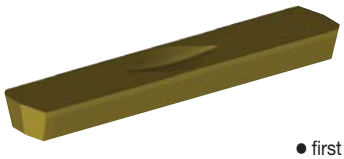
P	●	●	○
M	○	○	●
K	●	●	●
N	○	○	○
S			
H			

RIR-E13 • Reaming Inserts

ISO catalogue number	L10	S	W	αN°	αN2°	γ°	KC6005	KC6105	KC6305
RIR01E1306 *	15,00	1,53	2,80	8	18	6	–	●	–
RIR01E1312 *	15,00	1,53	2,80	8	18	12	–	●	–
RIR02E1312 *	18,00	1,93	4,00	8	18	12	–	●	●
RIR03E1312 *	20,00	2,33	4,76	8	18	12	–	–	●
RIR04E1312	27,00	3,13	5,56	8	18	12	●	–	–
RIR04E1312 *	27,00	3,13	5,56	8	18	12	–	●	–

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





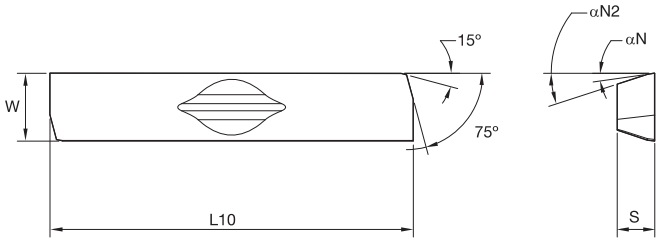
● first choice
○ alternate choice

P			
M			
K			
N			●
S			
H			

RIR-EDS • Reaming Inserts

ISO catalogue number	L10	S	W	αN°	αN2°	γ°	KD1415
RIR04EDS06 *	27,00	3,15	5,56	8	18	6	●

NOTE: All KD1415™ inserts are single tipped except full face at size RIR01.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





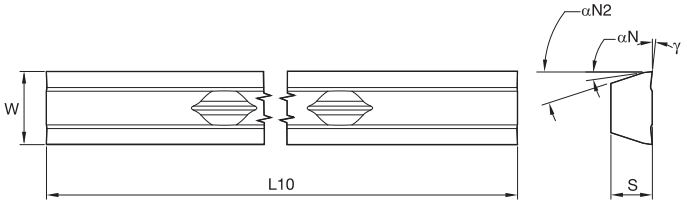
● first choice
○ alternate choice

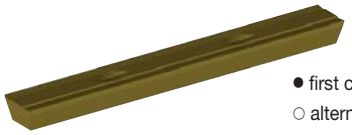
P			●
M			○
K			●
N			○
S			
H			

RIR-EGU • Reaming Inserts

ISO catalogue number	L10	S	W	αN°	αN2°	KC6105
RIR01EGU00	14,48	1,55	2,80	8	18	●
RIR05EGU00 *	27,00	3,15	6,75	8	18	●

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





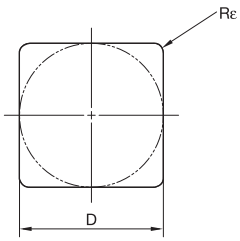
● first choice
○ alternate choice

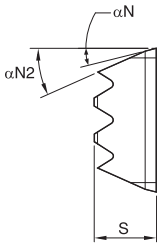
P		●
M		○
K		●
N		○
S		
H		

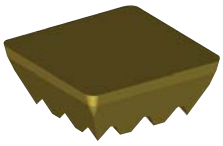
RIR-C45 • Reaming Inserts

ISO catalogue number	L10	S	W	αN°	αN2°	γ°	KC6005
RIRT4C4512	45,00	3,15	5,56	8	18	12	●

NOTE: For use with taper reamer bodies.







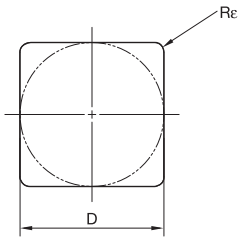
● first choice
○ alternate choice

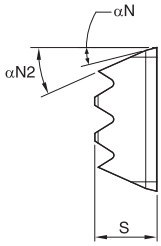
P		
M		
K		
N		●
S		
H		

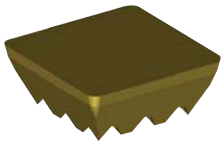
RIQ-R02 • Reaming Inserts

ISO catalogue number	D	S	Rε	αN°	αN2°	γ°	KD1415
RIQ06R0200 *	6,00	2,60	0,20	8	18	0	●

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





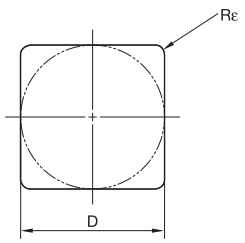


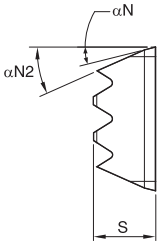
● first choice
○ alternate choice

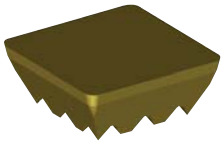
P			●
M			○
K		○	
N			
S			
H		●	

RIQ-R04 • Reaming Inserts

ISO catalogue number	D	S	Rε	αN°	αN2°	γ°	KB1610	KT6225
RIQ06R0400S	6,00	2,60	0,40	8	18	0	●	–
RIQ09R0400S	9,00	3,15	0,40	8	18	0	●	–





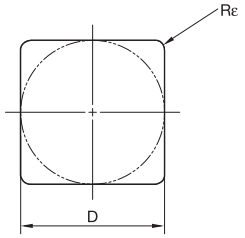


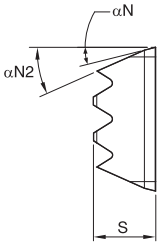
● first choice
○ alternate choice

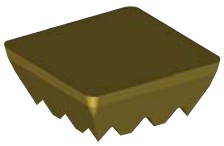
P		●
M		○
K	○	
N		
S		
H	●	

RIQ-R04-FB • Reaming Inserts • With Chipbreaker • For Blind Holes

ISO catalogue number	D	S	Rε	αN°	αN2°	γ°	KB1610	KT6225
RIQ06R0400FB	6,00	2,60	0,40	3	18	12	–	●
RIQ09R0400FB	9,00	3,15	0,40	3	18	12	–	●





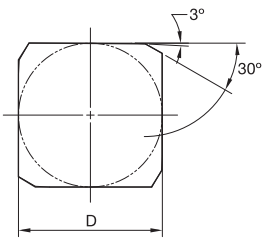


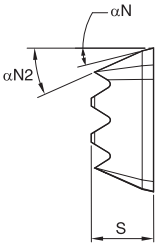
● first choice
○ alternate choice

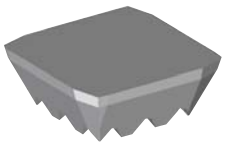
P		●
M		○
K		
N		
S		
H		

RIQ-R05 • Reaming Inserts • With Chipbreaker • For Through Holes

ISO catalogue number	D	S	Rε	αN°	αN2°	γ°	KT6315
RIQ06R0500FT	6,00	2,60	0,50	8	18	0	●
RIQ09R0506FT	9,00	3,15	0,50	14	24	6	●







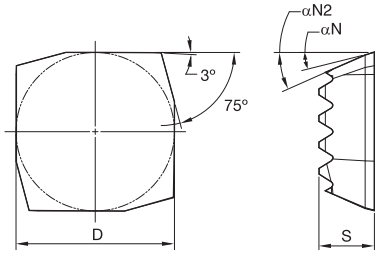
● first choice
○ alternate choice

P	●	●	○
M	○	○	●
K	●	●	●
N	○	○	○
S			
H			

RIQ-E13 • Reaming Inserts

ISO catalogue number	D	S	αN°	αN2°	γ°	KC6005	KC6105	KC6305
RIQ06E1300 *	6,00	2,60	8	18	0	●	●	●
RIQ06E1306 *	6,00	2,60	14	24	6	●	●	●
RIQ06E1312 *	6,00	2,60	20	30	12	●	●	●
RIQ09E1300 *	9,00	3,15	8	18	0	●	●	●
RIQ09E1306 *	9,00	3,15	14	24	6	●	●	●
RIQ09E1312 *	9,00	3,15	20	30	12	●	●	●

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





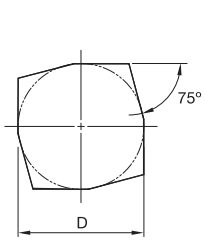
● first choice
○ alternate choice

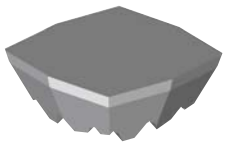
P		●	●	○	
M		○	○	●	
K		●	●	●	
N		○	○	○	●
S					
H					

RIQ-EDR • Reaming Inserts

ISO catalogue number	D	S	αN°	αN2°	γ°	KC6005	KC6105	KC6305	KD1415
RIQ06EDR00	6,00	2,60	8	18	0	●	–	●	–
RIQ06EDR00 *	6,00	2,60	8	18	0	–	●	–	–
RIQ06EDR06 *	6,00	2,60	14	24	6	●	–	–	–
RIQ06EDR06	6,00	2,60	14	24	6	–	●	●	●
RIQ06EDR12 *	6,00	2,60	20	30	12	●	●	●	–
RIQ09EDR00 *	9,00	3,15	8	18	0	●	●	●	–
RIQ09EDR06 *	9,00	3,15	14	24	6	●	●	●	●
RIQ09EDR12 *	9,00	3,15	20	30	12	●	●	●	–

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

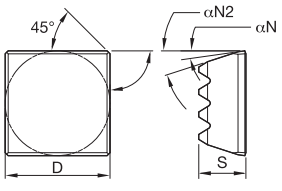


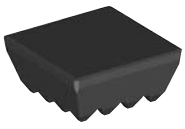


RIQ-EGR • Reaming Inserts

ISO catalogue number	D	S	αN°	αN2°	γ°	KC6005	KC6105	KC6305	KD1415
RIQ06EGR00	6,00	2,60	8	18	0	●	–	–	–
RIQ06EGR00 *	6,00	2,60	8	18	0	–	●	●	–
RIQ06EGR06	6,00	2,60	14	24	6	●	–	–	●
RIQ06EGR06 *	6,00	2,60	14	24	6	–	●	●	–
RIQ06EGR12 *	6,00	2,60	20	30	12	●	●	●	–
RIQ09EGR00	9,00	3,15	8	18	0	●	–	–	–
RIQ09EGR00 *	9,00	3,15	8	18	0	–	●	●	–
RIQ09EGR06 *	9,00	3,15	14	24	6	●	●	–	–
RIQ09EGR06	9,00	3,15	14	24	6	–	–	●	●
RIQ09EGR12 *	9,00	3,15	20	30	12	●	●	●	–

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





● first choice
○ alternate choice

P		
M		
K	●	●
N		
S		
H	●	●

RIQ-C45 • Valve Seat Finishing

ISO catalogue number	D	S	αN°	αN2°	KBHK10	KBHK15
RIQB6C4500S	6,00	2,60	8	18	●	●
RIQB7C4500S	6,50	2,60	8	18	●	●
RIQ07C4500S	7,00	3,15	8	18	●	●
RIQ08C4500S	8,00	3,15	8	18	●	●
RIQ09C4500S	9,00	3,15	8	18	●	●

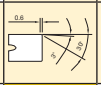
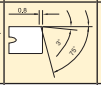
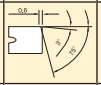
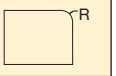
RIR™/RIQ™ • Metric

Material Group		Grade	Cutting Speed — vc Range — m/min				Hole Types	 1	 2	 3	 4	 5		
							Metric							
							Recommended Feed Rate per Tooth							
			min	Starting Value	max		E13	EDS	EDR	EGR	EGU	R0X	C45*
P	1	KC6005	30	**60**	100	mm/r	0,10–0,20	–	–	–	–	–	0,20–0,30
	2	KC6005	20	**50**	90	mm/r	0,10–0,20	–	–	–	–	–	0,20–0,30
	3	KC6005	20	**40**	80	mm/r	0,05–0,20	–	–	–	–	–	0,20–0,30
		KT6225	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
		KT6315	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
	4	KC6005	15	**30**	50	mm/r	0,05–0,20	–	–	–	–	–	0,20–0,30
		KC6105	15	**30**	50	mm/r	0,05–0,20	–	–	–	–	–	–
		KT6225	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
		KT6315	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
	5	KC6105	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
	6	KC6105	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
M	1	KC6305	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
	2	KC6305	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
	3	KC6305	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
K	1	KC6005	20	**70**	100	mm/r	0,10–0,20	0,15–0,20	0,15–0,20	0,18–0,20	–	–	0,20–0,30
		K6105	20	**70**	100	mm/r	–	–	–	–	0,20	–	–
	2	KC6005	20	**60**	100	mm/r	0,10–0,20	0,15–0,20	0,15–0,20	0,18–0,20	–	–	0,20–0,30
		K6105	20	**60**	100	mm/r	–	–	–	–	0,20	–	–
	3	KC6005	20	**60**	100	mm/r	0,10–0,20	0,13–0,20	0,13–0,20	0,15–0,20	0,17–0,20	–	0,20–0,30
N	1	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
	2	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
	3	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
	4	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
S	1	–	–	–	–	mm/r	Recommendations available on request						
	2	–	–	–	–	mm/r							
	3	–	–	–	–	mm/r							
	4	–	–	–	–	mm/r							
H	1	KB1610	150	**180**	200	mm/r	–	–	–	–	–	0,05–0,10	–

*For taper reamers vc min 5 m/min, starting vc 10 m/min, max. vc 20 m/min

Overview of RIR and RIQ insert leads

Alternative insert lead that can be used

Tool designed for below listed lead	E06	E13	EDS	EGS	EKS	EGU	EGR	EDR	EKR	ESR	EUR	R02	R04	R06	R08
															
E06	●	–	–	–	–	–	–	–	–	–	–	●	–	–	–
E13	●	●	–	–	–	–	○	○	○	○	○	●	○	–	–
EDS	●	–	●	●	–	–	●	●	○	–	–	●	○	–	–
EGS	○	–	–	●	–	–	●	–	–	–	–	●	○	–	–
EKS	●	–	–	–	●	–	●	●	●	–	–	●	○	–	–
EGU	○	–	○	○	○	●	●	○	○	○	○	●	○	○	–
EGR	●	–	–	–	–	–	●	–	–	–	–	●	○	–	–
EDR	●	–	–	○	–	–	●	●	●	●	○	●	○	–	–
EKR	●	–	–	○	–	–	●	●	●	●	○	●	○	–	–
ESR	●	–	–	○	–	–	●	●	●	●	○	●	○	–	–
EUR	●	–	–	○	–	–	●	●	●	●	●	●	●	–	–
R02	–	–	–	–	–	–	○	–	–	–	–	●	–	–	–
R04	–	–	–	–	–	–	○	–	–	–	–	●	●	–	–
R06	●	–	–	–	–	–	●	●	●	●	●	●	●	●	–
R08	●	–	–	–	–	–	●	●	●	●	●	●	●	●	●

Insert Lead

Surface finish	●●●	●●●	●●	●	●●	●●	●	●●	●●	●●	●●	●●	●●	●●	●●
Postioning accuracy	–	–	●●	●●●	●●	●●	●●●	●●	●●	●●	●●	●	●	●	●

Legend

●	Alternative Inserts	Delivery condition of tool. Insert lead = tool lead.
●		90% compatible. Later support of guide pads at the bore entrance can happen, if leads are not identical.
○		Under certain circumstances compatible. Refer to a Kennametal expert for further support.
–		Do not use in this tool. Can lead to tool damage.

●●●	Surface/ Positioning	Excellent results
●●		Good results
●		Sufficient results
–		Not given

General advice: To mount an insert, where the lead is not identical to the tool lead, the rake angle and insert size have to be identical.

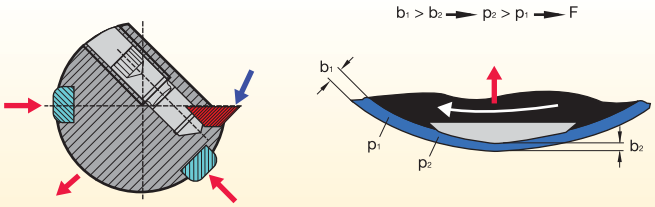
coolant selection		
	recommended	alternative
material type	mineral-oil-based emulsions	semi-synthetic
steel	6%	10%
nickel chrome steel	6%	12%
stainless steel	6%	12%
cast iron	6%	6%
aluminium	6%	12%
zinc alloys	6%	12%
copper	6%	12%
brass	6%	6%

pressure and flow rates					
cut diameter (mm)	cut diameter (in)	flow rate (L/min)	flow rate (gal/min)	pressure (bar)	pressure (psi)
6–12	.25–.468	15–20	55–75	>10	>150
12–16	.468–.625	20–40	75–150	>8	>120
16–20	.625–.781	30–50	115–190	>7	>100
20–32	.781–1.25	40–75	150–285	>5	>75
32–50	1.25–2.0	65–250	245–950	>4	>50
50–100	2.0–4.0	175–350	660–1325	>3	>40

Basic Principle

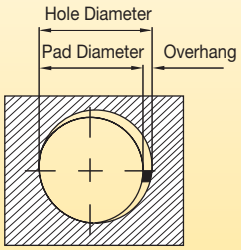
The Kennametal padded reaming tools follow two basic rules. The result, perfectly cylindrical bores with exceptional straightness and superior surface finishes combined with a bore diameter tolerance held to microns:

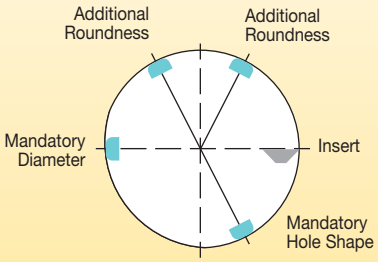
1. A SINGLE-POINT BORING TOOL SUPPORTED BY BEARING PADS, FLOATING ON A COOLANT FILM.
2. A TOOL MUST DEFLECT ONTO THE PADS, ON ENTERING THE HOLE, IN ORDER TO OBTAIN THE CORRECT SIZE.



Each padded reamer hosts a selection of guide pads that are positioned to resist the cutting forces created during machining. A minimum of two guide pads are necessary guiding the reamer in the predrilled hole.

The lubricant, in the form of coolant, gets between the pad and component surface, resulting in frictionless stability during cutting.





Guide pads are ground slightly smaller than the targeted diameter, this allows for blade/insert wear. Most common is a 10 µm overhang but can vary depending on the material to be cut.

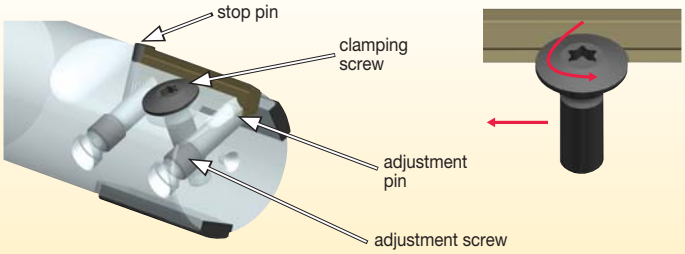
As padded reamers are specifically ground, relative to diameter and tolerance, guide pads are not flexible or adjustable. The pad below the insert ensures hole roundness while the pad opposite the insert defines the bore diameter. Each further pad improves the roundness, straightness, and bridges interruptions within the bore.

These carbide, cermet, PCD, and ceramic guide pads are selected and brazed or bonded to the body depending on coolant availability/type and abrasiveness of the material to be cut. Especially with high L/D ratio tooling (e.g., cam and crank boring bars), bonding of guide pads offers higher precision due to less thermal influence to the steel base body.

● first choice ○ alternate choice

material	P	M	K	N	S	H	MQL
carbide	●	○	●	●		○	○
cermet	●	○	●			○	●
PCD			○		●		●

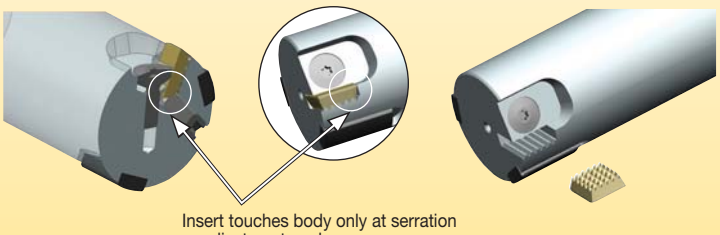
RIR Clamping



RIR reaming inserts are clamped by a single screw to avoid weakening of the pocket seat against common clamping wedges. This clamp screw has a left hand thread to move and securely hold the blade against the stop pin. The stop pin ensures correct advancement of cutting insert to guiding pad.

Like other types of padded reamers using rectangular reaming inserts, two adjustment screws and wedges are required to adjust diameter and back taper accurately. Therefore, RIR is the preferred solution for diameters below RIQ range.

RIQ Clamping



There is no need to adjust back taper as this is already predefined by the serrations. Only the overhang of the cutting edge, relative to the guide pads, needs to be adjusted.

The right-hand clamp screw locks the insert securely onto the high-precision serration. The three cutting edges that are not in use are completely protected by the body while not touching them. All four cutting edges of full-face CBN and PCD inserts can be completely used without the danger of accidently damaging one of them.

The special form of the clamp screw provides the highest clamping forces enabling less loss of diameter by bedding in effects than known on finger-clamp systems

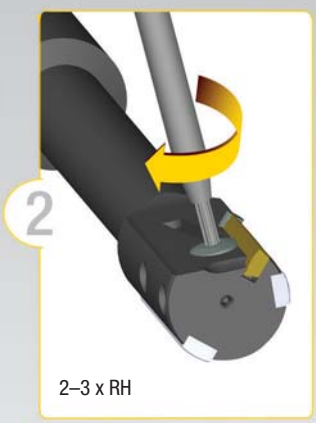
The proprietary adjustment wedge prevents any unpredictable rotation. This avoids errors during setup that cause tool damages.

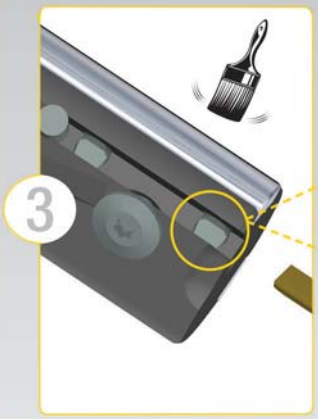
Adjustment Pin and Screw

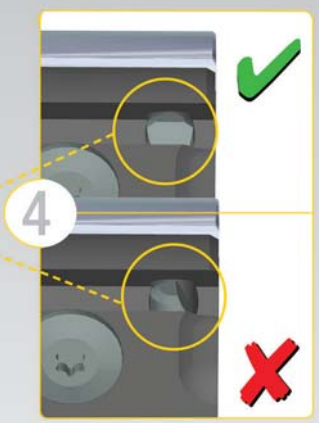


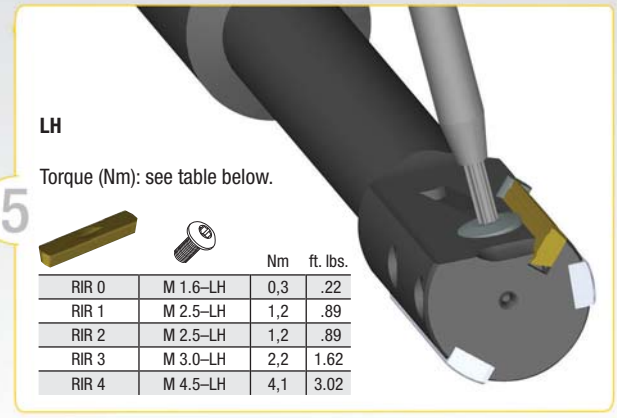
RIR Tooling Setup



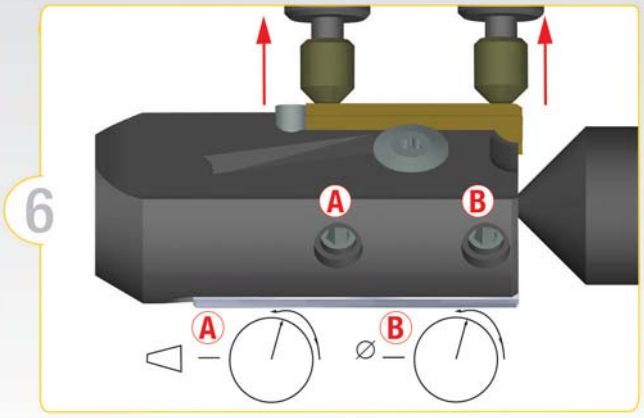






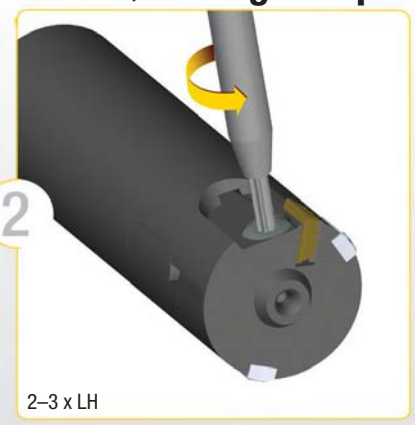


		Nm	ft. lbs.
RIR 0	M 1.6–LH	0,3	.22
RIR 1	M 2.5–LH	1,2	.89
RIR 2	M 2.5–LH	1,2	.89
RIR 3	M 3.0–LH	2,2	1.62
RIR 4	M 4.5–LH	4,1	3.02

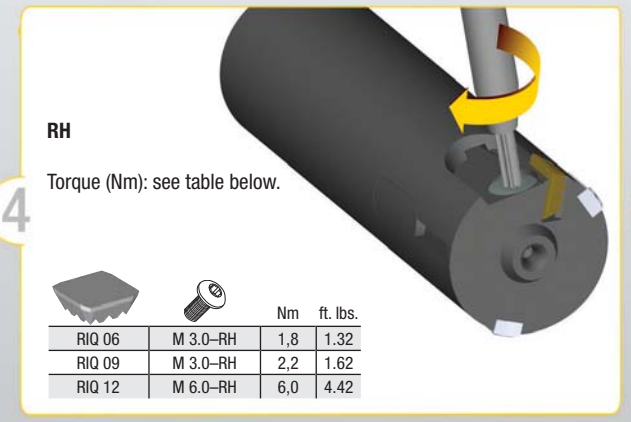


RIQ Tooling Setup

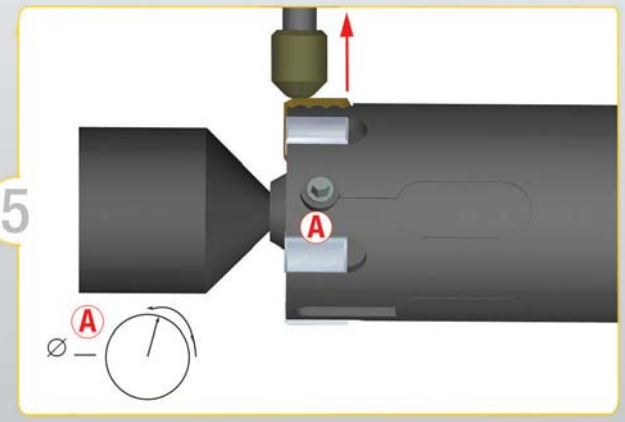






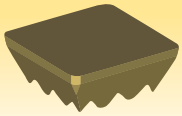


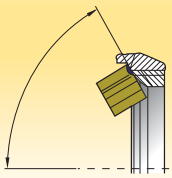
		Nm	ft. lbs.
RIQ 06	M 3.0–RH	1,8	1.32
RIQ 09	M 3.0–RH	2,2	1.62
RIQ 12	M 6.0–RH	6,0	4.42

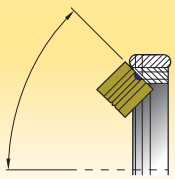


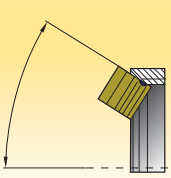
Valve Seat Tools • RIQ™ Quattro Cut™ Based Tooling

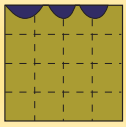
RIQ technology enables bypassing any angular adjustment of the insert and provides up to 12 cutting edges.











- Causing in three wear areas per edge.
- Resulting into 12 usable cutting edges per insert.

Valve Seat Tools • Machining Centre Solutions

RIQ valve seat tooling with integrated hydraulic chuck to clamp multiflute RMS™ or RIR™ guide pad reamer.

Machining Centre • Integrated Hydraulic Chuck

RMS Multiflute Reamer
for regular runout accuracy of valve seat to value guide demands



RIR Guide Pad Reamer
for highest requests regarding valve guide roundness and cylindricity



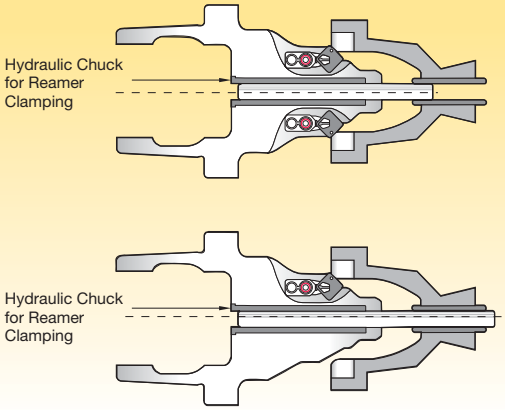
Machining Centre Process • All Angles Formed to Finish Specifications in TWO Passes

Process A (Preferred)
Tool 1 • Semi-Finish:
- Finish of secondary angles.
- Semi-finish of primary angles.
- Create pilot bore (short version of RMS or RIR reamer).

Tool 2 • Finish:
- Finish of primary angles.
- Finish of guide bore (long version of RMS or RIR reamer).

Process B (Alternate)
Tool 1 • Finish Valve Seat:
- Finish of primary and secondary angles.
- Create pilot bore (short version of RMS or RIR reamer).

Tool 2 • Finish Valve Guide:
- Finish of guide bore (long version of RMS or RIR reamer).





Valve Seat Tools • Transfer Line Solutions

RIQ valve seat tooling with carbide bushing guiding RMS or RIR reamer machining the valve guide on transfer lines.

Transfer Line • Integrated Carbide Bushing

Multiflute Reamer RMS
for regular runout accuracy of valve seat to value guide demands



RIR Guide Pad Reamer
for highest requests regarding valve guide roundness and cylindricity

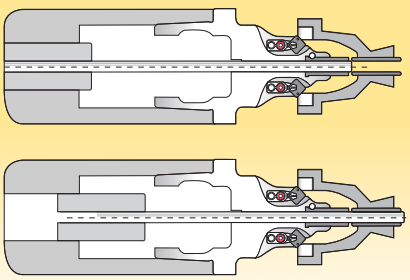


Transfer Line Process • All Angles Formed to Finish Specifications in TWO Passes/ONE Pass

Process A (Preferred)
Tool 1 • Semi-Finish:
- Semi-finish of secondary angles.
- Semi-finish of primary angles.

Tool 2 • Finish:
- Finish of primary angles.
- Finish of secondary angles.
- Finish of guide bore with feed out multiflute or guide pad reamer (squirt-through type).

Process B (Alternate)
Tool 1 • Semi-Finish and Finish Combined:
- Finish of primary and secondary seat angles.
- Finish of guide bore with feed out multiflute or guide pad reamer (squirt-through type).





Fine Boring Application Sheet

Feature tolerances, surface finishes, and geometric tolerances have to be content of the workpiece drawing

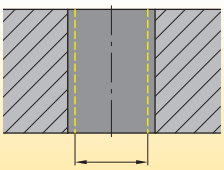
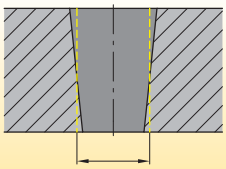
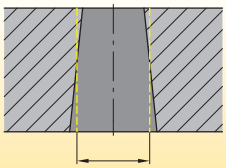
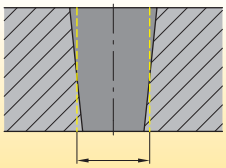
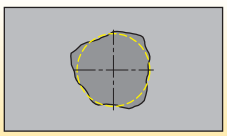
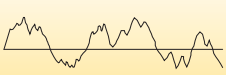
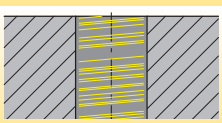
Q-Number:				**Date:**	
Customer:				**Sales eng.:**	
Location:				**Application eng.:**	
Contact person:				**Competitors:**	
General					
Status:	❒ Launch	❒ Running progress	❒ Process change		
Volume:	Holes/Year	**Similar tool:**			
Workpiece					
Operation name:					
Diameters/features to be machined	**1:**	**2:**	**3:**	**4:**	**5:**	**6:**
Tolerance target:	❒ Upper third ❒ Middle third (e.g., if CpK is needed) ❒ Lower third (e.g., if Go/NoGo Gage)		**Interrupted cut:** ❒ Yes ❒ No **Facing included:** ❒ Yes ❒ No **Max lead length:** _____		
CpK-value:	❒ Yes ❒ No		**Hole type:** ❒ Blind ❒ Through		
Workpiece material:			**Hardness/strength:**		(N/mm², HRC,...)
Premachining: (detailed description including stock amounts)					
Machine/Fixture/Hole Gaging					
Machine type:	❒ Machining centre ❒ Transfer line ❒ Lathe ❒ Special purpose machine				
Machine name:					
Tool:	❒ Rotating ❒ Stationary		**Spindle connection:**		(HSK80A, DV50, BT40,...)
Spindle orientation:	❒ Horizontal ❒ Vertical		**Number of spindles:**		(for same operation on same machine)
Workpiece clamping:	❒ Rigid ❒ Weak		**M/C spindle adjustment:**	❒ Radial runout ❒ Axial runout ❒ No	
Setting device available: (only for adjustable tools)	❒ Yes:		Description	❒ No	
Gauging method:	❒ Go/NoGo-gage ❒ Air or electronic gage ❒ Other				
Coolant type	❒ Soluble ❒ Semi-synthetic ❒ Synthetic ❒ MQL				
Coolant supply:	❒ Internal ❒ External ❒ None				
Coolant pressure:	bar		**Coolant concentration:**		%
			Coolant flow:		l/min
Additional Information: (e.g. interferences, weight or dimensional restrictions, customer reason for change, known issues,...)					

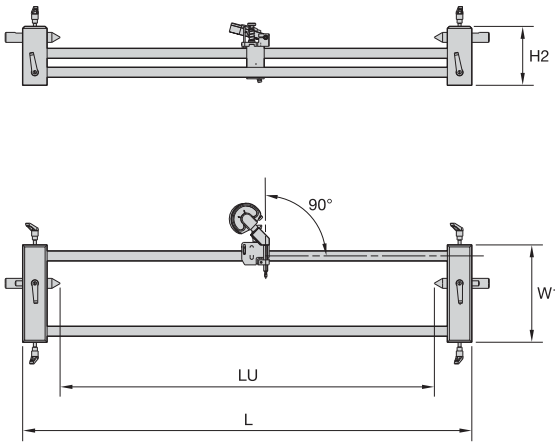
Quotation Processing Only with Workpiece Drawing and Filled Out Form

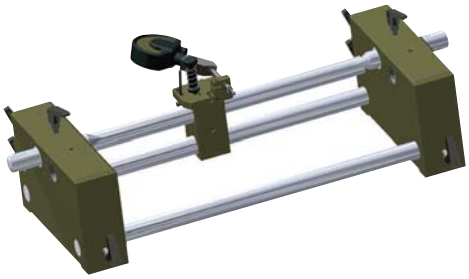
Reaming Allowances for Single Blade Reaming

	reaming allowance in diameter mm		
mm	min	middle	max
6,01–9,59	0,10	0,15	0,25
9,60–15,00	0,15	0,20	0,30
15,00–20,00	0,15	0,25	0,35
20,00–50,00	0,20	0,30	0,40

Causes of and Remedies for Reaming Problems

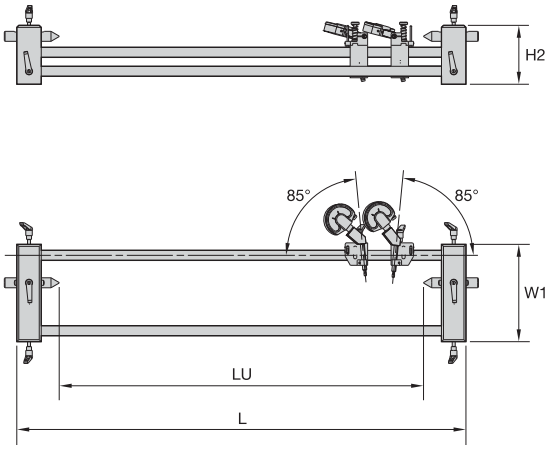
Problem		Cause	Possible Remedy
Drill diameter too large	 d_{Nom}	1. Reaming tool running out-of-centre. 2. Concentricity of pilot hole and ream machining unsatisfactory. 3. Built-up edge. 4. Unsuitable cooling lubricant. 5. Reaming tool Ø too large.	• Use SIF™ equalising adaptor. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Drill diameter too small	 d_{Nom}	1. Reamer worn. 2. Unsuitable cooling lubricant. 3. Reaming allowance too small.	• Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
Conical drill profile wider towards drill runout	 d_{Nom}	1. Concentricity of pilot hole and reaming unsatisfactory. 2. Positioning accuracy of pilot hole to reaming.	• Re-align, use SIF equalising adaptor. • Correct positioning accuracy.
Conical drill profile wider at drill entry point	 d_{Nom}	1. Concentricity of pilot hole and reaming unsatisfactory. 2. Reaming tool skim cutting with ledger.	• Re-align, use floating head. • Securely clamp reaming tool axially.
Hole out-of-centre and/or showing chatter marks		1. Reaming tool running out-of-centre. 2. Slanted cutting surface/asymmetrical cutting. 3. Workpiece twisted.	• Use SIF equalising adaptor. • Flatten surface before drilling or reaming. • Take the direction of impact into account when clamping the workpiece.
Surface quality does not meet specification		1. Tool cutters worn. 2. Reaming tool running out-of-centre. 3. Incorrect technology data (cutting parameters). 4. Inadequate chip evacuation.	• Replace and refit tool. • Use SIF equalising adaptor. • Change cutting parameters in machining range. • Optimise coolant supply; increase coolant pressure and volume.
Feed grooves		1. Built-up edge.	• Change cooling lubricant. • Change cutting speed.

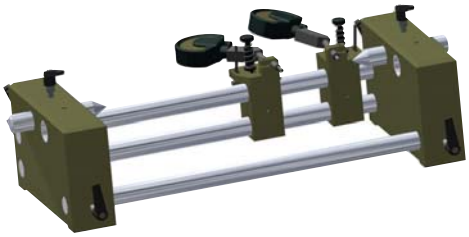




Setting Fixture • One Gage

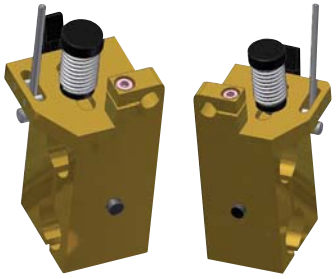
order number	catalogue number	H2	L	LU	W1
5025599	**SF300M1RS**	118	450	300	195
5025670	**SF750M1RS**	118	900	750	195





Setting Fixture • Two Gage

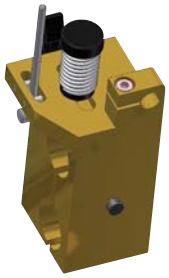
order number	catalogue number	H2	L	LU	W1
5025597	**SF300M1LA1RA**	118	450	300	195
5025598	**SF750M1LA1RA**	118	900	750	195



Left Hand Right Hand

Axial Slide • 90° with Angle Fine Adjustment

order number	catalogue number
5025672	SFSLLS
5025671	SFSLRS



SM Screw Sets for Slides

Axial Slides

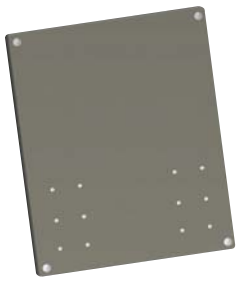
order number	catalogue number
5025683	SFSLSS



Left Hand Right Hand

Axial Slide • 85°

order number	catalogue number
5025674	SFSLLA
5025673	SFSLRA



Base Plate for Vertical Setup

order number	catalogue number
5025680	SFVB



SM Clamp Handle

Clamp Handle for End Blocks and Axial Slides

order number	catalogue number
5025682	SFEBCH



SM End Block

End Block Including Screws

order number	catalogue number
5025681	SFEBS



Contact Pins Set

order number	catalogue number
5025686	SFCPS



Support Bars (450mm and 900mm)

order number	catalogue number
5025684	SFSB450
5025685	SFSB900



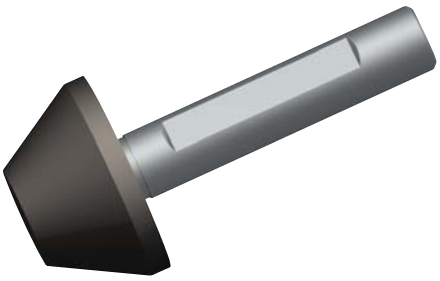
Gage Set

order number	catalogue number
5025675	SFMGS



Spring-Loaded Centre Ø 20mm

order number	catalogue number
5025679	SFCR20S



HSK Centre

order number	catalogue number
5025677	SFCRHSK3263
5025678	SFCRHSK63100



Standard Centre Ø 20mm

order number	catalogue number
5025676	SFCR20

Romicron™ Fine-Boring System

Primary Application

The Romicron tooling portfolio has a diameter range of 4–213mm (.1575–8.3858") and reduces setup time and scrap rates while increasing overall equipment efficiency. This premium fine-boring system can be used in most materials in metalcutting applications by applying the latest Kennametal standard ISO turning inserts. Its closed loop boring (CLB) provides a unique opportunity to automate insert wear compensation with minimal investment due to the precise 2 µm diameter adjustment per increment.

The Romicron system should be used where extremely close tolerances are critical to the overall process or where fast and easy diameter adjustments are needed.



Features and Benefits

Higher Productivity and Profitability

- Reduce scrap rates and setup time with backlash-free adjustment.
- Diameter adjustment can be done inside the machine, avoiding routine insert changes in the setup room.
- Avoid time-consuming control cuts or sister tooling.
- No training or experience needed for use, resulting in less stressful adjustments.

Versatility

- Retrofit existing machines to automated wear compensation using standard CLB pin. No electronic equipment needed, except hole measuring device.
- AVS00B-SVS6B prebalanced heads are preferred solution for diameter 25–139mm (.984–5.472").
- SVUBB1 tooling for high-speed applications 4–16,5mm (.157–.650").
- Broad diameter range of 6–100mm (.236–3.937") using SVUBB2 tooling.
- SVU65 and SVU92 for larger diameters of 71–213mm (2.79–8.386").

100% mechanical system with micron adjustment by hand or fully automated.



Ease of Adjustment

- No tools are needed so adjustment is done on the machine tool. Eliminates need to remove and return boring head to the presetting area, increasing productivity.
- SEE, FEEL, and HEAR the adjustment mechanism for fail-safe size control.

Customisation

- Engineered solutions available for multistep or high length-to-diameter tooling.
- Anti-chatter devices and various non-standard machine spindle coupling sizes available.



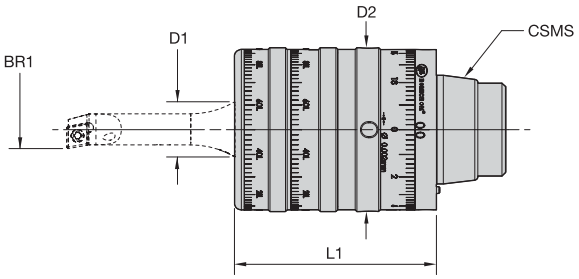
Boring range, coolant capacity, and maximum RPM features for all Romicron boring heads.

	head size	bore range
• 25,000 RPM max. • Balanceable. • 1,050 psi coolant capacity. • 1,050 psi/70 bar coolant capacity. • Movable zero reference.	**SVUBB1**	4mm – 16,5mm
• 10,000 RPM max. • Balanceable. • 1,050 psi coolant capacity. • 1,050 psi/70 bar coolant capacity. • Movable zero reference.	**SVUBB2**	6mm – 25,5mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS00B**	25mm – 32mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS0B**	31,5mm – 42,5mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS1B**	42mm – 53mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS2B**	52mm – 66mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS3B**	65mm – 79mm
• 4,500 RPM. • Prebalanced. • 300 psi/20 bar coolant capacity.	**SVS4B**	78mm – 98mm
• 4,500 RPM. • Prebalanced. • 300 psi/20 bar coolant capacity.	**SVS5B**	97mm – 117mm
• 3,500 RPM. • Prebalanced. • 300 psi/20 bar coolant capacity.	**SVS6B**	116mm – 139mm
• 6,000 RPM. • Balanceable. • 300 psi/20 bar coolant capacity. • Movable zero reference.	**SVU65**	71mm – 111mm
• 6,000 RPM. • Balanceable. • 300 psi/20 bar coolant capacity. • Movable zero reference.	**SVU92**	101mm – 213mm
• 6,000 RPM. • Balanceable. • 300 psi/20 bar coolant capacity. • Movable zero reference.	**SVU120**	139mm – 326mm

range mm	order number	catalogue number	content		
4,00–16,50	**4046076**	**SVUBB1KR32KIT**	KR32SVUBB1060M KRBB10FADRS102C KRBB10SCLDRS4060C KRBB10SCFPR06085C KRBB10SCFPR06110C KRBB10SCFPR06135C		
6,00–25,50	**4046077**	**SVUBB2KR32KITD025M**	KR32SVUBB2085M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A		
6,00–25,50	**4046078**	**SVUBB2KR50KITD025M**	KRBB16SCFPR06220A KR50SVUBB2075M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A		
6,00–100,00	**4052608**	**SVUBB2KR32KITD100M**	KR32SVUBB2085M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	KRDEA046AM KRDE025010M KRDE033010M KRDEA051AM KRDE043010M KRDEA012AM KRDE065012M KRCW032A	
6,00–100,00	**4052609**	**SVUBB2KR50KITD100M**	KR50SVUBB2075M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	KRDEA046AM KRDE025010M KRDE033010M KRDEA051AM KRDE043010M KRDEA012AM KRDE065012M KRCW032A	

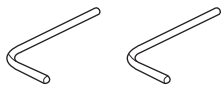
- For correct balance ring settings, see pages K96–K97.
- Order boring bar separately; see page K74.
- Order taper shank seperately; see page K86.







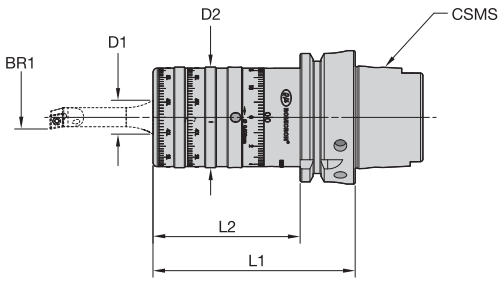
SVU BB1 • KR Back End with CLB Capability



order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	hex wrench	kg	lbs
4054737	**KR32SVUBB1060MCLB**	4,000-16,500	KR32	10,0	46,5	58,6	**KT8**	**170.000**	0,94	2.07

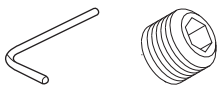
- For correct balance ring settings, see pages K96–K97.
- Order boring bar separately; see page K74.







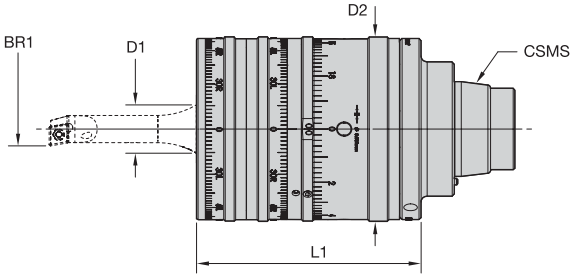
SVU BB1 • HSK Back End with CLB Capability



order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	L2	Torx wrench	radial adjusting screw	kg	lbs
4054734	**HSK63ASVUBB1095MCLB**	4,000-16,500	HSK63A	10,0	46,5	95,5	69,4	**KT15**	**191.282**	1,45	3.20

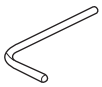
- For correct balance ring settings, see pages K98–K103.
- Order boring bar separately; see page K75.
- Order taper shank separately; see page K86.







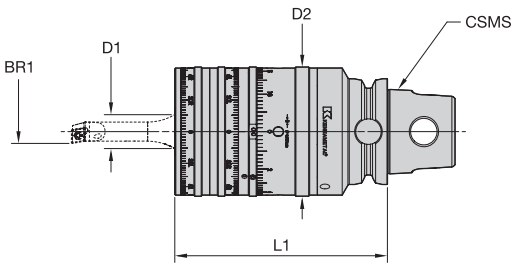
SVU BB2 • KR Back End with CLB Capability



order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	kg	lbs
4054738	**KR32SVUBB2085MCLB**	6,000-25,500	KR32	16,0	60,0	85,0	**KT27**	1,81	3.99
4054739	**KR50SVUBB2075MCLB**	6,000-25,500	KR50	16,0	60,0	75,0	**KT27**	1,61	3.55

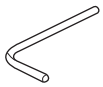
- For correct balance ring settings, see pages K98–K103.
- Order boring bar separately; see page K75.







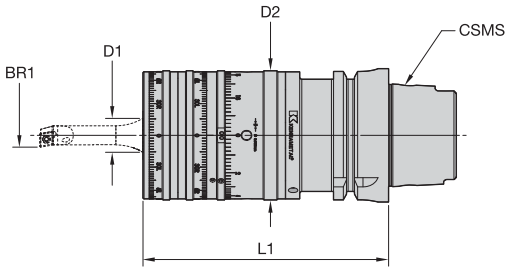
SVU BB2 • KM™ Back End with CLB Capability



order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	kg	lbs
4054736	**KM50TSSVUBB2100MCLB**	6,000-25,500	KM50TS	16,0	60,0	100,0	**KT27**	1,91	4.21

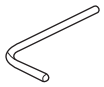
- For correct balance ring settings, see page K98–K103.
- Order boring bar separately; see page K75.





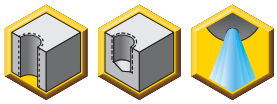


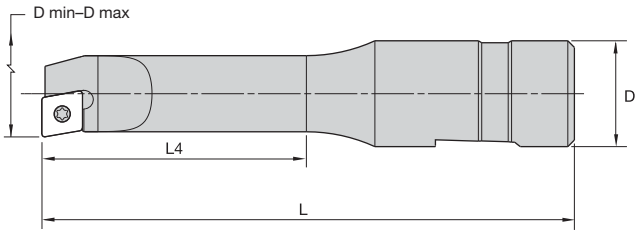
SVU BB2 • HSK Back End with CLB Capability



order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	kg	lbs
4054735	HSK63ASVUBB2116MCLB	6,000-25,500	HSK63A	16,0	60,0	116,0	KT27	2,52	5.56
4054733	HSK100ASVUBB2124MCLB	6,000-25,500	HSK100A	16,0	60,0	124,4	KT27	4,21	9.28

- Order inserts separately.







SVU BB1 • Universal Boring Bars

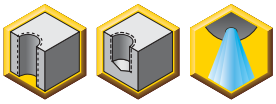


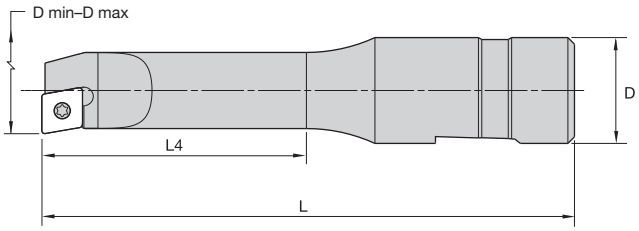


order number	catalogue number	D min	D max	D	L	L4	gage insert	insert screw	Torx wrench	kg	lbs
2202438	KRBB10FABDRS204C	4,00	7,00	10	57	14	–	–	–	0,05	.11
2202439	KRBB10SCLDR4060C	6,00	9,00	10	53	22	CD..S4T004	MS1454	FT5	0,05	.11
2202440	KRBB10SCFPR06085C	8,50	11,50	10	58	31	CP..060204	MS2005	FT7	0,08	.17
2202450	KRBB10SCFPR06110C	11,00	14,00	10	60	33	CP..060204	MS2005	FT7	0,08	.18
2202451	KRBB10SCFPR06135C	13,50	16,50	10	65	39	CP..060204	MS1153	FT7	0,09	.20

NOTE: Carbide shank and customised boring bars are available upon request to meet your specific requirements.
Please contact Kennametal for a design and quotation.

• Order inserts separately.





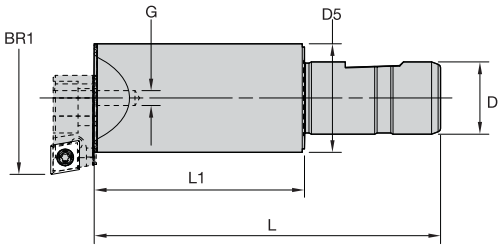


SVU BB2 • Universal Boring Bars

order number	catalogue number	D min	D max	D	L	L4	gage insert	insert screw	Torx wrench	kg	lbs
1522063	**KRBB16SCFPR06085A**	8,50	12,00	16	68	26	CP..060204	**MS1153**	**FT7**	0,06	.14
1522062	**KRBB16SCLDRS406A**	6,00	9,50	16	62	20	CD..S4T004	**MS1454**	**FT6**	0,06	.13
1522064	**KRBB16SCFPR0611A**	11,00	14,50	16	78	36	CP..060204	**MS1153**	**FT7**	0,08	.17
1522068	**KRBB16SCFPR06135A**	13,50	17,00	16	80	40	CP..060204	**MS1153**	**FT7**	0,09	.20
1522069	**KRBB16SCFPR0616A**	16,00	19,50	16	90	55	CP..060204	**MS1153**	**FT7**	0,11	.25
1522070	**KRBB16SCFPR0619A**	19,00	22,50	16	90	60	CP..060204	**MS1153**	**FT7**	0,12	.27
1522071	**KRBB16SCFPR0622A**	22,00	25,50	16	90	60	CP..060204	**MS1153**	**FT7**	0,15	.32

NOTE: Carbide shank and customised boring bars are available upon request to meet your specific requirements. Please contact Kennametal for a design and quotation.



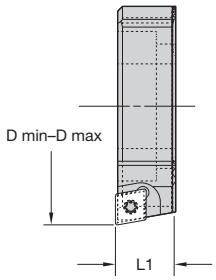


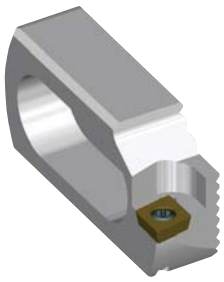


SVU BB2 • Universal Adaptors

order number	catalogue number	BR1 bore range	D	D5	G	L	L1	kg	lbs
2541200	**KRDEA046AM**	25,500-43,500	16	24,0	M4X0.70	76,4	46,4	0,2	.50
2541201	**KRDEA051AM**	43,000-65,000	16	25,0	M6X1.00	81,7	51,7	0,2	.52
2541202	**KRDEA012AM**	65,000-100,000	16	63,5	M8X1.25	42,5	12,5	0,2	.42

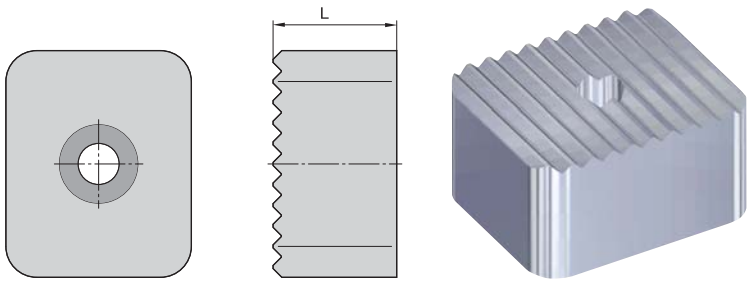
- Order inserts separately.





SVU BB2 • Universal Diameter Extenders

order number	catalogue number	D min	D max	L1	gage insert	insert screw	Torx wrench	kg	lbs
2541213	**KRDE025010M**	25,50	33,50	10,0	CP..0602../CP..215...	**MS1153**	**FT7**	0,02	.04
2541214	**KRDE033010M**	33,50	43,50	10,0	CP..0602../CP..215...	**MS1153**	**FT7**	0,02	.05
2541215	**KRDE043010M**	43,00	65,00	10,0	CP..0602../CP..215...	**MS1153**	**FT7**	0,03	.07
2541216	**KRDE065012M**	65,00	100,00	12,0	CP..0602../CP..215...	**MS1153**	**FT7**	0,05	.10



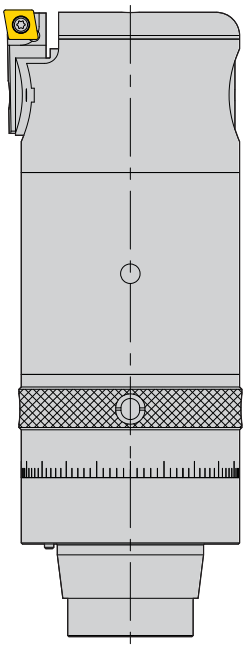
SVU BB2 • Counterweight

order number	catalogue number	L	kg	lbs
2541217	**KRCW032A**	12,0	0,04	.08

NOTE: Counterweight must be used with KRDEA012M adaptor and KRDEA065012M extender.

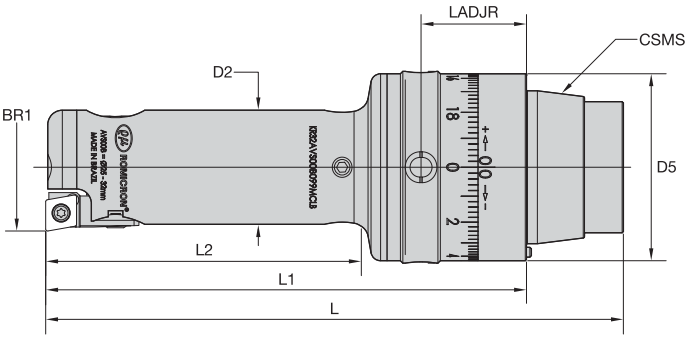
AVS and SVS Systems • Tooling Tree

cartridge range	cartridge size	bore range	head size
25–27,5mm	1Y	25–32mm	AVS00B
27,25–29,75mm	2Y		
29,5–32mm	3Y		
31,5–35,5mm	1X	31,5–42,5mm	AVS0B
35–39mm	2X		
38,5–42,5mm	3X		
42–46mm	1X	42–53mm	AVS1B
45,5–49,5mm	2X		
49–53mm	3X		
52–57mm	1W	52–66mm	AVS2B
56,5–61,5mm	2W		
61–66mm	3W		
65–70mm	1W	65–79mm	AVS3B
69,5–74,5mm	2W		
74–79mm	3W		



- Order cartridges separately.
- Order taper shank separately.





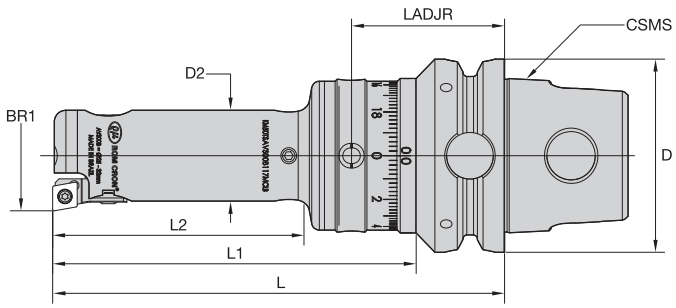


AVS • KR Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D2	D5	L	L1	L2	LADJR	kg	lbs
5124812	**KR32AVS00B099MCLB**	25,000-32,000	KR32	23,5	39,5	119,0	99,0	64,0	21,7	0,6	1.20
5124814	**KR32AVS0B116MCLB**	31,500-42,500	KR32	30,0	39,5	136,0	116,0	85,0	21,7	0,8	1.81
5124816	**KR32AVS1B100MCLB**	42,000-53,000	KR32	38,5	39,5	120,0	100,0	100,0	21,7	1,0	2.13
5124818	**KR32AVS2B115MCLB**	52,000-66,000	KR32	47,0	48,0	135,0	115,0	115,0	29,2	1,5	3.27
5124820	**KR32AVS3B115MCLB**	65,000-79,000	KR32	47,0	48,0	135,0	115,0	115,0	29,2	1,5	3.36

- Order cartridges separately.





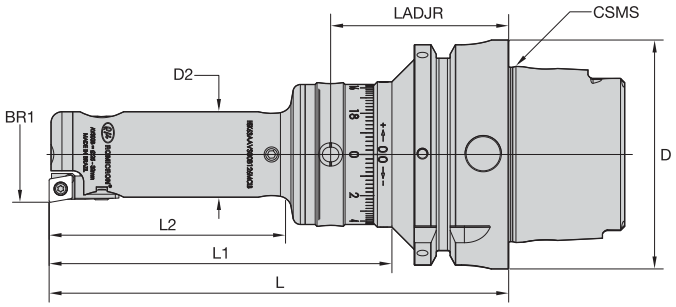


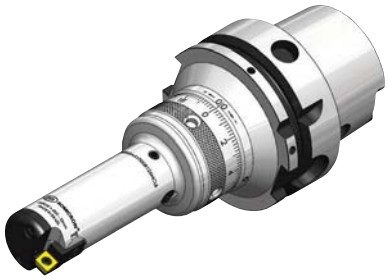
AVS • KM™ Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L	L1	L2	LADJR	kg	lbs
5124801	**KM40TSAVS00B111MCLB**	25.000-32.000	KM40TS	40,000	23,5	136,0	111,0	63,5	34,0	0,6	1.36
5124802	**KM40TSAVS0B128MCLB**	31.500-42.500	KM40TS	40,000	30,0	153,0	128,0	–	34,0	0,8	1.82
5124803	**KM40TSAVS1B112MCLB**	42.000-53.000	KM40TS	40,000	38,5	137,0	112,0	112,0	34,0	1,0	2.18
5124804	**KM40TSAVS2B127MCLB**	52.000-66.000	KM40TS	40,000	47,0	152,0	127,0	127,0	41,3	1,6	3.41
5124805	**KM50TSAVS00B117MCLB**	25.000-32.000	KM50TS	50,000	23,5	149,0	117,0	63,5	39,7	0,8	1.79
5124807	**KM50TSAVS0B134MCLB**	31.500-42.500	KM50TS	50,000	30,0	166,0	134,0	83,0	39,7	1,0	2.25
5124808	**KM50TSAVS1B118MCLB**	42.000-53.000	KM50TS	50,000	38,5	150,0	118,0	–	39,6	1,2	2.57
5124809	**KM50TSAVS2B128MCLB**	52.000-66.000	KM50TS	50,000	47,0	160,0	128,0	128,0	42,3	1,7	3.67
5124810	**KM50TSAVS3B128MCLB**	65.000-79.000	KM50TS	50,000	47,0	160,0	128,0	128,0	42,3	1,7	3.82
5124811	**KM63TSAVS3B130MCLB**	65.000-79.000	KM63TS	63,000	47,0	170,0	130,0	130,0	44,3	2,0	4.46

- Order cartridges separately.



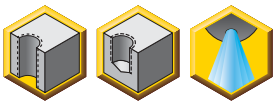


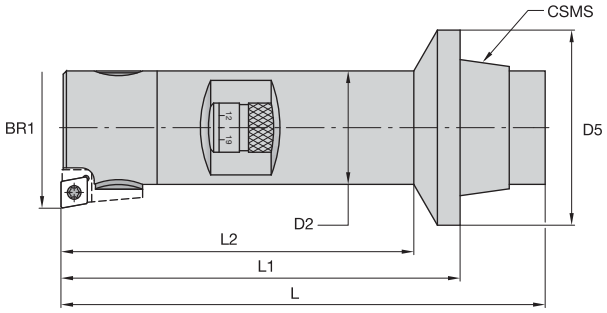


AVS • HSK Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L	L1	L2	LADJR	kg	lbs
5124576	**HSK63AAVS00B126MCLB**	25.000-32.000	HSK63A	63,000	23,5	158,0	126,0	63,5	49,0	1,2	2.71
5124577	**HSK63AAVS0B143MCLB**	31.500-42.500	HSK63A	63,000	30,0	175,0	143,0	83,0	49,0	1,4	3.17
5124578	**HSK63AAVS1B127MCLB**	42.000-53.000	HSK63A	63,000	38,5	159,0	127,0	95,0	49,0	1,6	3.53
5124579	**HSK63AAVS2B139MCLB**	52.000-66.000	HSK63A	63,000	47,0	171,0	139,0	109,0	53,5	2,2	4.73
5124800	**HSK63AAVS3B139MCLB**	65.000-79.000	HSK63A	63,000	47,0	171,0	139,0	109,0	53,5	2,2	4.85

- Order cartridges separately; see page K82.
- Order taper shank separately; see page K86.





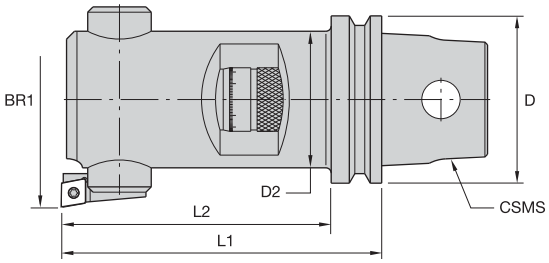


SVS • KR Back End

order number	catalogue number	BR1 bore range	CSMS system size	D2	L	L1	kg	lbs
1192281	**KR50SVS4B094M**	78,000-98,000	KR50	65,0	119,0	94,0	2,4	5.21
1279787	**KR50SVS5B094M**	97,000-117,000	KR50	65,0	119,0	94,0	3,0	6.49
1279793	**KR63SVS6B126M**	116,000-139,000	KR63	85,0	162,0	126,0	5,7	12.63

- Order cartridges separately; see page K82.



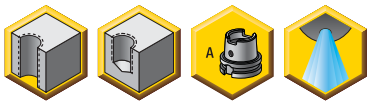


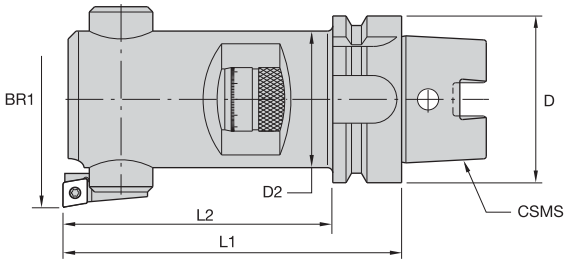


SVS • KM™ Back End

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L1	L2	kg	lbs
1763375	**KM50SVS4B125M**	78,000-98,000	KM50	50,000	65,0	125,0	110,0	2,2	4.90
1763378	**KM50SVS5B125M**	97,000-117,000	KM50	50,000	65,0	125,0	110,0	3,2	7.10
1763376	**KM63SVS4B110M**	78,000-98,000	KM63	63,000	65,0	110,0	92,0	2,4	5.30
1763379	**KM63SVS5B110M**	97,000-117,000	KM63	63,000	65,0	110,0	92,0	3,2	7.10
1763382	**KM80SVS6B150M**	116,000-139,000	KM80	80,000	85,0	150,0	128,0	7,8	17.20

- Order cartridges separately.





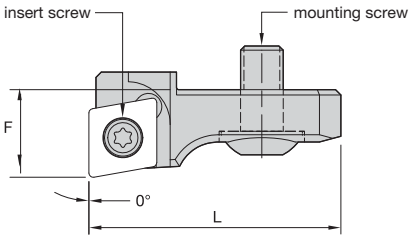


SVS • HSK Back End

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L1	L2	kg	lbs
1763116	**HSK63ASVS4B139M**	78,000-98,000	HSK63A	63,000	65,0	139,0	113,0	3,6	8.00
1763118	**HSK63ASVS5B139M**	97,000-117,000	HSK63A	63,000	65,0	139,0	113,0	5,9	13.00

- Order inserts separately.







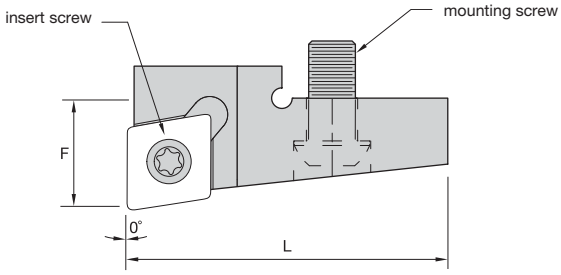
AVS • Cartridges SCF



order number	catalogue number	L	F	gage insert	reference head	cartridge size	mounting screw	Torx wrench	insert screw	Torx wrench	kg	lbs
5124822	**KRCSCFPR061Y**	19,20	4,76	CP..0602../CP..215...	AVS00B	1Y	**MS2006**	**FT8**	**MS2005**	**FT7**	0,00	.010
5124823	**KRCSCFPR062Y**	19,20	5,88	CP..0602../CP..215...	AVS00B	2Y	**MS2006**	**FT8**	**MS2005**	**FT7**	0,00	.010
5124824	**KRCSCFPR063Y**	19,20	7,01	CP..0602../CP..215...	AVS00B	3Y	**MS2006**	**FT8**	**MS2005**	**FT7**	0,00	.010
5124825	**KRCSCFPR061X**	23,75	6,46	CP..0602../CP..215...	AVS1B,AVS0B	1X	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020
5124826	**KRCSCFPR062X**	23,60	8,21	CP..0602../CP..215...	AVS1B,AVS0B	2X	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020
5124827	**KRCSCFPR063X**	23,60	9,96	CP..0602../CP..215...	AVS1B,AVS0B	3X	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020
5124828	**KRCSCFPR061W**	26,60	6,45	CP..0602../CP..215...	AVS3B1,AVS2B1	1W	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.030
5124829	**KRCSCFPR062W**	26,75	8,70	CP..0602../CP..215...	AVS2B1,AVS3B1	2W	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.030
5124850	**KRCSCFPR063W**	26,60	10,95	CP..0602../CP..215...	AVS3B1,AVS2B1	3W	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020

- Order inserts separately.



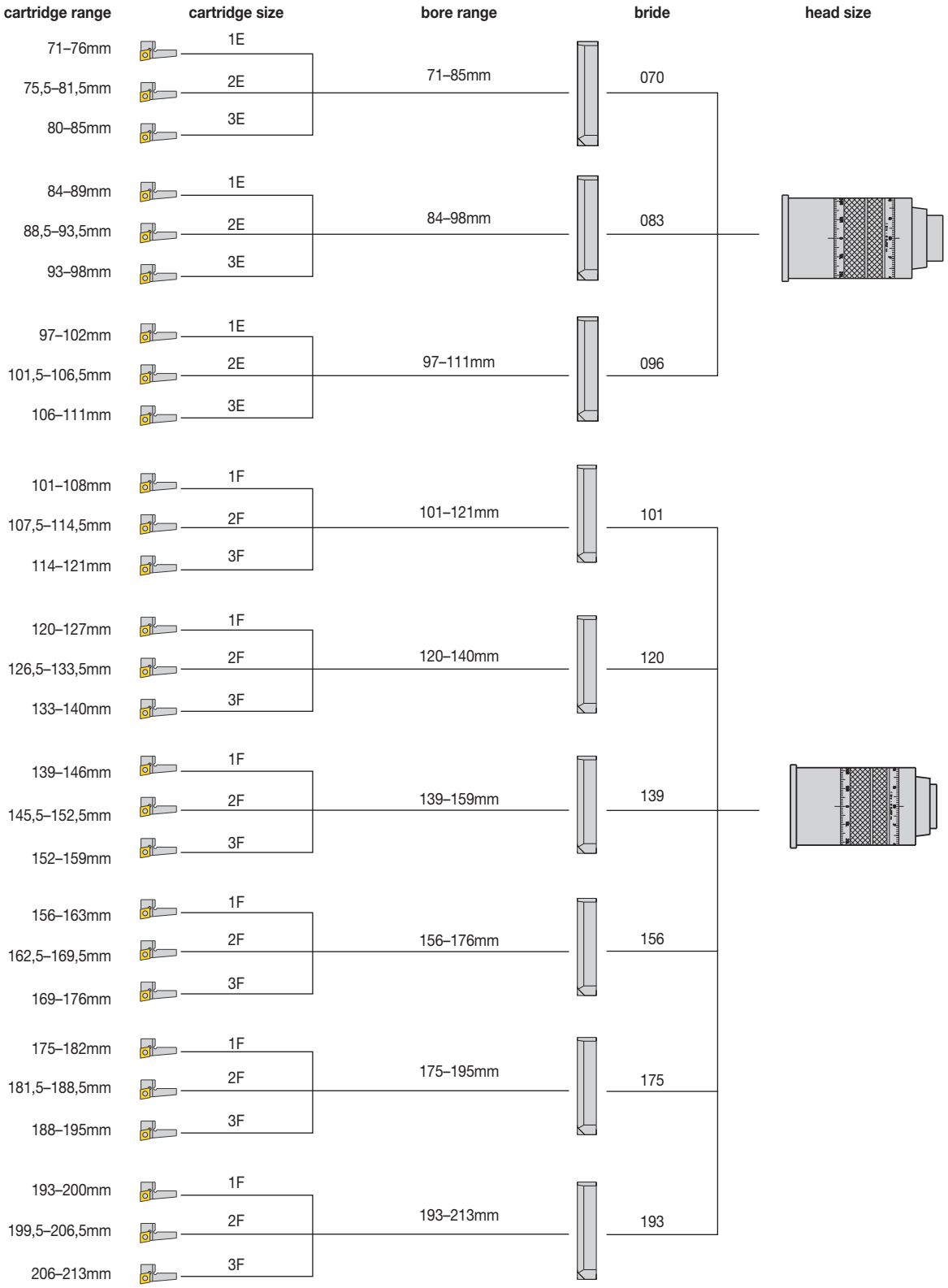




SVS • Cartridges SCF

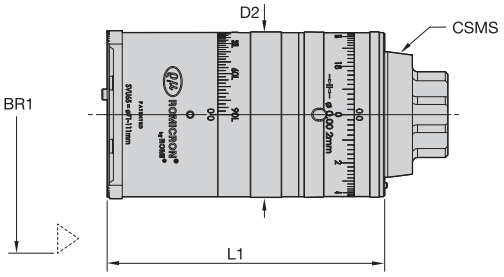
order number	catalogue number	L	F	gage insert	reference head	cartridge size	kg	lbs
1501356	**KRCSCFPR061L**	19,15	4,76	CP..0602../CP..215...	AVS00B	1L.	0,01	.02
1500650	**KRCSCFPR062L**	19,15	5,89	CP..0602../CP..215...	KRMSVS00M50049M,AVS00B	2L.	0,01	.02
1501357	**KRCSCFPR063L**	19,15	7,01	CP..0602../CP..215...	AVS00B	3L.	0,01	.03
1099162	**KRCSCFPR061A**	23,65	6,45	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	1A.	0,01	.02
1099163	**KRCSCFPR062A**	23,70	8,20	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	2A.	0,01	.02
1099164	**KRCSCFPR063A**	23,70	9,95	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	3A.	0,01	.03
1099166	**KRCSCFPR062B**	24,65	8,70	CP..0602../CP..215...	SVS3B,SVS2B	2B.	0,01	.03
1099167	**KRCSCFPR063B**	24,65	10,95	CP..0602../CP..215...	SVS3B,SVS2B	3B.	0,02	.04
1099165	**KRCSCFPR061B**	24,70	6,45	CP..0602../CP..215...	SVS3B,SVS2B	1B.	0,01	.02
1099168	**KRCSCFPR061C**	30,70	8,45	CP..0602../CP..215..	SVS5B,SVS4B	1C.	0,02	.05
1099169	**KRCSCFPR062C**	30,70	11,70	CP..0602../CP..215...	SVS5B,SVS4B	2C.	0,03	.06
1099170	**KRCSCFPR063C**	30,70	14,95	CP..0602../CP..215...	SVS5B,SVS4B	3C.	0,04	.08
1099171	**KRCSCFPR061D**	38,70	8,45	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	1D.	0,03	.07
1099172	**KRCSCFPR062D**	38,70	12,20	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	2D.	0,05	.10
1099173	**KRCSCFPR063D**	38,70	15,95	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	3D.	0,06	.13

SVU System • Tooling Tree



- For correct balance ring settings, see page K104–K105.
- Order diameter extenders, cartridges, and taper shanks separately.





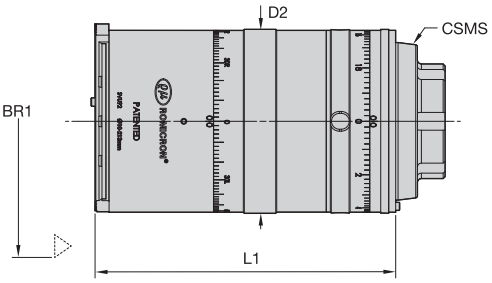


SVU65 • KR Boring Head with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	Torx wrench	kg	lbs
1582600	**KR50SVU65110MCLB**	71,000-111,000	KR50	65,0	110,0	**KT27**	2,8	6.20

- For correct balance ring settings, see page K106–K110.
- Order diameter extenders, cartridges, and taper shanks separately.

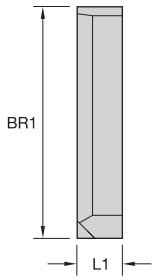






SVU92 • KR Boring Head with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	Torx wrench	kg	lbs
4054740	**KR80SVU92152MCLB**	101,000-213,000	KR80	92,0	152,0	**KT27**	7,5	16.54



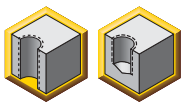


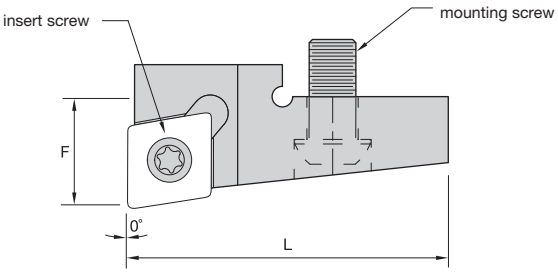


SVU • Diameter Extenders

order number	catalogue number	BR1 bore range	L1 assy	kg	lbs
1279736	**KRDE070019M**	70,000-85,000	19,2	0,2	.48
1279739	**KRDE083019M**	83,000-98,000	19,2	0,3	.62
1279740	**KRDE096019M**	96,000-111,000	19,2	0,3	.76
1279741	**KRDE101023M**	101,000-121,000	23,2	0,6	1.25
1279742	**KRDE120023M**	120,000-140,000	23,2	0,7	1.54
1279743	**KRDE139026M**	139,000-159,000	26,2	1,0	2.15
1279745	**KRDE156026M**	156,000-176,000	26,2	1,1	2.51
1279746	**KRDE175026M**	175,000-195,000	26,2	1,3	2.83
1279748	**KRDE193026M**	193,000-213,000	26,2	1,4	3.14

- Order inserts separately.



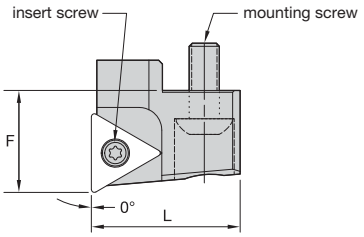




SVU • Cartridges SCF



order number	catalogue number	reference head	F	L	gage insert	insert screw	mounting screw	insert Torx wrench	Torx wrench	cartridge size	kg	lbs
1099174	**KRCSCFPR061E**	SVU65	6,75	19,70	CP..0602../CP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	1E.	0,01	.02
1099175	**KRCSCFPR062E**	SVU65	9,00	19,70	CP..0602../CP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	2E.	0,01	.02
1099176	**KRCSCFPR063E**	SVU65	11,25	19,70	CP..0602../CP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	3E.	0,01	.03
1099177	**KRCSCFPR061F**	SVU92	6,75	19,70	CP..0602../CP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	1F.	0,01	.02
1099178	**KRCSCFPR062F**	SVU92	10,00	19,70	CP..0602../CP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	2F.	0,01	.03
1099179	**KRCSCFPR063F**	SVU92	13,25	19,70	CP..0602../CP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	3F.	0,02	.03



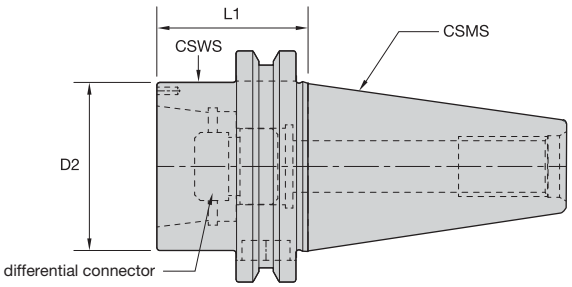


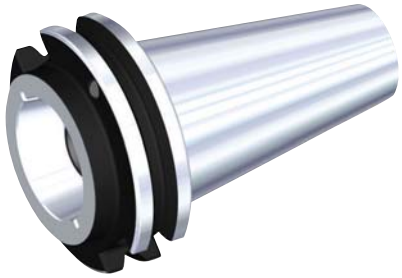
SVU92 • Cartridges STF 90° Lead Angle



order number	catalogue number	reference head	F	L	gage insert	insert screw	mounting screw	insert Torx wrench	Torx wrench	kg	lbs
1279732	**KRCSTFPR113F**	SVU92	13,25	19,70	TP..1102../TP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	0,02	.03

- Differential connector included.





CV to KR Adaptors AD/B



order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
3554366	**CV40BKR32157**	CV40	KR32	47	40	**KRDCKR32M**	1,08	2.40	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554367	**CV40BKR50236**	CV40	KR50	65	60	**KRDCKR50M**	1,23	2.70	SVS4B,5B,SVU65,SVUBB2
3554368	**CV50BKR32157**	CV50	KR32	50	40	**KRDCKR32M**	3,25	7.20	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554369	**CV50BKR50157**	CV50	KR50	65	40	**KRDCKR50M**	3,05	6.70	SVS4B,5B,SVU65,SVUBB2
3554370	**CV50BKR63236**	CV50	KR63	85	60	**KRDCKR63M**	3,50	7.70	SVS6B,7B,8B
3554371	**CV50BKR80275**	CV50	KR80	95	70	**KRDCKR80M**	4,28	9.40	SVU92,120

DV to KR DIN 69871 AD/B

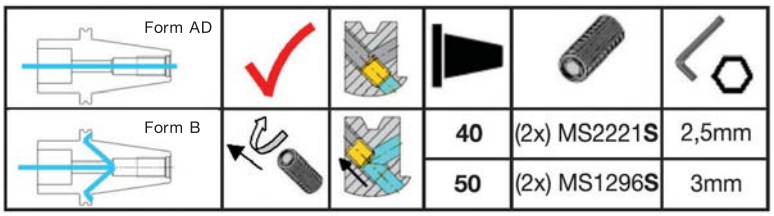


order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
1539005	**DV40BKR32041M**	DV40	KR32	44	41	**KRDCKR32M**	1,00	2.20	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1263816	**DV40BKR50060M**	DV40	KR50	65	60	**KRDCKR50M**	1,40	3.08	SVS4B,5B,SVU65,SVUBB2
1528328	**DV50BKR32041M**	DV50	KR32	50	41	**KRDCKR32M**	2,80	6.16	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1191970	**DV50BKR32040M**	DV50	KR32	50	40	**KRDCKR32M**	2,80	6.16	AVS0B, AVS2B, AVS3B
1191971	**DV50BKR50040M**	DV50	KR50	65	40	**KRDCKR50M**	2,80	6.16	SVS4B,5B,SVU65,SVUBB2
1264135	**DV50BKR63060M**	DV50	KR63	85	60	**KRDCKR63M**	3,30	7.26	SVS6B,7B,8B
1264136	**DV50BKR80070M**	DV50	KR80	95	70	**KRDCKR80M**	4,10	9.02	SVU92,120

BT to KR JIS B6339 Adaptors AD/B

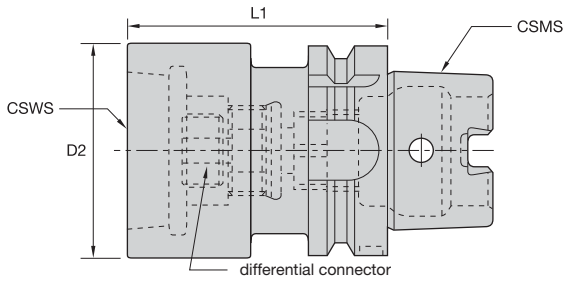


order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
3554372	**BT40BKR32030M**	BT40	KR32	50	30	**KRDCKR32M**	1,20	2.63	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554373	**BT40BKR50050M**	BT40	KR50	63	50	**KRDCKR50M**	1,26	2.80	SVS4B,5B,SVU65,SVUBB2
3554374	**BT50BKR32040M**	BT50	KR32	50	40	**KRDCKR32M**	3,90	8.60	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554375	**BT50BKR50040M**	BT50	KR50	65	40	**KRDCKR50M**	3,17	7.00	SVS4B,5B,SVU65,SVUBB2
3554376	**BT50BKR63060M**	BT50	KR63	85	60	**KRDCKR63M**	4,31	9.50	SVS6B,7B,8B
3554377	**BT50BKR80060M**	BT50	KR80	95	60	**KRDCKR80M**	4,53	9.98	SVU92,120



- Differential connector included.







ERICKSON

HSK Form A to KR Adaptors



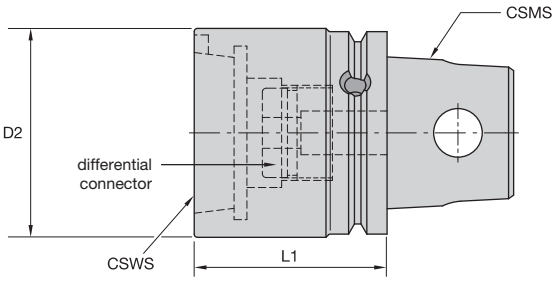
order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
1153403	**HSK63AKR32075M**	HSK63A	KR32	50	75	**KRDCKR32M**	1,20	2.64	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1153604	**HSK63AKR50080M**	HSK63A	KR50	65	80	**KRDCKR50M**	1,60	3.52	SVS4B,5B,SVU65,SVUBB2
1153606	**HSK100AKR32075M**	HSK100A	KR32	50	75	**KRDCKR32M**	2,56	5.64	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1107188	**HSK100AKR50085M**	HSK100A	KR50	65	85	**KRDCKR50M**	3,12	6.87	SVS4B,5B,SVU65,SVUBB2
1173988	**HSK100AKR63100M**	HSK100A	KR63	85	100	**KRDCKR63M**	4,26	9.40	SVS6B,7B,8B
1153612	**HSK100AKR80090M**	HSK100A	KR80	95	90	**KRDCKR80M**	4,36	9.62	SVU92,120

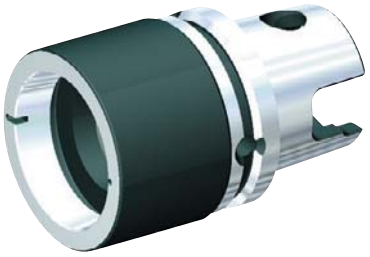
NOTE: Plug may need to be removed to access the differential screw drive through the HSK taper.

- Differential connector included.



KM QUICK CHANGE





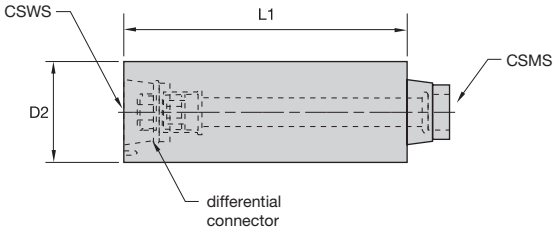
KM63XMZ to KR Adaptors



order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
1831590	**KM63XMZKR5060Y**	KM63XMZ	KR50	65	60	**KRDCKR50M**	1,37	3.02	SVS4B,5B,SVU65,SVUBB2

NOTE: Do not overtighten lock screw; use torque recommendations above.
Supplied with lock screw.
Lock screw wrench not included.

- Differential connector included.

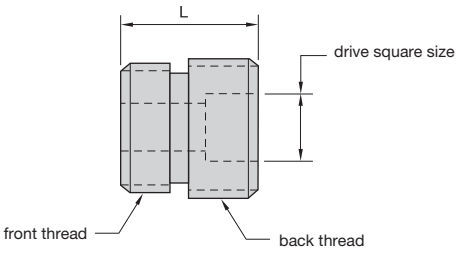




Length Extenders and Spare Differential Connectors



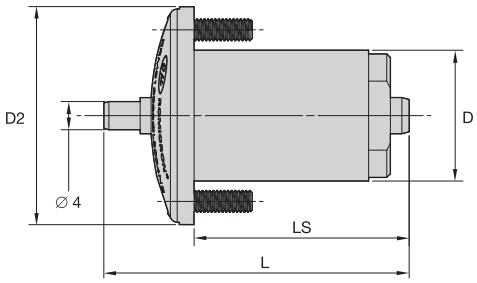
order number	catalogue number	CSWS system size	CSMS system size	D2	L1	differential connector	kg	lbs	reference head
1279772	**KR32KR32038050M**	KR32	KR32	38	50	**KRDCKR32M**	0,45	.99	AVS00B,1B
1192275	**KR32KR32038100M**	KR32	KR32	38	100	**KRDCKR32M**	0,82	1.81	AVS00B,1B
1279775	**KR32KR32047050M**	KR32	KR32	47	50	**KRDCKR32M**	0,69	1.52	AVS0B,2B,3B,SVUBB1
1192276	**KR32KR32047100M**	KR32	KR32	47	100	**KRDCKR32M**	1,28	2.82	AVS0B,2B,3B,SVUBB1
1279785	**KR50KR50065050M**	KR50	KR50	65	50	**KRDCKR50M**	1,16	2.56	SVS4B,5B,SVU65,SVUBB2
1192280	**KR50KR50065100M**	KR50	KR50	65	100	**KRDCKR50M**	2,25	4.96	SVS4B,5B,SVU65,SVUBB2
1279791	**KR63KR63085050M**	KR63	KR63	85	50	**KRDCKR63M**	2,00	4.41	SVS6B,7B,8B
1279792	**KR63KR63085100M**	KR63	KR63	85	100	**KRDCKR63M**	4,02	8.86	SVS6B,7B,8B
1279797	**KR80KR80095050M**	KR80	KR80	95	50	**KRDCKR80M**	2,50	5.51	SVU92,120
1279798	**KR80KR80095100M**	KR80	KR80	95	100	**KRDCKR80M**	5,00	11.02	SVU92,120





Spare Differential Connectors

order number	catalogue number	L	back thread	front thread	drive square size
1192295	**KRDCKR32M**	22	M20 X 2	M18 X 1	3/8 SQ
1192296	**KRDCKR50M**	22	M28 X 2	M26 X 1	3/8 SQ
1279733	**KRDCKR63M**	25	M36 X 2	M32 X 1	1/2 SQ
1279734	**KRDCKR80M**	28	M42 X 2	M38 X 1	1/2 SQ



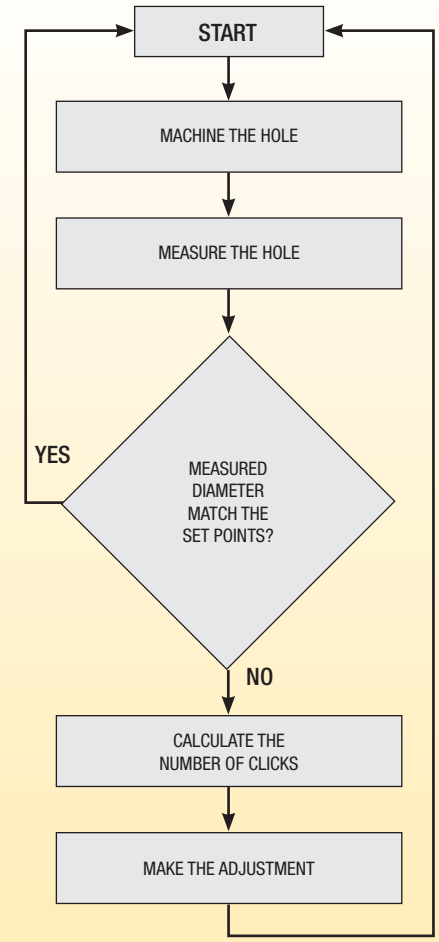


KRM • CLB Pin

order number	catalogue number	D	D2	LS	L	kg	lbs
4052592	**KRM018030CLB004NE**	18,0	30,0	29,6	42,0	0,1	.15

The Romicron Closed Loop Boring Process

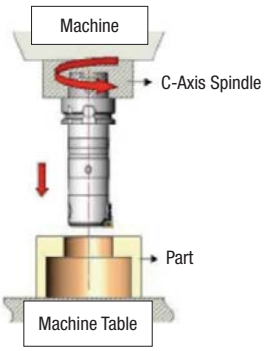
Closed Loop Boring (CLB) provides the unique possibility to automate the insert wear compensation with minimal investment due to the precise 2 µm adjustment in diameter of these tools per increment. Retrofit existing machines to automated wear compensation using the standard CLB pin without any electronic equipment needed besides a measuring device of holes produced.



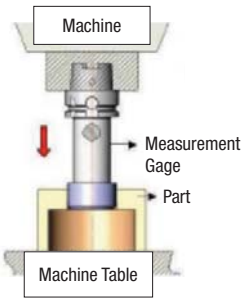
NOTE: This process is only possible with the Romicron system because it does not require tools to make the adjustment.

1. A precision system measures the holes after the machine process. The data is sent to the CNC.
2. The values are compared to the set points.
3. If the diameter is in the range of the specified set points, the machine goes to the next hole. Otherwise, the software calculates the necessary increment and automatically adjusts the Romicron using the CLB pin.

Step 1



Step 2



CNC Machine Command

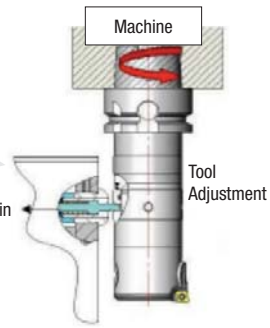


CNC calculates the correction and commands the tool.

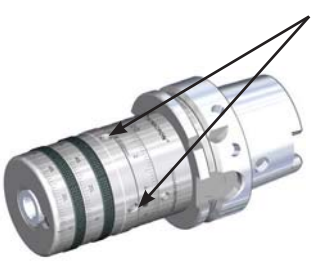
Step 3



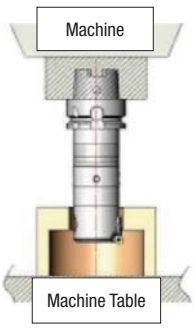
CLB retractable pin to lock the dial ring during diameter adjustment.



Step 4



Four CLB holes positioned at diameter dial ring.



Finishing Hole

Ready for **Takeoff**

Machining carbon-fibre reinforced polymers (CFRP) is a common challenge in the aerospace industry, and these solid carbide drills address the challenge head on. Our SPF drills feature a material-specific design and grade to machine CFRP composite materials by minimising delamination and increasing tool life. These drills feature a combination of point design, substrate, and coating for longer tool life and substantially less cutting force.

The new PCD-tipped PDC251_ drill provides outstanding wear resistance and tool life, and withstands the most abrasive CFRP materials with high-fibre content. Multiple regrinds are possible with these drills, making them extremely economical to use.

SPF DRILL
For composite exits



FULL PCD-TIP DRILL
For composite/metal stacks

Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

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Romicron™ • Cutting Data

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
P	1		KCP05			–	180	**435**	495	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**435**	495	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**400**	495	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**395**	465	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**395**	495	0,06–0,25	0,04–0,16	–	–
			KCP25				140	**280**	360	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	140	**280**	360	0,06–0,10	0,04–0,08	–	–
	2		KCP05			–	180	**265**	400	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**265**	400	–	–	0,06–0,25	–
			KT315	–	–	KT315	190	**270**	390	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**240**	330	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**240**	330	0,06–0,25	0,04–0,16	–	–
			KCP25				145	**195**	320	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	145	**195**	320	0,06–0,10	0,04–0,08	–	–
	3		KCP05			–	180	**205**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**205**	275	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**210**	275	0,06–0,25	–	–	0,08–0,30
			KCP10			–	160	**190**	250	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	155	**190**	240	0,06–0,25	0,04–0,16	–	–
			KCP25				135	**155**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	135	**155**	225	0,06–0,10	0,04–0,08	–	–
	4		KCP05			–	90	**160**	220	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	90	**160**	220	–	–	0,06–0,25	–
			KT315	–	–	KT315	90	**180**	220	0,06–0,25	–	–	0,08–0,30
			KCP10			–	90	**145**	195	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	90	**145**	195	0,06–0,25	0,04–0,16	–	–
			KCP25				75	**105**	180	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	75	**105**	180	0,06–0,10	0,04–0,08	–	–
	5		KCP05			–	150	**240**	315	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	150	**240**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	150	**250**	315	0,06–0,25	–	–	0,08–0,30
			KCP10			–	150	**215**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	150	**215**	300	0,06–0,25	0,04–0,16	–	–
			KCP25				120	**195**	255	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	120	**195**	255	0,06–0,10	0,04–0,08	–	–
	6		KCP05			–	140	**200**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KCP10			–	120	**180**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	120	**180**	225	0,06–0,25	0,04–0,16	–	–
			KCP25				105	**150**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	105	**150**	225	0,06–0,10	0,04–0,08	–	–

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
M	1		–	–	KTP10	–	140	**230**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**230**	315	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**215**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**180**	240	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	105	**180**	240	0,06–0,12	–	–	0,08–0,16
	2		–	–	KTP10	–	140	**215**	295	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**215**	295	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**200**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**165**	250	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	100	**160**	230	0,06–0,12	–	–	0,08–0,16
	3		–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**185**	230	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	115	**150**	255	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	110	**150**	230	0,06–0,12	–	–	0,08–0,16

Romicron™ • Cutting Data

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
K	1		KCK20	–	KCK20		200	**300**	540	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	165	**275**	490	0,06–0,25	–	–	0,08–0,30
			KC9315	–	–	–	110	**275**	450	0,06–0,25	–	–	–
			KC9320	–	–	–	100	**240**	400	0,06–0,12	–	–	–
	2		KCK20	–	KCK20		150	**240**	420	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**275**	360	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	100	**200**	265	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**260**	360	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**240**	330	0,06–0,12	–	–	–
	3		KCK20	–	KCK20		140	**210**	350	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**230**	320	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	120	**150**	225	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**215**	275	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**210**	260	0,06–0,12	–	–	–

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-FWL20	–	–	min	Starting Value	max	-LF	-FWL20	–	–
N	1		KC5410		–	–	200	**550**	1000	0,10–0,40	0,20–0,50	–	–
			KC5410	–	–	–	200	**550**	1000	0,10–0,20	–	–	–
			–	–	KD1400	–	450	**765**	3000	–	–	0,06–0,15	–
	2		–	–	KD1425	–	375	**580**	1150	–	–	0,06–0,25	–
			–	–	KD1400	–	400	**650**	1250	–	–	0,06–0,15	–
	3		KC5410		–	–	125	**275**	525	0,10–0,40	0,20–0,50	–	–
			–	–	KD1425	–	250	**500**	875	–	–	0,06–0,25	–
			KC5410	–	–	–	125	**275**	525	0,10–0,20	–	–	–
			–	–	KD1400	–	375	**520**	1000	–	–	0,06–0,12	–
	5		KC5410	–	–	–	125	**200**	375	0,10–0,40	–	–	–
			KC5410	–	–	–	125	**200**	375	0,10–0,20	–	–	–

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
S	1		–	–	KCU10	–	30	**55**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**30**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**55**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**55**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**55**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	10	**40**	50	–	–	0,06–0,12	–
			KC5025	–	–	–	10	**40**	50	0,06–0,10	–	–	–
	2		–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**35**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	10	**30**	50	–	–	0,06–0,12	–
			KC5025	–	–	–	10	**30**	50	0,06–0,10	–	–	–
	3		–	–	KCU10	–	30	**70**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**40**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**70**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**70**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**40**	60	–	–	0,06–0,12	–
			KC5025	–	–	–	25	**40**	60	0,06-0,10	–	–	–
	4		–	–	KCU10	–	45	**70**	140	–	–	0,06–0,25	–
			K313	–	–	–	15	**45**	65	0,06–0,25	–	–	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	45	**70**	140	–	–	0,06–0,25	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**55**	90	–	–	0,06–0,12	–
			KC5025	–	–	–	15	**55**	90	0,06–0,10	–	–	–

Romicron Assembly Instructions

The required parts for the adaptor assembly are identified on Figures 1 and 2. The SVS model is shown. The instructions are also valid to the SVU and SVUBB models.

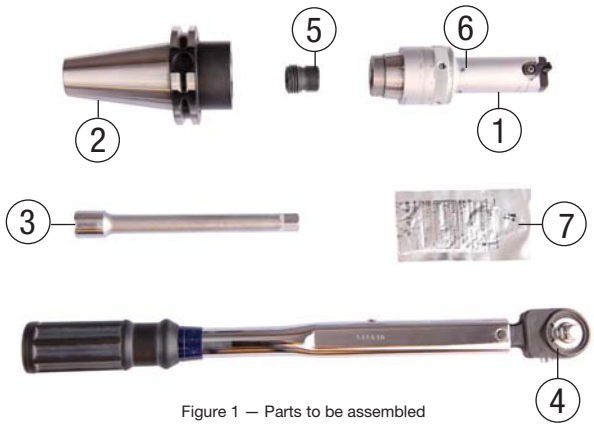


Figure 1 — Parts to be assembled

1	Boring head
2	Taper shank
3	Square extension (3/8" or 1/2")
4	Torque wrench
5	Differential connector
6	Positioning pin
7	Lubricant ASL-3G

WARNING:
Before starting the assembly procedure, ensure that all surfaces to be assembled together are free of dirt and completely clean.



Figure 2 — Assembled Tool

A



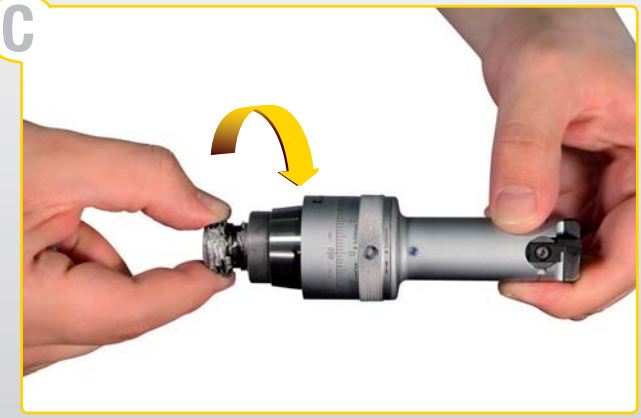
A. Remove the Differential Connector (5) from the Taper Shank (2).

B



B. Lubricate the thread on the Differential Connector (5) with Lubricant ASK-3G (7), supplied with the Taper Shank (2).

C



C. Screw the Differential Connector (5) into the rear thread on the Boring Head (1) until the end of the thread. At this time it is not necessary to tighten the Differential Connector (5). Remember that the Differential Connector (5) has two different screws, so there is no way to assemble the wrong side.

Romicron Assembly Instructions

D



D. Screw the front end of the Taper Shank (2) onto the Differential Connector (5), now located at the back on the Boring Head (1). Screw carefully until the Positioning Pin (6) gently touches the Taper (2) face. Stop!

F



F. Insert the square end of the Extension (3) through the Taper Shank (2) and into the Differential Connector (5). Keeping the Positioning Pin (6) and the positioning slot aligned, turn the Extensions (3) anti-clockwise until you see that two Romicron faces are meshing. Ensure that the Positioning Pin (6) is inserted into the slot on the Taper Shank (2).

E



E. Unscrew the Taper Shank (2) a little bit until the Positioning Pin (6) is aligned with the positioning slot mark in the Taper Shank (2) face.

G



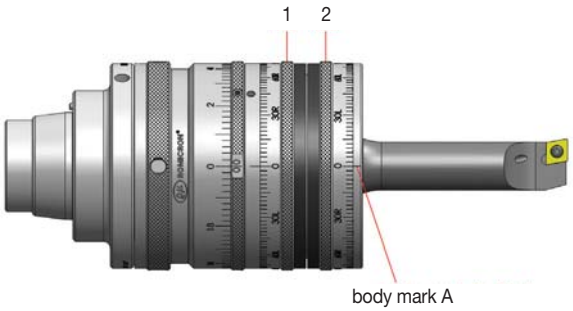
G. Tighten the Differential Connector (5) with the specified required torque, as shown on the table below. Use the Torque Wrench (4) to do this.

Tightening Torque Specifications

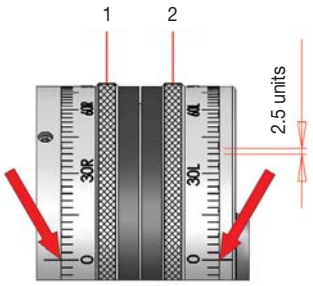
joint size	Torque Nm	drive square
KR32	30	3/8"
KR50	40	3/8"
KR63	55	1/2"
KR80	65	1/2"

Following these procedures will result in a rigid surface contact between the taper and the boring head face.

1. There are 2 balancing dials on the SVUBB system. Align ring 2 “zero” with the body mark A. Align “zero” mark of ring 1 with the “zero” mark of ring 2.



2. Look up your diameter in the table below and read the setting values for ring 1 and ring 2.



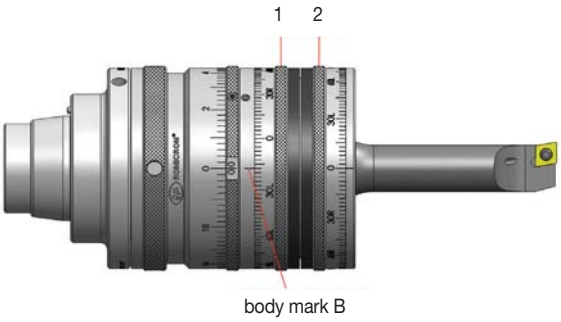
Balancing Table • SVU-BB1 Boring Head

KRBB10FABDRS204C 4–6,4mm					KRBB10SCLDR4060C 6–9mm					KRBB10SCFPR06085C 8,5–11,5mm				
diameter	ring 1		ring 2		diameter	ring 1		ring 2		diameter	ring 1		ring 2	
mm					mm					mm				
4	40	L	58	L	6	34	L	66	L	8,5	34	L	66	L
4,1	42	L	58	L	6,1	36	L	66	L	8,6	36	L	68	L
4,2	42	L	54	L	6,2	36	L	64	L	8,7	36	L	64	L
4,3	44	L	54	L	6,3	38	L	62	L	8,8	38	L	62	L
4,4	44	L	50	L	6,4	38	L	62	L	8,9	36	L	60	L
4,5	46	L	50	L	6,5	40	L	60	L	9	40	L	60	L
4,6	46	L	48	L	6,6	40	L	58	L	9,1	40	L	58	L
4,7	46	L	46	L	6,7	40	L	56	L	9,2	42	L	56	L
4,8	46	L	42	L	6,8	40	L	54	L	9,3	40	L	54	L
4,9	46	L	40	L	6,9	42	L	52	L	9,4	42	L	52	L
5	22	R	20	R	7	42	L	54	L	9,5	42	L	50	L
5,1	32	R	26	R	7,1	54	R	60	R	9,6	40	L	46	L
5,2	40	R	32	R	7,2	54	R	60	R	9,7	38	L	42	L
5,3	44	R	34	R	7,3	60	R	60	R	9,8	30	L	32	L
5,4	48	R	36	R	7,4	70	R	72	R	9,9	24	R	22	R
5,5	50	R	36	R	7,5	42	R	40	R	10	24	R	22	R
5,6	52	R	34	R	7,6	48	R	44	R	10,1	26	R	22	R
5,7	54	R	34	R	7,7	50	R	42	R	10,2	44	R	38	R
5,8	56	R	32	R	7,8	50	R	42	R	10,3	48	R	38	R
5,9	58	R	32	R	7,9	52	R	40	R	10,4	52	R	38	R
6	60	R	30	R	8	54	R	40	R	10,5	52	R	38	R
6,1	62	R	30	R	8,1	54	R	38	R	10,6	56	R	36	R
6,2	64	R	28	R	8,2	56	R	38	R	10,7	56	R	36	R
6,3	66	R	28	R	8,3	58	R	36	R	10,8	58	R	34	R
6,4	68	R	24	R	8,4	58	R	34	R	10,9	58	R	32	R
–	–	–	–	–	8,5	60	R	36	R	11	62	R	32	R
–	–	–	–	–	8,6	62	R	34	R	11,1	60	R	30	R
–	–	–	–	–	8,7	62	R	32	R	11,2	62	R	28	R
–	–	–	–	–	8,8	62	R	32	R	11,3	62	R	28	R
–	–	–	–	–	8,9	66	R	28	R	11,4	68	R	26	R
–	–	–	–	–	9	66	R	28	R	11,5	68	R	26	R

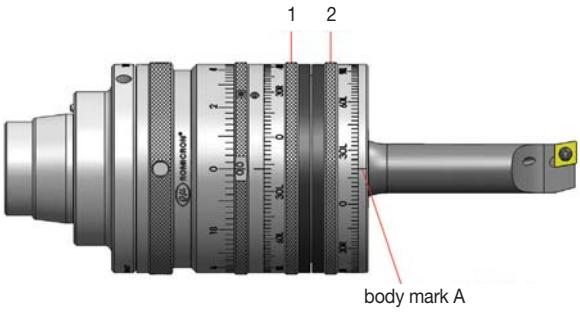
(continued)

(Balancing Table • SVU-BB1 Boring Head — continued)

3. Set ring 1 first, referencing to body mark B (one dial mark equals 2.5 units).

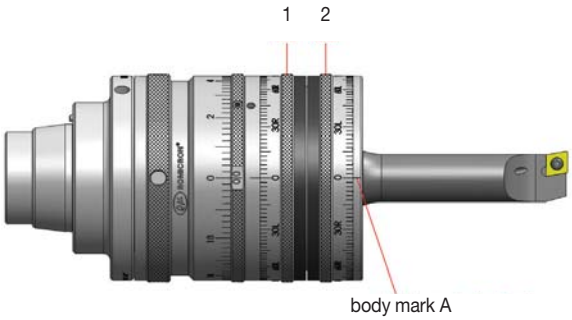


4. Set ring 2, referencing to body mark A (one dial mark equals 2.5 units).

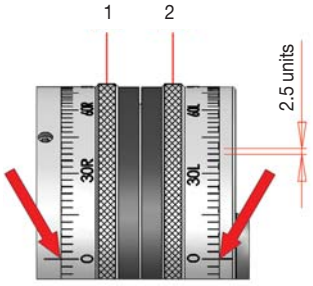


KRBB10SCFPR06110C 11–14mm					KRBB10SCFPR06135C 13,5–16,5mm				
diameter	ring 1		ring 2		diameter	ring 1		ring 2	
mm					mm				
11	32	L	66	L	13,5	34	L	62	L
11,1	34	L	64	L	13,6	36	L	60	L
11,2	34	L	62	L	13,7	38	L	58	L
11,3	36	L	60	L	13,8	38	L	56	L
11,4	36	L	58	L	13,9	40	L	56	L
11,5	38	L	58	L	14	42	L	44	L
11,6	38	L	56	L	14,1	42	L	52	L
11,7	40	L	54	L	14,2	44	L	50	L
11,8	40	L	52	L	14,3	42	L	46	L
11,9	40	L	52	L	14,4	34	L	36	L
12	38	L	46	L	14,5	18	L	20	L
12,1	34	L	42	L	14,6	10	R	6	R
12,2	26	L	30	L	14,7	18	R	10	R
12,3	24	R	22	R	14,8	40	R	30	R
12,4	28	L	26	L	14,9	44	R	32	R
12,5	44	L	38	R	15	48	R	34	R
12,6	44	R	36	R	15,1	48	R	32	R
12,7	50	R	40	R	15,2	50	R	30	R
12,8	50	R	38	R	15,3	52	R	30	R
12,9	52	R	36	R	15,4	56	R	32	R
13	52	R	36	R	15,5	54	R	28	R
13,1	54	R	34	R	15,6	58	R	28	R
13,2	54	R	32	R	15,7	60	R	26	R
13,3	56	R	32	R	15,8	64	R	26	R
13,4	56	R	30	R	15,9	64	R	26	R
13,5	60	R	28	R	16	66	R	24	R
13,6	60	R	28	R	16,1	66	R	22	R
13,7	62	R	26	R	16,2	70	R	20	R
13,8	64	R	26	R	16,3	74	R	18	R
13,9	68	R	24	R	16,4	76	R	16	R
14	68	R	24	R	16,5	78	R	14	R

1. There are 2 balancing dials on the SVUBB system. Align ring 2 “zero” with the body mark A. Align “zero” mark of ring 1 with the “zero” mark of ring 2.



2. Look up your diameter in the table below and read the setting values for ring 1 and ring 2.



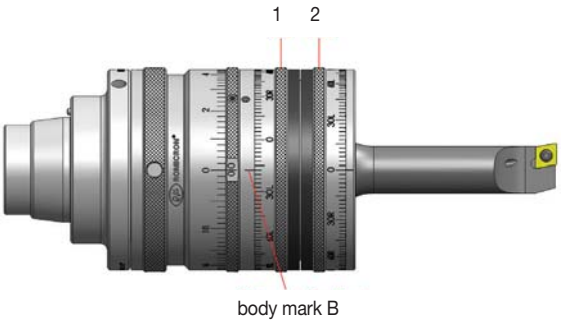
Balancing Table • SVU-BB2 Boring Head

KRBB16SCLDRS406A 6–9,5mm					KRBB16SCFPR06085A 8,5–12mm					KRBB16SCFPR0611A 11–14,5mm					KRBB16SCFPR06135A 13,5–17mm				
diameter	ring 1		ring 2		diameter	ring 1		ring 2		diameter	ring 1		ring 2		diameter	ring 1		ring 2	
mm					mm					mm					mm				
6	67.5	L	67.5	L	8,5	67.5	L	67.5	L	11	67.5	L	70	L	13,5	65	L	70	L
6,1	62.5	L	62.5	L	8,6	62.5	L	62.5	L	11,1	60	L	62.5	L	13,6	60	L	65	L
6,2	57.5	L	57.5	L	8,7	57.5	L	57.5	L	11,2	57.5	L	60	L	13,7	55	L	60	L
6,3	55	L	55	L	8,8	52.5	L	55	L	11,3	52.5	L	55	L	13,8	50	L	55	L
6,4	50	L	50	L	8,9	50	L	50	L	11,4	47.5	L	50	L	13,9	47.5	L	52.5	L
6,5	47.5	L	47.5	L	9	47.5	L	47.5	L	11,5	45	L	47.5	L	14	42.5	L	47.5	L
6,6	45	L	45	L	9,1	42.5	L	45	L	11,6	42.5	L	45	L	14,1	40	L	45	L
6,7	40	L	40	L	9,2	40	L	40	L	11,7	37.5	L	42.5	L	14,2	35	L	42.5	L
6,8	37.5	L	37.5	L	9,3	37.5	L	37.5	L	11,8	35	L	37.5	L	14,3	32.5	L	40	L
6,9	35	L	35	L	9,4	35	L	35	L	11,9	32.5	L	35	L	14,4	30	L	37.5	L
7	32.5	L	32.5	L	9,5	30	L	32.5	L	12	30	L	32.5	L	14,5	25	L	35	L
7,1	30	L	30	L	9,6	27.5	L	30	L	12,1	27.5	L	30	L	14,6	22.5	L	32.5	L
7,2	27.5	L	27.5	L	9,7	25	L	27.5	L	12,2	25	L	27.5	L	14,7	20	L	30	L
7,3	25	L	25	L	9,8	22.5	L	25	L	12,3	22.5	L	25	L	14,8	17.5	L	27.5	L
7,4	22.5	L	22.5	L	9,9	20	L	22.5	L	12,4	17.5	L	25	L	14,9	15	L	25	L
7,5	20	L	20	L	10	17.5	L	20	L	12,5	15	L	22.5	L	15	10	L	25	L
7,6	17.5	L	17.5	L	10,1	15	L	17.5	L	12,6	12.5	L	20	L	15,1	7.5	L	22.5	L
7,7	15	L	15	L	10,2	12.5	L	15	L	12,7	10	L	17.5	L	15,2	2.5	L	22.5	L
7,8	12.5	L	12.5	L	10,3	10	L	15	L	12,8	5	L	17.5	L	15,3	2.5	R	22.5	L
7,9	10	L	12.5	L	10,4	7.5	L	12.5	L	12,9	2.5	L	15	L	15,4	7.5	R	22.5	L
8	7.5	L	10	L	10,5	5	L	10	L	13	2.5	R	15	L	15,5	17.5	R	27.5	L
8,1	5	L	7.5	L	10,6	0	L	10	L	13,1	10	R	17.5	L	15,6	37.5	R	42.5	L
8,2	2.5	L	5	L	10,7	5	R	10	L	13,2	25	R	30	L	15,7	85	L	90	R
8,3	2.5	R	5	L	10,8	45	R	45	L	13,3	62.5	L	65	R	15,8	35	L	42.5	R
8,4	10	L	12.5	R	10,9	10	L	15	R	13,4	17.5	L	22.5	R	15,9	17.5	L	27.5	R
8,5	0	R	5	R	11	2.5	L	10	R	13,5	5	L	15	R	16	7.5	L	22.5	R
8,6	2.5	R	7.5	R	11,1	2.5	R	10	R	13,6	0	R	15	R	16,1	2.5	L	22.5	R
8,7	7.5	R	7.5	R	11,2	5	R	12.5	R	13,7	5	R	15	R	16,2	2.5	R	22.5	R
8,8	10	R	10	R	11,3	10	R	12.5	R	13,8	7.5	R	17.5	R	16,3	7.5	R	22.5	R
8,9	12.5	R	12.5	R	11,4	12.5	R	15	R	13,9	10	R	20	R	16,4	10	R	25	R
9	12.5	R	15	R	11,5	15	R	17.5	R	14	15	R	20	R	16,5	15	R	25	R
9,1	15	R	17.5	R	11,6	17.5	R	20	R	14,1	17.5	R	22.5	R	16,6	17.5	R	27.5	R
9,2	17.5	R	20	R	11,7	20	R	22.5	R	14,2	20	R	25	R	16,7	20	R	30	R
9,3	20	R	22.5	R	11,8	22.5	R	25	R	14,3	22.5	R	27.5	R	16,8	22.5	R	32.5	R
9,4	22.5	R	25	R	11,9	25	R	27.5	R	14,4	25	R	30	R	16,9	27.5	R	35	R
9,5	25	R	27.5	R	12	27.5	R	30	R	14,5	27.5	R	32.5	R	17	30	R	37.5	R

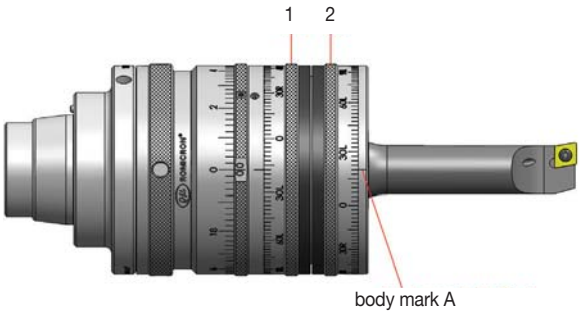
(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

3. Set ring 1 first, referencing to body mark B (one dial mark equals 2.5 units).



4. Set ring 2, referencing to body mark A (one dial mark equals 2.5 units).



KRBB16SCFPR0616A 16–19,5mm					KRBB16SCFPR0619A 19–22,5mm					KRBB16SCFPR0622A 22–25,5mm				
diameter					diameter					diameter				
mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2	
16	65	L	72.5	L	19	60	L	75	L	22	57.5	L	80	L
16,1	57.5	L	65	L	19,1	55	L	70	L	22,1	50	L	72.5	L
16,2	52.5	L	62.5	L	19,2	50	L	65	L	22,2	45	L	70	L
16,3	47.5	L	57.5	L	19,3	45	L	60	L	22,3	37.5	L	65	L
16,4	42.5	L	52.5	L	19,4	40	L	57.5	L	22,4	32.5	L	62.5	L
16,5	40	L	50	L	19,5	35	L	52.5	L	22,5	27.5	L	60	L
16,6	35	L	47.5	L	19,6	30	L	50	L	22,6	22.5	L	57.5	L
16,7	32.5	L	45	L	19,7	27.5	L	47.5	L	22,7	20	L	55	L
16,8	27.5	L	42.5	L	19,8	22.5	L	45	L	22,8	15	L	52.5	L
16,9	25	L	40	L	19,9	20	L	42.5	L	22,9	10	L	52.5	L
17	20	L	37.5	L	20	15	L	42.5	L	23	5	L	50	L
17,1	17.5	L	35	L	20,1	10	L	40	L	23,1	0	R	50	L
17,2	12.5	L	32.5	L	20,2	5	L	40	L	23,2	7.5	R	52.5	L
17,3	10	L	30	L	20,3	0	L	40	L	23,3	12.5	R	52.5	L
17,4	5	L	30	L	20,4	5	R	40	L	23,4	20	R	55	L
17,5	0	L	30	L	20,5	10	R	40	L	23,5	30	R	60	L
17,6	5	R	30	L	20,6	17.5	R	42.5	L	23,6	40	R	65	L
17,7	12.5	R	32.5	L	20,7	27.5	R	47.5	L	23,7	52.5	R	75	L
17,8	22.5	R	37.5	L	20,8	40	R	57.5	L	23,8	67.5	R	90	L
17,9	35	R	47.5	L	20,9	57.5	R	72.5	L	23,9	77.5	L	97.5	R
18	60	R	67.5	L	21	80	R	92.5	L	24	60	L	82.5	R
18,1	75	L	82.5	R	21,1	65	L	77.5	R	24,1	47.5	L	72.5	R
18,2	45	L	55	R	21,2	45	L	60	R	24,2	35	L	62.5	R
18,3	25	L	40	R	21,3	30	L	50	R	24,3	25	L	57.5	R
18,4	15	L	32.5	R	21,4	20	L	45	R	24,4	17.5	L	55	R
18,5	7.5	L	30	R	21,5	12.5	L	40	R	24,5	10	L	52.5	R
18,6	2.5	L	30	R	21,6	5	L	40	R	24,6	5	L	50	R
18,7	2.5	R	30	R	21,7	0	L	40	R	24,7	2.5	R	50	R
18,8	7.5	R	30	R	21,8	5	R	40	R	24,8	7.5	R	50	R
18,9	12.5	R	32.5	R	21,9	10	R	40	R	24,9	12.5	R	52.5	R
19	15	R	35	R	22	12.5	R	42.5	R	25	17.5	R	52.5	R
19,1	20	R	35	R	22,1	17.5	R	42.5	R	25,1	20	R	55	R
19,2	22.5	R	37.5	R	22,2	22.5	R	45	R	25,2	25	R	57.5	R
19,3	27.5	R	40	R	22,3	25	R	47.5	R	25,3	30	R	60	R
19,4	30	R	42.5	R	22,4	30	R	50	R	25,4	35	R	62.5	R
19,5	35	R	45	R	22.5	35	R	52.5	R	25,5	40	R	67.5	R

(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA046AM • KRDE025010M 25,5–33,5mm

diameter					diameter					diameter				
mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2	
25,5	62.5	L	65	L	28,5	57.5	L	60	L	31,5	52.5	L	55	L
25,6	57.5	L	60	L	28,6	52.5	L	55	L	31,6	47.5	L	50	L
25,7	50	L	52.5	L	28,7	45	L	50	L	31,7	42.5	L	45	L
25,8	45	L	47.5	L	28,8	40	L	45	L	31,8	37.5	L	42.5	L
25,9	40	L	45	L	28,9	37.5	L	40	L	31,9	32.5	L	37.5	L
26,0	35	L	40	L	29,0	32.5	L	37.5	L	32,0	27.5	L	35	L
26,1	32.5	L	35	L	29,1	27.5	L	32.5	L	32,1	25	L	30	L
26,2	27.5	L	32.5	L	29,2	25	L	30	L	32,2	20	L	27.5	L
26,3	22.5	L	30	L	29,3	20	L	27.5	L	32,3	17.5	L	22.5	L
26,4	20	L	25	L	29,4	15	L	25	L	32,4	12.5	L	22.5	L
26,5	62.5	L	65	L	29,5	55	L	57.5	L	32,5	50	L	55	L
26,6	55	L	57.5	L	29,6	50	L	52.5	L	32,6	45	L	50	L
26,7	50	L	52.5	L	29,7	45	L	47.5	L	32,7	40	L	45	L
26,8	45	L	47.5	L	29,8	40	L	45	L	32,8	37.5	L	40	L
26,9	40	L	42.5	L	29,9	35	L	40	L	32,9	32.5	L	37.5	L
27,0	35	L	40	L	30,0	32.5	L	35	L	33,0	27.5	L	32.5	L
27,1	30	L	35	L	30,1	27.5	L	32.5	L	33,1	22.5	L	30	L
27,2	25	L	32.5	L	30,2	22.5	L	30	L	33,2	20	L	25	L
27,3	22.5	L	27.5	L	30,3	20	L	25	L	33,3	15	L	22.5	L
27,4	17.5	L	25	L	30,4	15	L	22.5	L	33,4	12.5	L	20	L
27,5	60	L	62.5	L	30,5	55	L	57.5	L	33,5	50	L	52.5	L
27,6	52.5	L	55	L	30,6	47.5	L	52.5	L	33,6	45	L	47.5	L
27,7	47.5	L	50	L	30,7	42.5	L	47.5	L	33,7	40	L	42.5	L
27,8	42.5	L	45	L	30,8	37.5	L	42.5	L	33,8	35	L	40	L
27,9	37.5	L	42.5	L	30,9	35	L	37.5	L	33,9	30	L	35	L
28,0	32.5	L	37.5	L	31,0	30	L	35	L	34,0	27.5	L	32.5	L
28,1	30	L	35	L	31,1	25	L	32.5	L	34,1	22.5	L	27.5	L
28,2	25	L	30	L	31,2	22.5	L	27.5	L	34,2	20	L	25	L
28,3	20	L	27.5	L	31,3	17.5	L	25	L	34,3	15	L	22.5	L
28,4	17.5	L	25	L	31,4	12.5	L	22.5	L	34,4	10	L	20	L

KRDEA046AM • KRDE033010M 33,5–44,4mm

diameter					diameter					diameter					diameter				
mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2	
33,5	55	L	57.5	L	36,5	47.5	L	52.5	L	39,5	42.5	L	47.5	L	42,5	37.5	L	40	L
33,6	50	L	52.5	L	36,6	42.5	L	47.5	L	39,6	37.5	L	42.5	L	42,6	32.5	L	37.5	L
33,7	45	L	47.5	L	36,7	37.5	L	42.5	L	39,7	32.5	L	37.5	L	42,7	27.5	L	35	L
33,8	40	L	42.5	L	36,8	35	L	37.5	L	39,8	27.5	L	35	L	42,8	25	L	30	L
33,9	35	L	40	L	36,9	30	L	35	L	39,9	25	L	30	L	42,9	20	L	27.5	L
34,0	30	L	35	L	37,0	25	L	32.5	L	40,0	20	L	27.5	L	43,0	15	L	25	L
34,1	25	L	32.5	L	37,1	22.5	L	27.5	L	40,1	15	L	25	L	43,1	10	L	22.5	L
34,2	22.5	L	27.5	L	37,2	17.5	L	25	L	40,2	10	L	22.5	L	43,2	5	L	20	L
34,3	17.5	L	25	L	37,3	12.5	L	22.5	L	40,3	7.5	L	20	L	43,3	0	L	17.5	L
34,4	12.5	L	22.5	L	37,4	7.5	L	20	L	40,4	2.5	L	17.5	L	43,4	7.5	R	20	L
34,5	52.5	L	57.5	L	37,5	47.5	L	50	L	40,5	40	L	45	L	43,5	35	L	40	L
34,6	47.5	L	50	L	37,6	42.5	L	45	L	40,6	35	L	40	L	43,6	30	L	35	L
34,7	42.5	L	47.5	L	37,7	37.5	L	40	L	40,7	30	L	37.5	L	43,7	25	L	32.5	L
34,8	37.5	L	42.5	L	37,8	32.5	L	37.5	L	40,8	27.5	L	32.5	L	43,8	22.5	L	27.5	L
34,9	32.5	L	37.5	L	37,9	27.5	L	35	L	40,9	22.5	L	30	L	43,9	17.5	L	25	L
35,0	27.5	L	35	L	38,0	25	L	30	L	41,0	17.5	L	27.5	L	44,0	15	L	22.5	L
35,1	25	L	30	L	38,1	20	L	27.5	L	41,1	15	L	22.5	L	44,1	10	L	20	L
35,2	20	L	27.5	L	38,2	15	L	25	L	41,2	10	L	20	L	44,2	5	L	17.5	L
35,3	15	L	25	L	38,3	10	L	22.5	L	41,3	5	L	20	L	44,3	2.5	R	17.5	L
35,4	10	L	22.5	L	38,4	5	L	20	L	41,4	0	R	17.5	L	44,4	12.5	R	22.5	L
35,5	50	L	55	L	38,5	45	L	47.5	L	41,5	37.5	L	42.5	L	–	–	–	–	–
35,6	45	L	50	L	38,6	40	L	42.5	L	41,6	35	L	37.5	L	–	–	–	–	–
35,7	40	L	45	L	38,7	35	L	40	L	41,7	30	L	35	L	–	–	–	–	–
35,8	35	L	40	L	38,8	30	L	35	L	41,8	25	L	32.5	L	–	–	–	–	–
35,9	30	L	37.5	L	38,9	25	L	32.5	L	41,9	22.5	L	27.5	L	–	–	–	–	–
36,0	27.5	L	32.5	L	39,0	22.5	L	27.5	L	42,0	17.5	L	25	L	–	–	–	–	–
36,1	22.5	L	30	L	39,1	17.5	L	25	L	42,1	12.5	L	22.5	L	–	–	–	–	–
36,2	17.5	L	27.5	L	39,2	15	L	22.5	L	42,2	7.5	L	20	L	–	–	–	–	–
36,3	15	L	22.5	L	39,3	10	L	20	L	42,3	2.5	L	17.5	L	–	–	–	–	–
36,4	10	L	20	L	39,4	5	L	17.5	L	42,4	5	R	20	L	–	–	–	–	–

(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA051AM • KRDE043010M 43–65,9mm

diameter					diameter					diameter					diameter				
mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2	
43,0	55	L	65	L	46,0	42.5	L	55	L	49,0	32.5	L	47.5	L	52,0	25	L	40	L
43,1	47.5	L	57.5	L	46,1	37.5	L	50	L	49,1	27.5	L	42.5	L	52,1	20	L	37.5	L
43,2	40	L	52.5	L	46,2	30	L	45	L	49,2	22.5	L	40	L	52,2	12.5	L	35	L
43,3	35	L	47.5	L	46,3	25	L	42.5	L	49,3	17.5	L	35	L	52,3	7.5	L	32.5	L
43,4	30	L	42.5	L	46,4	20	L	37.5	L	49,4	12.5	L	32.5	L	52,4	0	L	32.5	L
43,5	22.5	L	40	L	46,5	15	L	35	L	49,5	5	L	32.5	L	52,5	7.5	R	32.5	L
43,6	17.5	L	37.5	L	46,6	7.5	L	32.5	L	49,6	2.5	R	32.5	L	52,6	20	R	37.5	L
43,7	12.5	L	32.5	L	46,7	2.5	L	30	L	49,7	12.5	R	35	L	52,7	42.5	R	52.5	L
43,8	5	L	32.5	L	46,8	7.5	R	32.5	L	49,8	27.5	R	42.5	L	52,8	85	L	92.5	R
43,9	2.5	R	32.5	L	46,9	17.5	R	35	L	49,9	60	R	70	L	52,9	40	L	52.5	R
44,0	50	L	60	L	47,0	40	L	52.5	L	50,0	30	L	45	L	53,0	22.5	L	37.5	L
44,1	42.5	L	55	L	47,1	35	L	47.5	L	50,1	25	L	40	L	53,1	17.5	L	35	L
44,2	37.5	L	50	L	47,2	27.5	L	42.5	L	50,2	20	L	37.5	L	53,2	10	L	32.5	L
44,3	32.5	L	45	L	47.3	22.5	L	40	L	50,3	12.5	L	35	L	53,3	2.5	L	32.5	L
44,4	25	L	42.5	L	47,4	17.5	L	35	L	50,4	7.5	L	32.5	L	53,4	5	R	32.5	L
44,5	20	L	37.5	L	47,5	12.5	L	32.5	L	50,5	0	L	32.5	L	53,5	15	R	35	L
44,6	15	L	35	L	47,6	5	L	32.5	L	50,6	7.5	R	32.5	L	53,6	30	R	45	L
44,7	10	L	32.5	L	47,7	2.5	R	32.5	L	50,7	20	R	37.5	L	53,7	62.5	R	72.5	L
44,8	2.5	L	30	L	47,8	12.5	R	35	L	50,8	40	R	52.5	L	53,8	57.5	L	67.5	R
44,9	7.5	R	32.5	L	47,9	27.5	R	42.5	L	50,9	87.5	R	95	L	53,9	27.5	L	42.5	R
45,0	47.5	L	57.5	L	48,0	37.5	L	50	L	51,0	27.5	L	42.5	L	54,0	20	L	37.5	L
45,1	40	L	52.5	L	48,1	30	L	45	L	51,1	22.5	L	40	L	54,1	12.5	L	35	L
45,2	35	L	47.5	L	48,2	25	L	40	L	51,2	17.5	L	35	L	54,2	7.5	L	32.5	L
45,3	30	L	42.5	L	48,3	20	L	37.5	L	51,3	10	L	35	L	54,3	0	L	32.5	L
45,4	22.5	L	40	L	48,4	15	L	35	L	51,4	5	L	32.5	L	54,4	7.5	R	32.5	L
45,5	17.5	L	35	L	48,5	7.5	L	32.5	L	51,5	2.5	R	30	L	54,5	20	R	37.5	L
45,6	12.5	L	32.5	L	48,6	0	L	32.5	L	51,6	12.5	R	32.5	L	54,6	45	R	55	L
45,7	5	L	32.5	L	48,7	7.5	R	32.5	L	51,7	30	R	45	L	54,7	82.5	L	90	R
45,8	2.5	R	32.5	L	48,8	20	R	37.5	L	51,8	60	R	70	L	54,8	40	L	52.5	R
45,9	12.5	R	35	L	48,9	40	R	52.5	L	51,9	60	L	70	R	54,9	20	L	37.5	R
55,0	17.5	L	35	L	58,0	7.5	L	32.5	L	61,0	5	R	32.5	L	64,0	25	R	40	L
55,1	10	L	32.5	L	58,1	0	R	30	L	61,1	15	R	35	L	64,1	55	R	65	L
55,2	2.5	L	32.5	L	58,2	10	R	32.5	L	61,2	35	R	47.5	L	64,2	67.5	L	77.5	R
55,3	5	R	32.5	L	58,3	22.5	R	40	L	61,3	75	R	82.5	L	64,3	32.5	L	45	R
55,4	15	R	35	L	58,4	47.5	R	57.5	L	61,4	50	L	60	R	64,4	15	L	35	R
55,5	32.5	R	45	L	58,5	75	L	82.5	R	61,5	25	L	40	R	64,5	5	L	32.5	R
55,6	65	R	75	L	58,6	35	L	47.5	R	61,6	10	L	32.5	R	64,6	2.5	R	32.5	R
55,7	55	L	65	R	58,7	17.5	L	37.5	R	61,7	0	L	30	R	64,7	10	R	32.5	R
55,8	27.5	L	42.5	R	58,8	5	L	32.5	R	61,8	5	R	32.5	R	64,8	15	R	35	R
55,9	12.5	L	35	R	58,9	2.5	R	32.5	R	61,9	12.5	R	35	R	64,9	22.5	R	37.5	R
56,0	12.5	L	35	L	59,0	2.5	L	32.5	L	62,0	10	R	32.5	L	65,0	37.5	R	50	L
56,1	7.5	L	32.5	L	59,1	5	R	32.5	L	62,1	25	R	40	L	65,1	80	R	87.5	L
56,2	0	R	32.5	L	59,2	15	R	35	L	62,2	52.5	R	62.5	L	65,2	47.5	L	57.5	R
56,3	10	R	32.5	L	59,3	35	R	47.5	L	62,3	70	L	77.5	R	65,3	22.5	L	40	R
56,4	22.5	R	40	L	59,4	72.5	R	80	L	62,4	35	L	47.5	R	65,4	7.5	L	32.5	R
56,5	47.5	R	57.5	L	59,5	52.5	L	62.5	R	62,5	15	L	35	R	65,5	0	L	32.5	R
56,6	80	L	87.5	R	59,6	25	L	40	R	62,6	5	L	32.5	R	65,6	7.5	R	32.5	R
56,7	37.5	L	50	R	59,7	10	L	32.5	R	62,7	2.5	R	32.5	R	65,7	12.5	R	35	R
56,8	17.5	L	35	R	59,8	2.5	L	32.5	R	62,8	10	R	32.5	R	65,8	17.5	R	37.5	R
56,9	7.5	L	32.5	R	59,9	5	R	32.5	R	62,9	15	R	35	R	65,9	25	R	40	R
57,0	10	L	32.5	L	60,0	0	R	30	L	63,0	17.5	R	37.5	L	–	–	–	–	–
57,1	2.5	L	32.5	L	60,1	10	R	32.5	L	63,1	37.5	R	50	L	–	–	–	–	–
57,2	5	R	32.5	L	60,2	25	R	40	L	63,2	77.5	R	85	L	–	–	–	–	–
57,3	15	R	35	L	60,3	50	R	60	L	63,3	47.5	L	57.5	R	–	–	–	–	–
57,4	32.5	R	45	L	60,4	72.5	L	80	R	63,4	22.5	L	40	R	–	–	–	–	–
57,5	67.5	R	77.5	L	60,5	35	L	47.5	R	63,5	10	L	32.5	R	–	–	–	–	–
57,6	52.5	L	62.5	R	60,6	15	L	35	R	63,6	0	L	30	R	–	–	–	–	–
57,7	25	L	40	R	60,7	5	L	32.5	R	63,7	7.5	R	32.5	R	–	–	–	–	–
57,8	10	L	32.5	R	60,8	2.5	R	32.5	R	63,8	12.5	R	35	R	–	–	–	–	–
57,9	2.5	L	32.5	R	60,9	10	R	32.5	R	63,9	17.5	R	37.5	R	–	–	–	–	–

(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA012AM • KRDE065012M 65–82,9mm

diameter	ring 1		ring 2		diameter	ring 1		ring 2		diameter	ring 1		ring 2	
mm					mm					mm				
65,0	5	L	37.5	R	68,0	12.5	R	37.5	R	71,0	25	R	45	R
65,1	2.5	R	37.5	R	68,1	17.5	R	40	R	71,1	32.5	R	47.5	R
65,2	10	R	37.5	R	68,2	22.5	R	42.5	R	71,2	37.5	R	52.5	R
65,3	15	R	40	R	68,3	27.5	R	47.5	R	71,3	42.5	R	57.5	R
65,4	20	R	42.5	R	68,4	32.5	R	50	R	71,4	47.5	R	62.5	R
65,5	25	R	45	R	68,5	40	R	55	R	71,5	55	R	67.5	R
65,6	30	R	47.5	R	68,6	45	R	60	R	71,6	65	R	77.5	R
65,7	35	R	52.5	R	68,7	52.5	R	65	R	71,7	65	R	77.5	R
65,8	42.5	R	57.5	R	68,8	60	R	72.5	R	71,8	65	R	77.5	R
65,9	47.5	R	62.5	R	68,9	70	R	82.5	R	71,9	65	R	77.5	R
66,0	2.5	R	35	R	69,0	17.5	R	40	R	72,0	30	R	47.5	R
66,1	7.5	R	37.5	R	69,1	22.5	R	42.5	R	72,1	35	R	52.5	R
66,2	12.5	R	40	R	69,2	27.5	R	45	R	72,2	40	R	55	R
66,3	20	R	40	R	69,3	32.5	R	50	R	72,3	47.5	R	60	R
66,4	25	R	45	R	69,4	37.5	R	52.5	R	72,4	55	R	67.5	R
66,5	30	R	47.5	R	69,5	45	R	57.5	R	72,5	62.5	R	75	R
66,6	35	R	52.5	R	69,6	50	R	62.5	R	72,6	80	R	90	R
66,7	40	R	55	R	69,7	57.5	R	70	R	72,7	80	R	90	R
66,8	47.5	R	60	R	69,8	67.5	R	80	R	72,8	80	R	90	R
66,9	55	R	67.5	R	69,9	67.5	R	80	R	72,9	80	R	90	R
67,0	7.5	R	37.5	R	70,0	22.5	R	42.5	R	73,0	40	R	55	R
67,1	12.5	R	40	R	70,1	27.5	R	45	R	73,1	47.5	R	60	R
67,2	17.5	R	42.5	R	70,2	32.5	R	50	R	73,2	52.5	R	65	R
67,3	22.5	R	45	R	70,3	37.5	R	52.5	R	73,3	62.5	R	75	R
67,4	30	R	47.5	R	70,4	42.5	R	57.5	R	73,4	75	R	87.5	R
67,5	35	R	50	R	70,5	50	R	62.5	R	73,5	75	R	87.5	R
67,6	40	R	55	R	70,6	57.5	R	70	R	73,6	75	R	87.5	R
67,7	45	R	60	R	70,7	65	R	77.5	R	73,7	75	R	87.5	R
67,8	52.5	R	65	R	70,8	65	R	77.5	R	73,8	75	R	87.5	R
67,9	60	R	72.5	R	70,9	65	R	77.5	R	73,9	75	R	87.5	R
74,0	40	R	55	R	77,0	55	R	67.5	R	80,0	22.5	L	45	L
74,1	45	R	60	R	77,1	65	R	77.5	R	80,1	17.5	L	42.5	L
74,2	52.5	R	65	R	77,2	65	R	77.5	R	80,2	12.5	L	40	L
74,3	60	R	72.5	R	77,3	65	R	77.5	R	80,3	5	L	40	L
74,4	70	R	82.5	R	77,4	65	R	77.5	R	80,4	2.5	R	40	L
74,5	70	R	82.5	R	77,5	65	R	77.5	R	80,5	10	R	40	L
74,6	70	R	82.5	R	77,6	65	R	77.5	R	80,6	22.5	R	45	L
74,7	70	R	82.5	R	77,7	65	R	77.5	R	80,7	37.5	R	55	L
74,8	70	R	82.5	R	77,8	65	R	77.5	R	80,8	65	R	77.5	L
74,9	70	R	82.5	R	77,9	65	R	77.5	R	80,9	70	L	82.5	R
75,0	52.5	R	65	R	78,0	62.5	R	75	R	81,0	20	L	42.5	L
75,1	57.5	R	70	R	78,1	82.5	R	92.5	R	81,1	12.5	L	40	L
75,2	70	R	82.5	R	78,2	82.5	R	92.5	R	81,2	5	L	40	L
75,3	70	R	82.5	R	78,3	82.5	R	92.5	R	81,3	0	R	37.5	L
75,4	70	R	82.5	R	78,4	82.5	R	92.5	R	81,4	10	R	40	L
75,5	70	R	82.5	R	78,5	82.5	R	92.5	R	81,5	20	R	45	L
75,6	70	R	82.5	R	78,6	82.5	R	92.5	R	81,6	35	R	52.5	L
75,7	70	R	82.5	R	78,7	82.5	R	92.5	R	81,7	57.5	R	72.5	L
75,8	70	R	82.5	R	78,8	82.5	R	92.5	R	81,8	75	L	87.5	R
75,9	70	R	82.5	R	78,9	82.5	R	92.5	R	81,9	45	L	60	R
76,0	50	R	62.5	R	79,0	75	R	87.5	R	82,0	15	L	40	L
76,1	57.5	R	70	R	79,1	75	R	87.5	R	82,1	7.5	L	40	L
76,2	67.5	R	80	R	79,2	75	R	87.5	R	82,2	0	L	40	L
76,3	67.5	R	80	R	79,3	75	R	87.5	R	82,3	7.5	R	40	L
76,4	67.5	R	80	R	79,4	75	R	87.5	R	82,4	17.5	R	42.5	L
76,5	67.5	R	80	R	79,5	75	R	87.5	R	82,5	30	R	50	L
76,6	67.5	R	80	R	79,6	75	R	87.5	R	82,6	52.5	R	67.5	L
76,7	67.5	R	80	R	79,7	75	R	87.5	R	82,7	82.5	L	95	R
76,8	67.5	R	80	R	79,8	75	R	87.5	R	82,8	50	L	65	R
76,9	67.5	R	80	R	79,9	75	R	87.5	R	82,9	30	L	50	R

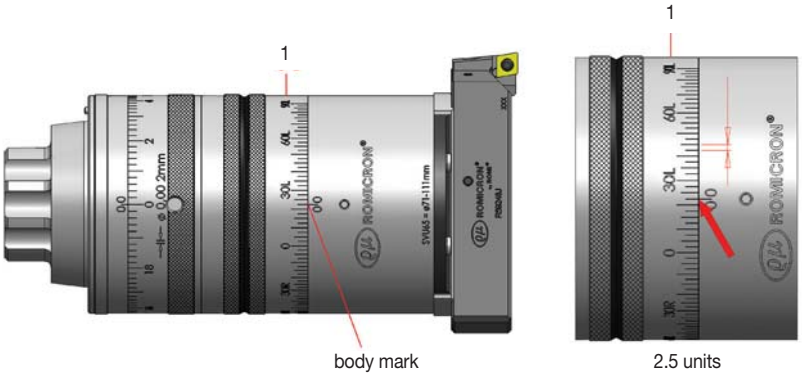
(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA012AM • KRDE065012M 65–100mm

diameter	ring 1		ring 2		diameter	ring 1		ring 2		diameter	ring 1		ring 2	
mm					mm					mm				
83,0	10	L	40	L	86,0	10	R	40	L	89,0	42.5	R	57.5	L
83,1	2.5	L	37.5	L	86,1	20	R	45	L	89,1	72.5	R	85	L
83,2	5	R	40	L	86,2	35	R	52.5	L	89,2	62.5	L	75	R
83,3	15	R	42.5	L	86,3	57.5	R	72.5	L	89,3	37.5	L	55	R
83,4	27.5	R	47.5	L	86,4	75	L	87.5	R	89,4	22.5	L	45	R
83,5	47.5	R	62.5	L	86,5	45	L	60	R	89,5	10	L	40	R
83,6	77.5	R	90	L	86,6	27.5	L	47.5	R	89,6	0	L	37.5	R
83,7	55	L	70	R	86,7	15	L	42.5	R	89,7	5	R	40	R
83,8	32.5	L	50	R	86,8	5	L	40	R	89,8	12.5	R	40	R
83,9	17.5	L	42.5	R	86,9	2.5	R	40	R	89,9	17.5	R	42.5	R
84,0	5	L	37.5	L	87,0	17.5	R	42.5	L	90,0	65	R	77.5	L
84,1	2.5	R	37.5	L	87,1	30	R	50	L	90,1	70	L	82.5	R
84,2	12.5	R	40	L	87,2	52.5	R	67.5	L	90,2	40	L	57.5	R
84,3	25	R	47.5	L	87,3	82.5	L	95	R	90,3	22.5	L	45	R
84,4	42.5	R	57.5	L	87,4	50	L	65	R	90,4	12.5	L	40	R
84,5	72.5	R	85	L	87,5	30	L	50	R	90,5	2.5	L	37.5	R
84,6	62.5	L	75	R	87,6	17.5	L	42.5	R	90,6	5	R	37.5	R
84,7	37.5	L	55	R	87,7	7.5	L	40	R	90,7	10	R	40	R
84,8	22.5	L	45	R	87,8	2.5	R	37.5	R	90,8	17.5	R	42.5	R
84,9	10	L	40	R	87,9	7.5	R	40	R	90,9	22.5	R	45	R
85,0	2.5	R	40	L	88,0	27.5	R	47.5	L	91,0	75	L	87.5	R
85,1	10	R	40	L	88,1	47.5	R	62.5	L	91,1	47.5	L	62.5	R
85,2	22.5	R	45	L	88,2	77.5	R	90	L	91,2	27.5	L	47.5	R
85,3	37.5	R	55	L	88,3	55	L	70	R	91,3	15	L	42.5	R
85,4	65	R	77.5	L	88,4	35	L	52.5	R	91,4	5	L	40	R
85,5	70	L	82.5	R	88,5	17.5	L	42.5	R	91,5	2.5	R	40	R
85,6	40	L	57.5	R	88,6	7.5	L	40	R	91,6	10	R	40	R
85,7	22.5	L	45	R	88,7	0	R	40	R	91,7	15	R	42.5	R
85,8	12.5	L	40	R	88,8	7.5	R	40	R	91,8	22.5	R	45	R
85,9	2.5	L	37.5	R	88,9	12.5	R	42.5	R	91,9	27.5	R	47.5	R
92,0	50	L	65	R	95,0	12.5	L	40	R	98,0	7.5	R	40	R
92,1	30	L	50	R	95,1	2.5	L	37.5	R	98,1	12.5	R	42.5	R
92,2	17.5	L	42.5	R	95,2	5	R	37.5	R	98,2	20	R	42.5	R
92,3	7.5	L	40	R	95,3	10	R	40	R	98,3	25	R	47.5	R
92,4	2.5	R	37.5	R	95,4	17.5	R	42.5	R	98,4	30	R	50	R
92,5	7.5	R	40	R	95,5	22.5	R	45	R	98,5	37.5	R	55	R
92,6	15	R	40	R	95,6	27.5	R	47.5	R	98,6	42.5	R	60	R
92,7	20	R	45	R	95,7	35	R	52.5	R	98,7	50	R	65	R
92,8	25	R	47.5	R	95,8	40	R	57.5	R	98,8	57.5	R	72.5	R
92,9	32.5	R	50	R	95,9	47.5	R	62.5	R	98,9	70	R	82.5	R
93,0	35	L	52.5	R	96,0	5	L	40	R	99,0	12.5	R	40	R
93,1	17.5	L	42.5	R	96,1	2.5	R	40	R	99,1	17.5	R	42.5	R
93,2	7.5	L	40	R	96,2	10	R	40	R	99,2	25	R	45	R
93,3	0	R	37.5	R	96,3	15	R	42.5	R	99,3	30	R	50	R
93,4	7.5	R	40	R	96,4	22.5	R	45	R	99,4	35	R	52.5	R
93,5	12.5	R	42.5	R	96,5	27.5	R	47.5	R	99,5	42.5	R	57.5	R
93,6	20	R	42.5	R	96,6	32.5	R	52.5	R	99,6	47.5	R	62.5	R
93,7	25	R	47.5	R	96,7	40	R	55	R	99,7	55	R	70	R
93,8	30	R	50	R	96,8	45	R	60	R	99,8	67.5	R	80	R
93,9	37.5	R	55	R	96,9	52.5	R	67.5	R	99,9	67.5	R	80	R
94,0	22.5	L	45	R	97,0	2.5	R	37.5	R	100,0	17.5	R	42.5	R
94,1	10	L	40	R	97,1	7.5	R	40	R	100,1	22.5	R	45	R
94,2	2.5	L	40	R	97,2	15	R	40	R	100,2	27.5	R	47.5	R
94,3	5	R	40	R	97,3	20	R	45	R	100,3	35	R	52.5	R
94,4	12.5	R	40	R	97,4	25	R	47.5	R	100,4	40	R	57.5	R
94,5	17.5	R	42.5	R	97,5	32.5	R	50	R	100,5	47.5	R	62.5	R
94,6	25	R	45	R	97,6	37.5	R	55	R	100,6	55	R	70	R
94,7	30	R	50	R	97,7	45	R	60	R	100,7	65	R	77.5	R
94,8	35	R	52.5	R	97,8	50	R	65	R	100,8	65	R	77.5	R
94,9	42.5	R	57.5	R	97,9	60	R	72.5	R	100,9	65	R	77.5	R

Balancing Table • SVU-65 Boring Head



1. There is 1 balancing dial on the SVU system.
2. Look up your diameter in the table below and read the setting values for ring 1.
3. Set ring 1, referencing to the body mark (one dial mark equals 2.5 units).

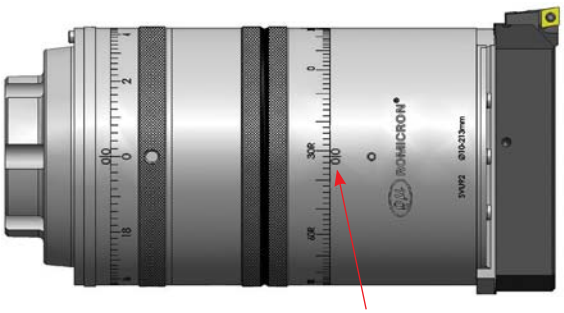
KRDE070019M									KRDE083019M					
KRCSCFPR061E 71–76mm			KRCSCFPR062E 75,5–81,5mm			KRCSCFPR063E 80–85mm			KRCSCFPR061E 84–89mm			KRCSCFPR062E 88,5–93,5mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
70,99	40	L	75,49	35	L	80,01	30	L	84,00	47.5	L	88,49	40	L
71,12	37.5	L	75,59	32.5	L	80,16	27.5	L	84,12	45	L	88,65	37.5	L
71,27	35	L	75,77	30	L	80,34	25	L	84,25	42.5	L	88,80	35	L
71,42	32.5	L	75,95	27.5	L	80,52	22.5	L	84,38	40	L	88,95	32.5	L
71,60	30	L	76,10	25	L	80,70	20	L	84,51	37.5	L	89,08	30	L
71,78	27.5	L	76,28	22.5	L	80,87	17.5	L	84,66	35	L	89,26	27.5	L
71,96	25	L	76,48	20	L	81,08	15	L	84,81	32.5	L	89,41	25	L
72,14	22.5	L	76,66	17.5	L	81,25	12.5	L	84,96	30	L	89,56	22.5	L
72,31	20	L	76,84	15	L	81,46	10	L	85,12	27.5	L	89,74	20	L
72,49	17.5	L	77,04	12.5	L	81,64	7.5	L	85,27	25	L	89,89	17.5	L
72,69	15	L	77,22	10	L	81,84	5	L	85,42	22.5	L	90,07	15	L
72,87	12.5	L	77,42	7.5	L	82,02	2.5	L	85,60	20	L	90,22	12.5	L
73,08	10	L	77,62	5	L	82,22	0	–	85,78	17.5	L	90,40	10	L
73,25	7.5	L	77,80	2.5	L	82,42	2.5	R	85,93	15	L	90,58	7.5	L
73,46	5	L	78,00	0	–	82,60	5	R	86,11	12.5	L	90,75	5	L
73,66	2.5	L	78,21	2.5	R	82,80	7.5	R	86,28	10	L	90,93	2.5	L
73,86	0	–	78,38	5	R	82,98	10	R	86,46	7.5	L	91,11	0	–
74,04	2.5	R	78,59	7.5	R	83,19	12.5	R	86,64	5	L	91,29	2.5	R
74,24	5	R	78,77	10	R	83,36	15	R	86,82	2.5	L	91,47	5	R
74,45	7.5	R	78,97	12.5	R	83,57	17.5	R	87,00	0	–	91,64	7.5	R
74,63	10	R	79,15	15	R	83,74	20	R	87,17	2.5	R	91,80	10	R
74,83	12.5	R	79,35	17.5	R	83,92	22.5	R	87,33	5	R	91,97	12.5	R
75,01	15	R	79,53	20	R	84,10	25	R	87,50	7.5	R	92,15	15	R
75,21	17.5	R	79,71	22.5	R	84,28	27.5	R	87,68	10	R	92,33	17.5	R
75,39	20	R	79,88	25	R	84,46	30	R	87,86	12.5	R	92,48	20	R
75,57	22.5	R	80,06	27.5	R	84,61	32.5	R	88,04	15	R	92,66	22.5	R
75,74	25	R	80,24	30	R	84,79	35	R	88,21	17.5	R	92,81	25	R
75,92	27.5	R	80,42	32.5	R	84,94	37.5	R	88,37	20	R	92,96	27.5	R
76,00	30	R	80,49	35	R	84,99	40	R	88,54	22.5	R	93,12	30	R
–	–	–	–	–	–	–	–	–	88,70	25	R	93,27	32.5	R
–	–	–	–	–	–	–	–	–	88,85	27.5	R	93,42	35	R
–	–	–	–	–	–	–	–	–	89,00	30	R	93,50	37.5	R

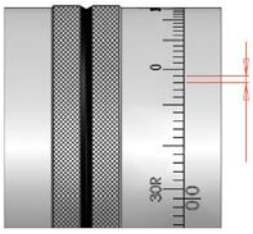
(continued)

(Balancing Table • SVU-65 Boring Head — continued)

KRDE083019M			KRDE096019M								
KRCSCFPR063E			KRCSCFPR061E			KRCSCFPR062E			KRCSCFPR063E		
93–98mm			97–102mm			101,5–106,5mm			106–111mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
92,99	35	L	97,00	55	L	101,50	45	L	105,99	37.5	L
93,14	32.5	L	97,05	52.5	L	101,60	42.5	L	106,17	35	L
93,29	30	L	97,16	50	L	101,73	40	L	106,32	32.5	L
93,45	27.5	L	97,28	47.5	L	101,85	37.5	L	106,45	30	L
93,60	25	L	97,38	45	L	101,98	35	L	106,58	27.5	L
93,78	22.5	L	97,51	42.5	L	102,13	32.5	L	106,73	25	L
93,93	20	L	97,61	40	L	102,26	30	L	106,88	22.5	L
94,11	17.5	L	97,74	37.5	L	102,41	27.5	L	107,04	20	L
94,26	15	L	97,87	35	L	102,54	25	L	107,19	17.5	L
94,44	12.5	L	98,02	32.5	L	102,69	22.5	L	107,34	15	L
94,62	10	L	98,15	30	L	102,84	20	L	107,49	12.5	L
94,79	7.5	L	98,30	27.5	L	103,00	17.5	L	107,65	10	L
94,95	5	L	98,45	25	L	103,15	15	L	107,82	7.5	L
95,12	2.5	L	98,58	22.5	L	103,30	12.5	L	107,98	5	L
95,30	0	–	98,73	20	L	103,48	10	L	108,13	2.5	L
95,48	2.5	R	98,88	17.5	L	103,63	7.5	L	108,31	0	–
95,66	5	R	99,06	15	L	103,78	5	L	108,46	2.5	R
95,83	7.5	R	99,21	12.5	L	103,96	2.5	L	108,61	5	R
96,01	10	R	99,36	10	L	104,11	0	–	108,79	7.5	R
96,19	12.5	R	99,52	7.5	L	104,27	2.5	R	108,94	10	R
96,34	15	R	99,70	5	L	104,44	5	R	109,09	12.5	R
96,52	17.5	R	99,85	2.5	L	104,60	7.5	R	109,25	15	R
96,67	20	R	100,03	0	–	104,75	10	R	109,40	17.5	R
96,85	22.5	R	100,18	2.5	R	104,90	12.5	R	109,55	20	R
97,00	25	R	100,33	5	R	105,08	15	R	109,70	22.5	R
97,16	27.5	R	100,51	7.5	R	105,23	17.5	R	109,86	25	R
97,31	30	R	100,66	10	R	105,38	20	R	110,01	27.5	R
97,46	32.5	R	100,81	12.5	R	105,54	22.5	R	110,13	30	R
97,61	35	R	100,97	15	R	105,69	25	R	110,29	32.5	R
97,76	37.5	R	101,14	17.5	R	105,82	27.5	R	110,41	35	R
97,89	40	R	101,30	20	R	105,97	30	R	110,54	37.5	R
97,99	42.5	R	101,45	22.5	R	106,10	32.5	R	110,67	40	R
–	–	–	101,57	25	R	106,25	35	R	110,79	42.5	R
–	–	–	101,73	27.5	R	106,38	37.5	R	110,90	45	R
–	–	–	104,39	30	R	106,43	40	R	111,00	47.5	R
–	–	–	102,01	32.5	R	106,53	42.5	R	–	–	–

Balancing Table • SVU-92 Boring Head





1. There is 1 balancing dial on the SVU system.
2. Look up your diameter in the table below and read the setting values for ring 1.
3. Set ring 1, referencing to the body mark (one dial mark equals 2.5 units)

KRDE101023M									KRDE120023M					
KRCSCFPR061F 101–108mm			KRCSCFPR062F 107,5–114,5mm			KRCSCFPR063F 114–121mm			KRCSCFPR061F 120–127mm			KRCSCFPR062F 126,5–133,5mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
100,99	36	L	107,49	34	L	114,00	30	L	119,99	40	L	126,49	36	L
101,19	34	L	107,62	32	L	114,22	28	L	120,19	38	L	126,72	34	L
101,40	32	L	107,80	30	L	114,40	26	L	120,35	36	L	126,90	32	L
101,57	30	L	108,00	28	L	114,60	24	L	120,52	34	L	127,08	30	L
101,78	28	L	108,20	26	L	114,81	22	L	120,70	32	L	127,25	28	L
101,98	26	L	108,41	24	L	115,01	20	L	120,88	30	L	127,43	26	L
102,18	24	L	108,61	22	L	115,24	18	L	121,06	28	L	127,61	24	L
102,39	22	L	108,81	20	L	115,44	16	L	121,23	26	L	127,81	22	L
102,59	20	L	109,02	18	L	115,67	14	L	121,41	24	L	127,99	20	L
102,79	18	L	109,25	16	L	115,87	12	L	121,62	22	L	128,19	18	L
103,02	16	L	109,45	14	L	116,10	10	L	121,79	20	L	128,40	16	L
103,23	14	L	109,68	12	L	116,31	8	L	122,00	18	L	128,57	14	L
103,45	12	L	109,88	10	L	116,54	6	L	122,20	16	L	128,78	12	L
103,66	10	L	110,11	8	L	116,76	4	L	122,38	14	L	128,98	10	L
103,89	8	L	110,34	6	L	116,97	2	L	122,58	12	L	129,18	8	L
104,11	6	L	110,57	4	L	117,20	0	–	122,78	10	L	129,39	6	L
104,32	4	L	110,77	2	L	117,42	2	R	122,99	8	L	129,59	4	L
104,55	2	L	111,00	0	–	117,65	4	R	123,19	6	L	129,79	2	L
104,78	0	–	111,23	2	R	117,86	6	R	123,39	4	L	130,00	0	–
105,00	2	R	111,46	4	R	118,08	8	R	123,60	2	L	130,20	2	R
105,23	4	R	111,66	6	R	118,31	10	R	123,80	0	–	130,40	4	R
105,44	6	R	111,89	8	R	118,52	12	R	124,00	2	R	130,61	6	R
105,66	8	R	112,12	10	R	118,75	14	R	124,21	4	R	130,81	8	R
105,89	10	R	107,19	12	R	118,95	16	R	124,41	6	R	131,01	10	R
106,10	12	R	112,55	14	R	119,18	18	R	124,61	8	R	131,22	12	R
106,32	14	R	112,75	16	R	119,38	20	R	124,82	10	R	131,42	14	R
106,53	16	R	112,98	18	R	119,58	22	R	125,02	12	R	131,62	16	R
106,76	18	R	113,18	20	R	119,79	24	R	125,22	14	R	131,80	18	R
106,96	20	R	113,39	22	R	119,99	26	R	125,43	16	R	132,00	20	R
107,16	22	R	113,59	24	R	120,19	28	R	125,63	18	R	132,18	22	R
107,37	24	R	113,79	26	R	120,37	30	R	125,81	20	R	132,38	24	R
107,57	26	R	114,00	28	R	120,57	32	R	126,01	22	R	132,56	26	R
107,77	28	R	114,20	30	R	120,75	34	R	126,19	24	R	132,74	28	R
107,98	30	R	114,38	32	R	120,93	36	R	126,37	26	R	132,92	30	R
108,00	32	R	114,50	34	R	121,01	38	R	126,57	28	R	133,10	32	R
–	–	–	–	–	–	–	–	–	126,75	30	R	133,27	34	R
–	–	–	–	–	–	–	–	–	126,92	32	R	133,45	36	R
–	–	–	–	–	–	–	–	–	127,00	34	R	133,50	38	R

(continued)

(Balancing Table • SVU-92 Boring Head — continued)

KRDE120023M			KRDE139026M								
KRCSCFPR063F			KRCSCFPR061F			KRCSCFPR062F			KRCSCFPR063F		
133–140mm			139–146mm			145,5–152,5mm			152–159mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
132,99	34	L	138,99	50	L	145,49	44	L	151,99	40	L
133,10	32	L	139,09	48	L	145,67	42	L	152,12	38	L
133,27	30	L	139,22	46	L	145,80	40	L	152,27	36	L
133,45	28	L	139,34	44	L	145,95	38	L	152,40	34	L
133,63	26	L	139,47	42	L	146,08	36	L	152,55	32	L
133,81	24	L	139,60	40	L	146,23	34	L	152,70	30	L
133,99	22	L	139,73	38	L	146,35	32	L	152,86	28	L
134,19	20	L	139,88	36	L	146,51	30	L	153,01	26	L
134,37	18	L	140,00	34	L	146,66	28	L	153,16	24	L
134,57	16	L	140,16	32	L	146,81	26	L	153,31	22	L
134,77	14	L	140,31	30	L	146,99	24	L	153,49	20	L
134,98	12	L	140,46	28	L	147,14	22	L	153,64	18	L
135,18	10	L	140,61	26	L	147,29	20	L	153,82	16	L
135,36	8	L	140,77	24	L	147,47	18	L	153,97	14	L
135,56	6	L	140,92	22	L	147,62	16	L	154,15	12	L
135,76	4	L	141,10	20	L	147,80	14	L	154,33	10	L
135,97	2	L	141,25	18	L	147,96	12	L	154,48	8	L
136,17	0	–	141,43	16	L	148,13	10	L	154,66	6	L
136,37	2	R	141,58	14	L	148,31	8	L	154,84	4	L
136,58	4	R	141,76	12	L	148,49	6	L	155,02	2	L
162,18	6	R	141,94	10	L	148,64	4	L	155,19	0	–
136,98	8	R	142,11	8	L	148,82	2	L	155,35	2	R
137,19	10	R	142,27	6	L	149,00	0	–	155,52	4	R
137,39	12	R	142,44	4	L	149,17	2	R	155,70	6	R
137,59	14	R	142,62	2	L	149,35	4	R	155,88	8	R
137,80	16	R	142,80	0	–	149,53	6	R	156,03	10	R
137,97	18	R	142,98	2	R	149,68	8	R	156,21	12	R
138,18	20	R	143,15	4	R	149,86	10	R	156,39	14	R
138,38	22	R	143,31	6	R	150,04	12	R	156,54	16	R
138,56	24	R	143,48	8	R	150,19	14	R	156,72	18	R
138,73	26	R	143,66	10	R	150,37	16	R	156,87	20	R
138,91	28	R	143,84	12	R	150,55	18	R	157,05	22	R
139,09	30	R	143,99	14	R	150,70	20	R	157,20	24	R
139,27	32	R	144,17	16	R	150,85	22	R	157,35	26	R
139,45	34	R	144,32	18	R	151,03	24	R	157,51	28	R
139,60	36	R	144,50	20	R	151,18	26	R	157,66	30	R
139,78	38	R	144,65	22	R	151,33	28	R	157,81	32	R
139,93	40	R	144,83	24	R	151,49	30	R	157,96	34	R
140,00	42	R	144,98	26	R	151,64	32	R	158,09	36	R
–	–	–	145,14	28	R	151,79	34	R	158,24	38	R
–	–	–	145,29	30	R	151,92	36	R	158,37	40	R
–	–	–	145,44	32	R	152,07	38	R	158,50	42	R
–	–	–	145,57	34	R	152,20	40	R	158,62	44	R
–	–	–	145,72	36	R	152,32	42	R	158,75	46	R
–	–	–	145,87	38	R	152,45	44	R	158,88	48	R
–	–	–	145,97	40	R	152,50	46	R	158,98	50	R
–	–	–	146,00	42	R	–	–	–	159,00	52	R

(continued)

(Balancing Table • SVU-92 Boring Head — continued)

KRDE156026M

KRCSCFPR061F 156–163mm			KRCSCFPR062F 162,5–169,5mm			KRCSCFPR063F 169–176mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
156,01	56	L	162,51	50	L	169,01	44	L
156,11	54	L	162,61	48	L	169,11	42	L
156,21	52	L	162,71	46	L	169,24	40	L
156,31	50	L	162,81	44	L	169,37	38	L
156,41	48	L	162,94	42	L	169,49	36	L
156,51	46	L	163,07	40	L	169,62	34	L
156,62	44	L	163,20	38	L	169,75	32	L
156,74	42	L	163,32	36	L	169,90	30	L
156,87	40	L	163,45	34	L	170,03	28	L
157,00	38	L	163,58	32	L	170,18	26	L
157,12	36	L	163,70	30	L	170,33	24	L
157,25	34	L	163,86	28	L	170,46	22	L
157,38	32	L	164,01	26	L	170,61	20	L
157,53	30	L	164,13	24	L	170,76	18	L
157,66	28	L	164,29	22	L	170,92	16	L
157,81	26	L	164,44	20	L	171,07	14	L
157,94	24	L	164,59	18	L	171,22	12	L
158,09	22	L	164,74	16	L	171,37	10	L
158,24	20	L	164,90	14	L	171,55	8	L
158,39	18	L	165,05	12	L	171,70	6	L
158,55	16	L	165,20	10	L	171,86	4	L
158,70	14	L	165,35	8	L	172,01	2	L
158,85	12	L	165,53	6	L	172,19	0	–
159,00	10	L	165,68	4	L	172,34	2	R
159,18	8	L	165,84	2	L	172,49	4	R
159,33	6	L	165,99	0	–	172,64	6	R
159,49	4	L	166,17	2	R	172,82	8	R
159,64	2	L	166,32	4	R	172,97	10	R
159,82	0	–	166,47	6	R	173,13	12	R
159,97	2	R	166,62	8	R	173,28	14	R
160,12	4	R	166,80	10	R	173,43	16	R
160,27	6	R	166,95	12	R	173,58	18	R
160,45	8	R	167,11	14	R	173,74	20	R
160,60	10	R	167,26	16	R	173,89	22	R
160,76	12	R	167,41	18	R	174,04	24	R
160,91	14	R	167,56	20	R	174,17	26	R
161,06	16	R	167,72	22	R	174,32	28	R
161,21	18	R	167,87	24	R	174,45	30	R
161,37	20	R	168,00	26	R	174,60	32	R
161,52	22	R	168,15	28	R	174,73	34	R
161,67	24	R	168,28	30	R	174,85	36	R
161,82	26	R	168,43	32	R	174,98	38	R
161,95	28	R	168,55	34	R	175,11	40	R
162,10	30	R	168,68	36	R	175,23	42	R
162,23	32	R	168,81	38	R	175,34	44	R
162,36	34	R	168,94	40	R	175,46	46	R
162,51	36	R	169,06	42	R	175,56	48	R
162,64	38	R	169,16	44	R	175,67	50	R
162,74	40	R	169,29	46	R	175,77	52	R
162,86	42	R	169,39	48	R	175,87	54	R
162,99	44	R	169,49	50	R	175,95	56	R
162,99	46	R	169,49	52	R	176,00	58	R

(continued)

(Balancing Table • SVU-92 Boring Head — continued)

KRDE175026M

KRCSCFPR061F 175–182mm			KRCSCFPR062F 181,5–188,5mm			KRCSCFPR063F 188–195mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
175,01	64	L	181,51	56	L	188,0108	48	L
175,06	62	L	181,56	54	L	188,1124	46	L
175,13	60	L	181,64	52	L	188,214	44	L
175,21	58	L	181,74	50	L	188,3156	42	L
175,29	56	L	181,84	48	L	188,4426	40	L
175,36	54	L	181,94	46	L	188,5442	38	L
175,46	52	L	182,04	44	L	188,6712	36	L
175,56	50	L	182,14	42	L	188,7982	34	L
175,64	48	L	182,27	40	L	188,8998	32	L
175,74	46	L	182,37	38	L	189,0268	30	L
175,87	44	L	182,50	36	L	189,1792	28	L
175,97	42	L	182,63	34	L	189,3062	26	L
176,07	40	L	182,75	32	L	189,4332	24	L
176,20	38	L	182,88	30	L	189,5602	22	L
176,30	36	L	183,01	28	L	189,7126	20	L
176,43	34	L	183,13	26	L	189,8396	18	L
176,56	32	L	183,26	24	L	189,992	16	L
176,68	30	L	183,41	22	L	190,1444	14	L
176,81	28	L	183,54	20	L	190,2714	12	L
176,96	26	L	183,69	18	L	190,4238	10	L
177,09	24	L	183,82	16	L	114,3762	8	L
177,22	22	L	183,97	14	L	190,7286	6	L
177,37	20	L	184,12	12	L	190,8556	4	L
177,50	18	L	184,25	10	L	191,008	2	L
177,65	16	L	184,40	8	L	191,1604	0	–
177,80	14	L	184,56	6	L	191,3128	2	R
177,93	12	L	184,71	4	L	191,4652	4	R
178,08	10	L	184,86	2	L	191,6176	6	R
178,23	8	L	184,99	0	–	191,7446	8	R
178,38	6	L	185,14	2	R	191,897	10	R
178,54	4	L	185,29	4	R	192,0494	12	R
178,66	2	L	185,45	6	R	192,2018	14	R
178,82	0	–	185,60	8	R	192,3288	16	R
178,97	2	R	185,75	10	R	192,4812	18	R
179,12	4	R	185,88	12	R	192,6082	20	R
179,27	6	R	186,03	14	R	192,7606	22	R
179,43	8	R	186,18	16	R	192,8876	24	R
179,55	10	R	186,31	18	R	193,04	26	R
179,71	12	R	186,46	20	R	193,167	28	R
179,86	14	R	186,59	22	R	193,294	30	R
180,01	16	R	186,74	24	R	193,421	32	R
180,14	18	R	186,87	26	R	193,548	34	R
180,29	20	R	186,99	28	R	193,675	36	R
180,42	22	R	187,12	30	R	193,7766	38	R
180,57	24	R	187,25	32	R	193,9036	40	R
180,70	26	R	187,38	34	R	194,0052	42	R
180,82	28	R	187,50	36	R	194,1068	44	R
180,95	30	R	187,63	38	R	194,2338	46	R
181,08	32	R	187,73	40	R	194,3354	48	R
181,20	34	R	187,86	42	R	194,4116	50	R
181,33	36	R	187,96	44	R	194,5132	52	R
181,46	38	R	188,06	46	R	194,6148	54	R
181,56	40	R	188,16	48	R	194,691	56	R
181,69	42	R	188,26	50	R	194,7672	58	R
181,79	44	R	188,37	52	R	194,8434	60	R
181,89	46	R	188,44	54	R	194,9196	62	R
181,99	48	R	188,49	56	R	194,9958	64	R
181,99	50	R	–	–	–	194,9958	66	R

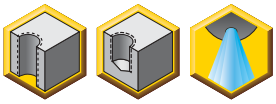
(continued)

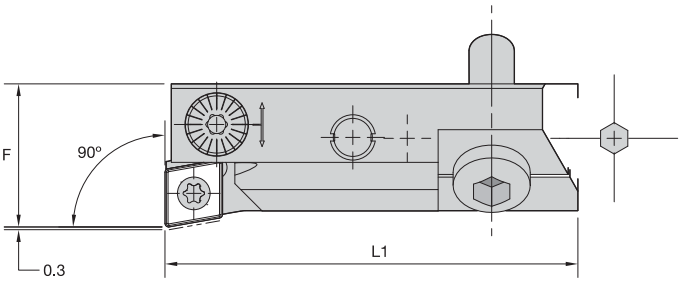
(Balancing Table • SVU-92 Boring Head — continued)

KRDE193026M

KRCSCFPR061F 193–200mm			KRCSCFPR062F 199,5–206,5mm			KRCSCFPR063F 206–213mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
192,99	64	L	199,49	54	L	205,994	46	L
193,07	62	L	199,62	52	L	206,1464	44	L
193,14	60	L	199,72	50	L	206,248	42	L
193,22	58	L	199,80	48	L	206,375	40	L
193,29	56	L	199,90	46	L	206,4766	38	L
193,37	54	L	200,03	44	L	206,6036	36	L
193,47	52	L	200,13	42	L	206,7306	34	L
193,57	50	L	200,23	40	L	206,8576	32	L
193,65	48	L	200,36	38	L	206,9846	30	L
193,75	46	L	200,48	36	L	207,1116	28	L
193,88	44	L	200,61	34	L	207,2386	26	L
193,98	42	L	200,71	32	L	207,391	24	L
194,08	40	L	200,86	30	L	207,518	22	L
194,21	38	L	200,99	28	L	207,6704	20	L
194,34	36	L	201,12	26	L	207,7974	18	L
194,46	34	L	201,24	24	L	207,9498	16	L
194,59	32	L	201,40	22	L	208,1022	14	L
194,72	30	L	201,52	20	L	208,2292	12	L
194,84	28	L	201,68	18	L	208,3816	10	L
194,97	26	L	201,80	16	L	208,534	8	L
195,10	24	L	201,96	14	L	208,6864	6	L
195,25	22	L	202,11	12	L	208,8388	4	L
195,38	20	L	202,26	10	L	208,9912	2	L
195,53	18	L	202,41	8	L	209,1182	0	–
195,68	16	L	202,54	6	L	209,2706	2	R
195,81	14	L	202,69	4	L	209,423	4	R
195,96	12	L	202,84	2	L	209,5754	6	R
196,11	10	L	203,00	0	–	209,7278	8	R
196,27	8	L	203,15	2	R	209,8802	10	R
196,42	6	L	203,30	4	R	210,0326	12	R
196,57	4	L	203,45	6	R	210,1596	14	R
196,70	2	L	203,61	8	R	210,312	16	R
196,85	0	–	203,76	10	R	210,4644	18	R
197,00	2	R	203,89	12	R	210,5914	20	R
197,15	4	R	204,04	14	R	210,7438	22	R
197,31	6	R	204,19	16	R	210,8708	24	R
197,46	8	R	204,32	18	R	210,9978	26	R
197,61	10	R	204,47	20	R	211,1502	28	R
197,76	12	R	204,60	22	R	211,2772	30	R
197,89	14	R	204,75	24	R	211,4042	32	R
198,04	16	R	204,88	26	R	211,5312	34	R
198,20	18	R	205,03	28	R	211,6582	36	R
198,32	20	R	205,16	30	R	211,7598	38	R
198,48	22	R	205,28	32	R	84,8868	40	R
198,60	24	R	205,41	34	R	211,9884	42	R
198,76	26	R	205,54	36	R	212,1154	44	R
198,88	28	R	205,64	38	R	212,217	46	R
199,01	30	R	205,77	40	R	212,3186	48	R
199,14	32	R	205,87	42	R	212,4202	50	R
199,26	34	R	205,99	44	R	212,4964	52	R
199,39	36	R	206,10	46	R	212,598	54	R
199,52	38	R	206,20	48	R	212,6742	56	R
199,62	40	R	206,30	50	R	212,7758	58	R
199,75	42	R	206,38	52	R	212,852	60	R
199,85	44	R	206,48	54	R	212,9028	62	R
199,95	46	R	206,50	56	R	212,979	64	R
200,00	48	R	–	–	–	213,0044	66	R

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.







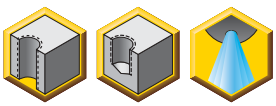
90° Lead • Micro-Adjustable Cartridge • C-Style

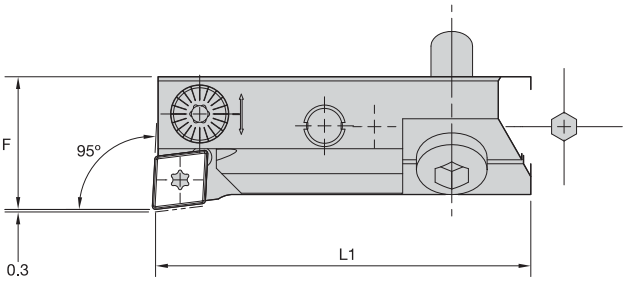


order number	catalogue number	F	L1	gage insert	insert screw	set screw
right hand						
3784474	**FBSCFCR09CA06F**	16,15	45,50	CCMT060204	**12148068700**	**12147629800**
left hand						
3784475	**FBSCFCL09CA06F**	16,15	45,50	CCMT060204	**12148068700**	**12147629800**

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.







95° Lead • Micro-Adjustable Cartridge • C-Style

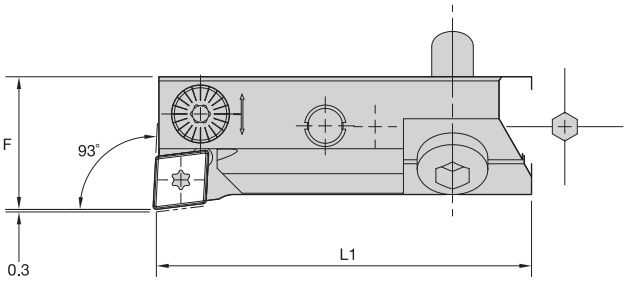


order number	catalogue number	F	L1	gage insert	insert screw	set screw
right hand						
3784476	**FBSCLCR09CA06F**	16,15	45,50	CCMT060204	**12148068700**	**12147629800**
left hand						
3784477	**FBSCLCL09CA06F**	16,15	45,50	CCMT060204	**12148068700**	**12147629800**

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.





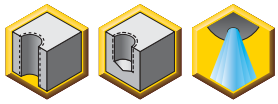


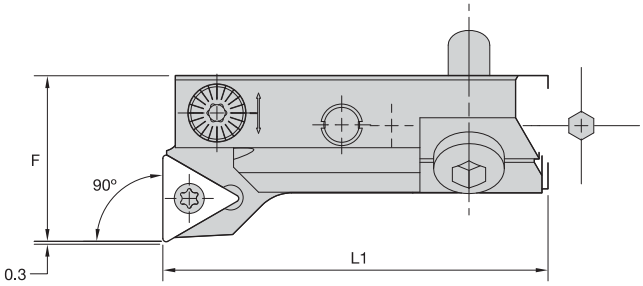
93° Lead • Micro-Adjustable Cartridge • C-Style

order number	catalogue number	F	L1	gage insert	 insert screw	 set screw
right hand						
2907289	**FBSCUCR09CA06F**	16,15	45,50	CCMT060204	**12148068700**	**12147629800**

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.







90° Lead • Micro-Adjustable Cartridge • T-Style

order number	catalogue number	F	L1	gage insert	insert screw	set screw
right hand						
2907291	**FBSTFCR09CA11F**	20,15	45,50	TCMT110204	**12148068700**	**12147629800**

NOTE: For use with custom solution fine-boring and countersinking tools.

ModBORE™

One system includes highly flexible roughing and fine-boring heads to large bridge tooling with optimum amount of tooling components.

Primary Application

This premium boring line enables roughing to fine-boring operations using one system with a large diameter range from 9,75–2,205mm (.384–86.8"). The ModBORE system can be used in most workpiece materials in metalcutting applications along with the latest Kennametal standard ISO turning inserts.

Features and Benefits

Complete System

- Twin blade heads for roughing to semi-finishing operations starting from diameter 23,5mm (.925").
- Fine-boring heads for finishing in diameters 9,75–2,205mm (.384–86.8").
- Bridge tooling for large diameters up to 2,205mm (86.8") standard with both roughing and fine-finishing heads.
- Through-coolant capability in all styles.

Resolution

- Fine adjustable roughing heads.
- 0,01mm (.0004") diameter adjustment respective 2 µm (.00008") with easy-to-read large vernier scale with fine-boring heads.

Highest versatility possible on the shop floor with the ModBORE™ roughing and fine boring systems.



Product Variety

- KM™ shanks for use in all spindles with compatible adaptors.
- HSK shanks for use without adaptors.
- Inch shanks are most economical to use with compatible adaptors.



Customisation

- Engineered solutions available.
- Anti-chatter devices available.
- Cartridges can be designed into standard boring heads for added versatility.

ModBORE™ Fine-Boring System

Based on KM™, HSK, and inch SSF couplings, match all spindle specifications direct or indirect via adaptors. The ModBORE fine-boring system uses standard ISO/ANSI turning inserts for maximum performance and flexibility.

RBHT • Twin Cutters for Rough and Semi-Finish Boring

- Diameters 23,5–153mm (.925–6.024").
- KM, HSK, and inch straight shank back end versions available.
- Preloaded serration and ground support face for stable connection, minimal vibration, and maximum accuracy, with easy diameter adjustment.
- Large selection of blades sets:
  — Staggered — efficient machining of large depths of cut.
  — 70° — for challenging applications requiring stable corner radii and full use of inserts.
  — 90° — most precise machining results.
- Generous clearance and through coolant enable free chip flow and improved tool life.
- All toolholders accept positive standard inserts. Toolholders in diameter 65,5mm (2.58") and greater for negative standard inserts.



FBHM • Offset Boring Bar and Cartridge Heads for Fine Finishing

- Diameters 9,75–320mm (.384–12.59").
- KM-TS™, HSK, CV, DV, and BT steep taper back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008"). Large TiN-coated dial is easy to adjust and read.
- Standard steel and carbide boring bars adjust in length for maximum stability.
- Aluminium diameter extender with insert cartridges and counterweight used for diameters starting at 86mm (3.38") for maximum flexibility.
- Through coolant at the cutting edge improves tool life, surface finish, and chip evacuation.



FBHO • Offset Boring Bar Heads for Fine Finishing



- Diameters 9,75–88,1mm (.384–3.46").
- KM™, HSK, and inch straight shank back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008") via easy-to-read vernier scale.
- Standard steel and carbide boring bars can be adjusted in length for maximum stability.
- Through coolant at the cutting edge improves tool life, surface finish, and chip evacuation.

FBHS • Cartridge Boring Heads for Fine Finishing



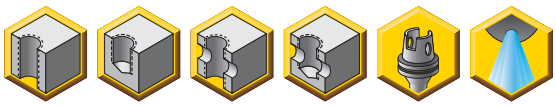
- Diameters 23,5–153mm (.925–6.024").
- KM, HSK, and inch straight shank back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008") via easy-to-read vernier scale.
- Large selection of insert holders:
  — 95° — for use with wiper turning inserts.
  — 90° regular diameter — for efficient machining in large depths of cut.
  — 90° oversized diameter — for enhanced boring head diameter capabilities.
- Generous clearance and through coolant at the cutting edge improve tool life, surface finish, and chip evacuation.

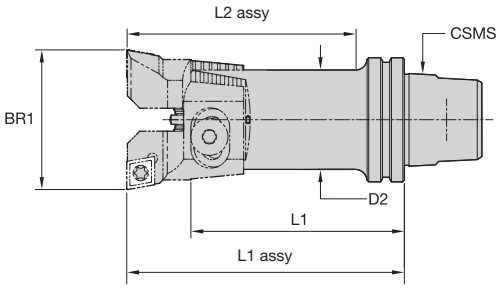
BT • Bridge Tools for Rough and Finish Boring

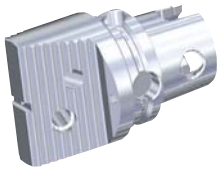


- Diameters 150–2,205mm (5.91–86.81").
- Sophisticated ground serration and T-style bolt clamping provide high cutting forces, and prevent diameter changes when heads are clamped.
- Only 10 bridge consoles are needed for diameters up to 655mm (25.7").
- KM, HSK, and some steep taper adaptors with ground serration available as standard. Through coolant at the cutting edge improves tool life and surface finish.
- Diameters 650–2,205mm (25.5–86.81") covered by three aluminium-based consoles and two sets of steel slides for mounting rough and finish boring heads.
- 90° roughing head sets ensure precise height alignment, and negative standard inserts enable high metal removal rates.
- Counterweight for better balancing and fine-boring head with precision-ground micrometric screw for adjustments of 2 µm (.00008").

- Order blade sets separately; see pages K120–K122.





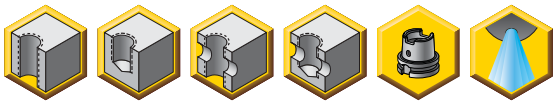


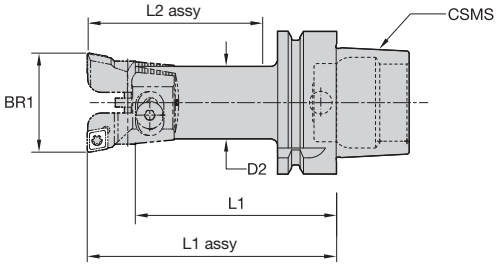
KM™ QUICK CHANGE

RBHT • KM™ Rough-Boring Twin Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	blade screw	washer	pin
3586519	KM32RBHT24	23.500-30.500	KM32	20,0	75,4	90,0	76,0	840.142.200	841.142.200	841.342.200
3586520	KM32RBHT30	29.500-40.000	KM32	25,0	83,8	100,0	86,0	840.142.250	841.142.250	841.342.200
3586521	KM40RBHT40	39.500-50.500	KM40	32,0	68,8	90,0	74,0	840.142.320	841.142.320	841.342.200
3586522	KM50RBHT50	49.500-66.500	KM50	42,0	62,2	90,0	70,0	840.142.420	841.142.200	841.342.420
3586543	KM50RBHT66	65.500-87.500	KM50	55,0	63,0	100,0	100,0	840.142.550	841.142.550	841.342.420
3586544	KM50RBHT87	86.500-115.500	KM50	72,0	70,5	120,0	120,0	840.142.720	841.142.720	841.342.420
3586545	KM63UTRBHT87	86.500-115.500	KM63UT	72,0	70,5	120,0	120,0	840.142.720	841.142.720	841.342.420
3586546	KM63UTRBHT115	114.500-153.000	KM63UT	94,0	83,2	150,0	150,0	840.142.940	841.142.940	841.342.420

- Order blade sets separately; see pages K120–K122.





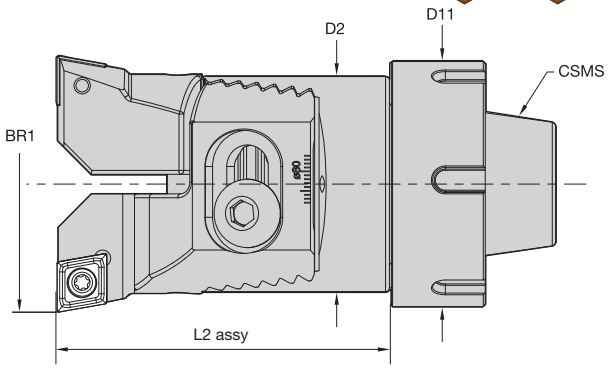


RBHT • HSK Rough-Boring Twin Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	blade screw	washer	pin
3586547	HSK63RBHT24	23.500-30.500	HSK63A	20,0	75,4	90,0	64,1	840.142.200	841.142.200	841.342.200
3586548	HSK63RBHT30	29.500-40.000	HSK63A	25,0	88,8	105,0	79,1	840.142.250	841.142.250	841.342.200
3586549	HSK63RBHT40	39.500-50.500	HSK63A	32,0	92,2	110,0	84,1	840.142.320	841.142.320	841.342.200
3586550	HSK63RBHT50	49.500-66.500	HSK63A	42,0	92,2	120,0	94,1	840.142.420	841.142.420	841.342.200
3586551	HSK63RBHT66	65.500-87.500	HSK63A	55,0	95,5	125,0	125,0	840.142.550	841.142.720	841.342.420
3586563	HSK63RBHT87	86.500-115.500	HSK63A	72,0	95,5	145,0	145,0	840.142.720	841.142.720	841.342.420

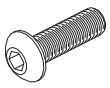
- Order blade sets separately; see pages K120–K122.







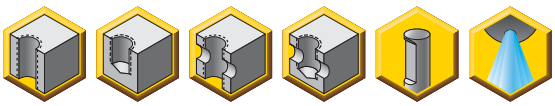
RBHT • ER Rough-Boring Twin Cutters

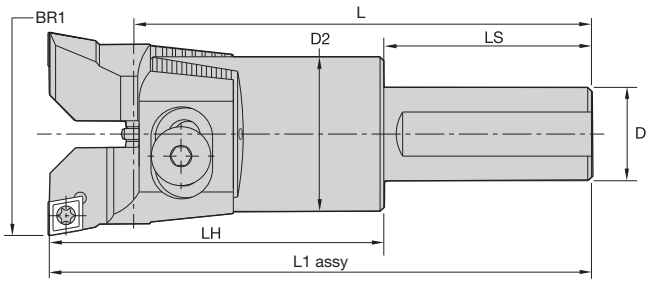




order number	catalogue number	BR1 bore range	CSMS system size	D11	D2	L2 assy	blade screw	washer	pin
5544148	**ER25RBHT40**	39,500-50,500	ER25	39,0	32,0	65,5	**840.142.320**	**841.142.320**	**841.342.200**
5544190	**ER32RBHT50**	49,500-66,500	ER32	49,5	42,0	75,5	**840.142.420**	**841.142.200**	**841.342.420**
5544192	**ER40RBHT66**	65,500-87,500	ER40	62,7	55,0	85,5	**840.142.550**	**841.142.550**	**841.342.420**

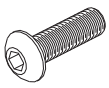
- Order blade sets separately; see pages K120–K122.







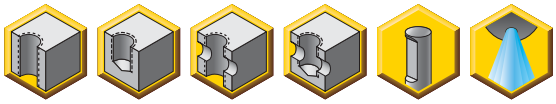
RBHT • Steel Straight Shank Rough Boring Twin Cutters

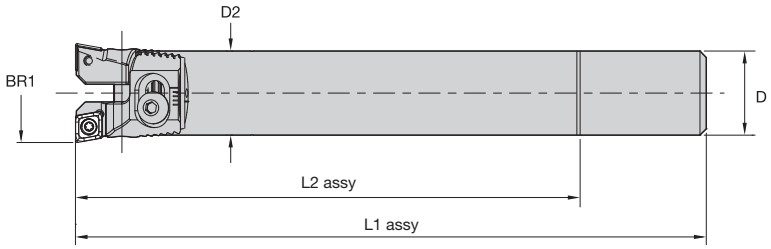


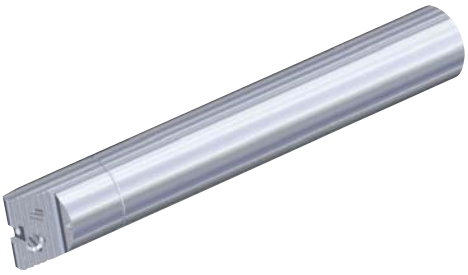


order number	catalogue number	BR1 bore range	D	D2	L	LH	L1 assy	LS	blade screw	washer	pin
3586564	**SF075RBHT24**	23,500-30,500	19,1	20,0	135,4	27,8	150,0	107,6	**840.142.200**	**841.142.200**	**841.342.200**
3586565	**SF100RBHT30**	29,500-40,000	25,4	25,0	153,8	30,6	170,0	123,2	**840.142.250**	**841.142.250**	**841.342.200**
3586566	**SF125RBHT40**	39,500-50,500	31,8	32,0	168,8	31,3	190,0	137,5	**840.142.320**	**841.142.320**	**841.342.200**
3586567	**SF100RBHT50**	49,500-66,500	25,4	42,0	118,1	62,2	145,9	55,9	**840.142.420**	**841.142.420**	**841.342.420**
3586569	**SF125RBHT66**	65,500-87,500	31,8	55,0	123,7	63,0	160,7	60,7	**840.142.550**	**841.142.720**	**841.342.420**
3586570	**SF150RBHT87**	86,500-115,500	38,1	72,0	142,1	70,5	191,6	71,6	**840.142.720**	**841.142.720**	**841.342.420**
3586571	**SF200RBHT115**	114,500-153,000	50,8	94,0	169,1	82,6	235,9	86,5	**840.142.940**	**841.142.940**	**841.342.420**

- Order blade sets separately; see pages K120–K122.

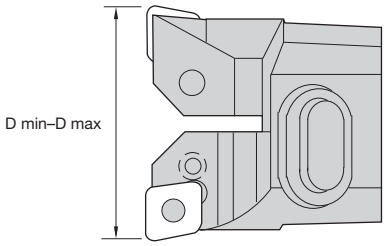


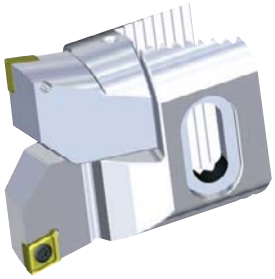




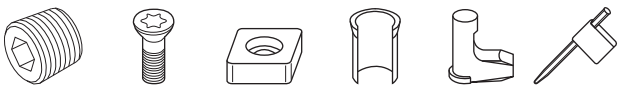
RBHT • Straight Shank Rough-Boring Twin Cutters • Metric

order number	catalogue number	BR1 bore range	D	D2	L1 assy	L2 assy	blade screw	washer	pin
5544143	**SS20RBHT24**	23,500-30,500	20,0	20,0	150,0	120,0	**840.142.200**	**841.142.200**	**841.342.200**
5544145	**SS25RBHT30**	29,500-40,000	25,0	25,0	170,0	140,0	**840.142.250**	**841.142.250**	**841.342.200**

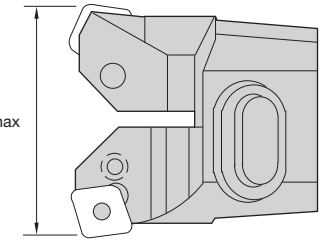


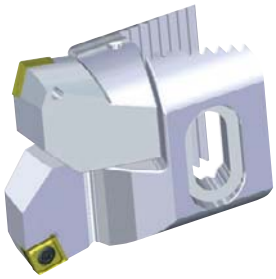


90° Lead Blade Sets



order number	catalogue number	D min	D max	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size
3556346	**MB24RBHT06F**	23,50	30,50	CC..0602../CC..215..	**848.200.407**	**843.006.000**	–	–	–	**FT7**	T7
3556347	**MB30RBHT06F**	29,50	40,10	CC..0602../CC..215..	**848.250.409**	**843.006.000**	–	–	–	**FT7**	T7
3556348	**MB40RBHT09F**	39,50	50,50	CC..09T3../CC..325..	**848.320.413**	**843.009.000**	–	–	–	**FT15**	T15
3556349	**MB50RBHT09F**	49,50	66,50	CC..09T3../CC..325..	**848.420.614**	**843.009.000**	–	–	–	**FT15**	T15
3556350	**MB66RBHT12F**	65,50	87,50	CC..1204../CC..43..	**848.550.620**	**843.012.000**	–	–	–	**FT20**	T20
3556352	**MB66RBHT12LF**	65,50	87,50	CN..1204../CN..43..	**847.012.000**	–	**845.012.000**	**844.012.000**	**846.012.000**	–	–
3556393	**MB87RBHT12F**	86,50	115,50	CC..1204../CC..43..	**848.720.000**	**843.012.000**	–	–	–	**FT20**	T20
3556394	**MB87RBHT16LF**	86,50	115,50	CN..1606../CN..54..	**847.016.000**	–	**845.016.000**	**844.016.000**	**846.016.000**	–	–
3556395	**MB115RBHT12F**	114,50	153,00	CC..1204../CC..43..	**848.940.640**	**843.012.000**	–	–	–	**FT20**	T20
3556396	**MB115RBHT16LF**	114,50	153,00	CN..1606../CN..54..	**847.016.000**	–	**845.016.000**	**844.016.000**	**846.016.000**	–	–

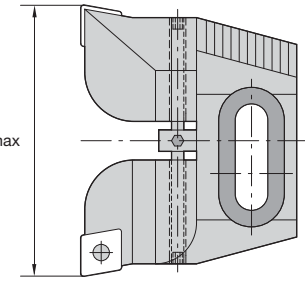


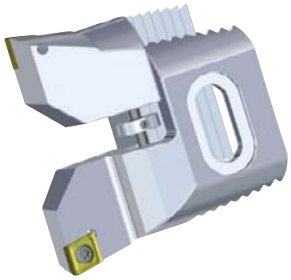


70° Lead Blade Sets



order number	catalogue number	D min	D max	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size	hex size
3556397	MB24RBHT06K	23,50	30,50	CC..0602../CC..215..	848.200.407	843.006.000	–	–	–	FT7	T7	–
3556398	MB30RBHT06K	29,50	40,10	CC..0602../CC..215..	848.250.409	843.006.000	–	–	–	FT7	T7	–
3556399	MB40RBHT09K	39,50	50,50	CC..09T3../CC..325..	848.320.413	843.009.000	–	–	–	FT15	T15	–
3556400	MB50RBHT09K	49,50	66,50	CC..09T3../CC..325..	848.420.614	843.009.000	–	–	–	FT15	T15	–
3556401	MB66RBHT12K	65,50	87,50	CC..1204../CC..43..	848.550.620	843.012.000	–	–	–	FT20	T20	–
3556402	MB66RBHT12LK	65,50	87,50	CN..1204../CN..43..	847.012.000	–	845.012.000	844.012.000	846.012.000	–	–	3 mm
3556403	MB87RBHT12K	86,50	115,50	CC..1204../CC..43..	848.720.000	843.012.000	–	–	–	FT20	T20	–
3556404	MB87RBHT16LK	86,50	115,50	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000	–	–	3 mm
3556405	MB115RBHT16LK	114,50	153,00	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000	–	–	3 mm

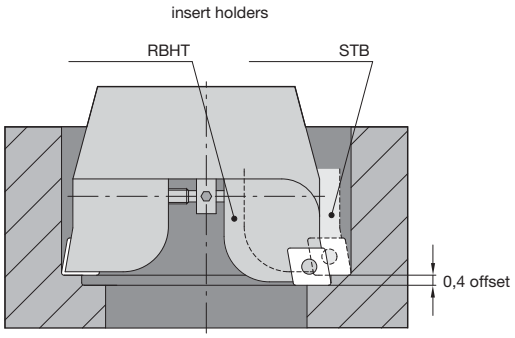


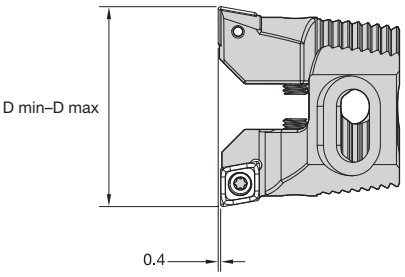


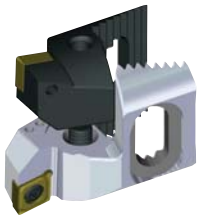
90° Lead Simultaneous Adjusting Blade Sets



order number	catalogue number	D min	D max	gage insert	adjusting screw	insert screw	simultaneous adj spindle	shim	shim pin	toggle lever
2652965	SYB24RBHT06F	23,50	30,50	CC..0602../CC..215..	848.200.407	843.006.000	848.200.005	–	–	–
2652967	SYB30RBHT06F	29,50	40,10	CC..0602../CC..215..	848.250.409	843.006.000	848.250.005	–	–	–
2652968	SYB40RBHT09F	39,50	50,50	CC..09T3../CC..325..	848.320.413	843.009.000	848.320.005	–	–	–
2652969	SYB50RBHT09F	49,50	66,50	CC..09T3../CC..325..	848.420.614	843.009.000	848.420.005	–	–	–
2652970	SYB66RBHT12F	65,50	87,50	CC..1204../CC..43..	–	843.012.000	848.550.005	–	–	–
2652971	SYB66RBHT12LF	65,50	87,50	CN..1204../CN..43..	–	848.550.620	848.550.005	845.012.000	844.012.000	846.012.000
2652972	SYB87RBHT12F	86,50	115,50	CC..1204../CC..43..	–	843.012.000	848.720.005	–	–	–
2652983	SYB87RBHT16LF	86,50	115,50	CNMG543	847.016.000	–	848.720.005	845.016.000	844.016.000	846.016.000
2652984	SYB115RBHT16LF	114,50	153,00	CNMG543	847.016.000	–	848.720.005	845.016.000	844.016.000	846.016.000







90° Lead Split Depth of Cut Blades

order number	catalogue number	D min	D max	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever
4063996	**SDB24RBHT06F**	23,50	30,50	CC..0602../CC..215..	**848.200.407**	**843.006.000**	**–**	**–**	**–**
4063997	**SDB30RBHT06F**	29,50	40,10	CC..0602../CC..215..	**848.250.409**	**843.006.000**	**–**	**–**	**–**
4063998	**SDB40RBHT09F**	39,50	50,50	CC..09T3../CC..325..	**848.320.413**	**843.009.000**	**–**	**–**	**–**
4063999	**SDB50RBHT09F**	49,50	66,50	CC..09T3../CC..325..	**848.420.614**	**843.009.000**	**–**	**–**	**–**
4064000	**SDB66RBHT12F**	65,50	87,50	CC..1204../CC..43..	**848.550.620**	**843.012.000**	**–**	**–**	**–**
4064001	**SDB66RBHT12LF**	65,50	87,50	CN..1204../CN..43..	**847.012.000**	**–**	**845.012.000**	**844.012.000**	**846.012.000**
4064002	**SDB87RBHT12F**	86,50	115,50	CC..1204../CC..43..	**848.720.000**	**843.012.000**	**–**	**–**	**–**
4064203	**SDB87RBHT16LF**	86,50	115,50	CN..1606../CN..54..	**847.016.000**	**–**	**845.016.000**	**844.016.000**	**846.016.000**
4064204	**SDB115RBHT16LF**	114,50	153,00	CN..1606../CN..54..	**847.016.000**	**–**	**845.016.000**	**844.016.000**	**846.016.000**
4064205	**SDB115RBHT12F**	114,50	153,00	CC..1204../CC..43..	**848.940.640**	**843.012.000**	**–**	**–**	**–**

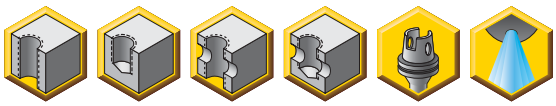
FBHM • Fine-Boring Kits

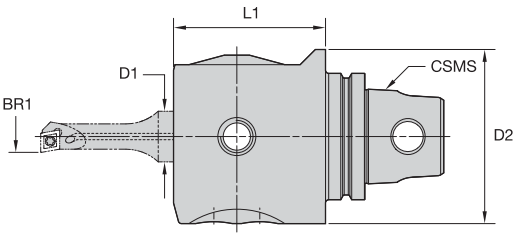
order number	catalogue number	range	contents	
4057101	**KM50TSFBHMKIT164M**	9,75–164,0	KM50TSFBHM1677 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057098	**HSK63FBHMKIT164M**	9,75–164,0	HSK63FBHM1696 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057099	**DV40FBHMKIT164M**	9,75–164,0	DV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057100	**BT40FBHMKIT164M**	9,75–164,0	BT40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4167882	**CV40FBHMKIT645**	9,75–164,0	CV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09

NOTE: Counterweight 886038045 is not part of the kits and needs to be ordered separately.



- Order boring bars separately for required diameter; see pages K130–K131.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.





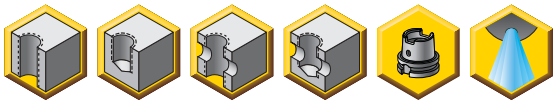


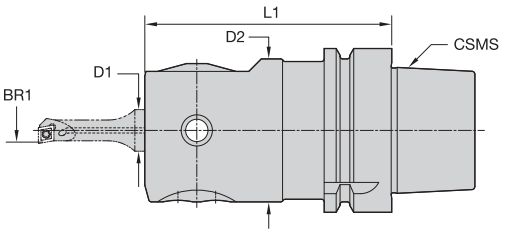
KM™ QUICK CHANGE

FBHO • KM™ Offset Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHO parts package
1131111	**KM40FBHO1660**	9.750-53.100	KM40	16	55,0	60,0	**PKG7001**
1132036	**KM50FBHO1670**	9.750-53.100	KM50	16	55,0	70,0	**PKG7001**

- Order boring bars separately for required diameter; see pages K130–K131.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



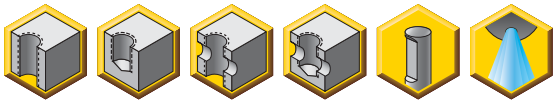


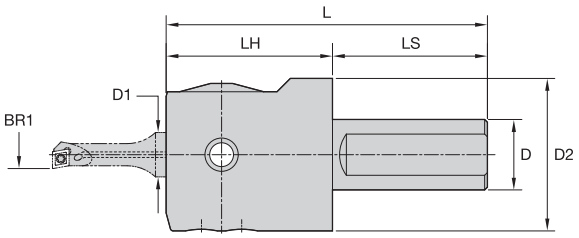


FBHO • HSK Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHO parts package
2651037	**HSK63FBHO1695**	9.750-53.100	HSK63A	16	55,0	95,0	**PKG7001**

- Order boring bars separately for required diameter; see pages K130–K131.

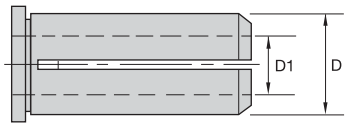






FBHO • Straight Shank Boring Head

order number	catalogue number	BR1 bore range	D	D1	D2	L	LH	LS
3077141	**SF100FBHO1660**	3.000-88.100	25	16	55,0	115,9	60,0	55,9
3077140	**SF150FBHO1660**	3.000-88.100	38	16	55,0	131,6	60,0	71,6

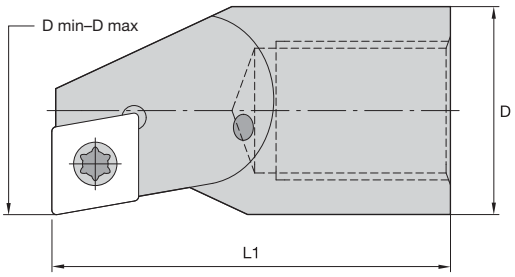




RS Series Sleeves • Metric I.D.

order number	catalogue number	D	D1
2651042	**RS1605**	16	5
1125092	**RS1606**	16	6
1133914	**RS1608**	16	8
1135642	**RS1610**	16	10
1135662	**RS1612**	16	12

- Match boring head diameter to carbide bar diameter.
- Order inserts separately.

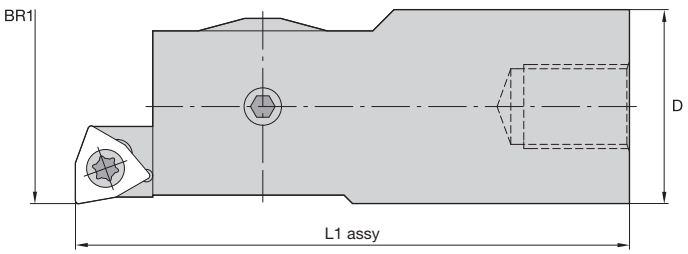




Fixed Pocket Boring Head

order number	catalogue number	D min	D max	D	L1	gage insert	insert screw	Torx size
2651168	**HFB1023SCFPR06**	10,75	16,10	10	23	CC..0602../CC..215..	**PKG0011**	T7
2651169	**HFB1223SCFPR06**	12,75	18,10	12	23	CC..0602../CC..215..	**PKG0011**	T7
2651170	**HFB1627SCFPR06**	16,75	22,10	16	27	CC..0602../CC..215..	**PKG0011**	T7
2651171	**HFB2127SCFPR06**	21,75	27,10	16	27	CC..0602../CC..215..	**PKG0011**	T7
2651172	**HFB2427SCFPR06**	24,75	30,10	16	27	CC..0602../CC..215..	**PKG0011**	T7
2651173	**HFB2727SCFPR06**	27,75	33,10	16	27	CC..0602../CC..215..	**PKG0011**	T7
2651174	**HFB3127SCFPR06**	31,75	37,10	16	27	CC..0602../CC..215..	**PKG0011**	T7
2651175	**HFB3427SCFPR06**	34,75	40,10	16	27	CC..0602../CC..215..	**PKG0011**	T7

- Match boring head diameter to carbide bar diameter.
- Order insert cartridge separately.





Fine Adjustable Screw On Boring Head for Carbide Bars

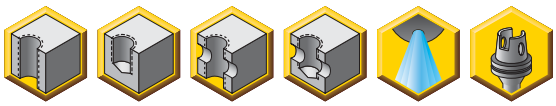
order number	catalogue number	BR1 bore range	L1 assy	D	cartridge mounting screw
2651176	**HFB14FBHS1440**	14.700-17.100	40,0	14	**PKG1402**
2651177	**HFB16FBHS1640**	16.700-20.100	40,0	16	**PKG1602**
2651178	**HFB19FBHS1840**	19.700-24.100	40,0	18	**PKG1802**

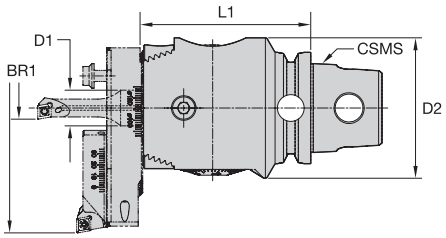
FBHM Fine-Boring Kits

order number	catalogue number	range	contents	
4057101	**KM50TSFBHMKIT164M**	9,75-164,0	KM50TSFBHM1677 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057098	**HSK63FBHMKIT164M**	9,75-164,0	HSK63FBHM1696 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057099	**DV40FBHMKIT164M**	9,75-164,0	DV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057100	**BT40FBHMKIT164M**	9,75-164,0	BT40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4167882	**CV40FBHMKIT645**	9,75-164,0	CV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09



- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



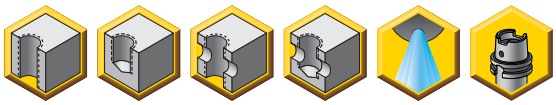


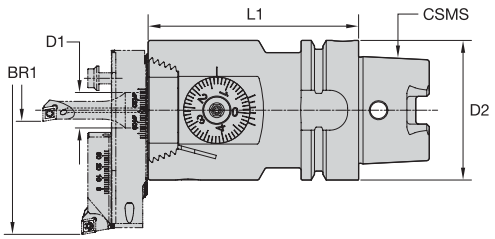


FBHM • KM™ Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057060	**KM50TSFBHM1677**	9,750-164,000	KM50TS	16,0	63,0	76,6	**PKG-8001**	1,5	3.31

- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



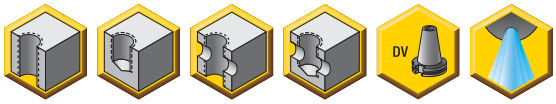


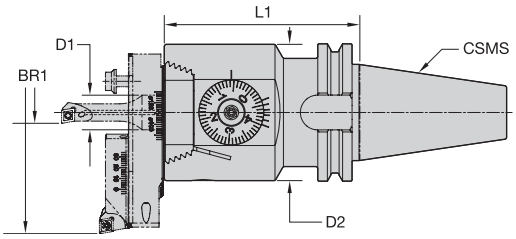


FBHM • HSK Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057057	**HSK63FBHM1696**	9,750-164,000	HSK63A	16,0	63,0	95,0	**PKG-8001**	2,0	4.30

- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



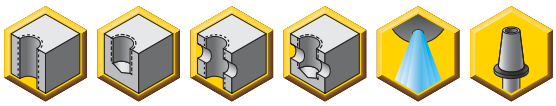


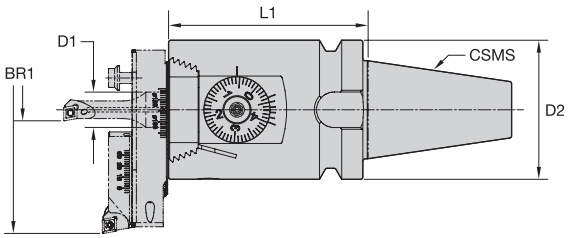


FBHM • DV40 Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057058	**DV40FBHM1691**	9,750-154,000	DV40	16,0	63,0	90,0	**PKG-8001**	2,1	4.64

- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



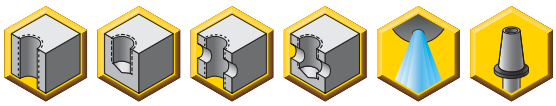


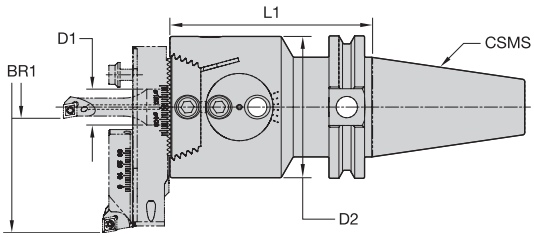


FBHM • BT40 Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057059	**BT40FBHM1691**	9,750-164,000	BT40	16,0	63,0	90,0	**PKG-8001**	2,2	4.94

- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



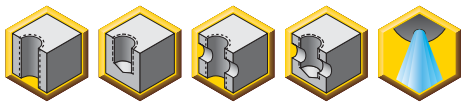


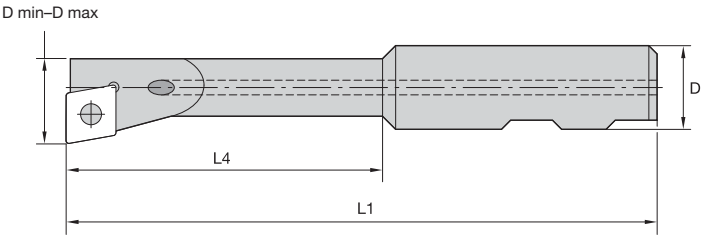


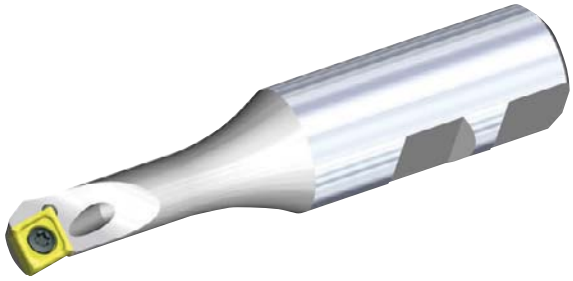
FBHM • CV40 Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4167881	**CV40FBHM1691**	9,750-164,000	CV40	16,0	63,0	91,2	**PKG-8001**	2,1	4.52

- Order inserts separately.



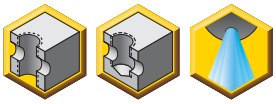


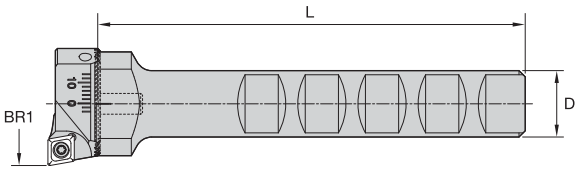


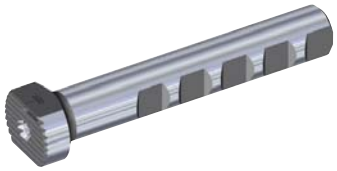
FBHO/FBHM • Universal Boring Bars

order number	catalogue number	D min	D max	D	L1	L4	gage insert	insert screw	Torx size
1125110	**AFB09075SCFCR06**	9,75	14,75	16	75,0	30,0	CC..0602../CC..215..	**PKG2025**	T7
1133883	**AFB13085SCFCR06**	13,75	18,75	16	85,0	40,0	CC..0602../CC..215..	**PKG2025**	T7
1133894	**AFB17100SCFCR06**	17,75	22,75	16	100,0	55,0	CC..0602../CC..215..	**PKG2025**	T7
1137835	**AFB21110SCFCR09**	21,75	26,75	16	110,0	60,0	CC..09T3../CC..325..	**PKG3242**	T15
1128324	**AFB24115SCFCR09**	24,75	29,75	16	115,0	65,0	CC..09T3../CC..325..	**PKG3242**	T15
1126838	**AFB27115SCFCR09**	27,75	32,75	16	115,0	70,0	CC..09T3../CC..325..	**PKG3242**	T15
1120731	**AFB31115SCFCR09**	31,75	36,75	16	115,0	70,0	CC..09T3../CC..325..	**PKG3242**	T15
1127271	**AFB34115SCFCR09**	34,75	39,75	16	115,0	70,0	CC..09T3../CC..325..	**PKG3242**	T15
2651038	**AFB38115SCFPR09**	38,75	44,10	16	115,0	85,0	CC..09T3../CC..325..	**PKG3242**	T15
2651039	**AFB42115SCFPR09**	42,75	48,10	16	115,0	85,0	CC..09T3../CC..325..	**PKG3242**	T15
2651040	**AFB47115SCFPR09**	47,75	53,10	16	115,0	85,0	CC..09T3../CC..325..	**PKG3242**	T15

- Order AFM insert cartridge separately.



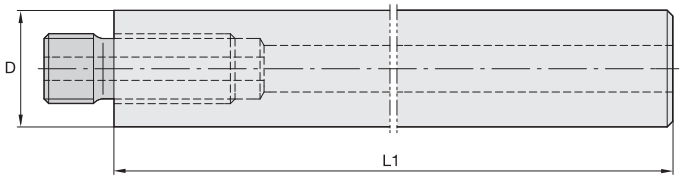




FBHO/FBHM • AFM Boring Bars

order number	catalogue number	BR1 bore range	D	D2	L
4057061	**AFM29115**	29.750-48.100	16,0	25,0	103,000
4057062	**AFM47115**	47.750-88.100	16,0	44,0	101,580



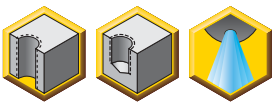


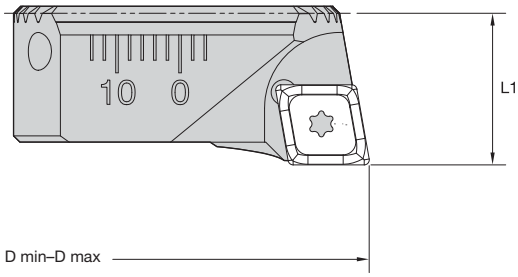


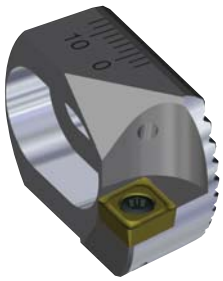
Carbide Shanks for Screw-On Boring Heads

order number	catalogue number	D	L1
2651163	**CFB10082**	10	82
2651164	**CFB12096**	12	96
2651165	**CFB14110**	14	110
2651166	**CFB16120**	16	120
2651167	**CFB18140**	18	140

- For use with AFM boring bars.
- Order inserts separately.



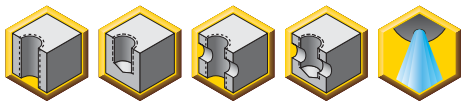


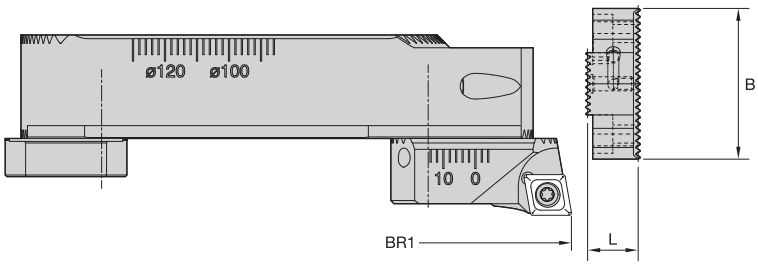


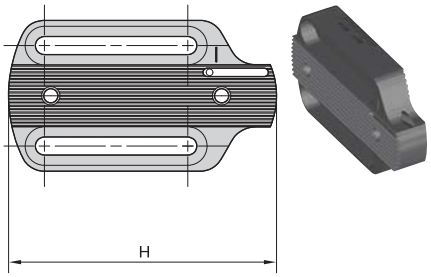
AFM • Insert Cartridges

order number	catalogue number	D min	D max	L1	gage insert	ModBORE parts package	insert screw ID drive size
4057093	**AFM29SCFPR06**	29,75	48,10	12,0	CC..0602../CC..2151..	**PKG2025**	T7
4057094	**AFM47SCFPR09**	47,75	88,10	14,0	CC..09T3../CC..3252..	**PKG3242**	T15

- For use with FBHM insert holders and FBHM counterweight.
- Order AFM47SCFPR09 insert cartridge separately to achieve diameter range.





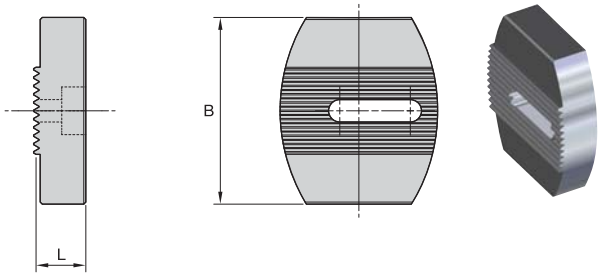


FBHM • Extension Bridge

order number	catalogue number	BR1 bore range	B	H	L
4057095	**EBM8015086**	86.000-164.000	45,0	80,0	15,0
4168063	**EBM1580160162**	162.000-320.000	45,0	158,0	16,2

- For use with FBHM extension bridge.

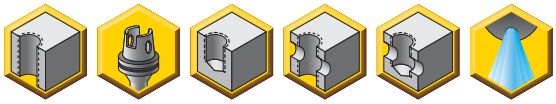


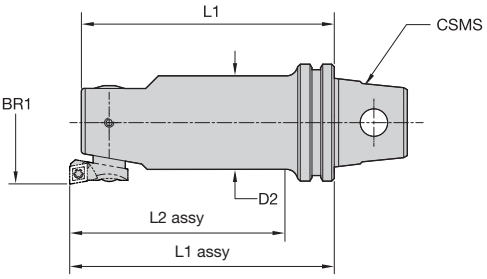


FBHM • Counterweight

order number	catalogue number	B	L
4057096	**886038045**	45	12

- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.



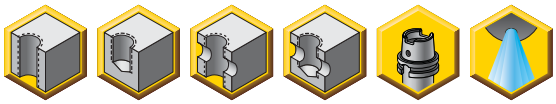


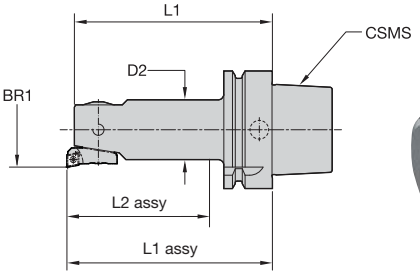


FBHS • KM™ Fine-Boring Single Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	cartridge mounting screw	lock screw
3586572	**KM32FBHS24**	23,900-37,100	KM32	20,0	86,0	90,0	76,1	**880.252.200**	**881.252.200**
3586573	**KM32FBHS31**	30,900-47,100	KM32	25,0	96,0	100,0	86,1	**880.252.250**	**881.252.250**
3586574	**KM40FBHS40**	39,900-59,100	KM40	32,0	86,0	90,0	74,0	**880.252.320**	**881.252.320**
3586575	**KM50FBHS51**	50,900-81,100	KM50	42,0	86,0	90,0	70,0	**880.252.420**	**881.252.420**
3586576	**KM50FBHS67**	66,900-105,100	KM50	55,0	96,0	100,0	100,0	**880.252.550**	**881.252.550**
3586577	**KM50FBHS87**	86,900-134,100	KM50	72,0	116,0	120,0	120,0	**880.252.550**	**881.252.720**
3586578	**KM63UTFBHS87**	86,900-134,100	KM63UT	72,0	116,0	120,0	120,0	**880.252.550**	**881.252.720**
3586579	**KM63UTFBHS116**	115,900-191,100	KM63UT	94,0	146,0	150,0	150,0	**880.252.550**	**881.252.940**

- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.



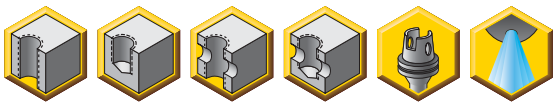


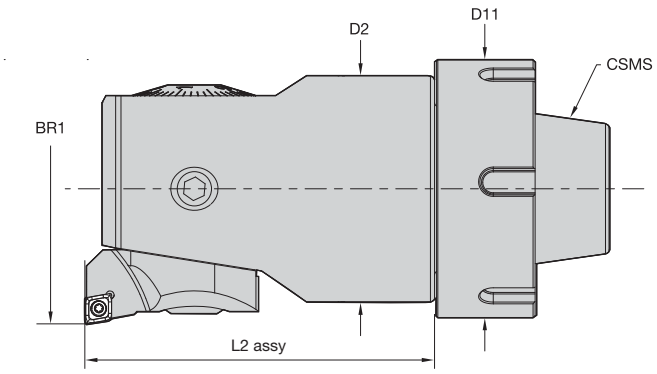


FBHS • HSK Fine-Boring Single Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	cartridge mounting screw	lock screw
3586580	**HSK63FBHS24**	23,900-37,100	HSK63A	20,0	86,0	90,0	61,1	**880.252.200**	**881.252.200**
3586581	**HSK63FBHS31**	30,900-47,100	HSK63A	25,0	101,0	105,0	76,1	**880.252.250**	**881.252.250**
3586582	**HSK63FBHS40**	39,900-59,100	HSK63A	32,0	106,0	110,0	81,1	**880.252.320**	**881.252.320**
3586583	**HSK63FBHS51**	50,900-81,100	HSK63A	42,0	116,0	120,0	91,1	**880.252.420**	**881.252.420**
3586584	**HSK63FBHS67**	66,900-105,100	HSK63A	55,0	121,0	125,0	99,1	**880.252.550**	**881.252.550**
3586585	**HSK63FBHS87**	86,900-134,100	HSK63A	72,0	141,0	145,0	145,0	**880.252.550**	**881.252.720**

- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.



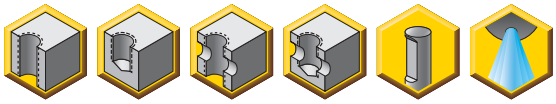


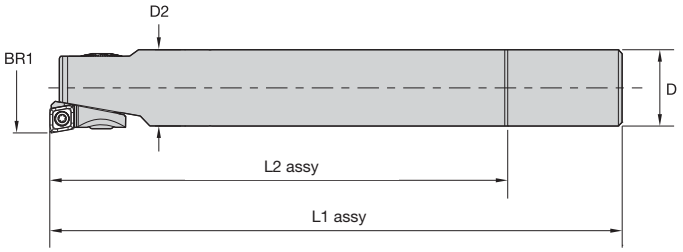


FBHS • ER Fine-Boring Single Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D11	D2	L2 assy	 cartridge mounting screw	 lock screw
5544149	**ER25FBHS40**	39,900-59,100	ER25	39,0	32,0	65,5	**880.252.320**	**881.252.320**
5544191	**ER32FBHS51**	50,900-81,100	ER32	49,5	42,0	75,5	**880.252.420**	**881.252.420**
5544193	**ER40FBHS67**	66,900-105,100	ER40	62,7	55,0	85,5	**880.252.550**	**881.252.550**

- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.



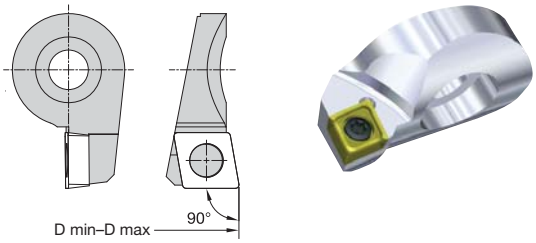




FBHS • Straight Shank Fine-Boring Single Cutters • Metric

order number	catalogue number	BR1 bore range	D	D2	L1 assy	L2 assy	 cartridge mounting screw	 lock screw
5544144	**SS20FBHS24**	23,900-37,100	20,0	20,0	150,0	120,0	**880.252.200**	**881.252.200**
5544146	**SS25FBHS31**	30,900-47,100	25,0	25,0	170,0	140,0	**880.252.250**	**881.252.250**

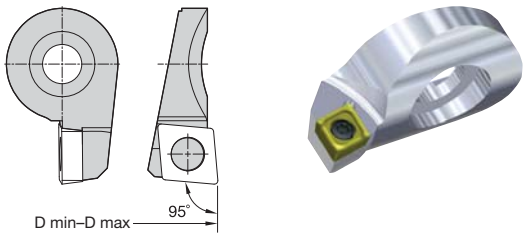
- Order inserts separately.



90° Lead • Insert Holders for FBHS Fine-Boring Heads

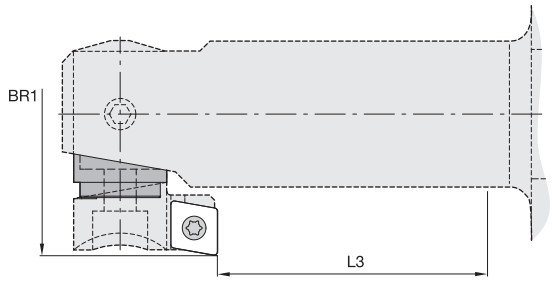
order number	catalogue number	D min	D max	gage insert	Torx size	insert screw
1137487	**R24FBHS06**	23,9	31,1	CC..0602../CC..215..	T7	**843.006.000**
2649548	**R30FBHS06**	29,9	37,1	CC..0602../CC..215..	T7	**843.006.000**
1133669	**R31FBHS06**	30,9	40,1	CC..0602../CC..215..	T7	**843.006.000**
2649549	**R38FBHS06**	37,9	47,1	CC..0602../CC..215..	T7	**843.006.000**
1135369	**R40FBHS06**	39,9	51,1	CC.0602../CC..215..	T7	**843.006.000**
2649550	**R48FBHS06**	47,9	59,1	CC..0602../CC..215..	T7	**843.006.000**
1137479	**R51FBHS06**	50,9	67,1	CC..0602../CC..215..	T7	**843.006.000**
2649551	**R65FBHS06**	64,9	81,1	CC..0602../CC..215..	T7	**843.006.000**
1834274	**R67FBHS06**	66,9	153,1	CC..0602../CC..215..	T7	**843.006.000**
1137505	**R67FBHS09**	66,9	153,1	CC..09T3../CC..325..	T15	**843.009.000**
2649552	**R85FBHS06**	84,9	171,1	CC..0602../CC..215..	T7	**843.006.000**
2649553	**R85FBHS09**	84,9	171,1	CC..09T3../CC..325..	T15	**843.009.000**
2649554	**R125FBHS09**	153,9	191,1	CC..09T3../CC..325..	T15	**843.009.000**

- Order inserts separately.



95° Lead • Insert Holders for FBHS

order number	catalogue number	D min	D max	gage insert	insert screw ID drive size	insert screw
2649555	**R24FBHS06LF**	23,9	31,1	CC..0602../CC..215..	T7	**843.006.000**
2649556	**R31FBHS06LF**	30,9	40,1	CC..0602../CC..215..	T7	**843.006.000**
2649557	**R40FBHS06LF**	39,9	51,1	CC..0602../CC..215..	T7	**843.006.000**
2649558	**R51FBHS06LF**	50,9	67,1	CC..0602../CC..215..	T7	**843.006.000**
2649559	**R67FBHS09LF**	66,9	153,1	CC..09T3../CC..325..	T15	**843.009.000**



Reversal Adaptors

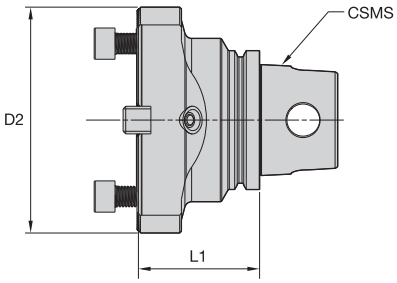
reversal adaptor	use with cartridges				L3	
catalogue number	90° lead	90° lead	95° lead	fine boring head series	mm	inch
R37FBHSRB	**R24FBHS06**	**–**	**R24FBHS06LF**	**..FBHS24**	13,0	0.512
R40FBHSRB	**R30FBHS06**	**–**	**–**	**..FBHS24**	13,0	0.512
R44FBHSRB	**R31FBHS06**	**–**	**R31FBHS06LF**	**..FBHS31**	17,6	0.693
R51FBHSRB	**R38FBHS06**	**–**	**–**	**..FBHS31**	17,6	0.693
R53FBHSRB	**R40FBHS06**	**–**	**R40FBHS06LF**	**..FBHS40**	31,3	1.232
R60FBHSRB	**R48FBHS06**	**–**	**–**	**..FBHS40**	31,3	1.232
R64FBHSRB	**R51FBHS06**	**–**	**R51FBHS06LF**	**..FBHS51**	49,2	1.937
R75FBHSRB	**R65FBHS06**	**–**	**–**	**..FBHS51**	49,2	1.937
R87FBHSRB	**R67FBHS06**	**R67FBHS09**	**R67FBHS09LF**	**..FBHS-67**	62,0	2.441

NOTE: Use the chart above to match the insert holder to the reversal adaptor.

ModBORE™ Bridge Boring Systems

- Extension bridge required.
- Order extension bridge separately; see pages K139–K140.
- Match adaptor and extension bridge series.





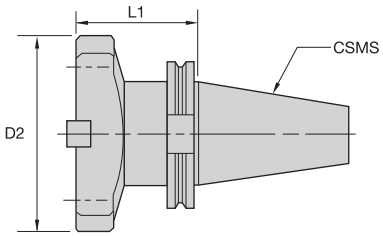


KM™ Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1135802	**KM63BT13065**	KM63	A	130,0	65,0	**PKG1565**	**MS1085PKG**
1197315	**KM80BT13070**	KM80	B,A	130,0	70,0	**PKG1565**	**MS1085PKG**

- Extension bridge required.
- Order extension bridge separately; see pages K139–K140.
- Order coolant cartridge set separately.
- Match adaptor and extension bridge series.







CV Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1122185	**CV50BT13069**	CV50	A,B,C	130,0	69,1	**PKG1565**	**MS1085PKG**



BT Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1121711	**BT50BT13088**	BT50	A,B,C	130,0	88,0	**PKG1565**	**MS1085PKG**

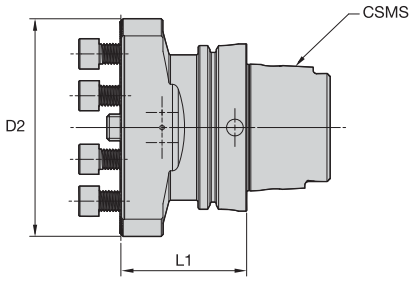


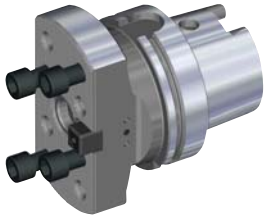
DV Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1263825	**DV40BT13069**	DV40	A	130,0	69,1	**PKG1565**	**MS1085PKG**
1133581	**DV50BT13069**	DV50	A,B,C	130,0	69,1	**PKG1565**	**MS1085PKG**

- Extension bridge required.
- Order extension bridge separately; see pages K139–K140.
- Match adaptor and extension bridge series.







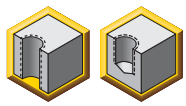
HSK Bridge Tool Adaptors

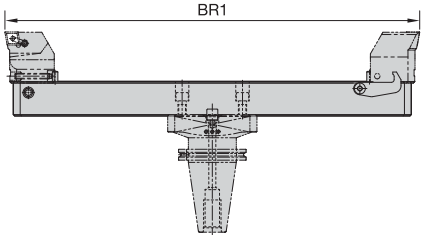


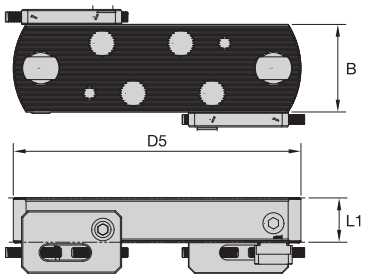
order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
4062112	**HSK100BT13075**	HSK100A	A,B,C	130,0	75,0	**PKG1565**	**MS1085PKG**

NOTE: Tool adaptors combined with small-scale extension bridges cover boring range 150–655mm.
Tool adaptors combined with large-scale extension bridge and bridge slides cover boring range from 650–2205mm.

- Match extension bridge series to adaptor.







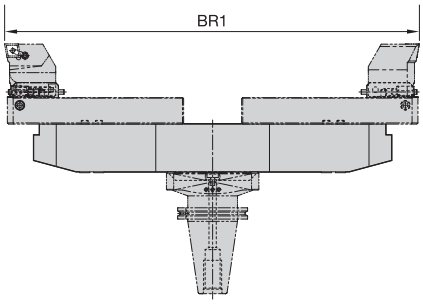


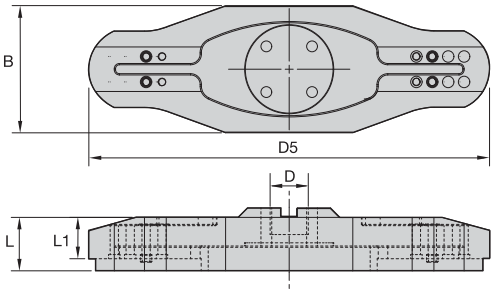
Small-Scale Extension Bridges

order number	catalogue number	BR1 bore range	max RPM	extension bridge series	B	D5	L1	spare parts package	hex size	kg	lbs
1133280	**EB13030150**	150.000-205.000	1250	A	70,0	130,0	30,0	**PKG156502**	8 mm	1,95	4.30
1125085	**EB18030200**	200.000-255.000	1000	A	70,0	180,0	30,0	**PKG156502**	8 mm	2,77	6.10
1132857	**EB23035250**	250.000-305.000	850	B	70,0	230,0	35,0	**PKG156502**	8 mm	4,00	8.80
1126830	**EB28035300**	300.000-355.000	700	B	70,0	280,0	35,0	**PKG156502**	8 mm	5,14	11.30
1121703	**EB33040350**	350.000-405.000	600	B	70,0	330,0	40,0	**PKG156502**	8 mm	6,86	15.10
1140602	**EB38040400**	400.000-455.000	530	C	70,0	380,0	40,0	**PKG156502**	8 mm	7,95	17.50
1121036	**EB43040450**	450.000-505.000	480	C	70,0	430,0	40,0	**PKG156502**	8 mm	9,23	20.30
1270619	**EB48040500**	500.000-550.000	440	C	70,0	480,0	40,0	**PKG156502**	8 mm	10,23	22.50
1270620	**EB53050550**	550.000-605.000	400	C	70,0	530,0	50,0	**PKG156502**	8 mm	13,91	30.60
1270621	**EB58050600**	600.000-655.000	370	C	70,0	580,0	50,0	**PKG156502**	8 mm	15,32	33.70

- For use with shell mill adaptors or direct connection to the machine spindle.
- Order bridge slides separately.









Large Scale Extension Bridge

order number	catalogue number	BR1 bore range	D	D5	B	L	L1	kg	lbs
4057204	**EB630128650**	650.000-1105.000	60,0	630,0	200,0	99,0	84,0	17,20	37.84
4057205	**EB10801281100**	1100.000-1655.000	60,0	1080,0	200,0	99,0	84,0	28,10	61.82
4057206	**EB16301281650**	1650.000-2205.000	60,0	1630,0	200,0	99,0	84,0	43,00	94.60

max RPM

BR1 bore range (mm)	BR1 bore range inch	maximum RPM
650–705	25.59–27.76	300
700–755	27.56–29.72	285
750–805	29.53–31.69	270
800–855	31.50–33.66	255
850–905	33.46–35.63	240
900–955	35.43–37.60	225
950–1005	37.40–39.57	210
1000–1055	39.37–41.54	195
1050–1105	41.34–43.50	180

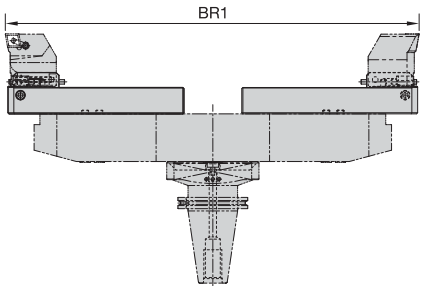
max RPM

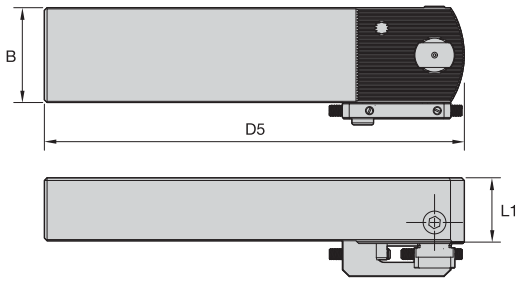
BR1 bore range (mm)	BR1 bore range inch	maximum RPM
1100–1155	43.31–45.47	170
1150–1205	45.28–47.44	163
1200–1255	47.24–49.41	156
1250–1305	49.21–51.38	149
1300–1355	51.18–53.35	142
1350–1405	53.15–55.31	135
1400–1455	55.12–57.28	128
1450–1505	57.09–59.25	121
1500–1555	59.06–61.22	114
1550–1605	61.02–63.19	107
1600–1655	62.99–65.16	100

max RPM

BR1 bore range (mm)	BR1 bore range inch	maximum RPM
1650–1705	64.96–67.13	95
1700–1755	66.93–69.09	90
1750–1805	68.90–71.06	85
1800–1855	70.87–73.03	80
1850–1905	72.83–75.00	75
1900–1955	74.80–76.97	70
1950–2005	76.77–78.94	65
2000–2055	78.74–80.91	60
2050–2105	80.71–82.87	55
2100–2155	82.68–84.84	50
2150–2205	84.65–86.81	45

- For use with large-scale bridge extensions.
- Delivered as a set of two.



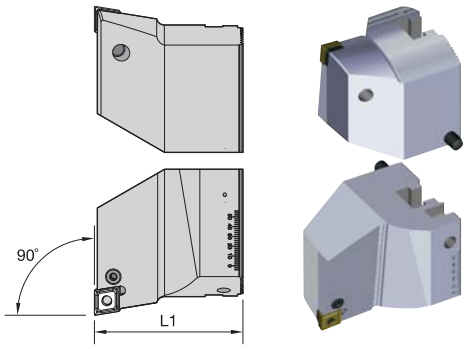




Bridge Slides

order number	catalogue number	BR1 bore range	B	D5	L1	spare parts package	kg	lbs
4057207	**EBSLD1105**	650.000-1105.000	70,0	310,0	48,0	**PKG156502**	7,00	15.40
4057208	**EBSLD2205**	1100.000-2205.000	70,0	360,0	48,0	**PKG156502**	7,90	17.38

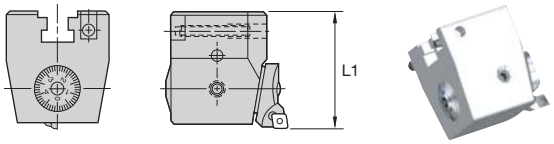
- Packaged as a matched set of two to enable twin cutting operations.



90° Lead • Bridge Tool Rough-Boring Head

order number	catalogue number	L1	gage insert	spare parts package	insert screw ID drive size	kg	lbs
1624878	**EBURF1975PKG**	75,0	CN..1906../CN..64..	**PKG7994**	4 mm	1,64	3.60

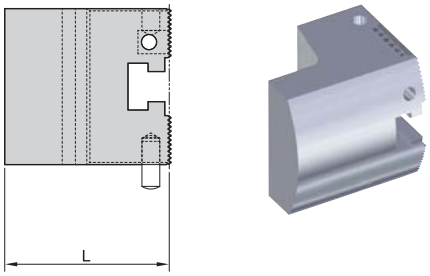
- Insert holder included.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Use with counterweight for balance.



90° Lead • Bridge Tool Fine-Boring Head

order number	catalogue number	L1	cartridge	spare parts package	wrench size-adjusting screw	kg	lbs
1135375	**EBUFF0975**	75,0	R67-FBHS-09	**PKG0002**	5 mm	2,14	4.70

- Use to balance the extension bridge when using an EBUFF fine-boring head.



Bridge Tool Counterweight

order number	catalogue number	L	kg	lbs
4062443	**EBUCW0074**	74,0	2,10	4.63

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Material Group		Condition	Geometry			Cutting Speed — vc m/min			Feed Rate mm/r		
			-MP	-MN	-MF	min	Starting Value	max	-MP	-MN	-MF
P	1		–	KCP05	–	180	**435**	495	–	0,16–0,63	–
			KCP10			180	**395**	360	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		180	**395**	360	–	0,16–0,63	0,10–0,40
			KCP25			125	**275**	360	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		155	**280**	360	–	0,16–0,31	0,10–0,20
	2		–	KCP05	–	180	**265**	400	–	0,16–0,63	–
			KCP10			180	**240**	470	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		180	**250**	340	–	0,16–0,63	0,10–0,40
			KCP25			125	**195**	280	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		140	**200**	295	–	0,16–0,31	0,10–0,20
	3		–	KCP05	–	180	**205**	275	–	0,16–0,63	–
			KCP10			160	**190**	350	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		155	**190**	235	–	0,16–0,63	0,10–0,40
			KCP25			135	**155**	225	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		135	**155**	225	–	0,16–0,31	0,10–0,20
	4		–	KCP05	–	90	**160**	220	–	0,16–0,63	–
			KCP10			90	**145**	235	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		90	**145**	195	–	0,16–0,63	0,10–0,40
			KCP25			75	**105**	180	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		75	**110**	175	–	0,16–0,31	0,10–0,20
	5		–	KCP05	–	150	**240**	315	–	0,16–0,63	–
			KCP10			150	**215**	300	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		150	**215**	300	–	0,16–0,63	0,10–0,40
			KCP25			120	**195**	260	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		120	**195**	260	–	0,16–0,31	0,10–0,20
	6		–	KCP05	–	140	**200**	300	–	0,16–0,63	–
			KCP10			110	**180**	270	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		120	**180**	225	–	0,16–0,63	0,10–0,40
			KCP25			105	**150**	225	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		105	**150**	225	–	0,16–0,31	0,10–0,20

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Material Group		Condition	Geometry			Cutting Speed — vc m/min			Feed Rate mm/r		
			-MP	-MF	–	min	Starting Value	max	-MP	-MF	–
M	1		KCM15		–	100	**180**	240	0,10–0,40	0,08–0,30	–
			KC5010	–	–	130	**215**	250	0,10–0,40	–	–
			KC9225		–	175	**185**	250	0,10–0,40	0,08–0,30	–
			KCM25		–	90	**150**	200	0,10–0,20	0,08–0,15	–
			KC9240		–	90	**120**	135	0,10–0,20	0,08–0,15	–
	2		KCM15		–	110	**165**	250	0,10–0,40	0,08–0,30	–
			KC5010	–	–	125	**200**	250	0,10–0,40	–	–
			KC9225		–	110	**170**	230	0,10–0,40	0,08–0,30	–
			KCM25		–	90	**150**	225	0,10–0,20	0,08–0,15	–
			KC9240		–	80	**105**	135	0,10–0,20	0,08–0,15	–
	3		KCM15		–	110	**150**	250	0,10–0,40	0,08–0,30	–
			KC5010	–	–	110	**150**	230	0,10–0,40	–	–
			KC9225		–	110	**150**	230	0,10–0,40	0,08–0,30	–
			KCM25		–	90	**120**	200	0,10–0,20	0,08–0,15	–
			KC9240		–	80	**90**	135	0,10–0,20	0,08–0,15	–

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Material Group		Condition	Geometry			Cutting Speed — vc m/min			Feed Rate mm/r		
			-MP	-MW	–	min	Starting Value	max	-MP	-MW	–
K	1		KCK20		–	220	**300**	540	0,10–0,40	0,16–1,00	–
			–	KT315	–	160	**275**	490	–	0,16–1,00	–
			KCK20		–	220	**275**	350	0,10–0,40	0,16–1,00	–
			–	KC9315	–	150	**275**	350	–	0,16–1,00	–
			KCK20		–	140	**210**	340	0,10–0,20	0,16–0,45	–
			–	KC9325	–	70	**210**	340	–	0,16–0,45	–
	2		KCK20		–	220	**275**	350	0,10–0,40	0,16–1,00	–
			–	KT315	–	180	**275**	360	–	0,16–1,00	–
			KCK20		–	220	**275**	350	0,10–0,40	0,16–1,00	–
			–	KC9315	–	130	**260**	340	–	0,16–1,00	–
			KCK20		–	220	**275**	350	0,10–0,20	0,16–0,45	–
	3		KCK20		–	110	**150**	230	0,10–0,40	0,16–1,00	–
			–	KT315	–	170	**230**	360	–	0,16–1,00	–
			KCK20		–	110	**150**	230	0,10–0,40	0,16–1,00	–
			–	KC9315	–	130	**215**	350	–	0,16–1,00	–
			KCK20		–	110	**150**	230	0,10–0,20	0,16–0,45	–

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Material Group		Condition	Geometry			Cutting Speed — vc m/min			Feed Rate mm/r		
			-HP	–	–	min	Starting Value	max	-HP	–	–
N	1		KC5410	–	–	200	**550**	1000	0,16–0,63	–	–
			–	KD1400	–	450	**765**	2500	–	0,25–0,63	–
			KC5410	–	–	200	**550**	1000	0,16–0,31	–	–
	2		–	KD1425	–	300	**520**	900	–	0,25–0,63	–
			–	KD1425	–	300	**520**	900	–	0,25–0,40	–
	3		KC5410	–	–	100	**275**	500	0,16–0,63	–	–
			K313	–	–	120	**260**	490	0,16–0,63	–	–
			KC5410	–	–	100	**275**	500	0,16–0,31	–	–
	5		KC5410	–	–	100	**200**	350	0,16–0,63	–	–
			KC5410	–	–	100	**200**	350	0,16–0,31	–	–

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Material Group		Condition	Geometry			Cutting Speed — vc m/min			Feed Rate mm/r		
			-MP	-FP	-UP	min	Starting Value	max	-MP	-FP	-UP
S	1		KCU10		–	30	**55**	115	0,10-0,40	0,06-0,25	–
			KC5010			30	**55**	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	10	**40**	55	0,10-0,20	0,06-0,12	–
			KC9240	–	KC9240	10	**40**	60	0,10–0,20	–	0,16–0,27
	2		KCU10		–	30	**60**	120	0,10-0,40	0,06-0,25	–
			KC5010			30	**60**	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	10	**30**	55	0,10-0,20	0,06-0,12	–
			KC9240	–	KC9240	10	**30**	55	0,10–0,20	–	0,16–0,27
	3		KCU10		–	30	**70**	115	0,10-0,40	0,06-0,25	–
			KC5010			30	**70**	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	20	**40**	55	0,10-0,20	0,06-0,12	–
			KC9240	–	KC9240	20	**40**	60	0,10–0,20	–	0,16–0,27
	4		KCU10		–	45	**70**	140	0,10-0,40	0,06-0,25	–
			KC5010			45	**70**	170	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	20	**55**	90	0,10-0,20	0,06-0,12	–
			KC9240	–	KC9240	15	**55**	90	0,10–0,20	–	0,16–0,27

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Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
P	1		KCP05			–	180	**435**	495	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**435**	495	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**400**	495	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**395**	465	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**395**	495	0,06–0,25	0,04–0,16	–	–
			KCP25				140	**280**	360	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	140	**280**	360	0,06–0,10	0,04–0,08	–	–
	2		KCP05			–	180	**265**	400	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**265**	400	–	–	0,06–0,25	–
			KT315	–	–	KT315	190	**270**	390	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**240**	330	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**240**	330	0,06–0,25	0,04–0,16	–	–
			KCP25				145	**195**	320	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	145	**195**	320	0,06–0,10	0,04–0,08	–	–
	3		KCP05			–	180	**205**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**205**	275	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**210**	275	0,06–0,25	–	–	0,08–0,30
			KCP10			–	160	**190**	250	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	155	**190**	240	0,06–0,25	0,04–0,16	–	–
			KCP25				135	**155**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	135	**155**	225	0,06–0,10	0,04–0,08	–	–
	4		KCP05			–	90	**160**	220	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	90	**160**	220	–	–	0,06–0,25	–
			KT315	–	–	KT315	90	**180**	220	0,06–0,25	–	–	0,08–0,30
			KCP10			–	90	**145**	195	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	90	**145**	195	0,06–0,25	0,04–0,16	–	–
			KCP25				75	**105**	180	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	75	**105**	180	0,06–0,10	0,04–0,08	–	–
	5		KCP05			–	150	**240**	315	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	150	**240**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	150	**250**	315	0,06–0,25	–	–	0,08–0,30
			KCP10			–	150	**215**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	150	**215**	300	0,06–0,25	0,04–0,16	–	–
			KCP25				120	**195**	255	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	120	**195**	255	0,06–0,10	0,04–0,08	–	–
	6		KCP05			–	140	**200**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KCP10			–	120	**180**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	120	**180**	225	0,06–0,25	0,04–0,16	–	–
			KCP25				105	**150**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	105	**150**	225	0,06–0,10	0,04–0,08	–	–

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Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
M	1		–	–	KTP10	–	140	**230**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**230**	315	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**215**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**180**	240	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	105	**180**	240	0,06–0,12	–	–	0,08–0,16
	2		–	–	KTP10	–	140	**215**	295	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**215**	295	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**200**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**165**	250	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	100	**160**	230	0,06–0,12	–	–	0,08–0,16
	3		–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**185**	230	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	115	**150**	255	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	110	**150**	230	0,06–0,12	–	–	0,08–0,16

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Material Group		Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
K	1		KCK20	–	KCK20		200	**300**	540	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	165	**275**	490	0,06–0,25	–	–	0,08–0,30
			KC9315	–	–	–	110	**275**	450	0,06–0,25	–	–	–
			KC9320	–	–	–	100	**240**	400	0,06–0,12	–	–	–
	2		KCK20	–	KCK20		150	**240**	420	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**275**	360	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	100	**200**	265	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**260**	360	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**240**	330	0,06–0,12	–	–	–
	3		KCK20	–	KCK20		140	**210**	350	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**230**	320	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	120	**150**	225	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**215**	275	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**210**	260	0,06–0,12	–	–	–

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Material Group		Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r			
			-LF	–	–	–	min	Starting Value	max	-LF	–	–	–
N	1		KC5410	–	–	–	200	**550**	1000	0,10–0,40	–	–	–
			KC5410	–	–	–	200	**550**	1000	0,10–0,20	–	–	–
			–	KD1400	–	–	450	**765**	3000	–	0,06–0,15	–	–
	2		–	KD1425	–	–	375	**580**	1150	–	0,06–0,25	–	–
			–	KD1400	–	–	400	**650**	1250	–	0,06–0,15	–	–
	3		KC5410	–	–	–	125	**275**	525	0,10–0,40	–	–	–
			–	KD1425	–	–	250	**500**	875	–	0,06–0,25	–	–
			KC5410	–	–	–	125	**275**	525	0,10–0,20	–	–	–
			–	KD1400	–	–	375	**520**	1000	–	0,06–0,12	–	–
	5		KC5410	–	–	–	125	**200**	375	0,10–0,40	–	–	–
			KC5410	–	–	–	125	**200**	375	0,10–0,20	–	–	–

ModBORE • Finishing • Metric

Material Group		Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
S	1		–	–	KCU10	–	30	**55**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**30**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**55**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**55**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**55**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	10	**40**	50	–	–	0,06–0,12	–
			KC5025	–	–	–	10	**40**	50	0,06–0,10	–	–	–
	2		–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**35**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	10	**30**	50	–	–	0,06–0,12	–
			KC5025	–	–	–	10	**30**	50	0,06–0,10	–	–	–
	3		–	–	KCU10	–	30	**70**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**40**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**70**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**70**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**40**	60	–	–	0,06–0,12	–
			KC5025	–	–	–	25	**40**	60	0,06–0,10	–	–	–
	4		–	–	KCU10	–	45	**70**	140	–	–	0,06–0,25	–
			K313	–	–	–	15	**45**	65	0,06–0,25	–	–	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	45	**70**	140	–	–	0,06–0,25	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**55**	90	–	–	0,06–0,12	–
			KC5025	–	–	–	15	**55**	90	0,06–0,10	–	–	–

PCD Customised Tooling

PCD tooling offers the highest productivity and accuracy, reduced tooling costs due to long tool life, and secure process control due to close tolerances. All of this increases overall quality and reduces scrap rates and inspection costs.

Primary Application

Use Kennametal PCD tooling for machining aluminium and aluminium alloys, magnesium, copper, brass, bronze, plastics (GFRP, CFRP), MMC (Metal Matrix Composite), graphite, tungsten carbide green-stages, and ceramic. Choose from various PCD products for drilling, counterboring, and reaming. Steel- and solid carbide-based tool body designs are available for direct spindle coupling with or without adjustable PCD pocket seats or with steerable SIF™ backend.



Features and Benefits

Higher Productivity and Profitability

- Highest chip removal rates and fewer tool changes using multistep tooling.
- Extremely long tool life while maintaining very tight tolerances.
- Reduced built-up edge and bur formation, improved hole shape with multistep tooling, and better surface finish of the workpiece.

Choose Kennametal as your trusted partner for PCD applications and benefit from our years of experience and global presence.

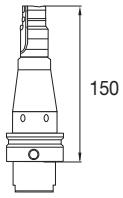


Product Platform Versatility

- All PCD drilling, counterboring, and reaming tools are designed to specific needs for diameter, shape, radii, and steps.
- Various PCD grades are available to match specific material.
- Multistep drilling, profiling, countersinking, and reaming platforms available.
- Coolant channel for optimised chip evacuation in regular and MQL styles.
- Steel-based tool body designs for direct spindle coupling or adjustable pocket seat for highest accuracy even in larger sizes.
- Carbide-based tool bodies enable highest accuracy and tool life in high L/D ratio applications.
- SIF™ steerable interface optimises runout and enables highest accuracy and tool life.
- All PCD tooling prebalanced by design. Further precision balancing available on request.

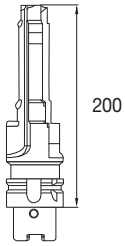
PCD Tooling Basic Design Overview

Kennametal offers you certain PCD design platforms to optimally fulfill your machining task.
These basic designs are independent, whether you are drilling, countersinking, profiling, reaming, or milling.
All tooling designs are capable of internal coolant, MQL coolant, and are balanced by design.

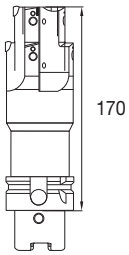


PCD ..ST —
Steel body

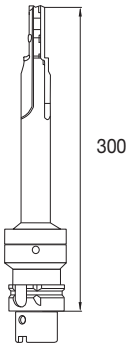
PCD ..SC —
Solid carbide body



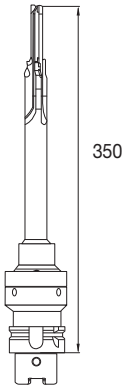
PCD ..STM —
Steel body monoblock



PCD ..STMJ —
Steel body monoblock
Ø adjustable



PCD ..STA —
Steel body with steerable SIF™ backend



PCD ..SCA —
Solid carbide shank and steerable SIF backend

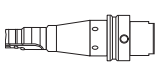
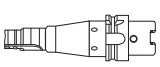
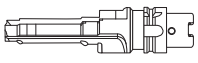
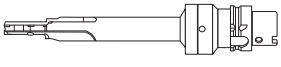
PCDRSC02CCE

PCD	R	SC	02	CC	E
	Technology	Type	Teeth	Point Geometry	Coolant
HF = Helix Flute	**D** = Drilling	**SC** = Solid carbide body	**02**	**RL** = Reaming lead	**E** = Emulsion
SF = Straight Flute	**R** = Reaming	**ST** = Steel body	**03**	**CC** = Centre cut	**M** = MQL
	C = Countersinking	**STM** = Steel monoblock	**04**	**CT** = Drill point	**A** = Air
	E = End milling	**STMJ** = Steel monoblock adjustable	**...**	**CTE** = Drill point	**D** = Dry
	F = Face milling	**STA** = Steel steerable	**12**	**SW** = Drill point	
	P = Profile milling	**SCA** = Carbide steerable	**...**	**MT** = Drill point	
	M = Multioperation tool		**22***		

*Exception for **Type** Reamer **22** = **2** teeth + **2** additional land = **4** guiding lands.

Runout of the Spindle

Depending on spindle runout and/or higher L/D ratios

runout ≤ 0,005mm		runout ≥ 0,006mm	
	**PCD-ST** **PCD-SC**		**PCD-ST or PCD-SC with hydraulic chuck and SIF shank**
	**PCD-STM**		**PCD-STA with SIF** **PCD-SCA with SIF**

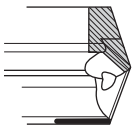
PCD Drill-Point Design Overview

CT
- PCD corner tipped.
- Carbide-based body design.
- Diameter >4,2mm.



Use for general application at moderate cutting speeds up to 12 x D drilling depth.

CTE
- PCD corner tipped, E point.
- Carbide-based body design.
- Diameter >4,2mm.



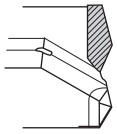
Use at precasted holes at moderate cutting speeds up to 12 x D drilling depth.

SW
- Full-face sandwich PCD.
- Carbide-based body design.
- Diameter >5mm.



Use at high cutting speeds and abrasive materials up to 5 x D drilling depth.

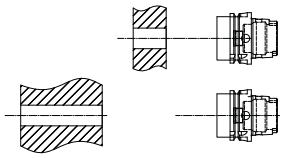
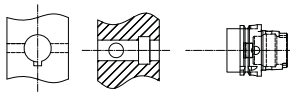
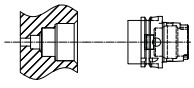
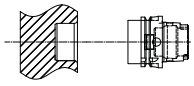
MT
- PCD corner tipped.
- Steel- and carbide-based body design.
- Diameter >12mm.



Use for drilling casted surfaces up to 3 x D drilling depth.

Cutting Edge and Margin Land Requirements

Determine correlations between spindle to edge overhang, amount of cutting, and margin lands for guidance and increased precision.

		number of cutting edges				
						
		2 flutes	2 flutes	3 flutes	4 flutes	6 flutes
application/shape of bore	overhang	2 lands	2 lands	3 lands	4 lands	6 lands
	short	●	●	●	●	●
	long	○	●	◑	●	●
	short	◑	●	◑	●	●
	long	○	●	○	○	○
	short	◑	●	◑	○	○
	long	○	●	◑	○	○
	short	●	●	●	◑	○
	long	○	●	◑	◑	○

● First Choice ◑ Suitable with Limitations ○ Not Recommended

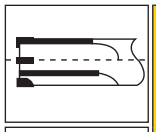
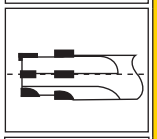
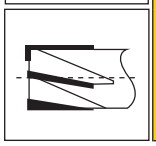
Cutting Grade, Tooling Design

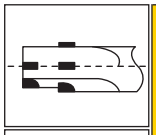
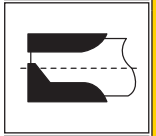
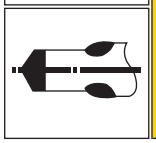
Select cutting data and tooling design based on stability and surface quality demands.

material	coolant	drilling	counterboring	reaming	milling	grade
Al <7%	MQL, emulsion	vc = 350–600 m/min	vc = 650–900 m/min	vc = 400–900 m/min	vc = 1.500–5.000 m/min	KD1415
		fz = 0,004–0,016 IPR	fz = 0,004–0,031 IPR	fz = 0,004–0,016 IPR	fz = 0,004–0,010 IPR	
Al <12%	MQL, emulsion	vc = 200–800 m/min	vc = 650–900 m/min	vc = 400–600 m/min	vc = 1.500–4.000 m/min	KD1415
		fz = 0,004–0,016 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	
Al >12%	emulsion	vc = 100–700 m/min	vc = 650–900 m/min	vc = 400–600 m/min	vc = 1.500–3000 m/min	KD1415
		fz = 0,004–0,012 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	
mg alloys	emulsion	vc = 350–1.000 m/min	vc = 650–900 m/min	vc = 400–600 m/min	vc = 1.500–6.000 m/min	KD1415
		fz = 0,004–0,016 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	
CFRP, GFRP	dry, air	vc = 350–1.800 m/min	vc = 650–900 m/min	vc = 60–200 m/min	vc = 1.500–4.000 m/min	KD1425
		fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	

Quick-Ship Delivery • Tooling Ranges

Please contact us if this special service is available in your region.

		PCD tool		flutes[1]	chip flute length[2]	cutting diameter	max steps	through coolant	step difference
	non-centre cutting		reamer, corner tipped	2–6	max 5 x D	–	2	axial and radial	max 50%
			countersinker, corner tipped	2–4	max 5 x D	Ø 6–32	3		max 40%
			milling tool, corner tipped	1–6	max 5 x D	–	2		max 50%

		PCD tool		flutes[1]	chip flute length[2]	cutting diameter	max steps	through coolant	step difference
	centre cutting		drilling tool, corner tipped	2	max 20 x D	Ø 5–32	3	axial and radial	max 50%
			countersinker, centre cut	2–4	max 10 x D				
			drilling tool, centre cut	2	max 12 x D	Ø 5–12			

NOTE: 310mm max overall
[1]Depending on the diameter [2]Based on the max diameter

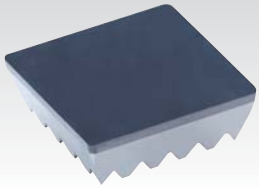
Valve Seat and **Guide Experts**





RMS™-BASED SOLID CARBIDE REAMER

- Best stiffness and accuracy.



CBN-BASED RIQ™ INSERT

- Cross-serration technology for pre-defined guide chamfer angles.
- Same type of insert for all angles.
- 12 effective cutting edges.



OPTIMISED HYDRO CHUCK

- Maximum flexural strength.
- Lowest runout error between seat and guide.



Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

Cylinder Head



RIQ™ QUATTRO CUT™ VALVE SEAT & GUIDE PARENT BORE

CHALLENGE

- Valve seat and guide parent bore machining combined.
- Tolerance range 8 µm.
- Cast iron.
- Machining centre with internal coolant.

SOLUTION

- RIQ padded reamer with integrated hydraulic chuck.
- RIQ Full face CBN KB1630™ insert.
- RMS™ reamer for guide parent bore.

CUTTING DATA

• vc 425 m/min	f 0,10 mm/rev	valve seat.
• vc 130 m/min	f 0,60 mm/rev	valve guide.

RESULT

- **Four usable cutting edges per CBN insert.**
- **CBN RIQ insert with 28,000 bore tool life.**
- **1,400 bores with regrindable RMS reamer.**

BENEFIT

- **Cost savings due to four-edged full face CBN insert.**
- **No insert back taper adjustment needed.**
- **Same RPM at both stages saving time on spindle acceleration and deceleration.**



Cylinder Head







Polished flutes
for improved
chip evacuation

PCD SEAT & GUIDE PARENT BORE PCDRSC04RLE

CHALLENGE

- Valve seat and guide parent bore machining combined.
- Tolerance range H7.
- Aluminium.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool (valve seat) with shrink in PCD tip, carbide based reamer (valve guide) with less than 4 µm total runout.

CUTTING DATA

• vc 344 m/min	f 0,60 mm/rev	valve seat.
• vc 985 m/min	f 0,60 mm/rev	valve guide.

RESULT

- **Tool life of 456,000 bores.**

BENEFIT

- **Productivity increases as same RPM applied to both seat and guide stages.**
- **Lowest possible runout resulting in higher tool life.**

Cylinder Head





RIQ serration defines valve seat angle

RIQ™ QUATTRO CUT™ VALVE SEAT & GUIDE MACHINING

CHALLENGE

- Valve guide machining combined with primary and secondary seat angles.
- Sinter metal.
- Concentricity of seat to guide less than 50 µm.
- Machining centre with internal coolant.

SOLUTION

- RIQ valve seat tooling with integrated hydraulic chuck.
- RIQ K68™ carbide inserts and solid carbide RMS™ multi-flute reamer.
- Alternative solution with KST coupling for higher stiffness.
- RIQ CBN inserts for valve seat machining available in KBHK10 and KBHK15.

CUTTING DATA

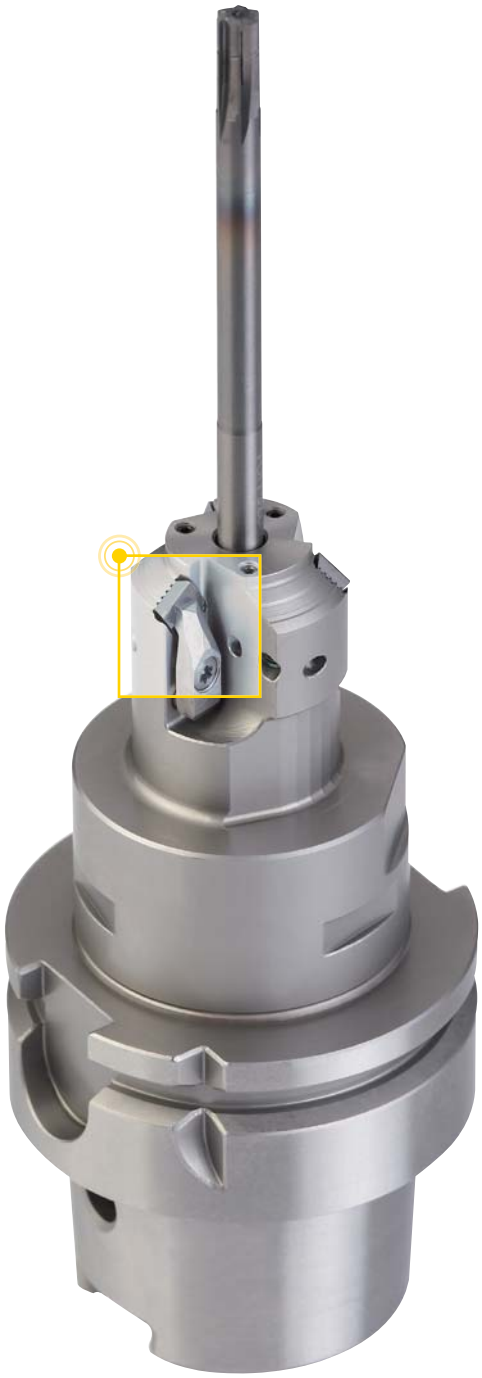
• vc 80 m/min	f 0,10 mm/rev	valve seat.
• vc 80 m/min	f 0,32 mm/rev	valve guide.

RESULT

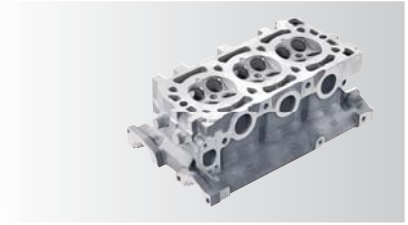
- **Tool life of 12,000 valve seats per insert.**

BENEFIT

- **Twelve usable cutting edges per carbide insert.**
- **Due to high precision RIQ pocket seat there is less setup effort as no angular adjustment of the insert is needed.**
- **Able to adapt RIR™ padded reamer machining the valve guide.**



Cylinder Head







Polished flutes for improved chip evacuation





Chipformer in carbide body

PCD STEP REAMING

CHALLENGE

- Valve lifter bore Ø 12mm.
- Tolerance range 18 µm G7.
- Aluminium AlSi7Mg.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, carbide-based reamer and counter sinker with internal coolant.
- Four effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 400 m/min (1.312 SFM).
- f 0,10 mm/rev (.004 IPR).

RESULT

- **Tool life of 125,000 holes.**
- **Surface finish better than Rz 1.5 µm.**

BENEFIT

- **Secure process and very good concentricity.**

PCD STEP REAMING

CHALLENGE

- Injector bore Ø 7,75–19,5mm.
- Tolerance range 5 µm.
- Aluminium G-AlSi7Mg.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, carbide based tool with PCD guide pads at Ø 19,5mm and internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 220 m/min (722 SFM).
- f 0,35 mm/rev (.014 IPR).

RESULT

- **Tool life of 400,000 bores.**
- **Surface finish better than Rz 3 µm.**

BENEFIT

- **Secure process due to chipformer in carbide body improving chip formation.**

Cylinder Head





Self-aligning
padded reamer

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Oil seal bore finishing Ø 56,4mm.
- Tolerance range 30 µm H7.
- Aluminium.
- Cambore to oil seal bore self alignment.
- Transfer line with internal coolant.

SOLUTION

- RIQ padded reamer with two PCD KD1415™ full-face inserts floating on finish machined cam bore.
- Self-aligning reamer body to ensure cam bore to oil seal bore concentricity.

CUTTING DATA

- vc 326 m/min (1.070 SFM).
- f 0,32 mm/rev (.004 IPR).

RESULT

- **Tool life of 80,000 cylinder heads.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Cost savings due to four-edged full face PCD RIQ insert.**



Cylinder Head







Semi-finish and finish stage combined

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Cam bore finishing Ø 25mm.
- Tolerance range 21 µm H7.
- Aluminium.
- Deflection less than 20 µm over total length.
- Machining centre with internal coolant.

SOLUTION

- RIQ padded reamer with two PCD KD1415™ full-face inserts for semi-finishing and two PCD KD1415 full-face inserts for finishing.

CUTTING DATA

- vc 334 m/min (1.096 SFM).
- f 0,16 mm/rev (.006 IPR).

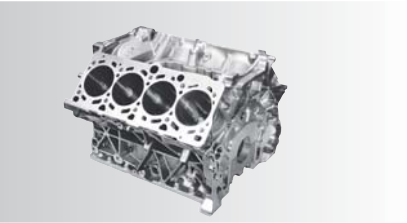
RESULT

- **Tool life of 160,000 cylinder heads.**
- **Surface finish Ra 0.3 µm.**

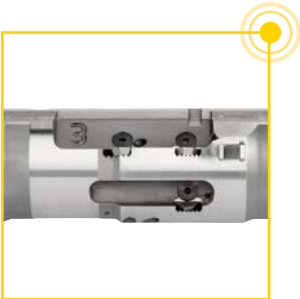
BENEFIT

- **No insert back taper adjustment is needed.**
- **Cost savings due to four-edged full face PCD RIQ insert.**
- **Setup time reduction from 8 hours with competitive tooling to less than 1/2 hour with RIQ.**

Cylinder Block







ASYMMETRICAL LINE BORING BAR

CHALLENGE

- Oil seal bore finishing Ø 56,4mm.
- Tolerance range 30 µm H7.
- Aluminium.
- Cambore to oil seal bore self alignment.
- Transfer line with internal coolant.

SOLUTION

- Patented asymmetrical LBB, which supports the before finished last journal of the crank bore.
- RI8 inserts with 8 cutting edges per inserts in PCD or carbide.
- Hybrid body made of heavy-metal and steel.

CUTTING DATA

- vc 326 m/min (1.070 SFM).
- f 0,32 mm/rev (.004 IPR).

RESULT

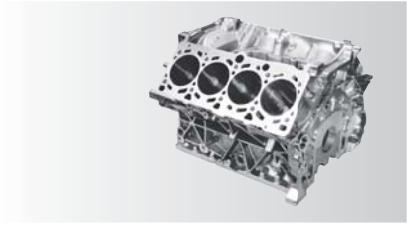
- **Roundness measured: 0.005mm.**
- **Concentricity measured: 0.005mm.**

BENEFIT

- **All advantages of a line boring bar, but applicable on MC.**
- **No disadvantage of typical line boring bars.**
- **Setup possible outside the machine on standard optical presetter.**



Cylinder Block







CLB screw for automatic wear compensation

MOTION TOOLING

CHALLENGE

- Cylinder bore Ø 75mm.
- Cast iron GG25.
- Semi-finish and finish operation combined in one tool with coolant pressure activated finish stage.
- Machining centre with internal coolant.

SOLUTION

- Motion tool with feed-out cartridges.
- Two-channel coolant system with coolant supply for inserts and feed-out cartridges.
- Solid CBN inserts with eight cutting edges; KB1340™.

CUTTING DATA

• vc 600 m/min	f 0,05 mm/rev	semi-finish.
• vc 600 m/min	f 0,11 mm/rev	finish.

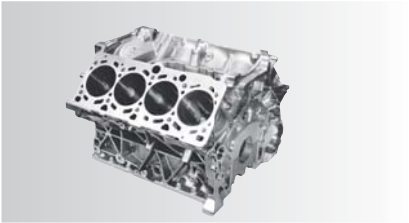
RESULT

- **Tool life of 2,000 bores per tooling setup.**
- **Cylindricity better than 8 µm.**

BENEFIT

- **Higher productivity as roughing at forward and finishing at backward movement — with coolant feed-out.**
- **Finish diameter adjustable with CLB process.**
- **Improved cylindricity in more than two separate operations.**

Cylinder Block





Bayonet quick-change system

ROMICRON™ FINE BORING

CHALLENGE

- Cylinder bore Ø 78,933mm.
- Cast iron GG25.
- Reduce setup and adjustment effort with roughing and finishing at various cylinder blocks.
- Engineered solutions vertical mill with internal coolant.

SOLUTION

- Romicron engineered solutions tool with quick-change interface and drawbar actuated finish cartridge.
- SNGN090308T00520 KY1615 roughing insert.
- CPMT09T308LF KT315™ finishing insert.

CUTTING DATA

• vc 580 m/min	f 0,26 mm/rev	roughing.
• vc 580 m/min	f 0,19 mm/rev	finishing.

RESULT

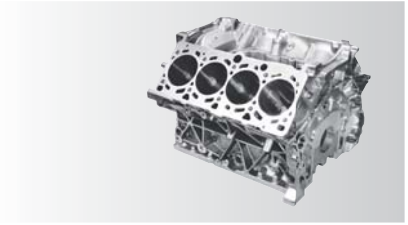
- **Tool life of 100 components per setup.**
- **Cylindricity 13 µm.**
- **Surface finish Ra 1.5 µm.**

BENEFIT

- **Bore tolerance easily and consistently achieved due to 1 µm per click in radius adjustment.**
- **Weight reduction from 11 kg to 1.8 kg.**
- **Setup time reduction from 1.5 hours to 15 minutes.**
- **Secure process resulting in higher cpk value.**



Cylinder Block







Semi-finish and finish stage combined

FINE BORING

CHALLENGE

- Crank bore finishing Ø 37mm.
- Tolerance range 5 µm.
- Cast iron.
- Maintain tolerance for minimum of 50 bores.
- Machining centre with internal coolant.

SOLUTION

- Line boring bar with tool bits adjusted by differential screw for more sensitivity.
- Dynamically balanced by design with axial holes ensuring highest stiffness of tool.

CUTTING DATA

• vc 160 m/min	f 0,12 mm/rev	semi-finish.
• vc 160 m/min	f 0,08 mm/rev	finish.

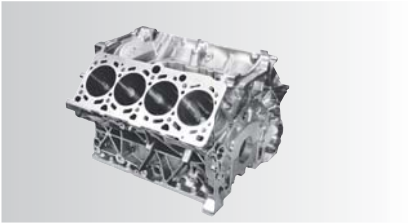
RESULT

- **Customer proprietary information.**

BENEFIT

- **Use of standard C-style inserts in LF reduce tooling costs in KCK15.**
- **Reduction of cycle time.**
- **Easy and fine adjustments ensure a stable process.**

Cylinder Block





RIQ chamfering, plunging, and reaming insert

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Balancing shaft bore Ø 31–39mm.
- Cast iron.
- Reaming of three diameters, machining of three chamfers, and one facing operation in one tool.
- Minimum quantity lubrication MQL.

SOLUTION

- RIQ padded reamer with one effective cutting edge combining chamfering, countersinking, and reaming stage in one tool, using two reaming RIQ and one special RIQ insert.

CUTTING DATA

- vc 100 m/min (328 SFM).
- f 0,14 mm/rev (.006 IPR).

RESULT

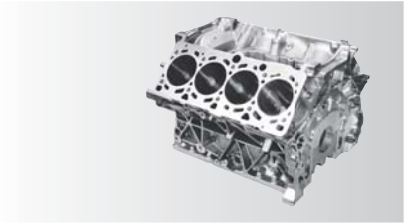
- **Tool life of 8,000 bores per insert.**
- **Surface finish Rz 10 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Highest angular precision without any adjustment with RIQ at chamfering stage.**



Cylinder Block





RHM™ MODULAR REAMING

CHALLENGE

- Position bore Ø 20mm.
- Tolerance range 21 µm N7.
- Cast iron GG26Cr.
- Replace padded double-edged reamer.
- Machining centre with internal coolant.

SOLUTION

- Special RHM head with six cutting edges.
- Engineered solution KC6105 TiN coated carbide grade.

CUTTING DATA

- vc 63 m/min (207 SFM).
- f 0,84 mm/rev (.033 IPR).

RESULT

- **Tool life of 336m.**

BENEFIT

- **8x higher productivity due to higher feed rate.**
- **Tool life increased by 240% when compared to previous solution.**

Conrod





ROMICRON™ FINE BORING

CHALLENGE

- Pin bore Ø 58,033mm.
- Brass.
- Combine finishing of crank and pin bore into one tool to increase productivity.
- Machining centre with internal coolant.

SOLUTION

- Romicron engineered-solution tool with two Romicron mechanisms in one tool body.
- KC5010™.

CUTTING DATA

- vc 450 m/min (1.476 SFM).
- f 0,10 mm/rev (.004 IPR).

RESULT

- **Tool life of 350 pin bores per insert.**
- **Surface finish better than Ra 1.0 µm.**
- **Cylindricity 5 µm.**

BENEFIT

- **Combination tool increases productivity.**
- **Bore tolerance range of 26 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**

ROMICRON FINE BORING

CHALLENGE

- Crank bore Ø 93,777mm.
- Steel C70.
- Combine finishing of crank and pin bore into one tool to increase productivity.
- Machining centre with internal coolant.

SOLUTION

- Romicron engineered solution tool with two Romicron mechanisms in one tool body.
- KT315™.

CUTTING DATA

- vc 400 m/min (1.312 SFM).
- f 0,10 mm/rev (.004 IPR).

RESULT

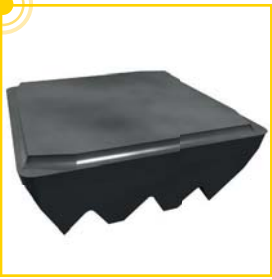
- **Tool life of 260 crank bores per insert.**
- **Surface finish better than Ra 1.0 µm.**
- **Cylindricity 5 µm.**

BENEFIT

- **Combination tool increases productivity.**
- **Bore tolerance range of 26 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**

Conrod





RIQ cermet insert with chipformer geometry

RIQ™ QUATTRO CUT™ PADDED REAMING



CHALLENGE

- Pin bore Ø 19mm.
- Tolerance range 33 µm H8.
- Steel C70.
- Entry/exit inclined and chip control improvement.
- Transfer line with MQL internal coolant.

SOLUTION

- RIQ padded reamer with two axial staggered RIQ inserts in microfinishing setup.
- Coated cermet RIQ inserts with four edges and special chip former.

CUTTING DATA

- vc 200 m/min (328 SFM).
- f 0,20 mm/rev (.006 IPR).

RESULT

- **Tool life of more than 5,000 components per insert.**
- **Surface finish Rz 12–14 µm.**
- **Cylindricity 5 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **High productivity increase due to higher feed rate when compared to previous fine boring tools.**
- **Very short chips improve chip evacuation.**
- **Secure process as surface requirement of Rz 8 µm to Rz 16 µm are achieved.**

Conrod



ROMICRON™ FINE BORING

CHALLENGE

- Pin bore Ø 16,77mm.
- Crank bore Ø 20,77mm.
- Steel C70.
- Combines roughing, semi-finishing, and finishing operation into one tool.

SOLUTION

- Romicron standard head HSK63ASVUBB2116M with engineered-solution boring bar.
- CPMT060204LF KC5010™.

CUTTING DATA

• vc 120 m/min	f 0,10 mm/rev	roughing.
• vc 120 m/min	f 0,05 mm/rev	finishing.

RESULT

- **Tool life of 2,500 components per insert edge.**
- **Surface finish Ra 0.5 µm.**
- **Cylindricity 3 µm.**

BENEFIT

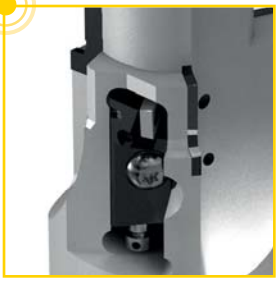
- **Productivity increase due to combination tool.**
- **Bore tolerance range of 20 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**



Steering Column







Adjustable cartridge
with PCD insert

PCD COUNTERSINKING

CHALLENGE

- Bore Ø 26,2; 37,6; and 44mm.
- Tolerance range 21 µm N7.
- Aluminium G-AlSi9Cu3.
- Varying depth of cut ca. 1,5mm.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with internal coolant.
- Three effective cutting teeth; KD1415™.
- Standard cartridge SCFCR08CA06 achieves required surface finish range.

CUTTING DATA

- vc 1,640 SFM (500 m/min).
- f .012 IPR (0,30 mm/rev).

RESULT

- **Surface finish Ra 1.6–2.3 µm.**

BENEFIT

- **Secure process.**

Steering Column



PCD COUNTERSINKING

CHALLENGE

- Bore Ø 17,07; 39,1; and 50,9mm.
- Tolerance range 21 µm N7.
- Aluminium G-AlSi10Mg.
- Varying depth of cut ca. 2,5mm.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 600 m/min (1,969 SFM).
- f 0,30 mm/rev (.012 IPR).

RESULT

- **Tool life of 2,000 metres.**

BENEFIT

- **Productivity increased due to higher cutting data.**



Gear Housing





PCD STEP REAMING

CHALLENGE

- Bearing bore Ø 13,5 and 18mm.
- Tolerance range 18 µm H7.
- Aluminium G-AlSi10Mg.
- Varying depth of cut ca. 0,5mm.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, carbide-based tool with SIF™ steerable interface with internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 230 m/min (755 SFM).
- f 0,25 mm/rev (.010 IPR).

RESULT

- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process.**

Gear Housing





Adjustable PCD pocket seat

PCD COUNTERSINKING

CHALLENGE

- Bearing bore Ø 40, 62, 85mm.
- Tolerance range 25 µm S7.
- Aluminium AlSi9Cu3.
- Machine three different diameters with one tool.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats, SIF™ steerable interface, and internal coolant.
- Four effective cutting and chamfering teeth; KD1415™.

CUTTING DATA

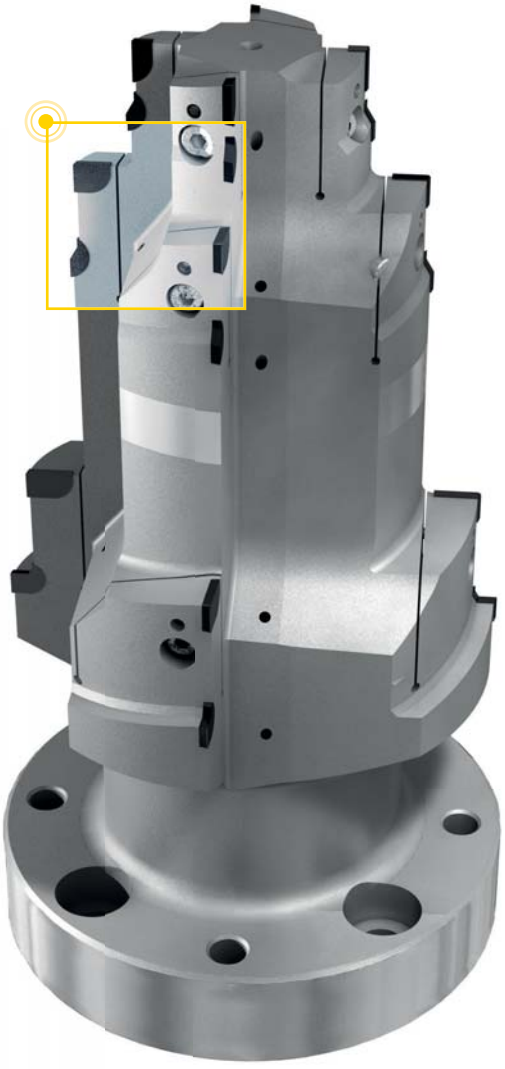
- vc 630–1,340 m/min n = 5,010 RPM.
- f 0,32 mm/rev (.013 IPR).

RESULT

- **Tool life of 500 workpieces.**

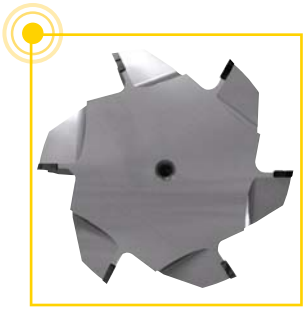
BENEFIT

- **Secure process with only 1.2 seconds cutting time per operation.**
- **Higher productivity due to combining three operations into one tool.**
- **Very stable process without chip control issues.**



Gear Housing





Highly uneven spacing

PCD STEP REAMING

CHALLENGE

- Bearing bore Ø 130mm.
- Tolerance range 25 µm S6.
- Aluminium AlSi8Cu3.
- Varying depth of cut ca. 0,5–5mm.
- Machining centre with internal coolant.



SOLUTION

- PCD-tipped, steel-based tool with HSK interface and internal coolant.
- Six effective cutting and chamfering teeth in positive cutting position; KD1415™.

CUTTING DATA

- vc 350 m/min (1,148 SFM).
- f 0,60 mm/rev (.024 IPR).

RESULT

- **Tool life increase versus previous solution.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process.**

Gear Housing



PCD REAMING

CHALLENGE

- Bearing bore Ø 35mm.
- Tolerance range 21 µm H7.
- Aluminium G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 235 m/min (771 SFM).
- f 0,30 mm/rev (.012 IPR).

RESULT

- **Tool life of 100,000 holes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process despite high L/D ratio.**
- **Very good surface quality.**



Gear Housing





PCD REAMING

CHALLENGE

- Index bore Ø 11,5mm.
- Tolerance range 18 µm H7.
- Aluminium G-AlSi10Mg.
- Varying depth of cut ca. 3mm.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, carbide based tool with shrink in HSK63A adaptor with internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 1,005 m/min (3,297 SFM).
- f 0,16 mm/rev (.024 IPR).

RESULT

- **Tool life of 200,000 holes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**
- **Very short overhang length resulting in very good stability.**

Gear Housing





PCD REAMING

CHALLENGE

- Bearing bore Ø 80mm.
- Tolerance range 30 µm H7.
- Aluminium G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Four effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 400 m/min (1,312 SFM).
- f 0,32 mm/rev (.013 IPR).

RESULT

- **Tool life of more than 30,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**

Gear Housing





PCD REAMING

CHALLENGE

- Bearing bore Ø 28 and 90mm.
- Tolerance range 21 and 35 µm H7.
- Aluminium G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with two individual adjustable SIF™ steerable interfaces and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 1,312 SFM (400 m/min).
- f .013 IPR (0,32 mm/rev).

RESULT

- **Tool life of more than 95,000 holes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**

Gear Housing



PCD STEP REAMING

CHALLENGE

- Bearing bore Ø 80 and 120mm.
- Tolerance range 30 and 35 µm H7.
- Aluminium G-AlSi7Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.



CUTTING DATA

- vc 800 m/min (2,625 SFM).
- f 0,32 mm/rev (.013 IPR).

RESULT

- **Tool life of more than 400 minutes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**
- **Tool life increase versus previous solution.**

Gear Housing





PCD COUNTERSINKING

CHALLENGE

- Bearing bore Ø 81,25 and 90,3mm.
- Tolerance range 30 and 35 µm H7.
- Aluminium G-AlSi7Mg.
- Pre drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 400 m/min (1,312 SFM).
- f 0,30 mm/rev (.012 IPR).

RESULT

- **Tool life of 10,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**

Gear Housing



PCD STEP REAMING

CHALLENGE

- Bearing bore 17,984 and 66,037mm.
- Tolerance range 8 and 20 µm.
- Aluminium GD-AlSi7.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting teeth.
- KD1415™.

CUTTING DATA

• vc 315 m/min	f 0,24 mm/rev	Ø 17,984mm.
• vc 1.156 m/min	f 0,15 mm/rev	Ø 66,037mm.

RESULT

- **Tool life of 35,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**
- **Achieves high concentricity and straightness.**



Gear Housing







PCD PROFILE MILLING

CHALLENGE

- Retraining grooves Ø 60,4 and 90,7mm.
- Tolerance range 60 µm.
- Aluminium G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 1,500 m/min (4,921 SFM).
- f 0,06 mm/rev (.002 IPR).

RESULT

- **Tool life of 50,000 parts.**
- **Surface finish better than Ra 0.4 µm.**

BENEFIT

- **Secure process.**
- **Combining two operations in one tool increases productivity.**
- **High accuracy in the distance between the two machined grooves.**

PCD PROFILE MILLING

CHALLENGE

- Retraining grooves Ø 60,4 and 90,7mm.
- Tolerance range 60 µm.
- Aluminium G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415.

CUTTING DATA

- vc 1,500 m/min (4,921 SFM).
- f 0,06 mm/rev (.002 IPR).

RESULT

- **Tool life of 50,000 parts.**
- **Surface finish better than Ra 0.4 µm.**

BENEFIT

- **Secure process.**
- **Combining two operations in one tool increases productivity.**
- **High accuracy in the distance between the two machined grooves.**

Differential Housing



REAMING AND BACK BORING

CHALLENGE

- Bearing seat finishing of gearbox.
- Material: G-AlSi9Cu3.
- Machine: M/C.
- IC 40 bar, 20 l/min.
- Ae = 0,25mm.

SOLUTION

- PCD reaming/back boring combination tool.
- 2 step reapers with 6 PCD teeth.
- Back boring with Romicron™ and PCD insert.

CUTTING DATA

- Speed: 350 m/min.
- Feed per tooth: 0,12mm.
- 1500 rev/min and 1080 mm/min.

RESULT

- **Roughness of Rz < 16 µm.**
- **One tool-chance saved.**

BENEFIT

- **Finish of 3 diameters with one tool.**
- **Perfect balanced tool, considering extreme asymmetrical shape.**
- **Easy adjustment with Romicron.**



Differential Housing





DIFFERENTIAL HOUSING–FINISH BORING

CHALLENGE

- Bearing seat finishing of gearbox.
- Material: GGG40.
- Machine: M/C.
- Diameter: 60H6.
- Surface Finish: Ra 1.6.

SOLUTION

- Fine boring tool Romicron™ AVS.
- Cartridge for SPHX inserts.
- SPHX-inserts KC7215 with 2 cutting edges.
- Special back taper grind for similar surface finishes to wiper inserts.

CUTTING DATA

- vc = 180 m/min
- fz = 0.05mm

RESULT

- **All geometric and dimensional tolerances including surface finish achieved.**
- **Very robust process.**
- **Tool life with standard SPHX insert 4000 pieces (within this tool life, 3 diameter adjustments with the “Romicron-Click-Mechanism” were required).**

BENEFIT

- **Excellent surface finish similar to wiper inserts.**
- **Huge portfolio of SPHX-inserts for all kind of workpiece materials.**
- **Romicron-Click-Mechanism.**
- **No need for wrench or gage for the diameter adjustment.**

Differential Housing





Adjustable pocket seat

DIFFERENTIAL HOUSING–FINISH BORING

CHALLENGE

- Bore Ø 40 and 55mm.
- Tolerance range 30 µm R7.
- Aluminium GD-AlSi10Mg.
- Fine boring two diameters with one tool.
- Machining centre with internal coolant.

SOLUTION

- PCD steel-based fine boring tool with four effective cutting edges, adjustable pocket seats at Ø 55mm, SIF™ steerable interface, and internal coolant.
- CCMT060202 KM™ — one uncoated carbide.

CUTTING DATA

- vc 340 and 520 m/min — n = 3,000 RPM.
- f 0,60 mm/rev — (.024 IPR).

RESULT

- **Tool life of more than 15,000 components per insert.**
- **Surface finish Rz 10–12 µm.**
- **Cylindricity better than 20 µm.**

BENEFIT

- **All requirements regarding perpendicularity, roundness, and surface quality between Rz 8 µm and Rz 16 µm continuously achieved.**
- **Higher productivity due to combining three operations in one tool.**



Water Pump Housing





PCD COUNTERSINKING

CHALLENGE

- Bore positions of Ø 21 and 24mm.
- Tolerance range 13 and 33 µm.
- Aluminium AlSi9Cu3.
- Pre drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats; SIF™ steerable interface and internal coolant.
- Four effective cutting teeth; KD1415™.

CUTTING DATA

- vc 1,969 SFM (600 m/min).
- f .005 IPR (0,12 mm/rev).

RESULT

- **Tool life of 80,000 components.**
- **Surface finish Rz 0.8 µm with Ø 21mm and Rz 12 µm with Ø 24mm.**

BENEFIT

- **All requirements regarding perpendicularity, roundness, and surface quality between Rz 8 µm and Rz 15 µm at Ø 24mm are continuously achieved.**

Water Pump Housing



PCD MULTI-OPERATION TOOL

CHALLENGE

- Position bore Ø 7,9mm.
- Tolerance range 22 µm H8.
- Aluminium AlSi9Cu3.
- Combine drilling, back chamfering, and facing.
- Machining centre BT40 with internal coolant.

SOLUTION

- Solid carbide, PCD-tipped, steel-based tool with back chamfering capability and internal coolant.
- Two effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 350 m/min (1,148 SFM).
- f 0,20 mm/rev (.008 IPR).

RESULT

- **Tool life of 50,000 components.**
- **Surface finish Rz 0.8 µm.**

BENEFIT

- **Higher productivity due to combining three operations in one tool.**



Water Pump Housing





PCD STEP REAMING

CHALLENGE

- Bearing bores Ø 10,14–18,45mm.
- Tolerance range 3–10 µm.
- Aluminium GD-AlSi9Cu3.
- Pre-casted hole with 0,3mm depth of cut.
- Machining centre HSK32A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats; SIF™ steerable interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 89–162 m/min n = 2800 RPM.
- f 0,4 mm/rev (.015 IPR).

RESULT

- **Tool life of 40,000 components.**
- **Surface finish Rz 0.8 µm.**

BENEFIT

- **The quality criterion with an exact alignment of rightness, concentricity, and a high value of surface quality was reached.**

Water Pump Housing





PCD END MILLING

CHALLENGE

- Face milling of connection face Ø 32mm.
- Aluminium AlSi10Mg.
- Casted face with 2,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based end mill with HSK63A interface and internal coolant.
- Five effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 1,005 m/min (3,294 SFM).
- f 0,06 mm/rev (.002 IPR).

RESULT

- **Tool life of 3,000 min.**
- **Surface finish Ra 0.3 µm.**

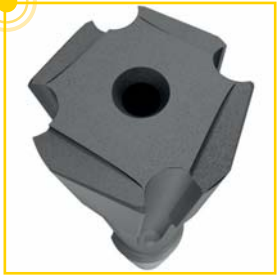
BENEFIT

- **Very low bur formation.**

Planetary Gear Carrier







Chip control geometry

RMS™ MULTI-FLUTE REAMING

CHALLENGE

- Bearing bores Ø 8,8mm.
- Tolerance range 9 µm M6.
- Steel 42CrMo4 and 31CrMoV9.
- Increase tool life with long chipping material.
- Machining centre with internal coolant.

SOLUTION

- RMS engineered-solution reamer with four effective cutting edges, internal coolant hole, and coolant channels at shank.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 70 m/min (230 SFM).
- f 0,30 mm/rev (.012 IPR).

RESULT

- **Tool life of 300 components.**
- **Surface finish Rz 1.0–2.0 µm.**

BENEFIT

- **All requirements regarding perpendicularity, roundness, and surface quality below Rz 4 µm are continuously achieved.**

Planetary Gear Carrier



ROMICRON™ FINE BORING

CHALLENGE

- Bearing bores Ø 35 and 36,5mm.
- Tolerance range 20 µm.
- Steel 20MnCr5.
- Replace padded step reamer.
- Machining centre with internal coolant.

SOLUTION

- Romicron™ standard AVS heads.
- CCMT06020411 KT315™ cermet insert.

CUTTING DATA

- vc 290 m/min (230 SFM).
- f 0,10 mm/rev (.012 IPR).

RESULT

- **Surface finish better than Ra 1.0 µm.**
- **Cylindricity better than 5 µm.**

BENEFIT

- **More than 25% reduction in machining time.**
- **Removing setup of padded reamer outside of the machine results in increased uptime.**
- **Bore tolerance range of 20 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**



Padded reaming pin machining







RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Bearing pin machining Ø 45mm.
- Tolerance range 16 µm k6.
- Ductile cast iron GGG40.
- Surface quality of Rmax 10 µm to achieve.
- Special dimensional accuracy requirement.

SOLUTION

- RIQ padded reamer with SIF™ steerable tooling interface and special gashing for external coolant supply.
- Balanced-by-design and fine balanced.

CUTTING DATA

- vc 105 m/min (344 SFM).
- f 0,06 mm/rev (.002 IPR).

RESULT

- **Surface finish better than Rz 2.5 µm.**
- **Roundness 3 µm.**
- **Cylindricity 6 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Faster setup and less scrap.**

Brake Caliper



BRAKE CALIPER–ROUGHING/FINISHING MAIN BORE

CHALLENGE

- Component: Brake caliber
- Material: GGG55
- Operation: Cylinder hole
- Coolant: Yes
- Machine: Machine centre
- Objective: Surface finish and roundness

SOLUTION

- HSK100A special tool with radial adjustments and guide pad.
- Fix-Perfect™ insert.
- Internal coolant.
- Decreasing vibration by means of heavy metal shank.

CUTTING DATA

- vc = 107 m/min
- vf = 300 mm/min
- FPT = 0,13mm

RESULT

- **Tool life: 2.238 parts.**
- **Roundness 0,01mm.**
- **H8 — Tolerance kept, and even smaller would be feasible if requested.**

BENEFIT

- **From cast to finish hole in one go, i.e., with one single "One-Shot-Tool".**
- **4 effective teeth.**
- **4 edges per insert.**
- **Very fine, consistent adjustment mechanism.**



Brake Caliper





RMS™ MULTIFLUTE REAMING

CHALLENGE

- Pin hole Ø 12mm.
- Tolerance range 30 µm.
- Cast iron.
- Machining centre HSK63A with internal coolant.

SOLUTION

- UpSharp engineered-solution solid carbide reamer with six cutting edges.
- TICN coated carbide.

CUTTING DATA

- vc 75 m/min (246 SFM).
- f 0,8 mm/rev (.031 IPR).

RESULT

- **Tool life of 5,000 holes.**
- **Surface finish Ra 1.0 µm.**

BENEFIT

- **Productivity increase.**
- **Longer tool life than competition.**
- **Ease of use due to shrink technology.**

Brake Caliper



RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Main bore Ø 54,02mm.
- Tolerance range 40 µm.
- Cast iron GGG.
- Reduce setup time and cost per part.

SOLUTION

- RIQ padded reamer with customer specific shank.
- Coated carbide RIQ insert with four edges.
- KC6305™.

CUTTING DATA

- vc 80 m/min (262 SFM).
- f 0,40 mm/rev (.016 IPR).

RESULT

- **Tool life of 16,000 bores per insert.**
- **Surface finish better than Ra 1.6 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **High cost savings due to more than 100% increase in tool life.**



Brake Caliper





PCD REAMING

CHALLENGE

- Main bore Ø 42mm.
- Tolerance range 8 µm.
- Aluminium.
- Varying depth of cut between 1–2mm.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 500 m/min (1,640 SFM).
- f 1 mm/rev (.039 IPR).

RESULT

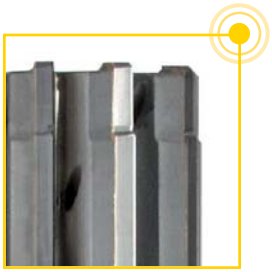
- **Tool life of 400,000–600,000 bores.**
- **Surface finish better than Ra 1.6 µm.**

BENEFIT

- **Secure process and high tool life.**
- **Productivity increase compared to previous solution.**

Brake Caliper





Producing two different diameters

RMB™ MULTI-FLUTE REAMING

CHALLENGE

- Location holes Ø 39 and 40mm.
- Tolerance range 39 µm H8.
- Cast iron GGG60.
- Produces both diameters with one tool.
- Machining centre with internal coolant.



SOLUTION

- RMB engineered-solution carbide tipped reamer with 10 teeth and internal coolant supply.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 70 m/min (230 SFM).
- f 3,30 mm/rev (.130 IPR).

RESULT

- **Tool life of 5,000 holes.**
- **Surface finish Rz 20 µm better than required Rz 25 µm.**

BENEFIT

- **Very stable and highly productive process as multiple operations are combined at very high cutting data.**

Brake Master Cylinder





RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Piston bore Ø 25,431mm.
- Tolerance range 10 µm.
- Ductile cast iron.
- Replace honing process with reaming.
- Machining centre with internal coolant.

SOLUTION

- RIQ padded reamer in angular micro-finishing setup with semi- and fine-finishing insert.
- RIQ full face PCD KD1415™ as finishing insert.

CUTTING DATA

- vc 120 m/min (394 SFM).
- f 0,20 mm/rev (.008 IPR).

RESULT

- **Tool life of 1,600 bores per insert.**
- **Surface finish better than Ra 0.4 µm.**
- **Cylindricity 6 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Higher productivity due to combining two operations in one tool.**

Steering Knuckle



ROMICRON™ FINE BORING

CHALLENGE

- Main bearing bore Ø 82mm.
- Replace setup of padded reamer and cover various diameters with one tool.
- Machining centre with internal coolant.

SOLUTION

- Romicron™ engineered solution. HSK80ASVSB156M SVS4B head.
- CPMT 060204 FW KCK20™.

CUTTING DATA

- vc 400 m/min (1,312 SFM).
- f 0,20 mm/rev (.008 IPR).

RESULT

- **Tool life of 1,000 components.**
- **Surface finish 1.2 µm.**
- **Cylindricity better than 6 µm.**

BENEFIT

- **Reduce setup time and cost reduction when standard inserts are used.**
- **Bore tolerance range of 30 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**



Suspension Sub-frame





REAMING PIVOT BEARING

CHALLENGE

- Location hole Ø 18,5–23,0mm.
- Tolerance range 0,1°.
- Steel.
- Improvement in roundness and angularity.
- Transfer line with internal coolant.

SOLUTION

- RIR taper reamer with HSK interface.
- R904S00771 KC6005™ with two edges.

CUTTING DATA

- vc 400 m/min (1,312 SFM).
- f 0,20 mm/rev (.008 IPR).

RESULT

- **Tool life of 800 bores per insert.**
- **Surface finish Ra 1.6 µm.**

BENEFIT

- **Predictable performance and cost savings because inserts can be reconditioned.**
- **Easy to set with three clock padded reamer setting fixtures.**
- **Roundness improvement over competitive solid carbide multi-flute reamer.**

Mounting Lever



PCD COUNTERSINKING

CHALLENGE

- Reaming pre-casted hole Ø 20mm.
- Tolerance range 21 µm H7.
- Aluminium AlSi9Cu3.
- 220mm overhang due to workpiece fixture.
- Machining centre with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 125 m/min (410 SFM).
- f 0,70 mm/rev (.003 IPR).

RESULT

- **Tool life of 60,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and less scrap than previous competitive solution.**
- **No adjustment effort due to solid solution.**



Turbocharger





RMS™ MULTI-FLUTE REAMING

CHALLENGE

- Mounting holes Ø 12mm.
- Tolerance range 18 µm H7.
- Ductile cast iron.
- Machining centre with internal coolant

SOLUTION

- RMS standard reamer with six effective cutting edges and internal coolant.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 66 SFM (20 m/min).
- f .012 IPR (0,30 mm/rev).

RESULT

- **Tool life of 1,000 components.**
- **Surface finish better than Rz 10 µm.**

BENEFIT

- **Productivity and tool life increase compared to previous solution.**

Compressor



ROMICRON™ FINE BORING

CHALLENGE

- Piston bore Ø 23,5mm.
- Tolerance range 18 µm.
- Aluminium 12% Si.
- Machining centre BT40 with external coolant.

SOLUTION

- Standard SVUBB2 head with KR coupling.
- Standard steel boring bar.
- CPGW060204FST KD1400™.

CUTTING DATA

- vc 367 m/min (1,204 SFM).
- f 0,07 mm/rev (.003 IPR).

RESULT

- **Surface finish Ra 0.6 µm.**
- **Roundness better than 5 µm.**

BENEFIT

- **2x the productivity compared to the current solution.**
- **80% less adjustment time needed.**
- **Bore tolerance range of 18 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**



Compressor







Polished flutes improving chip evacuation

PCD COUNTERSINKING

CHALLENGE

- Bearing hole Ø 12–31mm.
- Tolerance range 50 µm.
- Aluminium G-AlSi12.
- Machining centre HSK40 with internal coolant.

SOLUTION

- PCD-tipped, carbide-based tool with four guiding lands, flat-bottom drilling point, and internal coolant.
- Two effective cutting and chamfering teeth; KD1415™.

CUTTING DATA

- vc 440 m/min (1,444 SFM).
- f 0,20 mm/rev (.008 IPR).

RESULT

- **Surface finish Rz 1–2 µm.**
- **Roundness better than 5 µm.**

BENEFIT

- **Productivity increases due to combining different tools in one.**
- **Tool life increase versus previous solution.**

Compressor





KST pre-loaded taper face contact interface

RHM™ MODULAR REAMING

CHALLENGE

- Piston bore Ø 23,5mm.
- Tolerance range 10 µm.
- Cast iron GGG60.
- Machining centre HSK63 with internal coolant.

SOLUTION

- RHM modular reamer with six cutting edges.
- KT325™ uncoated cermet.
- Standard lead geometry.
- SIF™ steerable tooling.

CUTTING DATA

- vc 125 m/min (410 SFM).
- f 0,75 mm/rev (.030 IPR).

RESULT

- **Surface finish better than Rz 4 µm.**

BENEFIT

- **Higher productivity than single-edged padded reamer.**



Hydraulic Valve Block





RIR™ PADDED REAMING

CHALLENGE

- Spool bore Ø 18,5mm.
- Tolerance range 10 µm.
- Cast iron.
- Up to 4mm varying depth of cut.
- Machining centre with internal coolant.

SOLUTION

- RIR padded reamer with up to 100mm long cermet guide pads.
- Engineered solution RIR insert with modified chipformer.

CUTTING DATA

- vc 70 m/min (230 SFM).
- f 0,125 mm/rev (.005 IPR).

RESULT

- **Tool life of 400 min per double-edged insert.**
- **Roundness and straightness within 10 µm.**

BENEFIT

- **Very stable process control and predictable performance.**

Hydraulic Valve Block





RMS™ MULTI-FLUTE REAMING

CHALLENGE

- Rinse slider bore Ø 9,534mm.
- Tolerance range 6 µm.
- Ductile cast iron 0.7060.
- Three interrupted cuts at a reaming depth of 100mm.
- Special dimensional accuracy requirement.

SOLUTION

- RMS solid carbide reamer engineered solution.
- Special back taper configuration and support margins lands.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 150 m/min (492 SFM).
- f 0,72 mm/rev (.028 IPR).

RESULT

- **Tool life of 500 pieces.**

BENEFIT

- **Speed and feed rates are almost 30x faster, resulting in higher productivity.**
- **Less scrap due to consistent accuracy.**

Hydraulic Valve Block





PCD COUNTERSINKING

CHALLENGE

- Thread core hole Ø 24mm.
- Tolerance range 21 µm F7.
- Aluminium AlSi9Cu3.
- Pre-drilled hole.
- Machining centre DV40 with internal coolant.

SOLUTION

- PCD-tipped, carbide-based tool with internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 360–750 m/min — n = 7,500 RPM.
- f 0,20 mm/rev — (.008 IPR).

RESULT

- **Tool life of 100,000 holes.**
- **Surface finish Ra 0.1 µm.**

BENEFIT

- **Productivity increase due to combining two operations into one.**
- **Carbide base increases tool life and accuracy.**

ABS Valve Block



PCD COUNTERSINKING

CHALLENGE

- Bearing bores Ø 20,99 and 24,275mm.
- Tolerance range 20 µm.
- Aluminium AlSi1.
- Pre-casted hole with 0,15mm depth of cut.
- Machining centre HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 300 m/min (984 SFM).
- f 0,35 mm/rev (.014 IPR).

RESULT

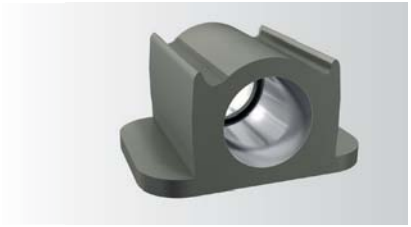
- **Surface finish Ra 0.4–0.6 µm.**

BENEFIT

- **Very stable process control and predictable performance.**
- **Very favourable chip creation.**



Bearing Seat







KST pre-loaded taper face contact interface

RHM™ MODULAR REAMING

CHALLENGE

- Reaming Ø 35mm.
- Tolerance range 20 µm.
- Carbon steel, annealed, long-chipping.
- Blind hole limiting chip evacuation.
- Machining centre with internal coolant.

SOLUTION

- RHM modular reamer with eight cutting edges.
- KT325™ uncoated cermet.
- Standard lead geometry.
- Short engineered-solution axial clamping tool body.

CUTTING DATA

- vc 120 m/min (394 SFM).
- f 1,18 mm/rev (.046 IPR).

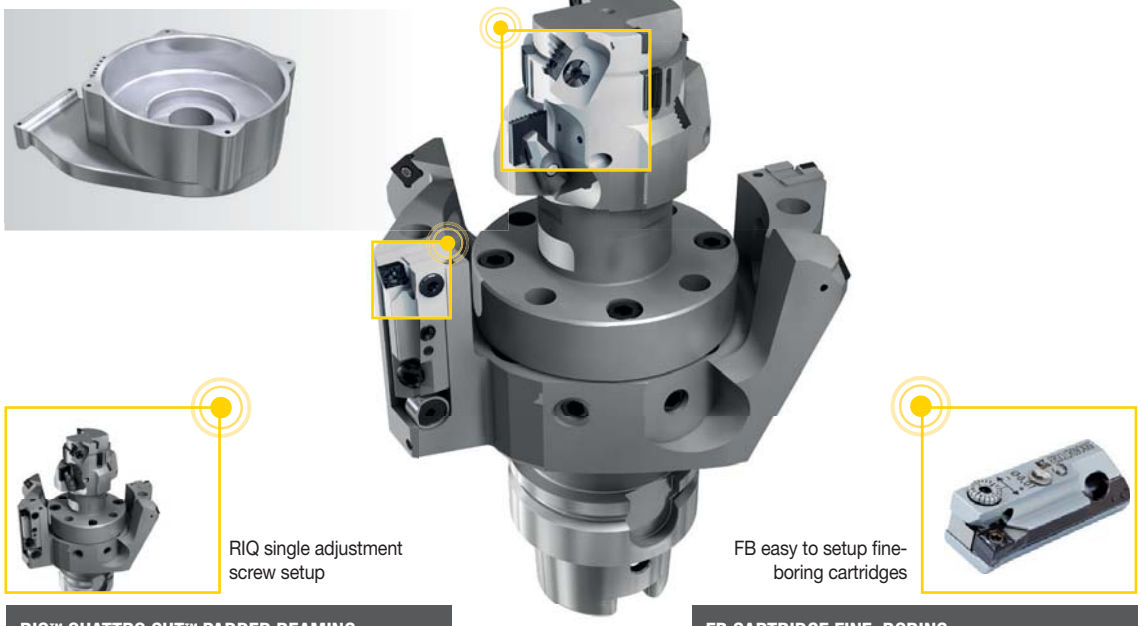
RESULT

- **Tool life of 145,000 holes.**
- **Surface finish better than Rz 6.3 µm.**

BENEFIT

- **Predictable tool life as only 2 µm diameter deviation after 10,000 holes.**

Bearing Seat



RIQ single adjustment screw setup

FB easy to setup fine-boring cartridges

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Reaming Ø 47mm.
- Tolerance range 19 µm N6.
- Aluminium AlSi9Cu3.
- Machine four different diameters, two spot faces, and four different chamfers with one tool.

SOLUTION

- RIQ padded reamer with full-face PCD KD1415™ insert having four cutting edges.
- SIF™ steerable interface between reaming and fine boring section.

CUTTING DATA

- vc 236 m/min (774 SFM).
- f 0,08 mm/rev (.003 IPR).

RESULT

- **Surface finish better than Rz 16 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Less operations increase productivity.**
- **Higher accuracy than multiple operations.**
- **Full-face PCD inserts reduce cost per hole.**

FB CARTRIDGE FINE–BORING

CHALLENGE

- Reaming Ø 144mm.
- Tolerance range 40 µm H7.
- Aluminium AlSi9Cu3.
- Machine two different diameters.

SOLUTION

- Standard FB fine-boring cartridges with almost backlash-free fine adjustment.
- CCGW060204 KD1415™.

CUTTING DATA

- vc 723 m/min (2,372 SFM).
- f 0,08 mm/rev (.003 IPR).

RESULT

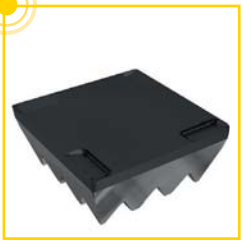
- **Surface finish better than Rz 16 µm.**

BENEFIT

- **Radial adjustment does not influence axial adjustment of inserts resulting in faster setup.**
- **Productivity increase with less operations.**
- **More accurate than previous solution.**

Pump Housing





Full-face PCD insert with chipformer geometry



RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Piston bore Ø 18,5mm.
- Tolerance range 21 µm H7.
- Aluminium.
- Heavy interrupted cut and surface finish Rz 6.3.
- Machining centre with internal coolant.

SOLUTION

- RIQ padded reamer with helical chip flute and helical solid carbide guide pad.
- Full-face KD1415™ insert having four cutting edges.
- Positive wiper insert geometry.

CUTTING DATA

- vc 230 m/min (755 SFM).
- f 0,15 mm/rev (.006 IPR).

RESULT

- **No chip evacuation issues.**
- **No bur, marks, or scratches at entrance or exit of interruptions.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Half cycle time compared to previous competitive tooling.**

Valve Housing



ROMICRON™ FINE BORING

CHALLENGE

- Various bore Ø 170–480mm.
- Tolerance range 75 µm.
- Cast iron GG25.
- Automated wear compensation at interrupted cut.
- Machining centre HSK100 with internal coolant.



SOLUTION

- Semi-standard SVU120 CLB head with engineered-solution diameter extender and automatic wear compensation with CLB.
- CPGW09T308S01015C KB1630™.

CUTTING DATA

- vc 800 m/min (2,625 SFM).
- f 0,12 mm/rev (.005 IPR).

RESULT

- **Tool life of 1,200 minutes per insert.**
- **Surface finish better than Rz 16 µm.**

BENEFIT

- **More than 30% reduction in manufacturing lead time.**
- **Third shift and weekend without operators.**
- **1 µm per click in radius adjustment executed by machine.**

Wind Energy Housing







1 µm per click in
radius adjustment

ROMICRON™ FINE BORING

CHALLENGE

- Flange Ø 1260–1400mm.
- Tolerance range 125 µm H7.
- Cast iron GGG40.
- One base bridge for multiple diameters.
- Machining centre without coolant.

SOLUTION

- Romicron standard modular MF40 element with engineered-solution aluminium bridge.
- CPGT060204/08HP KC5410™.

CUTTING DATA

- vc 200 m/min (650 SFM).
- f 0,12 mm/rev (.005 IPR).

RESULT

- **Tool life of 73 min.**

BENEFIT

- **Investment saving as only one base bridge needed.**
- **Use of standard off-the-shelf Romicron tool.**
- **Ease of use due to Romicron.**

Synchronous Joint





Balanced-by-design

ROMICRON™ FINE BORING

CHALLENGE

- Pin machining Ø 13mm.
- Tolerance range 6 µm.
- Steel 42CrMo4 (4140).
- Machining centre with internal coolant.

SOLUTION

- Romicron standard HSK63ASVUBB1095MCLB head with engineered solution pin boring bar.
- TCMT110202FP KTP10™.

CUTTING DATA

- vc 160 m/min (525 SFM).
- f 0,1 mm/rev (.004 IPR).

RESULT

- **Tool life of 300-450 components per insert.**
- **Surface finish Ra 0.3 µm.**
- **Cpk value ≥1,33.**

BENEFIT

- **Use of standard off-the-shelf Romicron tooling.**
- **Bore tolerance of 6 µm consistently achieved due to 1 µm per click in radius adjustment.**



Wind Energy

ModBORE™

For the **Big Jobs!**

The ModBore system includes tooling ranges from highly flexible roughing and fine-boring heads to large bridge tooling, with an optimum amount of tooling components. This premium boring line enables roughing to fine-boring operations using one system with a large diameter range from 9,75–2,205mm (.384–86.8"). ModBORE can be used in most workpiece materials in metalcutting applications with the latest Kennametal standard ISO turning inserts.



Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com



Tapping

Taps Introduction L2–L15

Spiral-Point/Left-Hand Spiral-Flute Taps M2–M18

Spiral-Flute Taps M20–M50

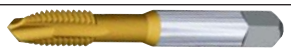
Straight-Flute Taps M52–M68

Forming Taps M70–M75

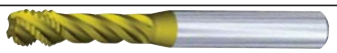
Pipe Taps M76–M79

Solid Carbide Thread Mills M80–M97

Technical Information M98–M132

Spiral-Point and Left-Hand Spiral-Flute Taps	series	grade/ coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H	
	**T320**	KC7542	6535 HA	●		○				
	**T320**	KC7542	6535 HA	●		○				
	**T321**	KC7542	6535 HA	●		○				
	**T620**	KP6525 KM6515	DIN 371, 374, 376	●	●	○	○			
	**T621**	KP6525 KM6515	DIN 371, 374, 376	●	●	○	○			
	**T620**	KP6525	DIN 376	●		●				
	**T620**	KP6525	XL	●		●				
	**T620**	KP6525	DIN 371, 376	●	○	○				
	**T621**	KP6525	DIN 371, 376	●	○	○				
	**T670**	KSN38	DIN 371, 376				●			
	**T600**	KSP21	DIN 371, 374, 376	●				○		
	**T820**	KSP32 KSP39	DIN 371, 374, 376	●	○	●	○			
	**T820**	KSP39	DIN 371, 376	○	○	○				
	**T820**	KSU31 KSU30	JIS	●	○	○	○			

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	3/8–1/2"	●		plug	D	L15°	●		M4	M98
	M6–M16	●		plug	D	L15°	●		M4	M98
	M10–M16	●		plug	D	L15°		●	M5	M98
	M3–M20	●		plug	D	L15°	●		M6	M98
	M5–M18	●		plug	D	L15°		●	M7	M98
	M24–M42	●		plug	D	L15°	●		M8	M98
	M24–M42	●		plug	D	L15°		●	M9	M98
	#6–1/2"	●		plug	D	L15°	●		M10	M98
	1/4–1/2"	●		plug	D	L15°		●	M11	M98
	M3–M16	●		plug	B	0°	●		M12	M98
	M3–M20	●		plug	B	0°	●		M13	M98
	M2–M36	●		plug	B	0°	●		M14–M15	M99
	#4–1"	●		plug	B	0°	●		M16–M17	M99
	M3–M20	●		plug	B	0°	●		M18	M99

Spiral-Flute Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H
	**T331**	KC7542	6535 HA	●		○			
	**T331**	KC7542	6535 HA	●		○			
	**T630**	KP6525, KM6515	DIN 371, 374, 376	●	●	○	○		
	**T631**	KP6525, KM6515	DIN 371, 374, 376	●	●	○	○		
	**T632**	KP6525	DIN 371, 374, 376	●		○			
	**T633**	KP6525	DIN 371, 374, 376	●		○			
	**T630**	KP6525	DIN 376	●		●			
	**T631**	KP6525	DIN 376	●		●			
	**T630**	KP6525	XL	●		●			
	**T631**	KP6525	XL	●		●			
	**T650**	KP6525	DIN 376	●		●			
	**T651**	KP6525	DIN 376	●		●			
	**T650**	KP6525	XL	●		●			
	**T651**	KP6525	XL	●		●			
	**T630**	KP6525	DIN 371, 376	●	○	○			
	**T631**	KP6525	DIN 371, 376	●	○	○			
	**T680**	KSN38	DIN 371, 376				●		
	**T604**	KSH26	DIN 371, 374, 376	●				○	
	**T830**	KSP32, KSP39	DIN 371, 374, 376	●	○	●	○		
	**T832**	KSP32, KSP39	DIN 371, 374, 376	●	○	●	○		
	**T838**	KSU31, KSP39	DIN 371, 374, 376	●	○	○	○		
	**T839**	KSU31, KSP39	DIN 371, 376	●	○	○	○		
	**T830**	KSP39	DIN 371, 376	○	○	○			
	**T838**	KSU31, KSP39	DIN 371, 374, 376	●	○	○	○		
	**T830**	KSU31, KSU30	JIS	●	○	○	○		

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
										
	1/4–1/2"		●	semi-bottoming	C	45°		●	M22	M98
	M6–M16		●	semi-bottoming	C	45°		●	M23	M98
	M3–M20		●	semi-bottoming	C	45°	●		M24	M98
	M5–M18		●	semi-bottoming	C	45°		●	M25	M98
	M5–M16		●	bottoming	E	45°	●		M26	M98
	M5–M16		●	bottoming	E	45°		●	M27	M98
	M24–M42		●	semi-bottoming	C	45°	●		M28	M98
	M24–M42		●	semi-bottoming	C	45°		●	M29	M98
	M24–M42		●	semi-bottoming	C	45°	●		M30	M98
	M24–M42		●	semi-bottoming	C	45°		●	M31	M98
	M24–M42		●	semi-bottoming	C	15°	●		M32	M98
	M24–M42		●	semi-bottoming	C	15°		●	M33	M98
	M24–M42		●	semi-bottoming	C	15°	●		M34	M98
	M24–M42		●	semi-bottoming	C	15°		●	M35	M98
	#6–1/2"		●	semi-bottoming	C	45°	●		M36	M98
	1/4–1/2"		●	semi-bottoming	C	45°		●	M37	M98
	M3–M20		●	semi-bottoming	C	45°	●		M38	M98
	M3–M20		●	semi-bottoming	C	42°	●		M39	M98
	M2–M36		●	semi-bottoming	C	45°	●		M40–M41	M99
	M3–M20		●	bottoming	E	45°	●		M42	M99
	M2–M52		●	semi-bottoming	C	45°	●		M43–M44	M99
	M3–M20		●	bottoming	E	45°	●		M45	M99
	#4–1"		●	semi-bottoming	C	45°	●		M46, M49	M99
	#6–2"		●	semi-bottoming	C	45°	●		M47–M48	M99
	M3–M20		●	semi-bottoming	C	45°	●		M50	M99

Straight-Flute Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H
	**T340**	KCK17	6535 HA	○		●			
	**T340**	KCK17	6535 HA	○		●			
	**T351**	KCK17	6535 HA	○		●			
	**T351**	KCK17	6535 HA	○		●			
	**T351**	KCK17	DIN 371, 374, 376	○		●			
	**T353**	KCK17	DIN 371, 376	○		●			
	**T471**	KCN14	6535 HA				●		
	**T471**	KCN14	DIN 371				●		
	**T410**	KCU36	DIN 371, 374, 376						●
	**T640**	KP6525	DIN 371, 376			●	●		
	**T641**	KP6525	DIN 371, 376			●	●		
	**T642**	KP6525	DIN 371, 374, 376			●	●		
	**T643**	KP6525	DIN 371, 374, 376			●	●		
	**T640**	KP6525	DIN 371, 376			●	●		
	**T641**	KP6525	DIN 371, 376			●	●		

*Through coolant 1/4", M6 and larger.

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
										
	#6–9/16"	●		plug	D	0°	●		M54	M98
	M4–M20	●		plug	D	0°	●		M55	M98
	#6*–3/4"		●	bottoming	E	0°		●	M56	M98
	M4*–M16		●	bottoming	E	0°		●	M57	M98
	M6–M14		●	bottoming	E	0°		●	M58	M98
	M4*–M14		●	semi-bottoming	C	0°		●	M59	M98
	M6–M14		●	bottoming	E	0°		●	M60	M98
	M6–M10		●	bottoming	E	0°		●	M61	M98
	M3–M16		●	semi-bottoming	C	0°	●		M62	M98
	M4–M22	●	●	semi-bottoming	C	0°	●		M63	M98
	M5–M20		●	semi-bottoming	C	0°		●	M64	M98
	M5–M16	●	●	bottoming	E	0°	●		M65	M98
	M5–M16		●	bottoming	E	0°		●	M66	M98
	#6–1/2"	●	●	semi-bottoming	C	0°	●		M67	M98
	1/4–1/2"		●	semi-bottoming	C	0°		●	M68	M98

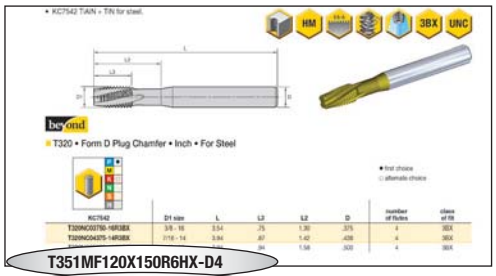
Forming Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H	
	**T491**	KCN14	6535 HA				●			
	**T491**	KCN14	DIN 2174				●			
	**T622**	KSP21, KSN28	DIN 2174	●			●			
	**T623**	KSP21, KSN28	DIN 2174	●			●			

Pipe Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H	
	**T877**	KSU31, KSP39	DIN 5156	●	○	○	○			
	**T857**	KSU31, KSP39	DIN 5156	●	○	○	○			
	**T848**	KSU30	DIN 5156	○		○				

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	M5–M12		●	bottoming	E	–		●	M72	M98
	M6–M10		●	bottoming	E	–		●	M73	M98
	M3–M16	●	●	semi-bottoming	C	–	●		M74	M98
	M5–M16		●	semi-bottoming	C	–		●	M75	M98

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	1/8–1"	●		plug	B	0°	●		M78	M99
	1/8–1"		●	semi-bottoming	C	42°	●		M78	M99
	1/16–1"	●	●	semi-bottoming	C	0°	●		M79	M99

Solid Carbide Tap Identification System



Metric	T351	MF	120	X	150	R	6HX	-D4
Inch	T320	NC	05000	–	13	R	3BX	
	Tap Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Tolerance Class	Taps Dimension
			mm or inch (depending on type)		mm or TPI (depending on type)			

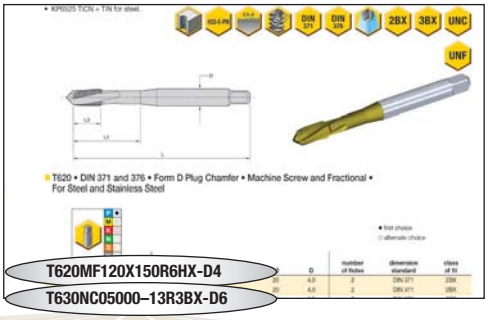
M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread

D1 = DIN 371
D4 = DIN 374
D6 = DIN 376
D74 = DIN 2174
blank = 6535 HA

Tap design

T320 = Steel, through holes, LH spiral flute, solid
T321 = Steel, through holes, LH spiral flute, through coolant
T331 = Steel, blind holes, RH spiral flute, through coolant
T340 = Cast iron and cast aluminium, through holes, straight flute, solid
T351 = Cast iron and cast aluminium, blind holes, straight flute, through coolant
T353 = Cast iron and cast aluminium, blind holes, straight flute, through coolant
T410 = Hard steel 55–63 HRC, through and blind holes, straight flute, solid
T471 = Aluminium, blind holes, straight flute, through coolant
T491 = Aluminium, blind holes, forming tap, through coolant

HSS-E-PM Tap Identification System



Metric	**T620**	**MF**	**120**	**X**	**150**	**R**	**6HX**	**-D4**
Inch	**T630**	**NC**	**05000**	**–**	**13**	**R**	**3BX**	**-D6**
	Tap Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Tolerance Class	Taps Dimension
			mm or inch (depending on type)		mm or TPI (depending on type)			

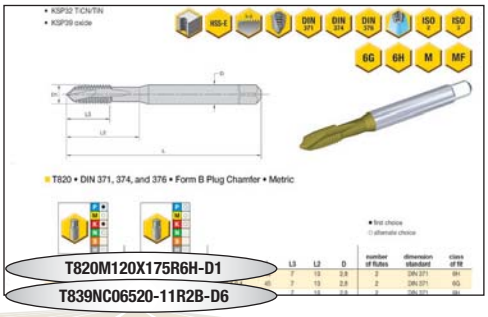
M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread

Tap design

T600 = Steel 32–44 HRC, through holes, spiral point, solid
T604 = Steel 32–44 HRC, blind holes, 3 x D, RH 42° spiral flute, solid
T620 = Steel and stainless steel, through holes, LH spiral flute, solid
T621 = Steel and stainless steel, through holes, LH spiral flute, through coolant
T622 = Steel and aluminium, blind and through holes, forming tap, solid
T623 = Steel and aluminium, blind holes, forming tap, through coolant
T630 = Steel and stainless steel, blind holes, RH spiral flute, solid
T631 = Steel and stainless steel, blind holes, RH spiral flute, through coolant
T632 = Steel and stainless steel, blind holes, RH spiral flute, solid
T633 = Steel and stainless steel, blind holes, RH spiral flute, through coolant
T640 = Cast iron and cast aluminium, through and blind holes, straight flute, solid
T641 = Cast iron and cast aluminium, blind holes, straight flute, through coolant
T642 = Cast iron and cast aluminium, blind holes, straight flute, solid
T643 = Cast iron and cast aluminium, blind holes, straight flute, through coolant
T650 = Steel and cast iron, blind holes, RH spiral flute, large sizes, solid
T651 = Steel and cast iron, blind holes, RH spiral flute, large sizes, through coolant
T670 = Aluminium, through holes, spiral point, solid
T680 = Aluminium, blind holes, RH spiral flute, solid

D1 = DIN 371
D4 = DIN 374
D6 = DIN 376
D74 = DIN 2174
XL = DIN extra length

GOtap HSS-E Tap Identification System



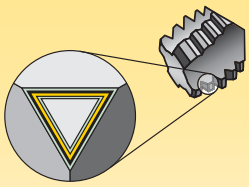
Metric	**T820**	**M**	**120**	**X**	**175**	**R**	**6H**	**-D1**
Inch	**T839**	**NC**	**06520**	**–**	**11**	**R**	**2B**	**-D6**
	Tap Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Tolerance Class	Taps Dimension
			mm or inch (depending on type)		mm or TPI (depending on type)			

M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread
NPT = American standard taper pipe thread
NPTF = Dryseal American standard taper pipe thread
G = DIN EN ISO 228

D1 = DIN 371
D4 = DIN 374
D6 = DIN 376
D56 = DIN 5156
J = JIS

Tap design

T820 = Steel, stainless steel, ductile iron, and cast aluminium, through holes, spiral point, solid
T830 = Steel, stainless steel, ductile iron, and cast aluminium, blind holes, spiral flute, semi-bottoming, solid
T832 = Steel, stainless steel, ductile iron, and cast aluminium, blind holes, spiral flute, bottoming, solid
T838 = Steel, stainless steel, ductile iron, and cast aluminium, blind holes, spiral flute, TC, semi-bottoming, solid
T839 = Steel, stainless steel, ductile iron, and cast aluminium, blind holes, spiral flute, TC, bottoming, solid
T848 = Steel, stainless steel, ductile iron, and cast aluminium, straight flute, NPT, NPTF, solid
T857 = Steel, stainless steel, ductile iron, and cast aluminium, spiral flute, G, solid
T877 = Steel, stainless steel, ductile iron, and cast aluminium, spiral point, G, solid



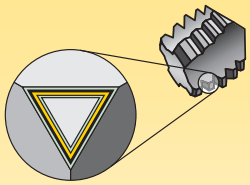
Coatings are designed for optimised tapping performance in specific materials.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Grade

wear resistance ⟷ toughness

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC7542	Coated carbide, PVD-multilayer coating with TiAlN and TiN over a high-strength carbide substrate specifically designed for tap application. Use in steel up to 32 HRC and cast iron at 4x faster speeds than HSS-E-PM taps.	P	■	■	■						
		K	■	■	■						
KCK17	Multilayer PVD AlCrN-coated fine-grain carbide. Newly-developed unique coating. Extraordinary wear resistance when tapping cast iron. High-temperature hardness enables long life at up to 4x faster speed than HSS-E-PM taps.	K	■	■	■						
KCN14	Coated carbide, PVD-two-layer coating over fine-grain carbide. Coating consists of low-friction CrC/C over wear-resistant TiN. CrC/C resists galling of non-ferrous materials to the tap. Provides superior performance for tapping cast aluminium and other non-ferrous materials.	N	■	■	■						
KCU36	Coated carbide. PVD — two-layer coating with heat-resistant TiAlN base layer and low-friction MoS_2 top layer over carbide substrate. Use in hardened steel 55–63 HRC.	H				■	■	■			
KSP21	Coated HSS-E-PM. PVD — powder metal HSS-E substrate with TiN coating. Use for tapping steel 32–44 HRC and for forming threads in steel 32 HRC.	P						■	■	■	
KSH26	Coated HSS-E-PM. PVD — powder metal HSS-E substrate coated with TiN base layer and low-friction MoS_2 top layer. Use in deep blind steel holes 32–44 HRC.	P						■	■	■	



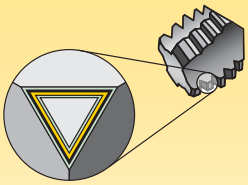
Coatings are designed for optimised tapping performance in specific materials.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Grade

wear resistance ← → toughness

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KSN25	Coated HSS-E-PM. PVD — powder metal HSS-E substrate with two-layer coating: TiN base layer and DLC top layer that resists galling of non-ferrous materials to the tap. Use for tapping titanium. Not recommended for steel.	S									
KSN28	Coated HSS-E-PM. PVD — powder metal HSS-E substrate with DLC coating. Use for form tapping aluminium. Not recommended for steel.	N									
KSN38	Coated HSS-E. PVD — lower vanadium HSS-E substrate with DLC coating. Use for tapping non-ferrous materials with low cutting temperatures like wrought aluminium. Not recommended for steel.	N									
KP6525	Coated HSS-E-PM. PVD — heat- and wear-resistant high vanadium — cobalt powder metal HSS substrate coated with wear-resistant TiCN base layer and low-friction TiN top layer. Use in steel, cast iron, and cast aluminium with silicon.	P K									
KM6515	Coated HSS-E-PM. PVD — heat- and wear-resistant high vanadium — cobalt powder metal HSS substrate. Coating consists of low-friction CrC/C over wear-resistant TiN base layer. Use for tapping stainless steel and non-ferrous materials.	M N									
KSP32	High-vanadium HSS-E substrate coated with wear resistant TiCN base layer and low-friction TiN top layer. Use in multiple applications, including steel, stainless steel, ductile cast iron, and cast aluminium. KSP32 is abrasion resistant.	P M K N									

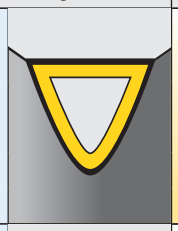
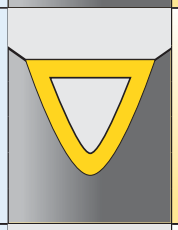
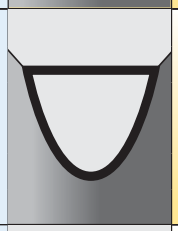
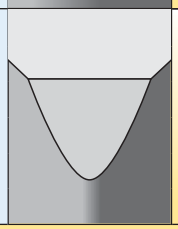


Coatings are designed for optimised tapping performance in specific materials.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

Grade

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KSMN34		High-vanadium HSS-E substrate with a coating consists of low-friction CrC/C over wear-resistant TiN base layer. Use for tapping stainless steel and non-ferrous materials.										
			M									
			N									
KSU31		Coated HSS-E substrate with TiN PVD layer. Use in multiple applications, including steel, stainless steel, ductile cast iron, and cast aluminium.	P									
			M									
			K									
			N									
KSP39		HSS-E substrate with black oxide surface treatment. Use in a variety of materials, including steel, stainless steel, and ductile iron. Not recommended for non-ferrous materials.	P									
			M									
			K									
KSU30		Uncoated HSS-E grade with bright surface. Use in easy to machine, general-purpose applications.	P									
			M									
			K									
			N									



Tapping Portfolio

Spiral-Point/Left-Hand Spiral-Flute Taps M2–M18

Beyond High-Performance Solid Carbide Taps M4–M5

High-Performance HSS-E-PM Taps M6–M13

Multipurpose GOtap M14–M18

Spiral-Flute Taps M20–M50

Beyond High-Performance Solid Carbide Taps M22–M23

High-Performance HSS-E-PM Taps M24–M39

Multipurpose GOtap M40–M50

Straight-Flute Taps M52–M68

Beyond High-Performance Solid Carbide Taps M54–M62

High-Performance HSS-E-PM Taps M63–M68

Forming Taps M70–M75

Beyond High-Performance Solid Carbide Taps M72–M73

High-Performance HSS-E-PM Taps M74–M75

Pipe Taps M76–M79

Multipurpose GOtap M78–M79

Solid Carbide Thread Mills M80–M97

Taps and Thread Milling Application and Technical Information M98–M132

Spiral-Point and Left-Hand Spiral-Flute Taps



High-Performance Taps for Through-Hole Applications

- Steel and steel alloys.
- Stainless steel.
- Cast iron.
- Nickel- and cobalt-based alloys.
- Titanium and titanium alloys.
- Aluminium.
- Hard steel.

High-Performance Beyond™ Solid Carbide Taps

- Left-hand spiral flute for optimal chip evacuation ahead of the tap.
- Runs up to 4x faster and 4x longer than conventional high-speed steel (HSS) taps.
- Ideal for long production runs where fewer tool changes result in greater productivity.
- For use on CNC machines with synchronous or rigid controls and precision toolholders.

High-Performance Beyond™ HSS-E-PM Taps

- Left-hand spiral flute for optimal chip evacuation ahead of the tap.
- Higher strength and wider range of applications versus solid carbide taps.
- Higher tapping speed capability and longer tool life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines.

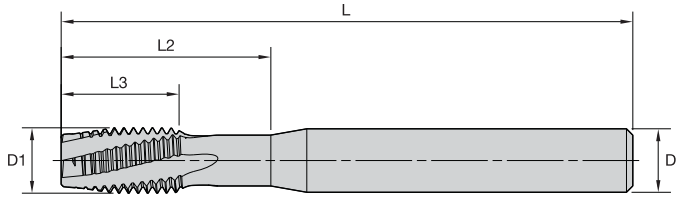
Multipurpose HSS-E GOtap™ Taps

- Optimised spiral-point geometry for efficient chip evacuation in through-hole applications.
- Manufactured with high vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Advanced PVD coatings to reduce tapping torque, resulting in high-quality thread finish and longer tool life.
- For use in both synchronous and non-synchronous machines, including rigid, synchronous, and tension/compression tap holders.



• KC7542 TiAlN + TiN for steel.

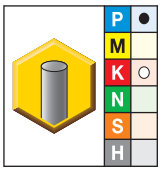






beyond

T320 • Form D Plug Chamfer • Inch • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	D1 size	L	L3	L2	D	number of flutes	class of fit
T320NC03750-16R3BX	3/8 - 16	3.54	.75	1.30	.375	4	3BX
T320NC04375-14R3BX	7/16 - 14	3.94	.87	1.42	.438	4	3BX
T320NC05000-13R3BX	1/2 - 13	3.94	.94	1.58	.500	4	3BX

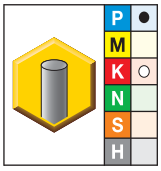
Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004



beyond

T320 • Form D Plug Chamfer • Metric • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	D1 size	L	L3	L2	D	number of flutes	class of fit
T320M060X100R6HX	M6 X 1	70	12	23	6,0	3	6HX
T320M080X125R6HX	M8 X 1,25	80	15	28	8,0	3	6HX
T320M100X150R6HX	M10 X 1,5	90	18	33	10,0	4	6HX
T320M120X175R6HX	M12 X 1,75	100	21	40	12,0	4	6HX
T320MF140X150R6HX *	M14 X 1,5	110	24	47	12,0	4	6HX
T320M160X200R6HX	M16 X 2	110	24	53	14,0	4	6HX

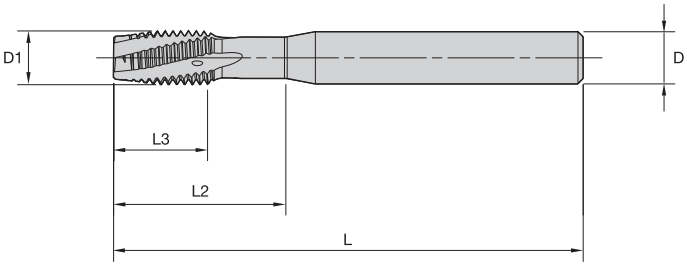
NOTE: Proprietary technology.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

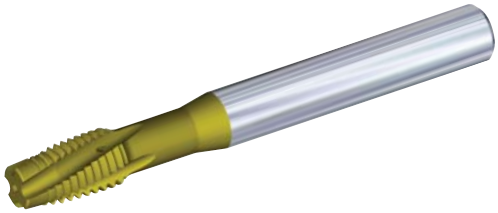
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

• KC7542 TiAlN + TiN for steel.

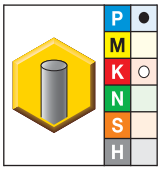






beyond

T321 • Form D Plug Chamfer • Through Coolant • Metric • Solid Carbide • For Steel



● first choice
○ alternate choice

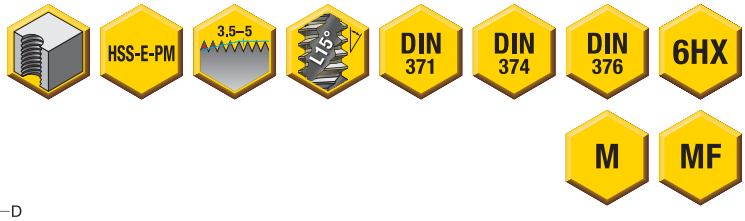
KC7542	D1 size	L	L3	L2	D	number of flutes	class of fit
T321M100X150R6HX	M10 X 1,5	90	18	33	10,0	4	6HX
T321MF120X150R6HX	M12 X 1,5	100	21	40	12,0	4	6HX
T321M120X175R6HX	M12 X 1,75	100	21	40	12,0	4	6HX
T321MF140X150R6HX	M14 X 1,5	110	24	47	12,0	4	6HX
T321M140X200R6HX	M14 X 2	110	24	47	12,0	4	6HX
T321M160X200R6HX *	M16 X 2	110	24	53	14,0	4	6HX

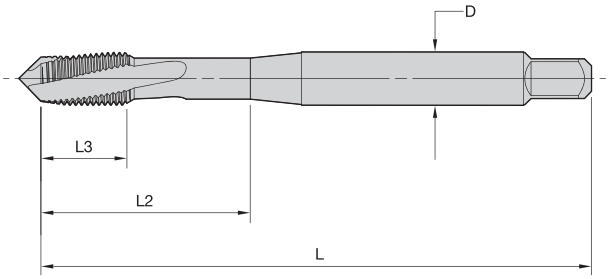
NOTE: Proprietary technology.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

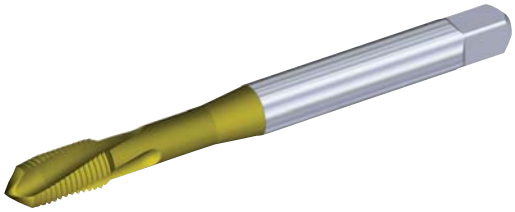
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

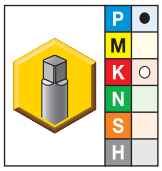
- KM6515 TiN + CrC/C for tapping stainless steel.
- KP6525 TiCN + TiN for tapping steel.

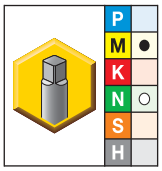






T620 • DIN 371, 374, and 376 • Form D Plug Chamfer • Metric • For Steel and Stainless Steel





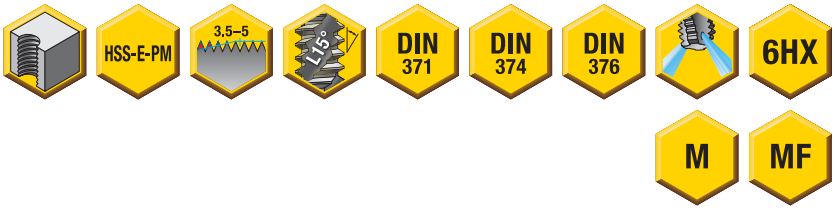
● first choice
○ alternate choice

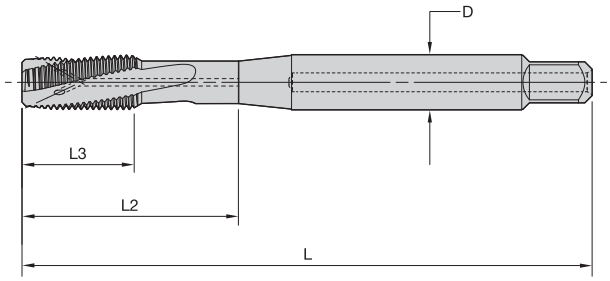
KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T620M030X050R6HX-D1	T620M030X050R6HX-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6HX
T620M040X070R6HX-D1	T620M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	2	DIN 371	6HX
T620M050X080R6HX-D1	T620M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	2	DIN 371	6HX
T620M060X100R6HX-D1	T620M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T620MF080X100R6HX-D4	T620MF080X100R6HX-D4	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T620M080X125R6HX-D1	T620M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T620MF100X100R6HX-D4	T620MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T620MF100X125R6HX-D4	—	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T620M100X150R6HX-D1	T620M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T620MF120X150R6HX-D4	T620MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	3	DIN 374	6HX
T620M120X175R6HX-D6	T620M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	3	DIN 376	6HX
T620MF140X150R6HX-D4	T620MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T620M140X200R6HX-D6	T620M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T620MF160X150R6HX-D4	T620MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T620M160X200R6HX-D6	T620M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T620MF180X150R6HX-D4	T620MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T620M200X250R6HX-D6	T620M200X250R6HX-D6	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX

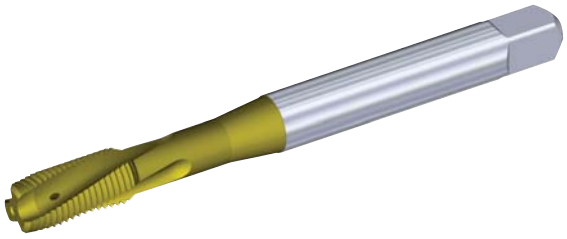
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

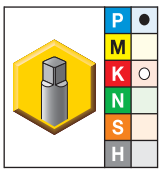
- KM6515 TiN + CrC/C for stainless steel.
- KP6525 TiCN + TiN for steel.

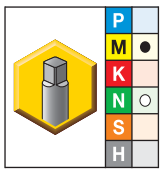






T621 • DIN 371, 374, and 376 • Form D Plug Chamfer • Through Coolant • Metric • For Steel and Stainless Steel





● first choice
○ alternate choice

KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T621M050X080R6HX-D1	T621M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	2	DIN 371	6HX
T621M060X100R6HX-D1	T621M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T621MF080X100R6HX-D4 *	T621MF080X100R6HX-D4 *	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T621M080X125R6HX-D1	T621M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T621MF100X100R6HX-D4	T621MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T621MF100X125R6HX-D4	T621MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T621M100X150R6HX-D1	T621M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T621MF120X125R6HX-D4	—	M12 X 1,25	100	15	39	9,0	3	DIN 374	6HX
T621MF120X150R6HX-D4	T621MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	3	DIN 374	6HX
T621M120X175R6HX-D6	T621M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	3	DIN 376	6HX
T621MF140X125R6HX-D4	—	M14 X 1,25	100	15	47	11,0	4	DIN 374	6HX
T621MF140X150R6HX-D4	T621MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T621M140X200R6HX-D6	T621M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T621MF160X150R6HX-D4	T621MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T621M160X200R6HX-D6	T621M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T621MF180X150R6HX-D4	T621MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T621M180X250R6HX-D6	T621M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX

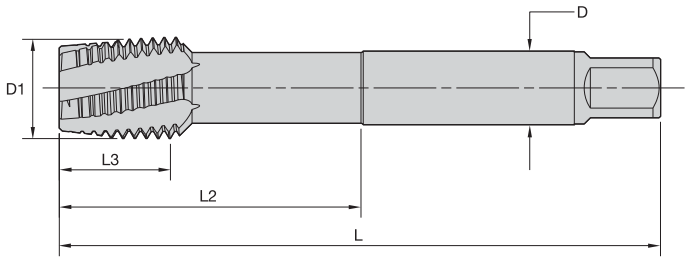
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

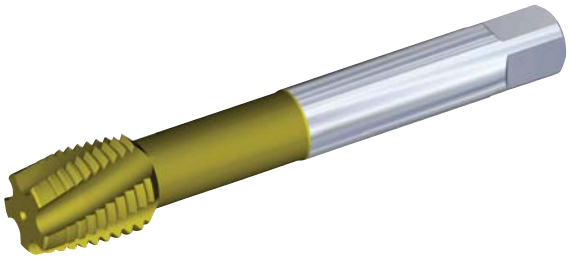
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

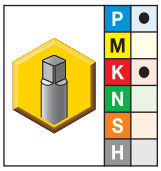
- KP6525 TiCN + TiN for tapping steel and cast iron.







T620 • DIN 376 • Form D Plug Chamfer • Large Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

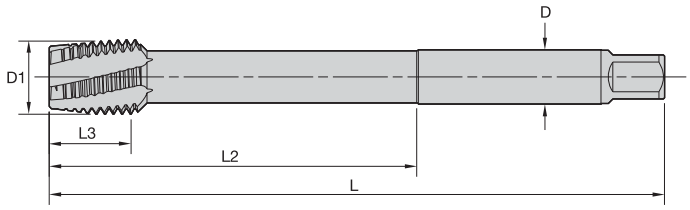
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T620M240X300R6HX-D6	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
T620M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T620M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T620M360X400R6HX-D6	M36 X 4	200	40	110	28,0	6	DIN 376	6HX
T620M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	6	DIN 376	6HX

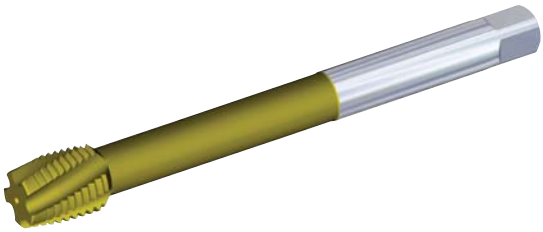
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

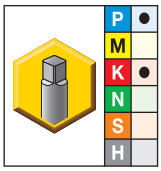
- KP6525 TiCN + TiN for tapping steel and cast iron.







T620 • Extra Long • Form D Plug Chamfer • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

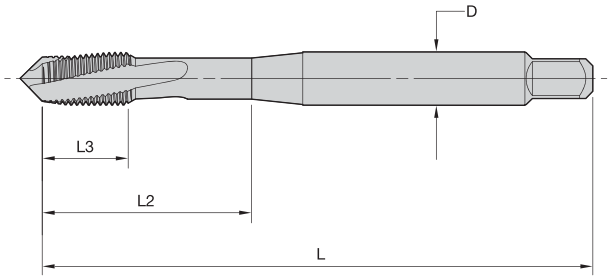
KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T620M240X300R6H-XL	M24 X 3	200	30	120	18,0	5	6HX
T620M300X350R6H-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T620M330X350R6H-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T620M360X400R6H-XL	M36 X 4	250	40	150	28,0	6	6HX
T620M420X450R6H-XL	M42 X 4,5	300	45	180	32,0	6	6HX

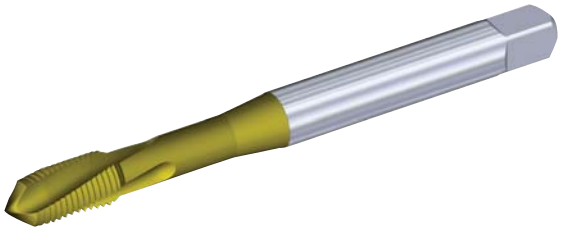
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

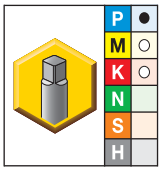
- KP6525 TiCN + TiN for steel.







T620 • DIN 371 and 376 • Form D Plug Chamfer • Machine Screw and Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

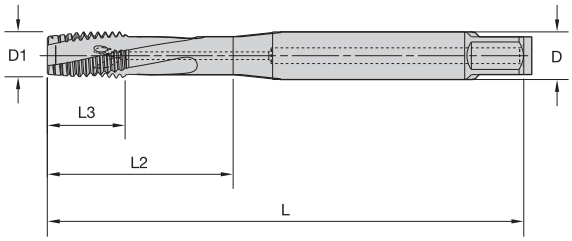
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T620NC#06-32R2BX-D1	6 - 32	56	9	20	4,0	2	DIN 371	2BX
T620NF#06-40R2BX-D1	6 - 40	56	9	20	4,0	2	DIN 371	2BX
T620NC#08-32R2BX-D1	8 - 32	63	10	21	4,5	2	DIN 371	2BX
T620NC#10-24R2BX-D1	10 - 24	70	10	25	6,0	3	DIN 371	2BX
T620NF#10-32R2BX-D1	10 - 32	70	10	25	6,0	3	DIN 371	2BX
T620NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T620NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T620NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T620NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T620NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	3	DIN 376	3BX
T620NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	3	DIN 376	3BX
T620NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T620NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T620NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	3	DIN 376	3BX
T620NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	3	DIN 376	3BX

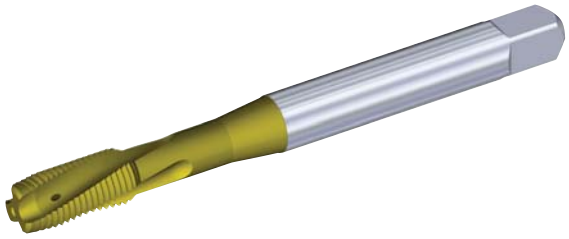
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

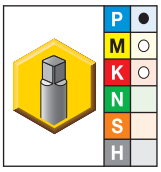
- KP6525 TiCN + TiN for steel.







T621 • DIN 371 and 376 • Form D Plug Chamfer • Through Coolant • Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

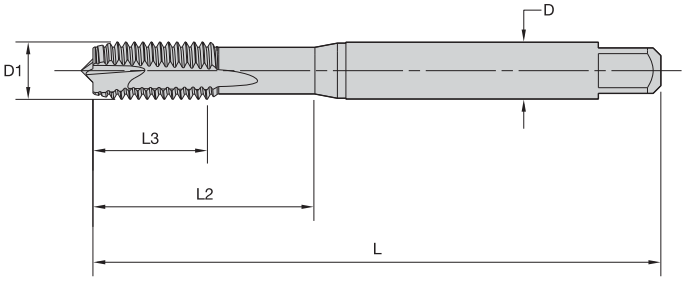
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T621NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T621NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T621NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T621NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T621NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T621NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T621NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	3	DIN 376	3BX
T621NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	3	DIN 376	3BX
T621NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	3	DIN 376	3BX
T621NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	3	DIN 376	3BX

Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

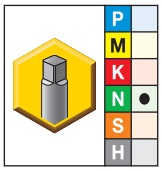
- KSN38 DLC for tapping aluminium.







T670 • DIN 371 and 376 • Form B Plug Chamfer • Metric • For Aluminium



● first choice
○ alternate choice

KSN38	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T670M030X050R6H-D1	M3 X 0,5	56	11	18	3,5	2	DIN 371	6H
T670M040X070R6H-D1	M4 X 0,7	63	13	21	4,5	2	DIN 371	6H
T670M050X080R6H-D1	M5 X 0,8	70	15	25	6,0	2	DIN 371	6H
T670M060X100R6H-D1	M6 X 1	80	17	30	6,0	2	DIN 371	6H
T670M080X125R6H-D1 *	M8 X 1,25	90	20	35	8,0	2	DIN 371	6H
T670M100X150R6H-D1	M10 X 1,5	100	22	39	10,0	2	DIN 371	6H
T670M120X175R6H-D6	M12 X 1,75	110	24	—	9,0	3	DIN 376	6H
T670M160X200R6H-D6	M16 X 2	110	27	—	12,0	3	DIN 376	6H

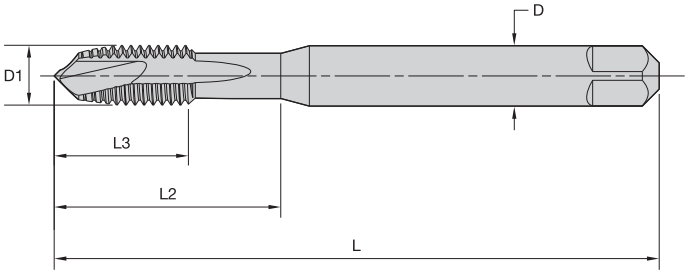
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

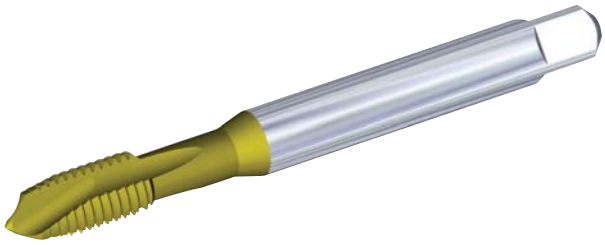
Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

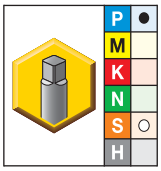
- KSP21 TiN for tapping steel 32–44 HRC.







T600 • DIN 371, 374, and 376 • Form B Plug Chamfer • Metric • For Hard Steel



● first choice
○ alternate choice

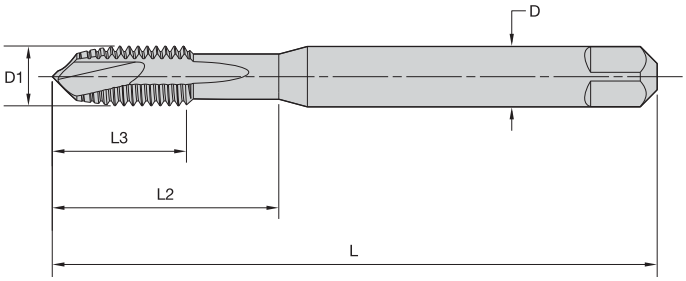
KSP21	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T600M030X050R6HX-D1	M3 X 0,5	56	11	18	3,5	2	DIN 371	6HX
T600M040X070R6HX-D1	M4 X 0,7	63	13	21	4,5	2	DIN 371	6HX
T600M050X080R6HX-D1	M5 X 0,8	70	15	25	6,0	2	DIN 371	6HX
T600M060X100R6HX-D1	M6 X 1	80	17	30	6,0	3	DIN 371	6HX
T600MF080X100R6HX-D4	M8 X 1	90	17	–	6,0	3	DIN 374	6HX
T600M080X125R6HX-D1	M8 X 1,25	90	20	35	8,0	3	DIN 371	6HX
T600MF100X100R6HX-D4	M10 X 1	90	18	–	7,0	3	DIN 374	6HX
T600MF100X125R6HX-D4	M10 X 1,25	100	22	–	7,0	3	DIN 374	6HX
T600M100X150R6HX-D1	M10 X 1,5	100	22	39	10,0	3	DIN 371	6HX
T600MF120X125R6HX-D4	M12 X 1,25	100	22	–	9,0	3	DIN 374	6HX
T600MF120X150R6HX-D4	M12 X 1,5	100	22	–	9,0	3	DIN 374	6HX
T600M120X175R6HX-D6	M12 X 1,75	110	24	–	9,0	3	DIN 376	6HX
T600MF140X150R6HX-D4	M14 X 1,5	100	22	–	11,0	3	DIN 374	6HX
T600M140X200R6HX-D6	M14 X 2	110	26	–	11,0	3	DIN 376	6HX
T600MF160X150R6HX-D4	M16 X 1,5	100	22	–	12,0	4	DIN 374	6HX
T600M160X200R6HX-D6	M16 X 2	110	27	–	12,0	4	DIN 376	6HX
T600M180X250R6HX-D6	M18 X 2	125	30	–	14,0	4	DIN 376	6HX
T600M200X250R6HX-D6	M20 X 2,5	140	32	–	16,0	4	DIN 376	6HX

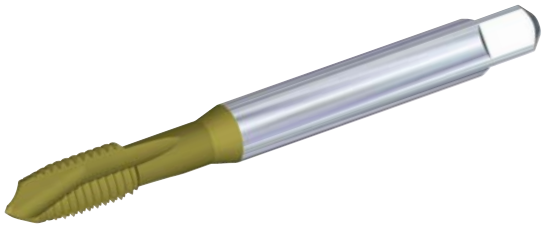
Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

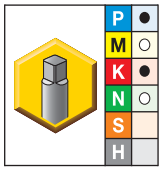
- KSP32 TiCN/TiN
- KSP39 oxide

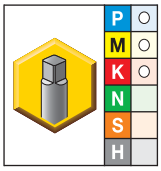






T820 • DIN 371, 374, and 376 • Form B Plug Chamfer • Metric



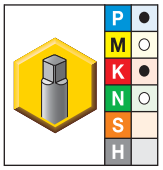


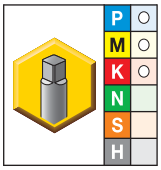
● first choice
○ alternate choice

KSP32	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T820M020X040R6H-D1	T820M020X040R6H-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6H
–	T820M020X040R6G-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6G
–	T820M025X045R6H-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6H
–	T820M025X045R6G-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6G
T820M030X050R6H-D1	T820M030X050R6H-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
–	T820M030X050R6G-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6G
–	T820M035X060R6H-D1	M3,5 X 0,6	56	9	20	4,0	2	DIN 371	6H
–	T820MF040X050R6H-D4	M4 X 0,5	63	10	21	2,8	2	DIN 374	6H
T820M040X070R6H-D1	T820M040X070R6H-D1	M4 X 0,7	63	11	21	4,5	2	DIN 371	6H
–	T820M040X070R6G-D1	M4 X 0,7	63	11	21	4,5	2	DIN 371	6G
–	T820MF050X050R6H-D4	M5 X 0,5	70	12	25	3,5	2	DIN 374	6H
T820M050X080R6H-D1	T820M050X080R6H-D1	M5 X 0,8	70	12	25	6,0	2	DIN 371	6H
–	T820M050X080R6G-D1	M5 X 0,8	70	12	25	6,0	2	DIN 371	6G
–	T820MF060X050R6H-D4	M6 X 0,5	80	12	30	4,5	3	DIN 374	6H
–	T820MF060X075R6H-D4	M6 X 0,75	80	12	30	4,5	3	DIN 374	6H
–	T820M060X100R6H-D6	M6 X 1	80	12	30	4,5	3	DIN 376	6H
T820M060X100R6H-D1	T820M060X100R6H-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6H
–	T820M060X100R6G-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6G
T820M070X100R6H-D1	T820M070X100R6H-D1	M7 X 1	80	12	30	7,0	3	DIN 371	6H
–	T820M070X100R6G-D1	M7 X 1	80	12	30	7,0	3	DIN 371	6G
–	T820MF080X100R6H-D4	M8 X 1	90	15	35	6,0	3	DIN 374	6H
–	T820M080X125R6H-D6	M8 X 1,25	90	15	35	6,0	3	DIN 376	6H
T820M080X125R6H-D1	T820M080X125R6H-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
–	T820M080X125R6G-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6G
–	T820MF100X100R6H-D4	M10 X 1	90	15	35	7,0	3	DIN 374	6H
–	T820MF100X125R6H-D4	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
–	T820M100X150R6H-D6	M10 X 1,5	100	18	39	7,0	3	DIN 376	6H
T820M100X150R6H-D1	T820M100X150R6H-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
–	T820M100X150R6G-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G
–	T820MF120X100R6H-D4	M12 X 1	100	21	39	9,0	3	DIN 374	6H
–	T820MF120X125R6H-D4	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H
–	T820MF120X150R6H-D4	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H

(continued)

(T820 • DIN 371, 374, and 376 • Form B Plug Chamfer • Metric — continued)





● first choice
○ alternate choice

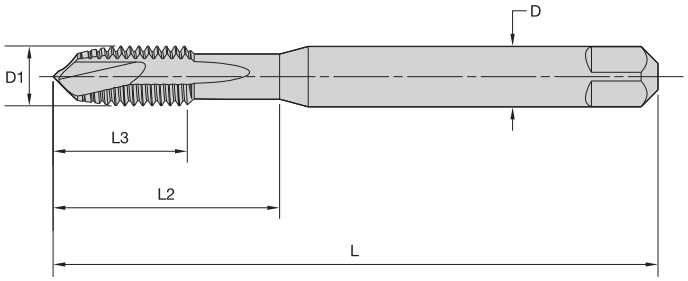
KSP32	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T820M120X175R6H-D6	**T820M120X175R6H-D6**	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
—	**T820M120X175R6G-D6**	M12 X 1,75	110	21	44	9,0	3	DIN 376	6G
—	**T820MF140X100R6H-D4**	M14 X 1	100	21	47	11,0	3	DIN 374	6H
—	**T820MF140X125R6H-D4**	M14 X 1,25	100	21	47	11,0	3	DIN 374	6H
—	**T820MF140X150R6H-D4**	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
T820M140X200R6H-D6	**T820M140X200R6H-D6**	M14 X 2	110	24	52	11,0	3	DIN 376	6H
—	**T820M140X200R6G-D6**	M14 X 2	110	24	52	11,0	3	DIN 376	6G
—	**T820MF160X100R6H-D4**	M16 X 1	100	21	46	12,0	3	DIN 374	6H
—	**T820MF160X150R6H-D4**	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H
T820M160X200R6H-D6	**T820M160X200R6H-D6**	M16 X 2	110	24	51	12,0	3	DIN 376	6H
—	**T820M160X200R6G-D6**	M16 X 2	110	24	51	12,0	3	DIN 376	6G
—	**T820MF180X150R6H-D4**	M18 X 1,5	110	21	50	14,0	3	DIN 374	6H
—	**T820MF180X200R6H-D4**	M18 X 2	125	30	58	14,0	3	DIN 374	6H
T820M180X250R6H-D6	**T820M180X250R6H-D6**	M18 X 2,5	125	30	58	14,0	3	DIN 376	6H
—	**T820MF200X150R6H-D4**	M20 X 1,5	125	24	56	16,0	3	DIN 374	6H
—	**T820MF200X200R6H-D4**	M20 X 2	140	30	64	16,0	3	DIN 374	6H
T820M200X250R6H-D6	**T820M200X250R6H-D6**	M20 X 2,5	140	30	64	16,0	3	DIN 376	6H
—	**T820MF220X150R6H-D4**	M22 X 1,5	125	24	62	18,0	3	DIN 374	6H
—	**T820MF220X200R6H-D4**	M22 X 2	140	30	70	18,0	3	DIN 374	6H
—	**T820M220X250R6H-D6**	M22 X 2,5	140	30	70	18,0	3	DIN 376	6H
—	**T820MF240X150R6H-D4**	M24 X 1,5	140	28	67	18,0	3	DIN 374	6H
—	**T820M240X300R6H-D6**	M24 X 3	160	36	77	18,0	3	DIN 376	6H
—	**T820M270X300R6H-D6**	M27 X 3	160	36	82	20,0	4	DIN 376	6H
—	**T820M300X350R6H-D6**	M30 X 3,5	180	42	91	22,0	4	DIN 376	6H
—	**T820M330X350R6H-D6**	M33 X 3,5	180	42	100	25,0	4	DIN 376	6H
—	**T820M360X400R6H-D6**	M36 X 4	200	48	110	28,0	4	DIN 376	6H

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

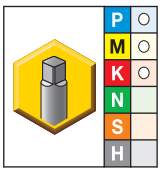
• KSP39 oxide







T820 • DIN 371 and 376 • Form B Plug Chamfer • UNC/UNF



● first choice
○ alternate choice

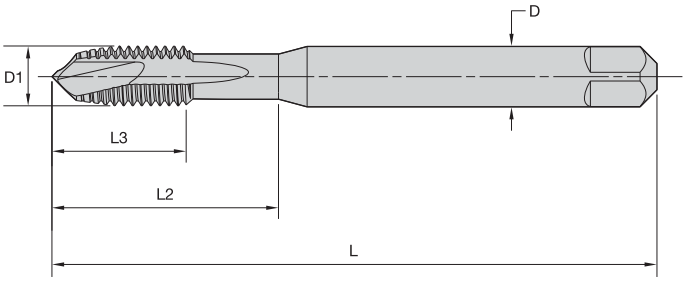
KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T820NC#04-40R2B-D1	4 - 40	56	8	18	3,5	2	DIN 371	2B
T820NC#05-40R2B-D1	5 - 40	56	9	20	4,0	2	DIN 371	2B
T820NC#06-32R2B-D1	6 - 32	56	9	20	4,0	2	DIN 371	2B
T820NF#06-40R2B-D1	6 - 40	56	9	20	4,0	2	DIN 371	2B
T820NC#08-32R2B-D1	8 - 32	63	11	21	4,5	2	DIN 371	2B
T820NC#10-24R2B-D1	10 - 24	70	12	25	6,0	2	DIN 371	2B
T820NF#10-32R2B-D1	10 - 32	70	12	25	6,0	2	DIN 371	2B
T820NC02500-20R2B-D1	1/4 - 20	80	15	30	7,0	3	DIN 371	2B
T820NF02500-28R2B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	2B
T820NC03125-18R2B-D1	5/16 - 18	90	15	35	8,0	3	DIN 371	2B
T820NF03125-24R2B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	2B
T820NC03750-16R2B-D1	3/8 - 16	100	19	39	10,0	3	DIN 371	2B
T820NF03750-24R2B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	2B
T820NC04375-14R2B-D6	7/16 - 14	100	18	41	8,0	3	DIN 376	2B
T820NF04375-20R2B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	2B
T820NC05000-13R2B-D6	1/2 - 13	110	23	47	9,0	3	DIN 376	2B
T820NF05000-20R2B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	2B
T820NC05625-12R2B-D6	9/16 - 12	110	25	53	11,0	3	DIN 376	2B
T820NF05625-18R2B-D6	9/16 - 18	110	25	53	11,0	3	DIN 376	2B
T820NC06250-11R2B-D6	5/8 - 11	110	24	51	12,0	3	DIN 376	2B
T820NF06250-18R2B-D6	5/8 - 18	110	24	51	12,0	3	DIN 376	2B
T820NC07500-10R2B-D6	3/4 - 10	140	30	64	16,0	3	DIN 376	2B
T820NF07500-16R2B-D6	3/4 - 16	140	30	64	16,0	3	DIN 376	2B
T820NC08750-9R2B-D6	7/8 - 9	140	34	71	18,0	3	DIN 376	2B
T820NF08750-14R2B-D6	7/8 - 14	140	34	71	18,0	3	DIN 376	2B
T820NC10000-8R2B-D6	1 - 8	160	38	81	18,0	3	DIN 376	2B
T820NF10000-12R2B-D6	1 - 12	160	38	81	18,0	3	DIN 376	2B

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

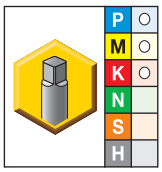
• KSP39 oxide







T820 • DIN 371 and 376 • Form B Plug Chamfer • UNJC/UNJF



● first choice
○ alternate choice

KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T820NC#04-40R3B-D1	4 - 40	56	8	18	3,5	2	DIN 371	3B
T820NC#06-32R3B-D1	6 - 32	56	9	20	4,0	2	DIN 371	3B
T820NC#08-32R3B-D1	8 - 32	63	11	21	4,5	2	DIN 371	3B
T820NF#10-32R3B-D1	10 - 32	70	12	25	6,0	2	DIN 371	3B
T820NF02500-28R3B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	3B
T820NF03125-24R3B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	3B
T820NF03750-24R3B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	3B
T820NF04375-20R3B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	3B
T820NF05000-20R3B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	3B

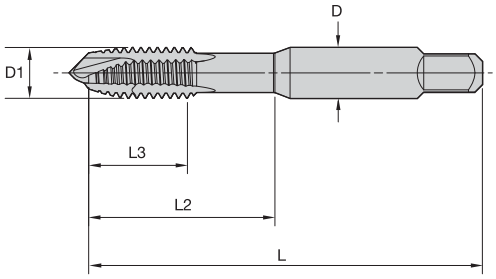
NOTE: Internal UNJC/UNJF threads may be produced with ground thread UNC/UNF taps.

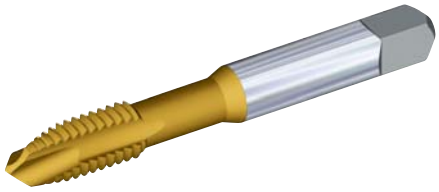
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

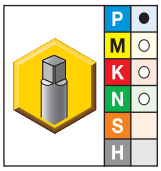
- KSU31 TiN
- KSU30 bright

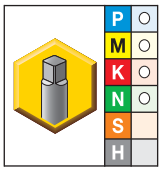






T820 • Form B Plug Chamfer • Metric • JIS





● first choice
○ alternate choice

KSU31	KSU30	D1 size	L	L3	L2	D	number of flutes	dimension standard	tap class
T820M030X050R6H-J	T820M030X050R6H-J	M3 X 0,5	46	11	19	4,0	2	JIS	ISO 2
T820M040X070R6H-J	T820M040X070R6H-J	M4 X 0,7	52	13	21	5,0	2	JIS	ISO 2
T820M050X080R6H-J	T820M050X080R6H-J	M5 X 0,8	60	16	24	5,5	2	JIS	ISO 2
T820M060X100R6H-J	T820M060X100R6H-J	M6 X 1	62	19	29	6,0	3	JIS	ISO 2
T820M080X125R6H-J	T820M080X125R6H-J	M8 X 1,25	70	22	37	6,2	3	JIS	ISO 2
T820M100X150R6H-J	T820M100X150R6H-J	M10 X 1,5	75	24	41	7,0	3	JIS	ISO 2
–	T820MF120X125R6H-J	M12 X 1,25	82	29	48	8,5	3	JIS	ISO 2
–	T820MF120X150R6H-J	M12 X 1,5	82	29	48	8,5	3	JIS	ISO 2
–	T820M120X175R6H-J	M12 X 1,75	82	29	48	8,5	3	JIS	ISO 2
–	T820MF140X150R6H-J	M14 X 1,5	88	30	48	10,5	3	JIS	ISO 2
–	T820M140X200R6H-J	M14 X 2	88	30	48	10,5	3	JIS	ISO 2
–	T820MF160X150R6H-J	M16 X 1,5	95	32	52	12,5	3	JIS	ISO 2
–	T820M160X200R6H-J	M16 X 2	95	32	52	12,5	3	JIS	ISO 2
–	T820M180X250R6H-J	M18 X 2,5	100	37	55	14,0	3	JIS	ISO 2
–	T820M200X250R6H-J	M20 X 2,5	105	37	60	15,0	3	JIS	ISO 2

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**

Spiral-Flute Taps



High-Performance Taps for Blind-Hole Applications

- Steel and steel alloys.
- Stainless steel.
- Cast iron.
- Nickel- and cobalt-based alloys.
- Titanium and titanium alloys.
- Aluminium.
- Hard steel.

High-Performance Beyond™ Solid Carbide Taps

- Right-hand spiral flute with through coolant for efficient chip evacuation at high spindle speeds.
- Runs up to 4x faster and 4x longer than conventional high-speed steel (HSS) taps.
- Ideal for long production runs where fewer tool changes result in greater productivity.
- For use on CNC machines with synchronous or rigid controls and precision toolholders.

High-Performance Beyond™ HSS-E-PM Taps

- Right-hand spiral flutes with the flute form and helix angle optimised for material-specific applications.
- Higher strength and wider range of applications versus solid carbide taps.
- Higher tapping speed capability and longer tool life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines with rigid or synchronous tap holders.

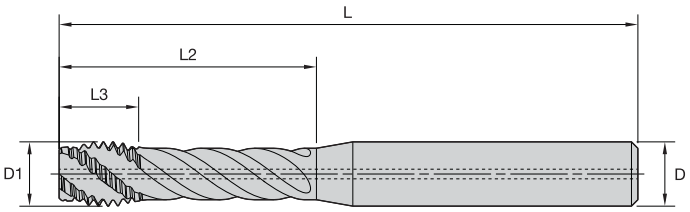


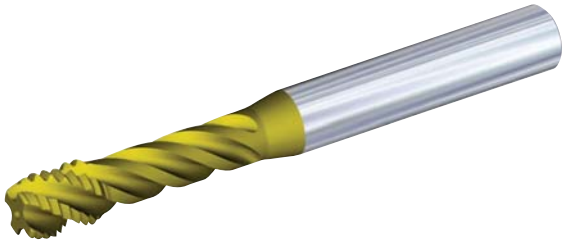
Multipurpose HSS-E GOtap™ Taps

- Advanced spiral-flute geometry designed for free cutting action and efficient chip evacuation in blind holes.
- Manufactured with high vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Advanced PVD coatings to reduce tapping torque, resulting in high-quality thread finish and longer tool life.
- For use in both synchronous and non-synchronous machines, including rigid, synchronous, and tension/compression tap holders.

- KC7542 TiAlN + TiN for steel.

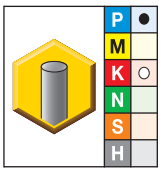






beyond

T331 • Form C Semi-Bottoming Chamfer • Through Coolant • Inch • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	D1 size	L	L3	L2	D	number of flutes	class of fit
T331NC2500-20R3BX	1/4 - 20	2.76	.39	.94	.250	3	3BX
T331NF2500-28R3BX	1/4 - 28	2.76	.39	.94	.250	3	3BX
T331NC3125-18R3BX	5/16 - 18	3.15	.47	1.26	.313	3	3BX
T331NC3750-16R3BX	3/8 - 16	3.54	.51	1.57	.375	4	3BX
T331NC4375-14R3BX	7/16 - 14	3.94	.59	1.73	.438	4	3BX
T331NC5000-13R3BX *	1/2 - 13	3.94	.63	1.89	.500	4	3BX

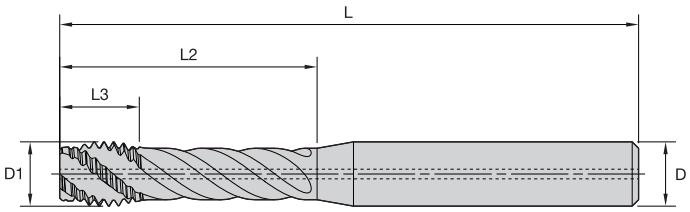
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

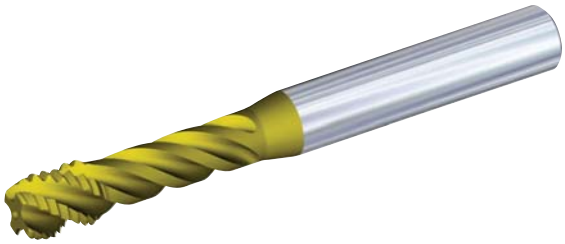
Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

• KC7542 TiAlN + TiN for steel.

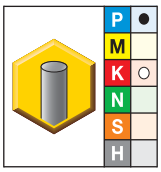






beyond

T331 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	D1 size	L	L3	L2	D	number of flutes	class of fit
T331M060X100R6HX	M6 X 1	70	8	24	6,0	3	6HX
T331M080X125R6HX	M8 X 1,25	80	10	32	8,0	3	6HX
T331M100X150R6HX	M10 X 1,5	90	12	40	10,0	4	6HX
T331MF120X150R6HX	M12 X 1,5	100	14	48	12,0	4	6HX
T331M120X175R6HX	M12 X 1,75	100	14	48	12,0	4	6HX
T331MF140X150R6HX	M14 X 1,5	110	16	56	12,0	4	6HX
T331M140X200R6HX	M14 X 2	110	16	56	12,0	4	6HX
T331M160X200R6HX	M16 X 2	110	16	64	14,0	4	6HX

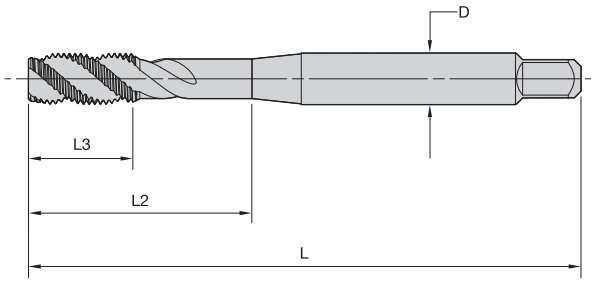
NOTE: Proprietary technology.

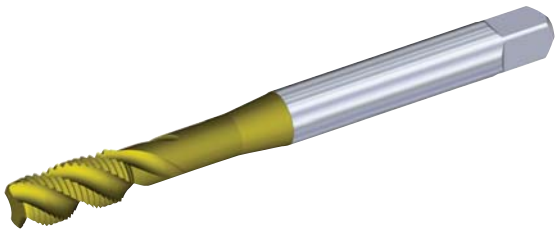
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

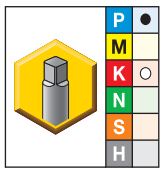
- KM6515 TiN + CrC/C for stainless steel.
- KP6525 TiCN + TiN for steel.

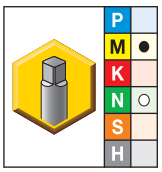






T630 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • For Steel and Stainless Steel • Rigid and Synchronous Holders





● first choice
○ alternate choice

KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T630M030X050R6HX-D1	T630M030X050R6HX-D1	M3 X 0,5	56	8	18	3,5	3	DIN 371	6HX
T630M040X070R6HX-D1	T630M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
T630M050X080R6HX-D1	T630M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T630M060X100R6HX-D1	T630M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T630MF080X100R6HX-D4	T630MF080X100R6HX-D4	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T630M080X125R6HX-D1	T630M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T630MF100X100R6HX-D4	T630MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T630MF100X125R6HX-D4	T630MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T630M100X150R6HX-D1	T630M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T630MF120X150R6HX-D4	T630MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T630M120X175R6HX-D6	T630M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T630MF140X150R6HX-D4	T630MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T630M140X200R6HX-D6	T630M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T630MF160X150R6HX-D4	T630MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T630M160X200R6HX-D6	T630M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T630MF180X150R6HX-D4	T630MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T630M180X250R6HX-D6	T630M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX

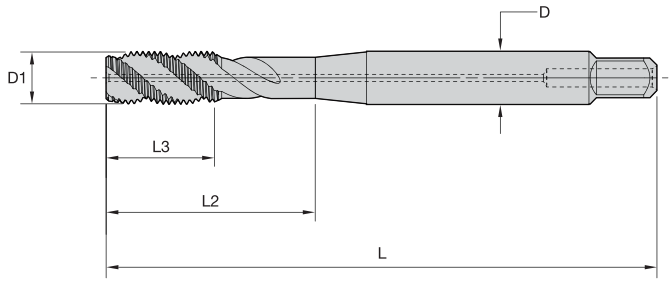
NOTE: Suggested for use in rigid and synchronous holders.

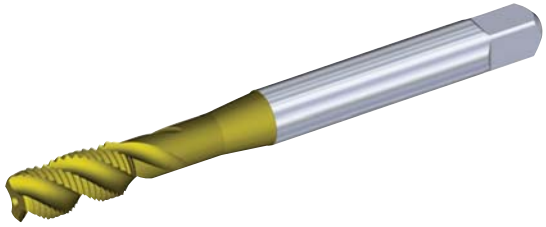
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

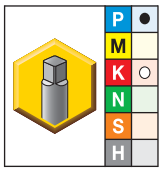
- KM6515 TiN + CrC/C for stainless steel.
- KP6525 TiCN + TiN for steel.

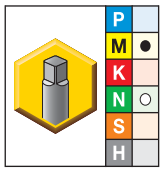






T631 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • For Steel and Stainless Steel • Rigid and Synchronous Holders





● first choice
○ alternate choice

KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T631M050X080R6HX-D1	T631M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T631M060X100R6HX-D1	T631M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T631MF080X100R6HX-D4	T631MF080X100R6HX-D4	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T631M080X125R6HX-D1	T631M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T631MF100X100R6HX-D4	T631MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T631MF100X125R6HX-D4	T631MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T631M100X150R6HX-D1	T631M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T631MF120X125R6HX-D4	T631MF120X125R6HX-D4	M12 X 1,25	100	15	39	9,0	4	DIN 374	6HX
T631MF120X150R6HX-D4	T631MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T631M120X175R6HX-D6	T631M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T631MF140X125R6HX-D4	T631MF140X125R6HX-D4	M14 X 1,25	100	15	47	11,0	4	DIN 374	6HX
T631MF140X150R6HX-D4	T631MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T631M140X200R6HX-D6	T631M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T631MF160X150R6HX-D4	T631MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T631M160X200R6HX-D6	T631M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T631MF180X150R6HX-D4	T631MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T631M180X250R6HX-D6	T631M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX

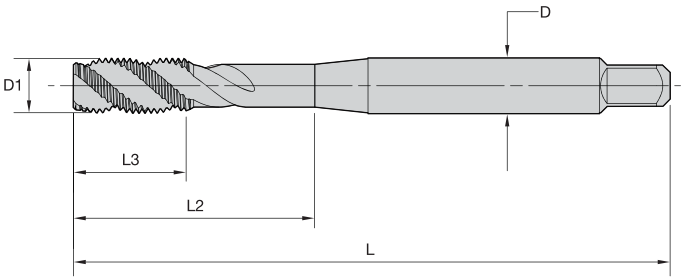
NOTE: Suggested for use in rigid and synchronous holders.

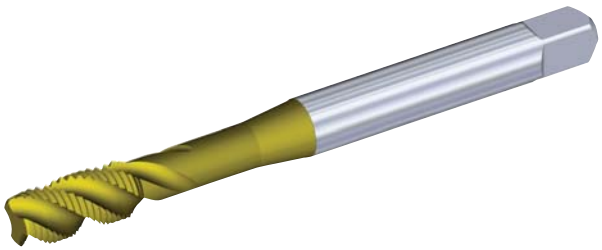
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

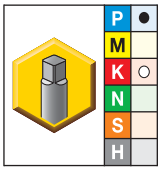
- KP6525 TiCN + TiN for tapping steel.







T632 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T632M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T632M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T632M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T632M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T632MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T632M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T632MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T632M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T632MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

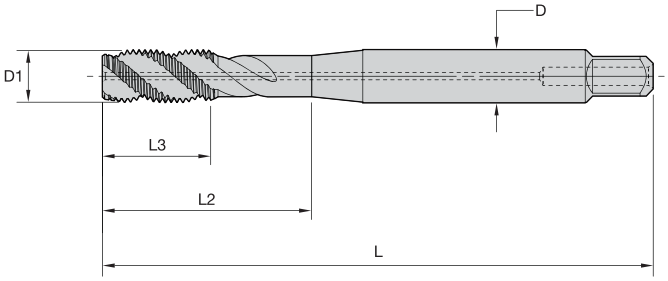
NOTE: Suggested for use in rigid and synchronous holders.

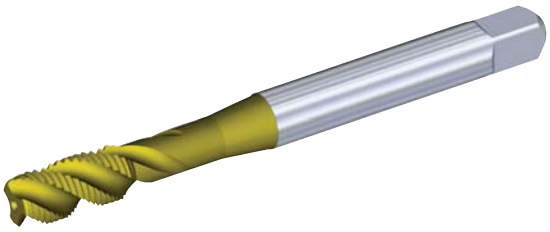
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

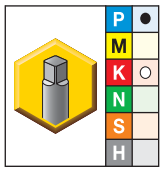
• KP6525 TiCN + TiN for tapping steel.







T633 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T633M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T633M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T633M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T633M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T633MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T633M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T633MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T633M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T633MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

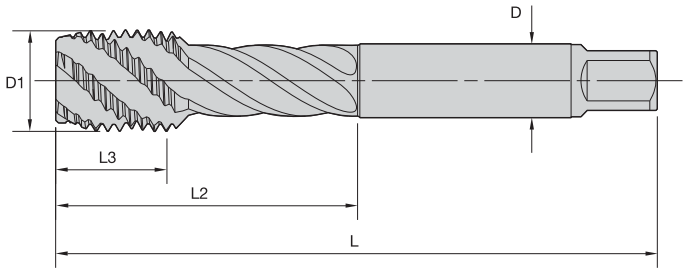
NOTE: Suggested for use in rigid and synchronous holders.

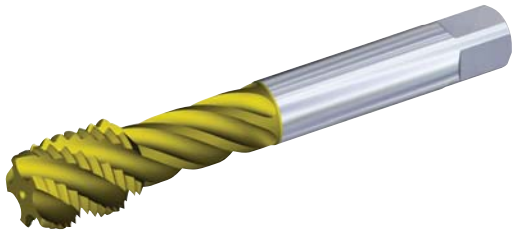
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

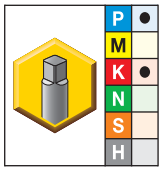
- KP6525 TiCN + TiN for tapping steel and cast iron.







T630 • DIN 376 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T630M240X300R6HX-D6	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
T630M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T630M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T630M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T630M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	5	DIN 376	6HX

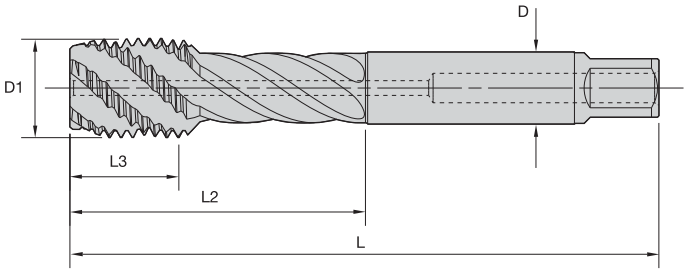
NOTE: Suggested for use in rigid and synchronous holders.

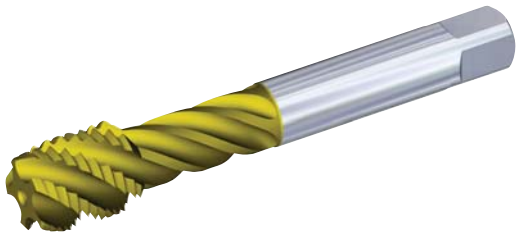
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

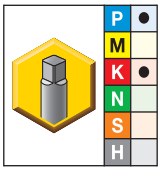
- KP6525 TiCN + TiN for tapping steel and cast iron.







T631 • DIN 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T631M240X300R6HX-D6	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
T631M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T631M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T631M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T631M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	5	DIN 376	6HX

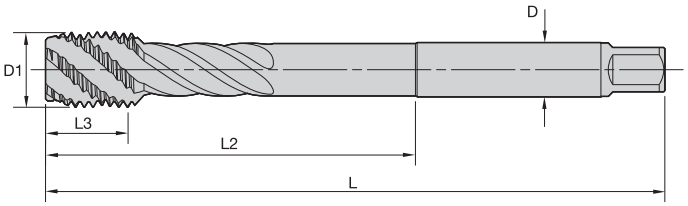
NOTE: Suggested for use in rigid and synchronous holders.

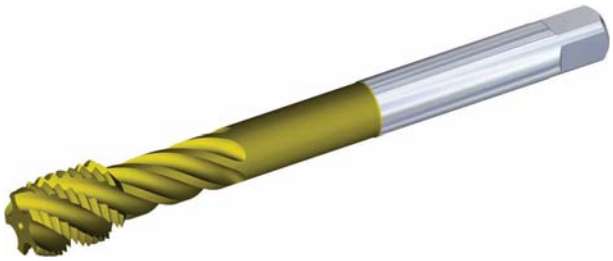
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

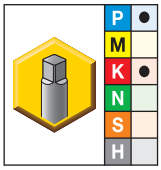
- KP6525 TiCN + TiN for tapping steel and cast iron.







T630 • Extra Long • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T630M240X300R6HX-XL	M24 X 3	200	30	120	18,0	5	6HX
T630M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T630M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T630M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T630M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	5	6HX

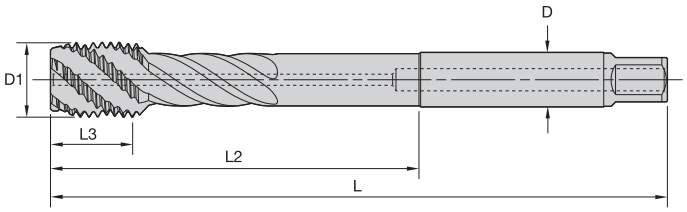
NOTE: Suggested for use in rigid and synchronous holders.

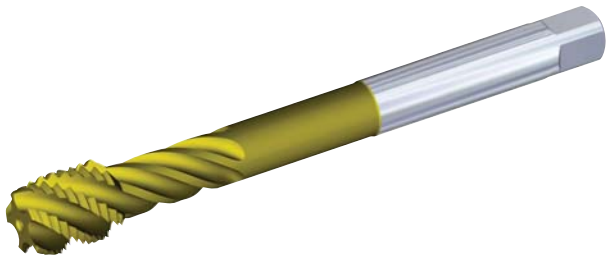
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

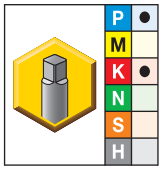
- KP6525 TiCN + TiN for tapping steel and cast iron.







T631 • Extra Long • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T631M240X300R6HX-XL	M24 X 3	200	30	120	18,0	5	6HX
T631M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T631M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T631M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T631M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	5	6HX

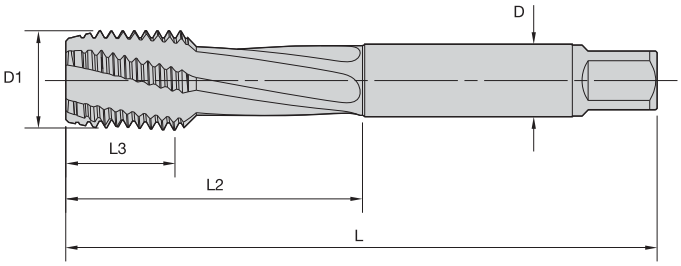
NOTE: Suggested for use in rigid and synchronous holders.

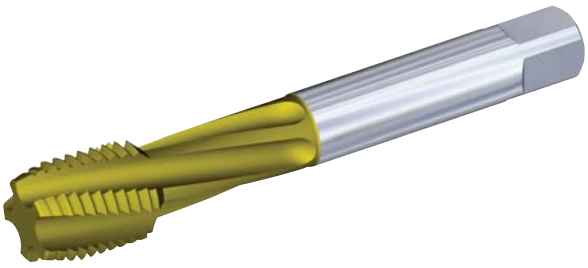
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

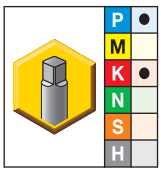
- KP6525 TiCN + TiN for tapping steel and cast iron.







T650 • DIN 376 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

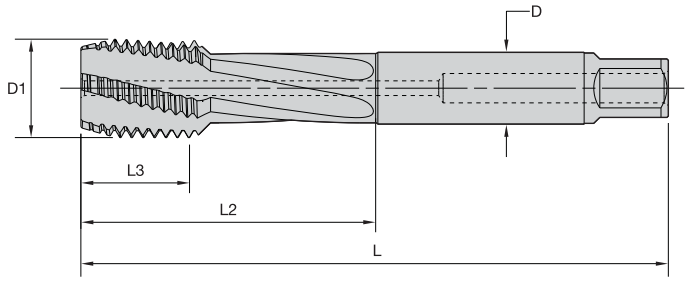
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T650M240X300R6HX-D6	M24 X 3	160	30	77	18,0	4	DIN 376	6HX
T650M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T650M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T650M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T650M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	6	DIN 376	6HX

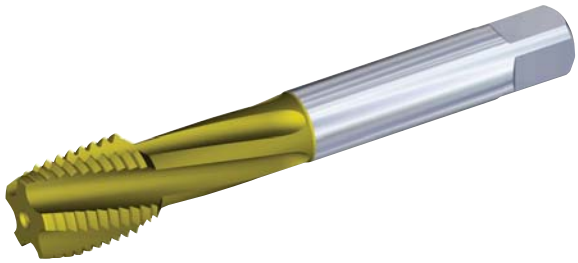
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

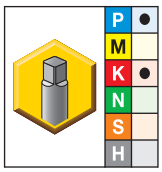
- KP6525 TiCN + TiN for tapping steel and cast iron.







T651 • DIN 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

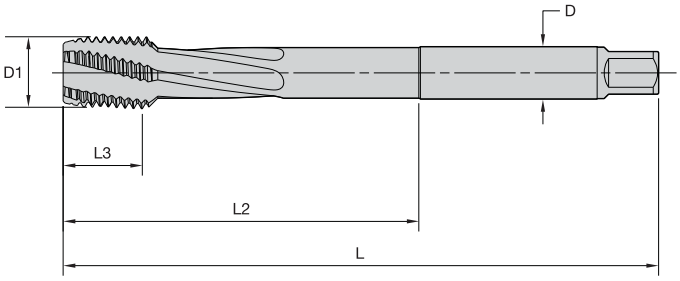
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T651M240X300R6HX-D6	M24 X 3	160	30	77	18,0	4	DIN 376	6HX
T651M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T651M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T651M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T651M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	6	DIN 376	6HX

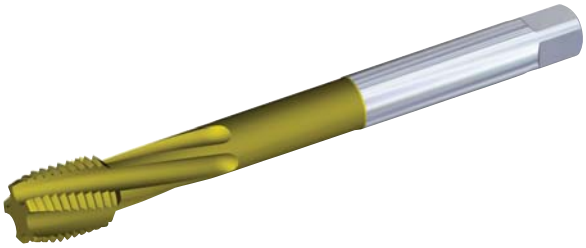
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

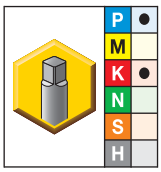
- KP6525 TiCN + TiN for tapping steel and cast iron.







T650 • Extra Long • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

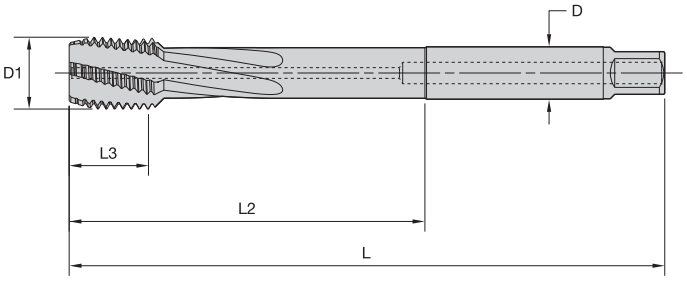
KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T650M240X300R6HX-XL	M24 X 3	200	30	120	18,0	4	6HX
T650M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T650M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T650M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T650M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	6	6HX

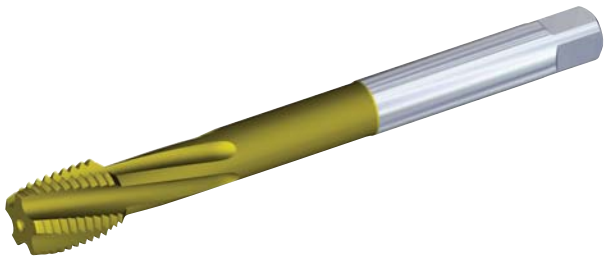
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

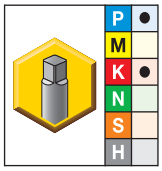
- KP6525 TiCN + TiN for tapping steel and cast iron.







T651 • Extra Long • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron



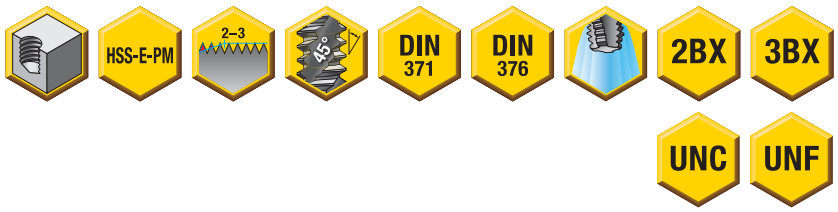
● first choice
○ alternate choice

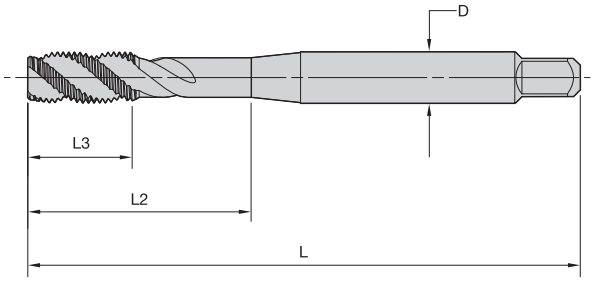
KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T651M240X300R6HX-XL	M24 X 3	200	30	120	18,0	4	6HX
T651M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T651M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T651M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T651M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	6	6HX

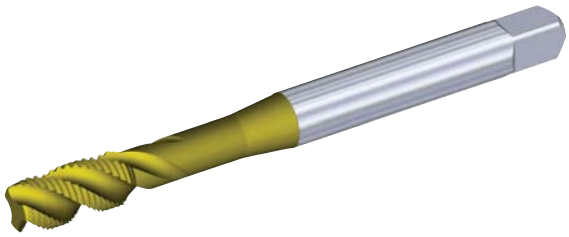
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

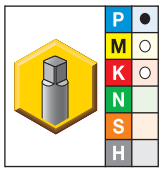
- KP6525 TiCN + TiN for steel.







T630 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T630NC#06-32R2BX-D1	6 - 32	56	9	20	4,0	3	DIN 371	2BX
T630NF#06-40R2BX-D1	6 - 40	56	9	20	4,0	3	DIN 371	2BX
T630NC#08-32R2BX-D1	8 - 32	63	10	21	4,5	3	DIN 371	2BX
T630NC#10-24R2BX-D1	10 - 24	70	10	25	6,0	3	DIN 371	2BX
T630NF#10-32R2BX-D1	10 - 32	70	10	25	6,0	3	DIN 371	2BX
T630NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T630NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T630NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T630NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T630NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T630NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T630NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T630NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T630NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T630NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

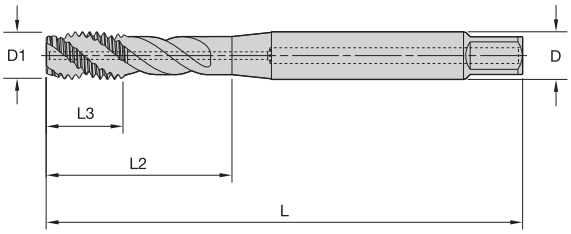
NOTE: Suggested for use in rigid and synchronous holders.

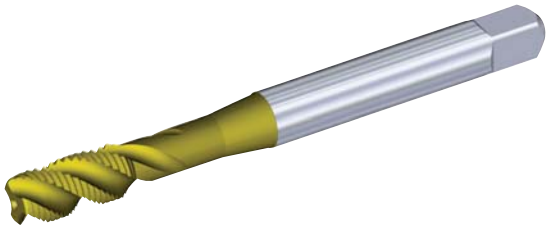
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

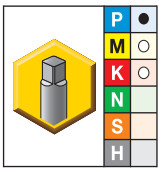
• KP6525 TiCN + TiN for steel.







T631 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T631NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T631NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T631NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T631NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T631NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T631NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T631NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T631NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T631NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T631NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

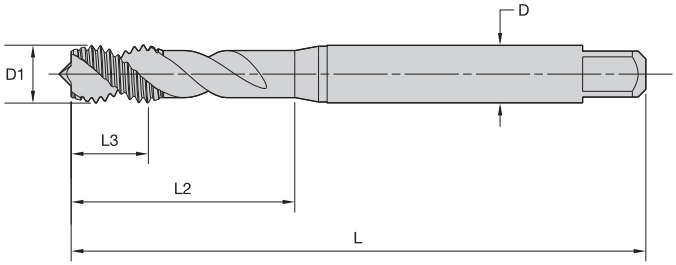
NOTE: Suggested for use in rigid and synchronous holders.

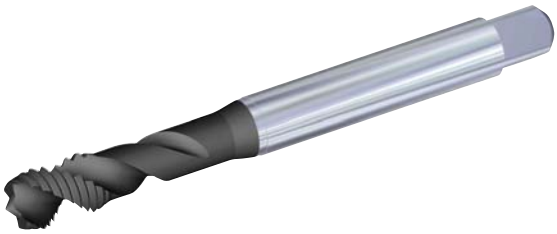
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

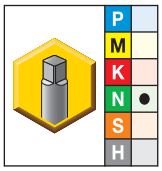
- KSN38 DLC for tapping aluminium.







T680 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Metric • For Aluminium



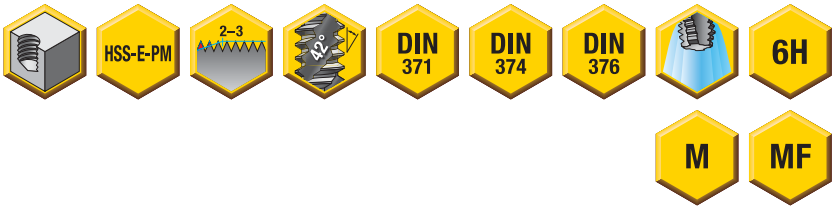
● first choice
○ alternate choice

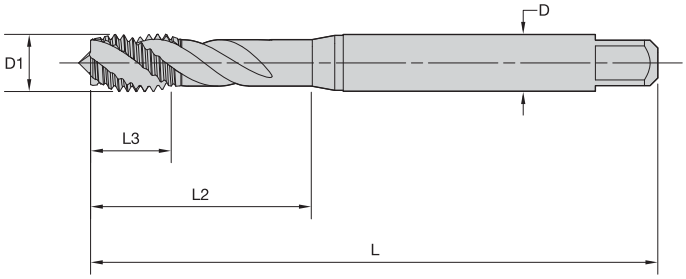
KSN38	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T680M030X050R6H-D1	M3 X 0,5	56	6	18	3,5	2	DIN 371	6H
T680M040X070R6H-D1	M4 X 0,7	63	7	21	4,5	2	DIN 371	6H
T680M050X080R6H-D1	M5 X 0,8	70	8	25	6,0	2	DIN 371	6H
T680M060X100R6H-D1	M6 X 1	80	10	30	6,0	2	DIN 371	6H
T680M080X125R6H-D1	M8 X 1,25	90	14	35	8,0	2	DIN 371	6H
T680M100X150R6H-D1	M10 X 1,5	100	16	39	10,0	2	DIN 371	6H
T680M120X175R6H-D6	M12 X 1,75	110	18	–	9,0	3	DIN 376	6H
T680M160X200R6H-D6	M16 X 2	110	22	–	12,0	3	DIN 376	6H
T680M200X250R6H-D6	M20 X 2,5	140	25	–	16,0	3	DIN 376	6H

Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

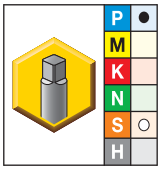
- KSH26 TiAlN/MoS_2 for tapping steel 32–44 HRC (3 x D).







T604 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • For Hard Steel



● first choice
○ alternate choice

KSH26	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T604M030X050R6H-D1	M3 X 0,5	56	6	18	3,5	3	DIN 371	6H
T604M040X070R6H-D1	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
T604M050X080R6H-D1	M5 X 0,8	70	8	25	6,0	3	DIN 371	6H
T604M060X100R6H-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6H
T604MF080X100R6H-D4	M8 X 1	90	10	–	6,0	3	DIN 374	6H
T604M080X125R6H-D1	M8 X 1,25	90	14	35	8,0	3	DIN 371	6H
T604MF100X100R6H-D4	M10 X 1	90	10	–	7,0	3	DIN 374	6H
T604MF100X125R6H-D4	M10 X 1,25	100	16	–	7,0	3	DIN 374	6H
T604M100X150R6H-D1	M10 X 1,5	100	16	39	10,0	3	DIN 371	6H
T604MF120X125R6H-D4	M12 X 1,25	100	15	–	9,0	4	DIN 374	6H
T604MF120X150R6H-D4	M12 X 1,5	100	15	–	9,0	4	DIN 374	6H
T604M120X175R6H-D6	M12 X 1,75	110	18	–	9,0	4	DIN 376	6H
T604MF140X150R6H-D4	M14 X 1,5	100	15	–	11,0	4	DIN 374	6H
T604M140X200R6H-D6	M14 X 2	110	20	–	11,0	4	DIN 376	6H
T604MF160X150R6H-D4 *	M16 X 1,5	100	15	–	12,0	4	DIN 374	6H
T604M160X200R6H-D6	M16 X 2	110	22	–	12,0	4	DIN 376	6H
T604M180X250R6H-D6	M18 X 2,5	125	25	–	14,0	4	DIN 376	6H
T604M200X250R6H-D6	M20 X 2,5	140	25	–	16,0	4	DIN 376	6H

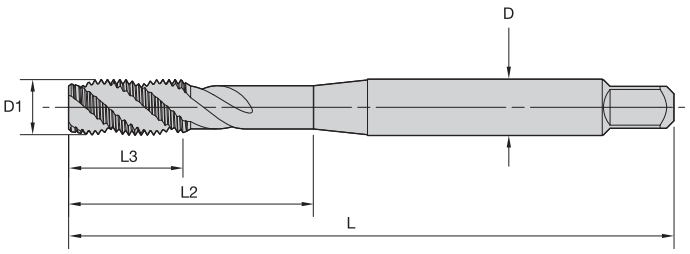
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

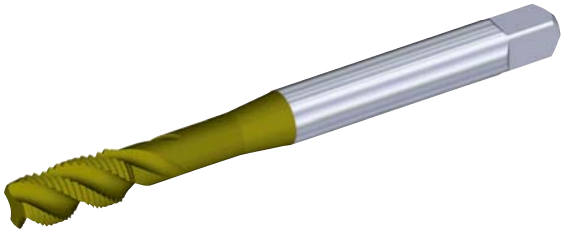
Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

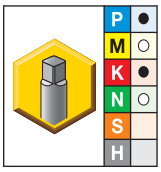
- KSP32 TiCN/TiN
- KSP39 oxide

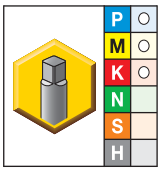






T830 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Rigid and Synchronous Holders



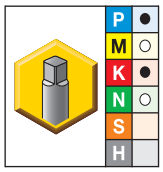


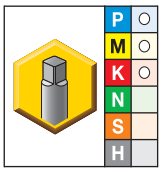
● first choice
○ alternate choice

KSP32	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
–	T830M020X040R6H-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6H
–	T830M020X040R6G-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6G
–	T830M025X045R6H-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6H
–	T830M025X045R6G-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6G
T830M030X050R6H-D1	T830M030X050R6H-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
–	T830M030X050R6G-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6G
–	T830M035X060R6H-D1	M3,5 X 0,6	56	9	20	4,0	2	DIN 371	6H
T830M040X070R6H-D1	T830M040X070R6H-D1	M4 X 0,7	63	11	21	4,5	3	DIN 371	6H
–	T830M040X070R6G-D1	M4 X 0,7	63	11	21	4,5	3	DIN 371	6G
T830M050X080R6H-D1	T830M050X080R6H-D1	M5 X 0,8	70	12	25	6,0	3	DIN 371	6H
–	T830M050X080R6G-D1	M5 X 0,8	70	12	25	6,0	3	DIN 371	6G
–	T830M060X100R6H-D6	M6 X 1	80	12	30	4,5	3	DIN 376	6H
T830M060X100R6H-D1	T830M060X100R6H-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6H
–	T830M060X100R6G-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6G
–	T830M070X100R6H-D1	M7 X 1	80	12	30	7,0	3	DIN 371	6H
T830MF080X100R6H-D4	T830MF080X100R6H-D4	M8 X 1	90	15	35	6,0	3	DIN 374	6H
–	T830M080X125R6H-D6	M8 X 1,25	90	15	35	6,0	3	DIN 376	6H
T830M080X125R6H-D1	T830M080X125R6H-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
–	T830M080X125R6G-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6G
T830MF100X125R6H-D4	T830MF100X125R6H-D4	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
–	T830M100X150R6H-D6	M10 X 1,5	100	18	39	7,0	3	DIN 376	6H
T830M100X150R6H-D1	–	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G
–	T830M100X150R6H-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
–	T830M100X150R6G-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G
–	T830MF120X125R6H-D4	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H
T830MF120X150R6H-D4	T830MF120X150R6H-D4	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
T830M120X175R6H-D6	T830M120X175R6H-D6	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
–	T830M120X175R6G-D6	M12 X 1,75	110	21	44	9,0	3	DIN 376	6G

(continued)

(T830 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Rigid and Synchronous Holders — continued)





● first choice
○ alternate choice

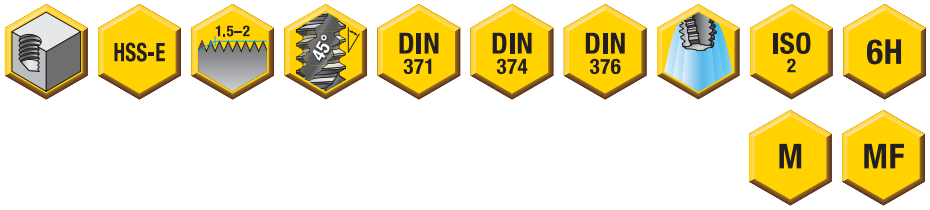
KSP32	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T830MF140X150R6H-D4	**T830MF140X150R6H-D4**	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
T830M140X200R6H-D6	**T830M140X200R6H-D6**	M14 X 2	110	24	52	11,0	3	DIN 376	6H
–	**T830M140X200R6G-D6**	M14 X 2	110	24	52	11,0	3	DIN 376	6G
–	**T830MF160X150R6H-D4**	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H
–	**T830M160X200R6H-D6**	M16 X 2	110	24	51	12,0	3	DIN 376	6H
–	**T830M160X200R6G-D6**	M16 X 2	110	24	51	12,0	3	DIN 376	6G
–	**T830MF180X150R6H-D4**	M18 X 1,5	110	21	50	14,0	4	DIN 374	6H
–	**T830M180X250R6H-D6**	M18 X 2,5	125	30	58	14,0	4	DIN 376	6H
–	**T830M200X250R6H-D6**	M20 X 2,5	140	30	64	16,0	4	DIN 376	6H
–	**T830M220X250R6H-D6**	M22 X 2,5	140	30	70	18,0	4	DIN 376	6H
–	**T830M240X300R6H-D6**	M24 X 3	160	36	77	18,0	4	DIN 376	6H
–	**T830M270X300R6H-D6**	M27 X 3	160	36	82	20,0	4	DIN 376	6H
–	**T830M300X350R6H-D6**	M30 X 3,5	180	42	91	22,0	4	DIN 376	6H
–	**T830M330X350R6H-D6**	M33 X 3,5	180	42	100	25,0	4	DIN 376	6H
–	**T830M360X400R6H-D6**	M36 X 4	200	48	110	28,0	5	DIN 376	6H

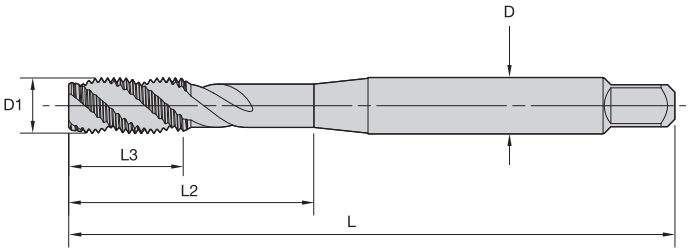
NOTE: Suggested for use in rigid and synchronous holders.

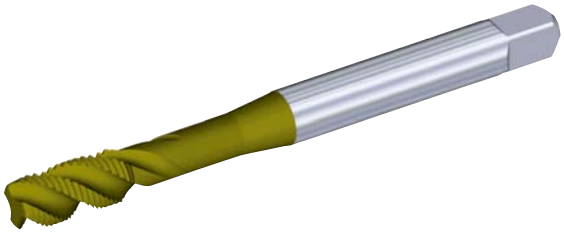
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

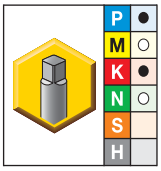
- KSP32 TiCN/TiN
- KSP39 oxide

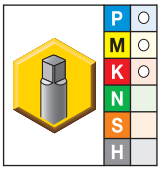






T832 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric • Rigid and Synchronous Holders





● first choice
○ alternate choice

KSP32	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T832M030X050R6H-D1	T832M030X050R6H-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
T832M040X070R6H-D1	T832M040X070R6H-D1	M4 X 0,7	63	11	21	4,5	3	DIN 371	6H
T832M050X080R6H-D1	T832M050X080R6H-D1	M5 X 0,8	70	12	25	6,0	3	DIN 371	6H
T832M060X100R6H-D1	T832M060X100R6H-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6H
T832MF080X100R6H-D4	T832MF080X100R6H-D4	M8 X 1	90	15	35	6,0	3	DIN 374	6H
T832M080X125R6H-D1	T832M080X125R6H-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
T832MF100X125R6H-D4	T832MF100X125R6H-D4	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
T832M100X150R6H-D1	T832M100X150R6H-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
T832MF120X150R6H-D4	T832MF120X150R6H-D4	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
T832M120X175R6H-D6	T832M120X175R6H-D6	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
T832MF140X150R6H-D4	T832MF140X150R6H-D4	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
T832M140X200R6H-D6	T832M140X200R6H-D6	M14 X 2	110	24	52	11,0	3	DIN 376	6H
—	T832M160X200R6H-D6	M16 X 2	110	24	51	12,0	3	DIN 376	6H
T832M180X250R6H-D6	T832M180X250R6H-D6	M18 X 2,5	125	30	58	14,0	4	DIN 376	6H
T832M200X250R6H-D6	T832M200X250R6H-D6	M20 X 2,5	140	30	64	16,0	4	DIN 376	6H

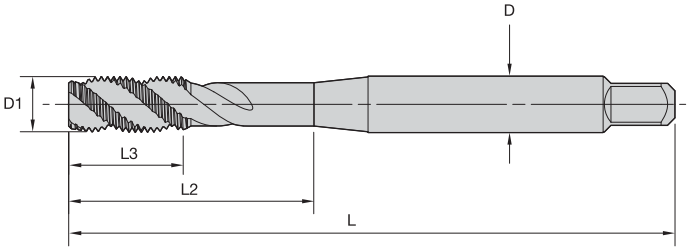
NOTE: Suggested for use in rigid and synchronous holders.

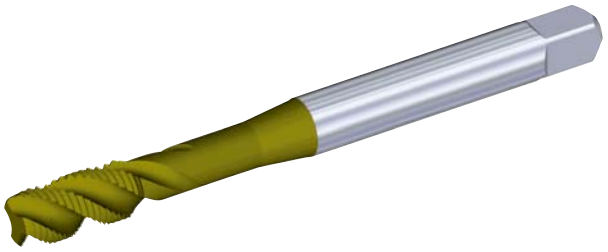
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

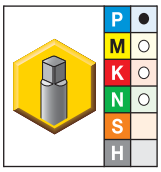
- KSU31 TiN
- KSP39 oxide

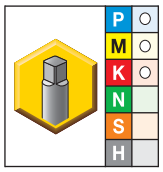






T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Tension/Compression Holders



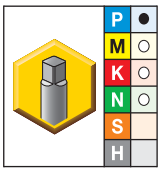


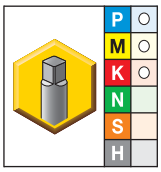
● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838M020X040R6H-D1	T838M020X040R6H-D1	M2 X 0,4	45	7	13	2,8	3	DIN 371	6H
T838M030X050R6H-D1	T838M030X050R6H-D1	M3 X 0,5	56	5	19	3,5	3	DIN 371	6H
T838M040X070R6H-D1	T838M040X070R6H-D1	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
T838M050X080R6H-D1	T838M050X080R6H-D1	M5 X 0,8	70	8	26	6,0	3	DIN 371	6H
T838M050X080R6H-D6	T838M050X080R6H-D6	M5 X 0,8	70	8	27	3,5	3	DIN 376	6H
T838MF060X075R6H-D4	T838MF060X075R6H-D4	M6 X 0,75	80	10	34	4,5	3	DIN 374	6H
T838M060X100R6H-D1	T838M060X100R6H-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6H
T838M060X100R6H-D6	T838M060X100R6H-D6	M6 X 1	80	10	34	4,5	3	DIN 376	6H
T838MF080X075R6H-D4	T838MF080X075R6H-D4	M8 X 0,75	90	13	37	6,0	3	DIN 374	6H
T838MF080X100R6H-D4	T838MF080X100R6H-D4	M8 X 1	90	13	37	6,0	3	DIN 374	6H
T838M080X125R6H-D1	T838M080X125R6H-D1	M8 X 1,25	90	13	37	8,0	3	DIN 371	6H
T838M080X125R6H-D6	T838M080X125R6H-D6	M8 X 1,25	90	13	37	6,0	3	DIN 376	6H
T838MF100X075R6H-D4	T838MF100X075R6H-D4	M10 X 0,75	90	15	40	7,0	3	DIN 374	6H
T838MF100X100R6H-D4	T838MF100X100R6H-D4	M10 X 1	90	15	40	7,0	3	DIN 374	6H
T838MF100X125R6H-D4	T838MF100X125R6H-D4	M10 X 1,25	100	15	44	7,0	3	DIN 374	6H
T838M100X150R6H-D1	T838M100X150R6H-D1	M10 X 1,5	100	15	41	10,0	3	DIN 371	6H
T838M100X150R6H-D6	T838M100X150R6H-D6	M10 X 1,5	100	15	44	7,0	3	DIN 376	6H
T838MF120X100R6H-D4	T838MF120X100R6H-D4	M12 X 1	100	13	50	9,0	3	DIN 374	6H
T838MF120X125R6H-D4	T838MF120X125R6H-D4	M12 X 1,25	100	13	50	9,0	3	DIN 374	6H
T838MF120X150R6H-D4	T838MF120X150R6H-D4	M12 X 1,5	100	13	50	9,0	3	DIN 374	6H
T838M120X175R6H-D6	T838M120X175R6H-D6	M12 X 1,75	110	18	55	9,0	3	DIN 376	6H
T838MF140X100R6H-D4	T838MF140X100R6H-D4	M14 X 1	100	15	41	11,0	4	DIN 374	6H
T838MF140X125R6H-D4	T838MF140X125R6H-D4	M14 X 1,25	100	15	41	11,0	4	DIN 374	6H
T838MF140X150R6H-D4	T838MF140X150R6H-D4	M14 X 1,5	100	15	41	11,0	4	DIN 374	6H
T838M140X200R6H-D6	T838M140X200R6H-D6	M14 X 2	110	20	50	11,0	3	DIN 376	6H
T838MF160X150R6H-D4	T838MF160X150R6H-D4	M16 X 1,5	100	15	45	12,0	4	DIN 374	6H
T838M160X200R6H-D6	T838M160X200R6H-D6	M16 X 2	110	20	55	12,0	4	DIN 376	6H
T838MF180X150R6H-D4	T838MF180X150R6H-D4	M18 X 1,5	110	17	55	14,0	4	DIN 374	6H
T838MF180X200R6H-D4	T838MF180X200R6H-D4	M18 X 2	125	25	61	14,0	4	DIN 374	6H
T838M180X250R6H-D6	T838M180X250R6H-D6	M18 X 2,5	125	25	61	14,0	4	DIN 376	6H
T838MF200X150R6H-D4	T838MF200X150R6H-D4	M20 X 1,5	125	17	56	16,0	4	DIN 374	6H
T838MF200X200R6H-D4	T838MF200X200R6H-D4	M20 X 2	140	25	65	16,0	4	DIN 374	6H

(continued)

(T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Tension/Compression Holders — continued)





● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838M200X250R6H-D6	**T838M200X250R6H-D6**	M20 X 2,5	140	25	65	16,0	4	DIN 376	6H
T838MF220X150R6H-D4	**T838MF220X150R6H-D4**	M22 X 1,5	125	18	61	18,0	4	DIN 374	6H
T838MF220X200R6H-D4	**T838MF220X200R6H-D4**	M22 X 2	140	25	66	18,0	4	DIN 374	6H
T838M220X250R6H-D6	**T838M220X250R6H-D6**	M22 X 2,5	140	25	66	18,0	4	DIN 376	6H
T838MF240X150R6H-D4	**T838MF240X150R6H-D4**	M24 X 1,5	140	20	67	18,0	4	DIN 374	6H
T838MF240X200R6H-D4	**T838MF240X200R6H-D4**	M24 X 2	140	20	67	18,0	4	DIN 374	6H
T838M240X300R6H-D6	**T838M240X300R6H-D6**	M24 X 3	160	30	77	18,0	4	DIN 376	6H
T838MF270X150R6H-D4	**T838MF270X150R6H-D4**	M27 X 1,5	140	20	65	20,0	4	DIN 374	6H
T838M270X300R6H-D6	**T838M270X300R6H-D6**	M27 X 3	160	33	85	20,0	4	DIN 376	6H
T838MF300X150R6H-D4	**T838MF300X150R6H-D4**	M30 X 1,5	150	22	68	20,0	4	DIN 374	6H
T838MF300X200R6H-D4	**T838MF300X200R6H-D4**	M30 X 2	150	22	68	22,0	4	DIN 374	6H
T838M300X350R6H-D6	**T838M300X350R6H-D6**	M30 X 3,5	180	35	87	22,0	4	DIN 376	6H
T838M330X350R6H-D6	**T838M330X350R6H-D6**	M33 X 3,5	180	35	92	25,0	4	DIN 376	6H
T838M360X400R6H-D6	**T838M360X400R6H-D6**	M36 X 4	200	40	110	28,0	4	DIN 376	6H
T838M390X400R6H-D6	**T838M390X400R6H-D6**	M39 X 4	200	40	105	32,0	4	DIN 376	6H
T838M420X450R6H-D6	**T838M420X450R6H-D6**	M42 X 4,5	200	40	105	32,0	5	DIN 376	6H
T838M450X450R6H-D6	**T838M450X450R6H-D6**	M45 X 5	220	50	110	36,0	5	DIN 376	6H
T838M480X500R6H-D6	**T838M480X500R6H-D6**	M48 X 5	250	50	145	36,0	5	DIN 376	6H
T838M520X500R6H-D6	**T838M520X500R6H-D6**	M52 X 5	250	50	135	40,0	5	DIN 376	6H

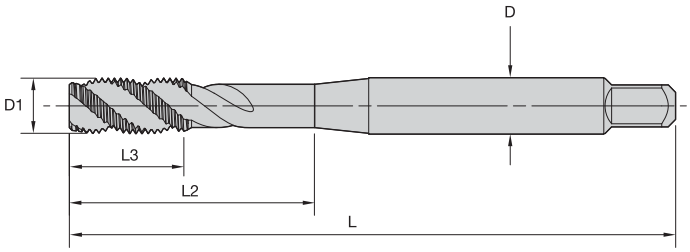
NOTE: Suitable for tension/compression holders.

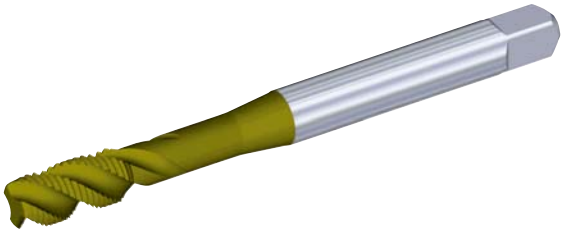
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

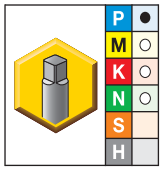
- KSU31 TiN
- KSP39 oxide

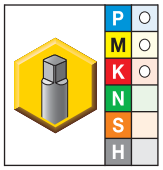






T839 • DIN 371 and 376 • Form E Bottoming Chamfer • Metric • Tension/Compression Holders





● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T839M030X050R6H-D1	**T839M030X050R6H-D1**	M3 X 0,5	56	5	19	3,5	3	DIN 371	6H
T839M040X070R6H-D1	**T839M040X070R6H-D1**	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
T839M050X080R6H-D1	**T839M050X080R6H-D1**	M5 X 0,8	70	8	26	6,0	3	DIN 371	6H
T839M060X100R6H-D1	**T839M060X100R6H-D1**	M6 X 1	80	10	30	6,0	3	DIN 371	6H
T839M080X125R6H-D1	**T839M080X125R6H-D1**	M8 X 1,25	90	13	37	8,0	3	DIN 371	6H
T839M100X150R6H-D1	**T839M100X150R6H-D1**	M10 X 1,5	100	15	42	10,0	3	DIN 371	6H
T839M120X175R6H-D6	**T839M120X175R6H-D6**	M12 X 1,75	110	18	55	9,0	3	DIN 376	6H
T839M140X200R6H-D6	**T839M140X200R6H-D6**	M14 X 2	110	20	50	11,0	3	DIN 376	6H
T839M160X200R6H-D6	**T839M160X200R6H-D6**	M16 X 2	110	20	55	12,0	4	DIN 376	6H
T839M180X250R6H-D6	**T839M180X250R6H-D6**	M18 X 2,5	125	25	61	14,0	4	DIN 376	6H
T839M200X250R6H-D6	**T839M200X250R6H-D6**	M20 X 2,5	140	25	65	16,0	4	DIN 376	6H

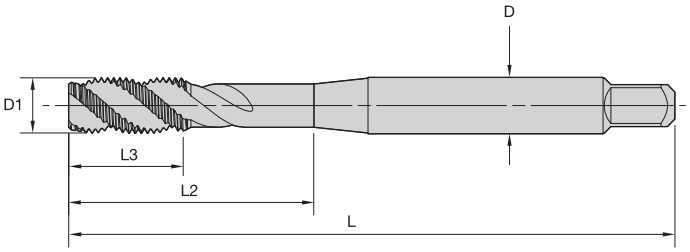
NOTE: Suitable for tension/compression holders.

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

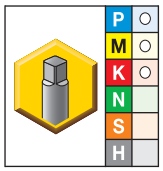
• KSP39 oxide







T830 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • UNC/UNF • Rigid and Synchronous Holders



● first choice
○ alternate choice

KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T830NC#04-40R2B-D1	4 - 40	56	8	18	3,5	2	DIN 371	2B
T830NC#05-40R2B-D1	5 - 40	56	9	20	4,0	2	DIN 371	2B
T830NC#06-32R2B-D1	6 - 32	56	9	20	4,0	2	DIN 371	2B
T830NF#06-40R2B-D1	6 - 40	56	9	20	4,0	2	DIN 371	2B
T830NC#08-32R2B-D1	8 - 32	63	11	21	4,5	3	DIN 371	2B
T830NC#10-24R2B-D1	10 - 24	70	12	25	6,0	3	DIN 371	2B
T830NF#10-32R2B-D1	10 - 32	70	12	25	6,0	3	DIN 371	2B
T830NC02500-20R2B-D1	1/4 - 20	80	15	30	7,0	3	DIN 371	2B
T830NF02500-28R2B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	2B
T830NC03125-18R2B-D1	5/16 - 18	90	15	35	8,0	3	DIN 371	2B
T830NF03125-24R2B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	2B
T830NC03750-16R2B-D1	3/8 - 16	100	19	39	10,0	3	DIN 371	2B
T830NF03750-24R2B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	2B
T830NC04375-14R2B-D6	7/16 - 14	100	18	41	8,0	3	DIN 376	2B
T830NF04375-20R2B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	2B
T830NC05000-13R2B-D6	1/2 - 13	110	23	47	9,0	3	DIN 376	2B
T830NF05000-20R2B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	2B
T830NC05625-12R2B-D6	9/16 - 12	110	25	53	11,0	3	DIN 376	2B
T830NF05625-18R2B-D6	9/16 - 18	110	25	53	11,0	3	DIN 376	2B
T830NC06250-11R2B-D6	5/8 - 11	110	24	51	12,0	3	DIN 376	2B
T830NF06250-18R2B-D6	5/8 - 18	110	24	51	12,0	3	DIN 376	2B
T830NC07500-10R2B-D6	3/4 - 10	140	30	64	16,0	4	DIN 376	2B
T830NF07500-16R2B-D6	3/4 - 16	140	30	64	16,0	4	DIN 376	2B
T830NF08750-9R2B-D6	7/8 - 9	140	34	71	18,0	4	DIN 376	2B
T830NF08750-14R2B-D6	7/8 - 14	140	34	71	18,0	4	DIN 376	2B
T830NC10000-8R2B-D6	1 - 8	160	38	81	18,0	4	DIN 376	2B
T830NF10000-12R2B-D6	1 - 12	160	38	81	18,0	4	DIN 376	2B

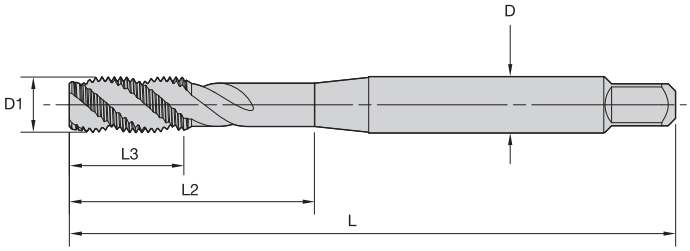
NOTE: Suggested for use in rigid and synchronous holders.

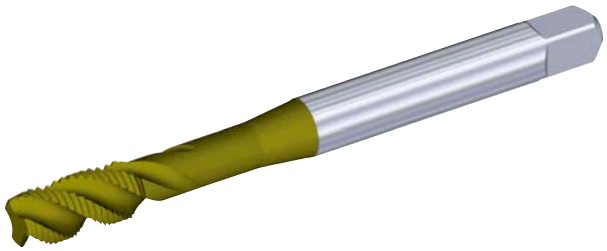
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

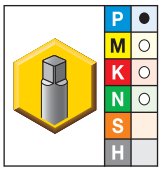
- KSU31 TiN
- KSP39 oxide

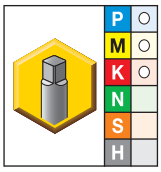






T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • UNC/UNF • Tension/Compression Holders



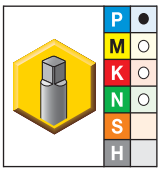


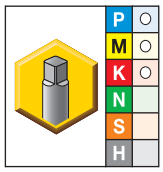
● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838NC#06-32R2B-D1	T838NC#06-32R2B-D1	6 - 32	56	7	21	4,0	3	DIN 371	2B
T838NF#06-40R2B-D1	T838NF#06-40R2B-D1	6 - 40	56	7	21	4,0	3	DIN 371	2B
T838NC#08-32R2B-D1	T838NC#08-32R2B-D1	8 - 32	63	7	21	4,5	3	DIN 371	2B
T838NF#08-36R2B-D1	T838NF#08-36R2B-D1	8 - 36	63	7	21	4,5	3	DIN 371	2B
T838NC#10-24R2B-D1	T838NC#10-24R2B-D1	10 - 24	70	8	25	6,0	3	DIN 371	2B
T838NF#10-32R2B-D1	T838NF#10-32R2B-D1	10 - 32	70	8	25	6,0	3	DIN 371	2B
T838NC#12-24R2B-D1	T838NC#12-24R2B-D1	12 - 24	80	10	30	6,0	3	DIN 371	2B
T838NF#12-28R2B-D1	T838NF#12-28R2B-D1	12 - 28	80	10	30	6,0	3	DIN 371	2B
T838NC02500-20R2B-D1	T838NC02500-20R2B-D1	1/4 - 20	80	10	29	7,0	3	DIN 371	2B
T838NC02500-20R2B-D6	T838NC02500-20R2B-D6	1/4 - 20	80	10	36	4,5	3	DIN 376	2B
T838NF02500-28R2B-D1	T838NF02500-28R2B-D1	1/4 - 28	80	10	29	7,0	3	DIN 371	2B
T838NF02500-28R2B-D4	T838NF02500-28R2B-D4	1/4 - 28	80	10	36	4,5	3	DIN 374	2B
T838NC03125-18R2B-D1	T838NC03125-18R2B-D1	5/16 - 18	90	13	37	8,0	3	DIN 371	2B
T838NC03125-18R2B-D6	T838NC03125-18R2B-D6	5/16 - 18	90	13	37	6,0	3	DIN 376	2B
T838NF03125-24R2B-D4	T838NF03125-24R2B-D4	5/16 - 24	90	13	37	6,0	3	DIN 374	2B
T838NC03750-16R2B-D1	T838NC03750-16R2B-D1	3/8 - 16	100	15	42	10,0	3	DIN 371	2B
T838NC03750-16R2B-D6	T838NC03750-16R2B-D6	3/8 - 16	100	15	45	7,0	3	DIN 376	2B
T838NF03750-24R2B-D4	T838NF03750-24R2B-D4	3/8 - 24	90	15	40	7,0	3	DIN 374	2B
T838NC04375-14R2B-D6	T838NC04375-14R2B-D6	7/16 - 14	100	15	47	8,0	3	DIN 376	2B
T838NF04375-20R2B-D4	T838NF04375-20R2B-D4	7/16 - 20	100	15	47	8,0	3	DIN 374	2B
T838NC05000-13R2B-D6	T838NC05000-13R2B-D6	1/2 - 13	110	18	50	9,0	3	DIN 376	2B
T838NF05000-20R2B-D4	T838NF05000-20R2B-D4	1/2 - 20	100	13	44	9,0	3	DIN 374	2B
T838NC05625-12R2B-D6	T838NC05625-12R2B-D6	9/16 - 12	110	20	55	11,0	4	DIN 376	2B
T838NF05625-18R2B-D4	T838NF05625-18R2B-D4	9/16 - 18	100	15	44	11,0	4	DIN 374	2B
T838NC06250-11R2B-D6	T838NC06250-11R2B-D6	5/8 - 11	110	20	55	12,0	4	DIN 376	2B
T838NF06250-18R2B-D4	T838NF06250-18R2B-D4	5/8 - 18	100	15	45	12,0	4	DIN 374	2B
T838NC07500-10R2B-D6	T838NC07500-10R2B-D6	3/4 - 10	125	25	65	14,0	4	DIN 376	2B
T838NF07500-16R2B-D4	T838NF07500-16R2B-D4	3/4 - 16	110	17	55	14,0	4	DIN 374	2B
T838NC08750-9R2B-D6	T838NC08750-9R2B-D6	7/8 - 9	140	25	68	18,0	4	DIN 376	2B
T838NF08750-14R2B-D4	T838NF08750-14R2B-D4	7/8 - 14	125	18	57	18,0	4	DIN 374	2B
T838NC10000-8R2B-D6	T838NC10000-8R2B-D6	1 - 8	160	30	89	18,0	4	DIN 376	2B
T838NF10000-12R2B-D4	T838NF10000-12R2B-D4	1 - 12	140	22	63	18,0	4	DIN 374	2B

(continued)

(T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • UNC/UNF • Tension/Compression Holders — continued)





● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838NC11250-7R2B-D6	**T838NC11250-7R2B-D6**	1 1/8 - 7	180	35	90	22,0	4	DIN 376	2B
T838NF11250-12R2B-D4	**T838NF11250-12R2B-D4**	1 1/8 - 12	150	22	70	22,0	4	DIN 374	2B
T838NC12500-7R2B-D6	**T838NC12500-7R2B-D6**	1 1/4 - 7	180	35	95	22,0	4	DIN 376	2B
T838NF12500-12R2B-D4	**T838NF12500-12R2B-D4**	1 1/4 - 12	150	22	67	22,0	5	DIN 374	2B
T838NC13750-6R2B-D6	**T838NC13750-6R2B-D6**	1 3/8 - 6	200	40	100	28,0	4	DIN 376	2B
T838NF13750-12R2B-D4	**T838NF13750-12R2B-D4**	1 3/8 - 12	170	24	80	28,0	5	DIN 374	2B
T838NC15000-6R2B-D6	**T838NC15000-6R2B-D6**	1 1/2 - 6	200	40	100	28,0	4	DIN 376	2B
T838NF15000-12R2B-D4	**T838NF15000-12R2B-D4**	1 1/2 - 12	170	24	72	28,0	6	DIN 374	2B
T838NC17500-5R2B-D6	**T838NC17500-5R2B-D6**	1 3/4 - 5	220	50	108	36,0	5	DIN 376	2B
T838NC20000-4,5R2B-D6	**T838NC20000-4,5R2B-D6**	2 - 4 1/2	250	55	140	40,0	5	DIN 376	2B

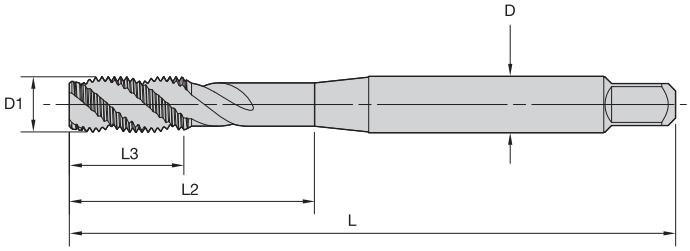
NOTE: Suitable for tension/compression holders.

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

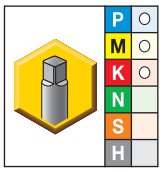
• KSP39 oxide







T830 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • UNJC/UNJF • Rigid and Synchronous Holders



● first choice
○ alternate choice

KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T830NC#04-40R3B-D1	4 - 40	56	8	18	3,5	2	DIN 371	3B
T830NC#06-32R3B-D1	6 - 32	56	9	20	4,0	2	DIN 371	3B
T830NC#08-32R3B-D1	8 - 32	63	11	21	4,5	3	DIN 371	3B
T830NF#10-32R3B-D1	10 - 32	70	12	25	6,0	3	DIN 371	3B
T830NF02500-28R3B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	3B
T830NF03125-24R3B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	3B
T830NF03750-24R3B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	3B
T830NF04375-20R3B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	3B
T830NF05000-20R3B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	3B

NOTE: Internal UNJC/UNJF threads may be produced with ground thread UNC/UNF taps.

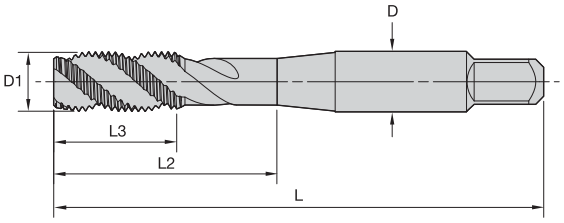
NOTE: Suggested for use in rigid and synchronous holders.

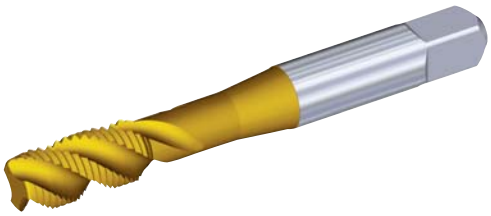
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

- KSU31 TiN
- KSU30 bright

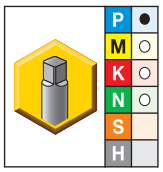


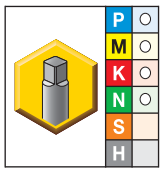




T830 • Form C Semi-Bottoming Chamfer • Metric • JIS • Rigid and Synchronous Holders

Tapping





● first choice
○ alternate choice

KSU31	KSU30	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	tap class
T830M030X050R6H-J	**T830M030X050R6H-J**	M3 X 0,5	46	11	19	4,0	2	JIS	ISO 2
T830M040X070R6H-J	**T830M040X070R6H-J**	M4 X 0,7	52	13	21	5,0	3	JIS	ISO 2
T830M050X080R6H-J	**T830M050X080R6H-J**	M5 X 0,8	60	16	24	5,5	3	JIS	ISO 2
T830M060X100R6H-J	**T830M060X100R6H-J**	M6 X 1	62	19	29	6,0	3	JIS	ISO 2
T830M080X125R6H-J	**T830M080X125R6H-J**	M8 X 1,25	70	22	37	6,2	3	JIS	ISO 2
T830M100X150R6H-J	**T830M100X150R6H-J**	M10 X 1,5	75	24	41	7,0	3	JIS	ISO 2
–	**T830MF120X125R6H-J**	M12 X 1,25	82	29	48	8,5	3	JIS	ISO 2
–	**T830MF120X150R6H-J**	M12 X 1,5	82	29	48	8,5	3	JIS	ISO 2
–	**T830M120X175R6H-J**	M12 X 1,75	82	29	48	8,5	3	JIS	ISO 2
–	**T830MF140X150R6H-J**	M14 X 1,5	88	30	48	10,5	3	JIS	ISO 2
–	**T830M140X200R6H-J**	M14 X 2	88	30	48	10,5	3	JIS	ISO 2
–	**T830MF160X150R6H-J**	M16 X 1,5	95	32	52	12,5	3	JIS	ISO 2
–	**T830M160X200R6H-J**	M16 X 2	95	32	52	12,5	3	JIS	ISO 2
–	**T830M180X250R6H-J**	M18 X 2,5	100	37	55	14,0	4	JIS	ISO 2
–	**T830M200X250R6H-J**	M20 X 2,5	105	37	60	15,0	4	JIS	ISO 2

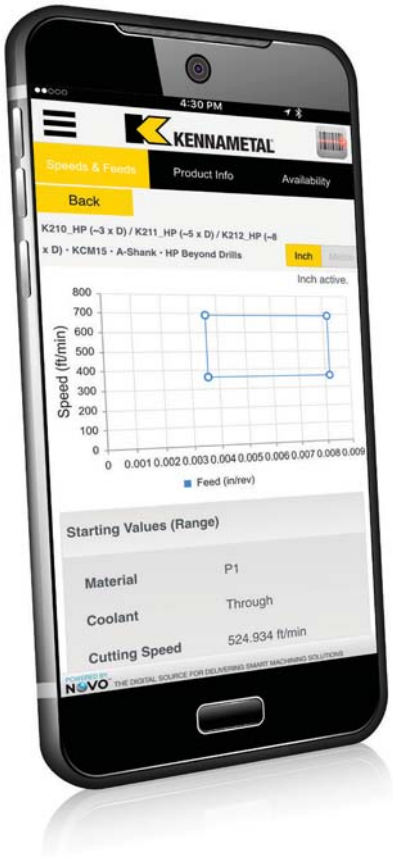
NOTE: Suggested for use in rigid and synchronous holders.

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



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Straight-Flute Taps



High-Performance Taps for Through-Hole and Blind-Hole Applications

- Cast iron.
- Cast aluminium.

High-Performance Beyond™ Solid Carbide Taps

- Straight-flute design for through- and blind-hole tapping in cast iron, cast aluminium, and hard steels.
- Runs up to 4x faster and 4x longer than conventional high-speed steel (HSS) taps.
- Ideal for long production runs where fewer tool changes result in greater productivity.
- For use on CNC machines with synchronous or rigid controls and precision toolholders.

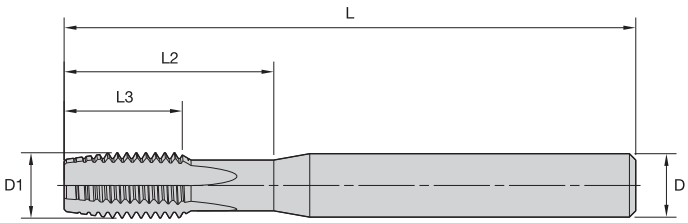
High-Performance Beyond™ HSS-E-PM Taps

- Straight-flute design for through- and blind-hole tapping in cast iron and cast aluminium.
- Higher strength and wider range of applications versus solid carbide taps.
- Higher tapping speed capability and longer tool life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines with rigid or synchronous tap holders.



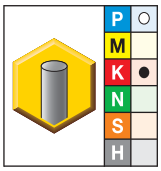
- KCK17 AlCrTiN for cast iron.







T340 • Form D Plug • Inch • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T340NC#6-32R3BX	6 - 32	2.36	.28	.55	.2500	3	3BX
T340NC#8-32R3BX *	8 - 32	2.36	.28	.63	.2500	3	3BX
T340NC#10-24R3BX	10 - 24	2.36	.35	.79	.2500	3	3BX
T340NF#10-32R3BX	10 - 32	2.36	.35	.79	.2500	3	3BX
T340NC02500-20R3BX	1/4 - 20	2.76	.59	.94	.2500	4	3BX
T340NC03125-18R3BX	5/16 - 18	3.15	.67	1.26	.3125	4	3BX
T340NC03750-16R3BX	3/8 - 16	3.54	.75	1.57	.3750	4	3BX
T340NF03750-24R3BX	3/8 - 24	3.54	.75	1.57	.3750	4	3BX
T340NC05000-13R3BX	1/2 - 13	3.94	.94	1.89	.5000	4	3BX
T340NF05000-20R3BX	1/2 - 20	3.94	.94	1.89	.5000	4	3BX
T340NF05625-18R3BX	9/16 - 18	4.33	1.02	2.21	.5000	4	3BX

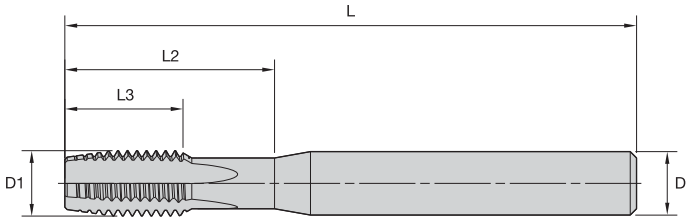
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

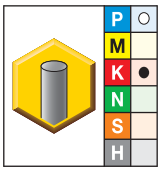
• KCK17 AlCrTiN for cast iron.







T340 • Form D Plug • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

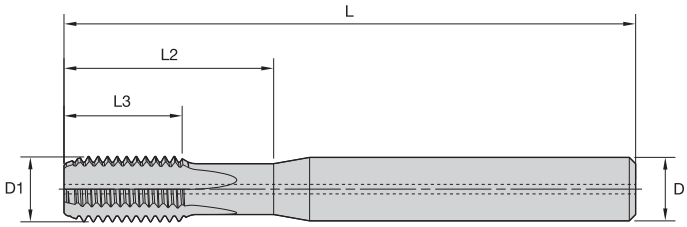
KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T340M040X070R6HX	M4 X 0,7	60	6	16	6,0	3	6HX
T340M050X080R6HX	M5 X 0,8	60	7	20	6,0	3	6HX
T340M060X100R6HX	M6 X 1	70	12	24	6,0	4	6HX
T340M080X125R6HX	M8 X 1,25	80	15	32	8,0	4	6HX
T340MF100X100R6HX	M10 X 1	90	18	40	10,0	4	6HX
T340M100X150R6HX	M10 X 1,5	90	18	40	10,0	4	6HX
T340MF120X150R6HX	M12 X 1,5	100	21	48	12,0	4	6HX
T340M120X175R6HX	M12 X 1,75	100	21	48	12,0	4	6HX
T340MF140X150R6HX	M14 X 1,5	110	24	56	12,0	4	6HX
T340M140X200R6HX	M14 X 2	110	24	56	12,0	4	6HX
T340M160X200R6HX	M16 X 2	110	24	64	14,0	4	6HX
T340M200X250R6HX	M20 X 2,5	140	30	80	18,0	5	6HX

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

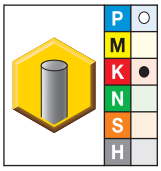
- KCK17 AlCrTiN for cast iron.







T351 • Form E Bottoming Chamfer • Through Coolant 1/4" and Larger • Inch • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T351NC#6-32R3BX *	6 - 32	2.36	.28	.55	.2500	3	3BX
T351NC#8-32R3BX	8 - 32	2.36	.28	.63	.2500	3	3BX
T351NF#10-32R3BX *	10 - 32	2.36	.35	.79	.2500	3	3BX
T351NC02500-20R3BX	1/4 - 20	2.76	.59	.95	.2500	4	3BX
T351NC03125-18R3BX	5/16 - 18	3.15	.67	1.26	.3125	4	3BX
T351NC03750-16R3BX	3/8 - 16	3.54	.75	1.57	.3750	4	3BX
T351NC04375-14R3BX	7/16 - 14	3.94	.87	1.73	.4375	4	3BX
T351NC05000-13R3BX	1/2 - 13	3.94	.94	1.89	.5000	4	3BX
T351NC06250-11R3BX	5/8 - 11	4.33	1.10	2.52	.5625	5	3BX
T351NC07500-10R3BX	3/4 - 10	4.92	1.22	3.01	.6250	5	3BX

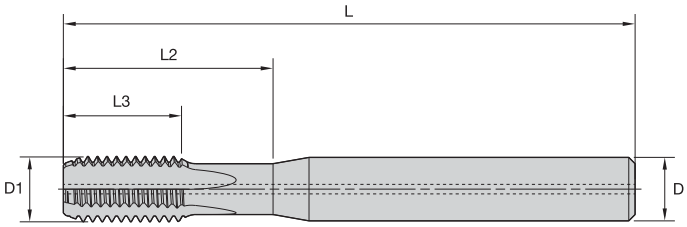
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

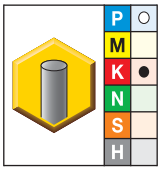
• KCK17 AlCrTiN for cast iron.







T351 • Form E Bottoming Chamfer • Through Coolant M6 and Larger • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

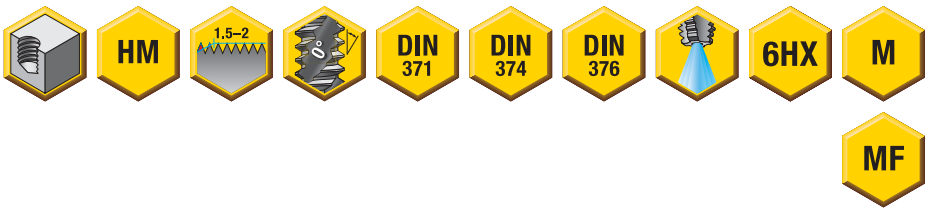
KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T351M040X070R6HX *	M4 X 0,7	60	6	16	6,0	3	6HX
T351M050X080R6HX	M5 X 0,8	60	7	20	6,0	3	6HX
T351M060X100R6HX	M6 X 1	70	12	24	6,0	4	6HX
T351M080X125R6HX	M8 X 1,25	80	15	32	8,0	4	6HX
T351MF100X100R6HX	M10 X 1	90	18	40	10,0	4	6HX
T351M100X150R6HX	M10 X 1,5	90	18	40	10,0	4	6HX
T351MF120X150R6HX	M12 X 1,5	100	21	48	12,0	4	6HX
T351M120X175R6HX	M12 X 1,75	100	21	48	12,0	4	6HX
T351MF140X150R6HX	M14 X 1,5	110	24	56	12,0	4	6HX
T351M140X200R6HX	M14 X 2	110	24	56	12,0	4	6HX
T351M160X200R6HX	M16 X 2	110	24	64	14,0	4	6HX

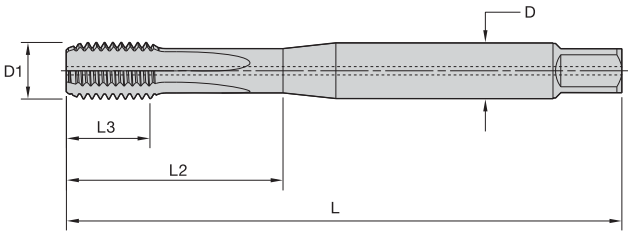
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

• KCK17 AlCrTiN for cast iron.

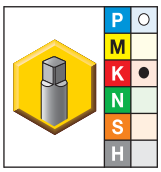






beyond

T351 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

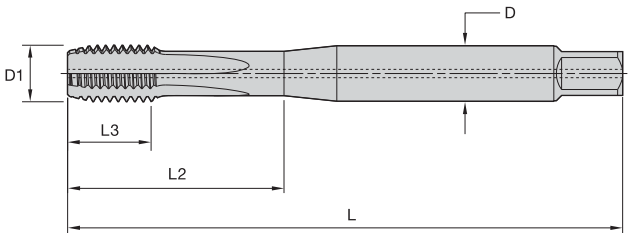
KCK17	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T351M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T351M070X100R6HX-D1	M7 X 1	80	10	30	7,0	4	DIN 371	6HX
T351M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T351M090X125R6HX-D1	M9 X 1,25	90	13	35	9,0	4	DIN 371	6HX
T351MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	4	DIN 374	6HX
T351MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	4	DIN 374	6HX
T351M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T351MF120X125R6HX-D4	M12 X 1,25	100	15	39	9,0	4	DIN 374	6HX
T351MF120X150R6HX-D4	M12 X 1,50	100	15	39	9,0	4	DIN 374	6HX
T351M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T351MF140X125R6HX-D4	M14 X 1,25	100	15	47	11,0	4	DIN 374	6HX
T351MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T351M140X2006RHX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX

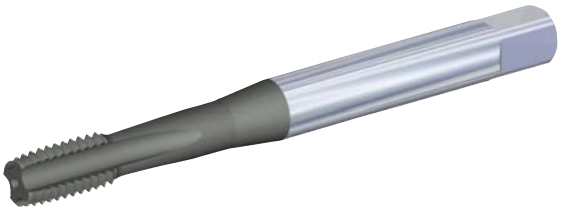
Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

- KCK17 AlCrTiN for cast iron.

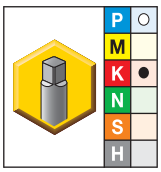






beyond

T353 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant M6 and Larger • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

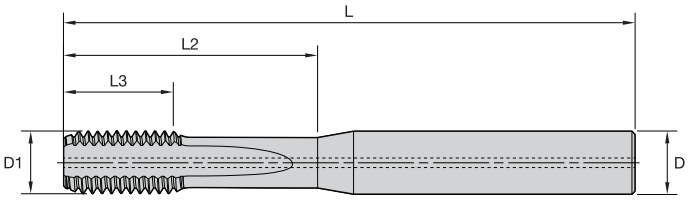
KCK17	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T353M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
T353M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T353M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T353M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T353M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T353M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T353M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX

Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

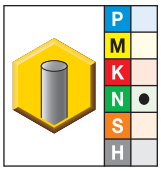
• KCN14 TiN + CrC/C for aluminium.







T471 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Aluminium



● first choice
○ alternate choice

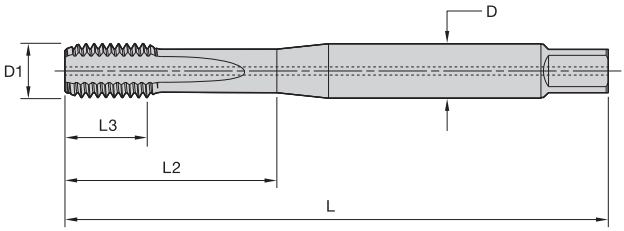
KCN14	D1 size	L	L3	L2	D	number of flutes	class of fit
T471M060X100R6HX	M6 X 1	70	12	24	6,0	3	6HX
T471M080X125R6HX	M8 X 1,25	80	15	32	8,0	3	6HX
T471M100X150R6HX	M10 X 1,5	90	18	40	10,0	3	6HX
T471M120X175R6HX	M12 X 1,75	100	21	48	12,0	3	6HX
T471M140X200R6HX	M14 X 2	110	24	56	12,0	4	6HX

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

• KCN14 TiN + CrC/C for aluminium.

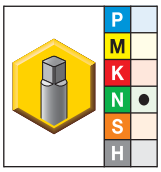






beyond

T471 • DIN 371 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Aluminium



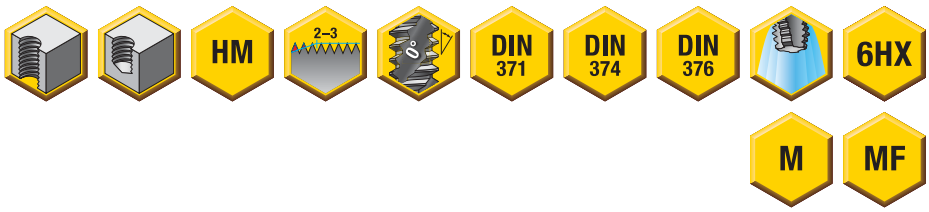
● first choice
○ alternate choice

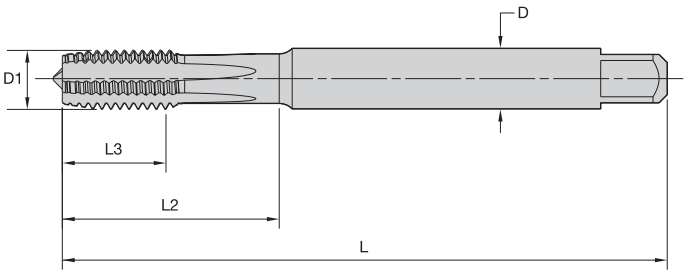
KCN14	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T471M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T471M080X125R6HX-D1	M8 X 1,25	90	10	35	8,0	3	DIN 371	6HX
T471M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX

Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

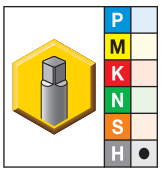
- KCU36 TiAlN/MoS_2 for tapping steel 55–63 HRC.







T410 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Solid Carbide • For Hard Steel



● first choice
○ alternate choice

KCU36	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T410M030X050R6HX-D1	M3 X 0,5	63	6	18	4,5	4	DIN 371	6HX
T410M040X070R6HX-D1	M4 X 0,7	63	8	20	4,5	4	DIN 371	6HX
T410M050X080R6HX-D1	M5 X 0,8	70	10	26	6,0	4	DIN 371	6HX
T410M060X100R6HX-D1	M6 X 1	80	12	28	6,0	4	DIN 371	6HX
T410MF080X100R6HX-D4 *	M8 X 1	90	15	35	8,0	5	DIN 374	6HX
T410M080X125R6HX-D1	M8 X 1,25	90	15	35	8,0	5	DIN 371	6HX
T410MF100X100R6HX-D4 *	M10 X 1	100	18	38	10,0	5	DIN 374	6HX
T410M100X150R6HX-D1	M10 X 1,5	100	18	38	10,0	5	DIN 371	6HX
T410MF120X150R6HX-D4	M12 X 1,5	110	21	41	12,0	5	DIN 374	6HX
T410M120X175R6HX-D6	M12 X 1,75	110	21	41	12,0	5	DIN 376	6HX
T410MF140X150R6HX-D4	M14 X 1,5	110	24	44	14,0	5	DIN 374	6HX
T410M140X200R6HX-D6	M14 X 2	110	24	44	14,0	6	DIN 376	6HX
T410MF160X150R6HX-D4	M16 X 1,5	110	24	44	16,0	5	DIN 374	6HX

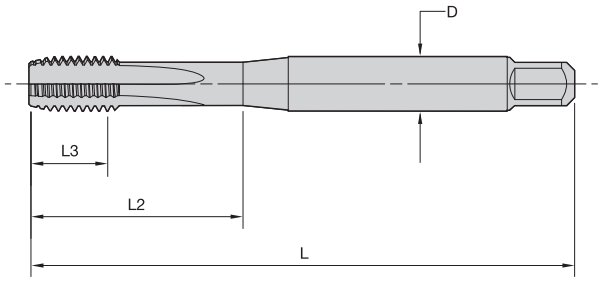
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

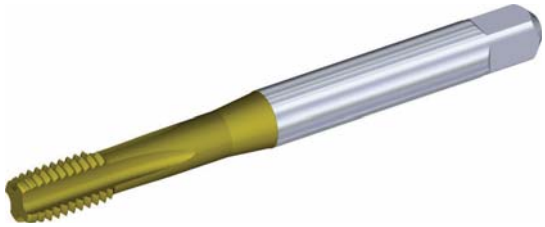
Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

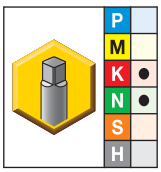
- KP6525 TiCN + TiN for cast iron and cast aluminium.







T640 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Metric • For Cast Iron and Cast Aluminium



● first choice
○ alternate choice

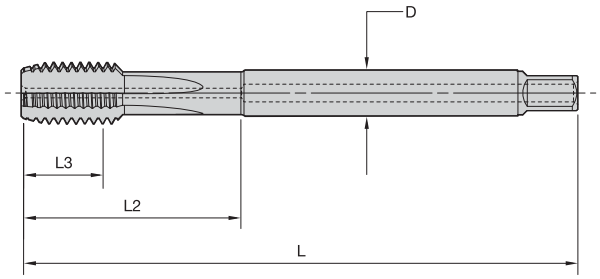
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T640M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
T640M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T640M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T640M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T640M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T640M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T640M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T640M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T640M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX
T640M200X250R6HX-D6	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX
T640M220X250R6HX-D6	M22 X 2,5	140	25	70	18,0	4	DIN 376	6HX

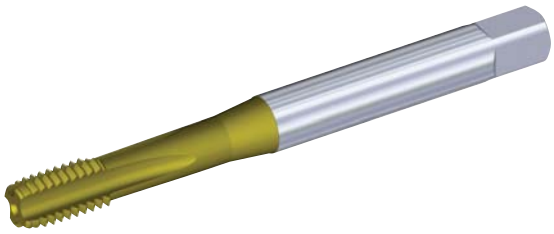
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

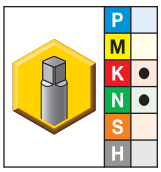
- KP6525 TiCN + TiN for cast iron and cast aluminium.







T641 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • For Cast Iron and Cast Aluminium



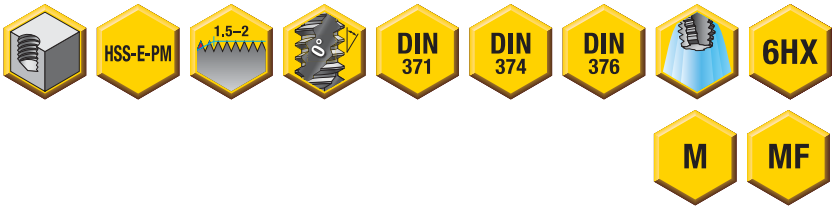
● first choice
○ alternate choice

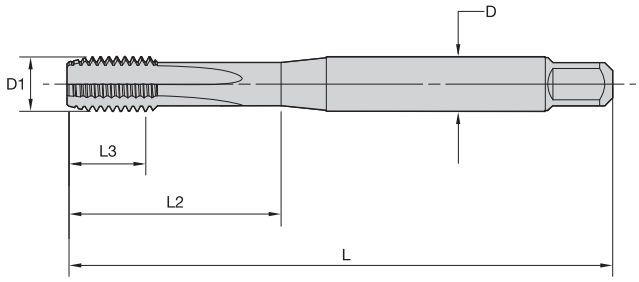
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T641M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T641M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T641M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T641M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T641M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T641M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T641M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T641M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX
T641M200X250R6HX-D6	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX

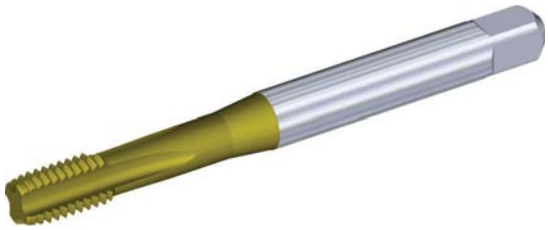
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

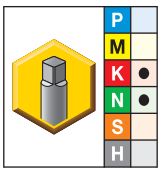
- KP6525 TiCN + TiN for cast iron and cast silicon aluminium.







T642 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric • For Cast Iron and Cast Silicon Aluminium



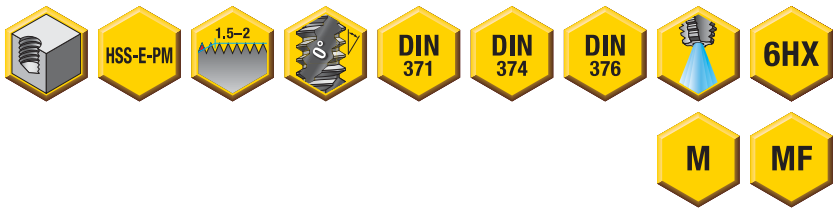
● first choice
○ alternate choice

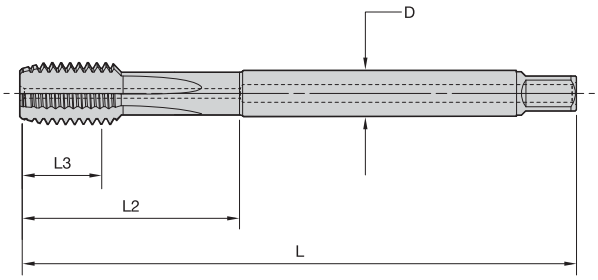
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T642M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T642M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T642M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T642M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T642MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T642M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T642MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T642M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T642MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

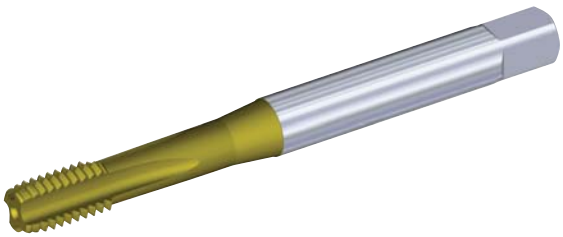
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

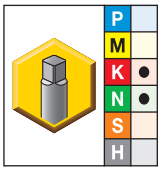
- KP6525 TiCN + TiN for tapping cast iron and cast silicon aluminium.







T643 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric • For Cast Iron and Cast Silicon Aluminium



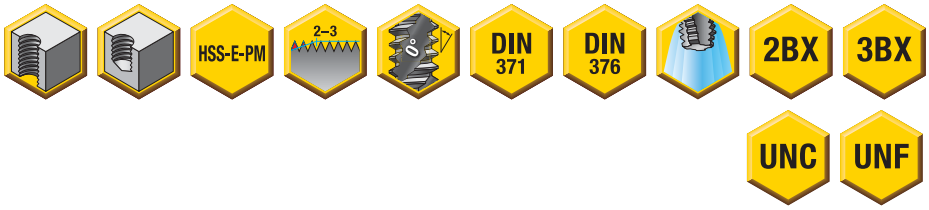
● first choice
○ alternate choice

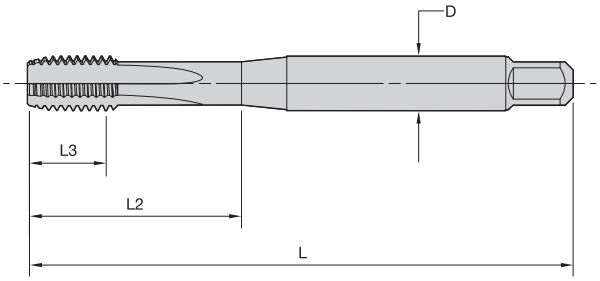
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T643M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T643M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T643M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T643M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T643MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T643M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T643MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T643M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T643MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

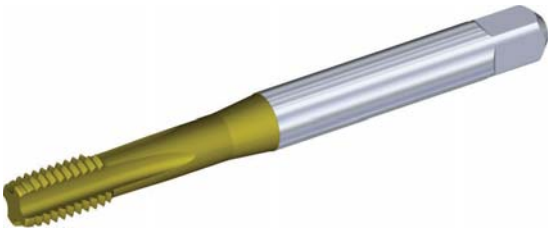
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

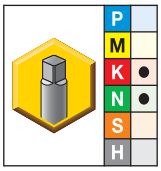
- KP6525 TiCN + TiN for cast iron and cast aluminium.







T640 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • For Cast Iron and Cast Aluminium



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T640NC#06-32R2BX-D1	6 - 32	56	9	20	4,0	3	DIN 371	2BX
T640NF#06-40R2BX-D1 *	6 - 40	56	9	20	4,0	3	DIN 371	2BX
T640NC#08-32R2BX-D1	8 - 32	63	10	21	4,5	3	DIN 371	2BX
T640NC#10-24R2BX-D1	10 - 24	70	10	25	6,0	3	DIN 371	2BX
T640NF#10-32R2BX-D1	10 - 32	70	10	25	6,0	3	DIN 371	2BX
T640NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	4	DIN 371	3BX
T640NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	4	DIN 371	3BX
T640NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	4	DIN 371	3BX
T640NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	4	DIN 371	3BX
T640NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	4	DIN 371	3BX
T640NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	4	DIN 371	3BX
T640NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T640NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T640NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T640NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

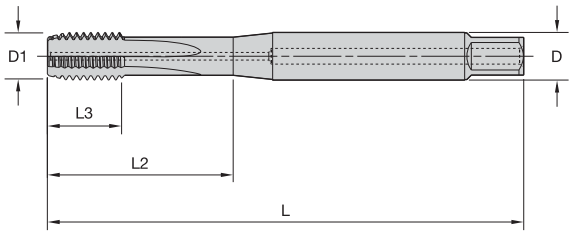
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

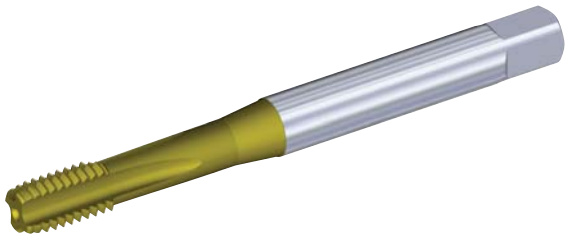
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

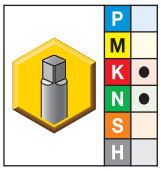
- KP6525 TiCN + TiN for cast iron and cast aluminium.







T641 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional • For Cast Iron and Cast Aluminium



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T641NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	4	DIN 371	3BX
T641NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	4	DIN 371	3BX
T641NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	4	DIN 371	3BX
T641NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	4	DIN 371	3BX
T641NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	4	DIN 371	3BX
T641NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	4	DIN 371	3BX
T641NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T641NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T641NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T641NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

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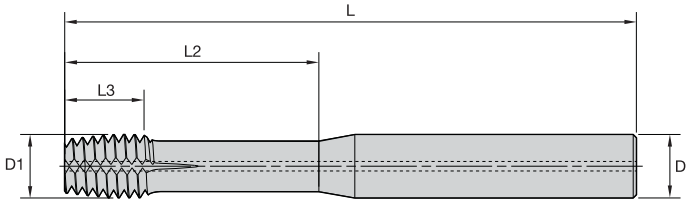
• KCN14 TiN + CrC/C for aluminium.

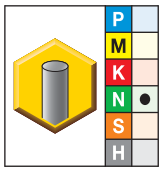






beyond

T491 • Form E Bottoming Entry Taper • Through Coolant M6 and Larger • Metric • Solid Carbide • For Aluminium



● first choice
○ alternate choice

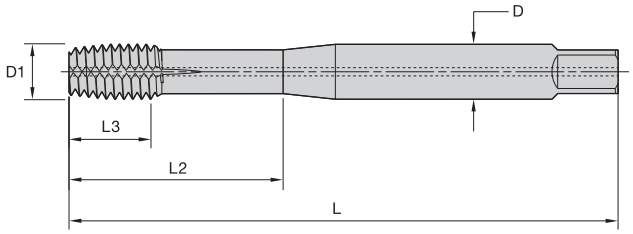
KCN14	D1 size	L	L3	L2	D	number of lube grooves	class of fit
T491M050X080R6HX	M5 X 0,8	60	7	20	6,0	2	6HX
T491M060X100R6HX	M6 X 1	70	8	24	6,0	2	6HX
T491M080X125R6HX	M8 X 1,25	80	10	32	8,0	2	6HX
T491M100X150R6HX	M10 X 1,5	90	12	40	10,0	3	6HX
T491M120X175R6HX	M12 X 1,75	100	14	48	12,0	3	6HX

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

• KCN14 TiN + CrC/C for aluminium.

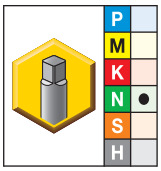






beyond

T491 • DIN 2174 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Aluminium



● first choice
○ alternate choice

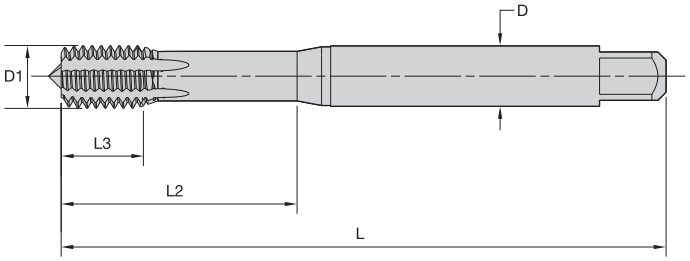
KCN14	D1 size	L	L3	L2	D	number of lube grooves	dimension standard	class of fit
T491M060X100R6HX-D74	M6 X 1	80	10	30	6,0	2	DIN 2174	6HX
T491M080X125R6HX-D74	M8 X 1,25	90	13	35	8,0	2	DIN 2174	6HX
T491M100X150R6HX-D74	M10 X 1,5	100	15	39	10,0	3	DIN 2174	6HX

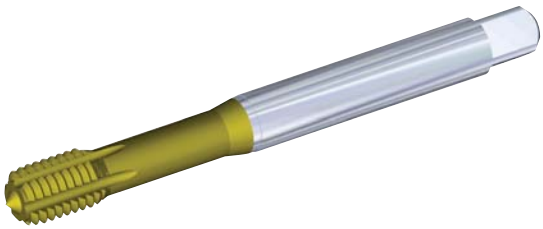
Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

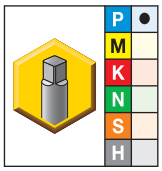
- KSP21 TiN for tapping steel.
- KSN28 DLC for tapping aluminium.

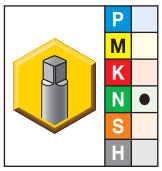






T622 • DIN 2174 • Form C Semi-Bottoming Entry Taper • Metric • For Steel and Aluminium





● first choice
○ alternate choice

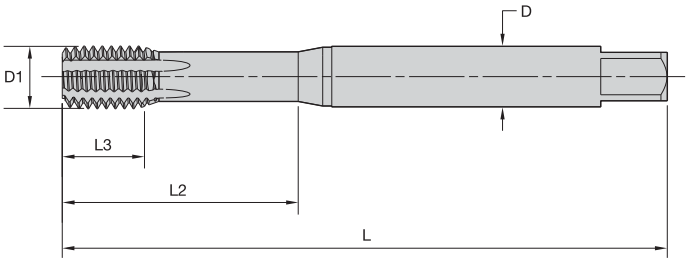
KSP21	KSN28	D1 size	L	L3	L2	D	number of lube grooves	dimension standard	class of fit
T622M030X050R6HX-D74	T622M030X050R6HX-D74	M3 X 0,5	56	6	18	3,5	4	DIN 2174	6HX
T622M040X070R6HX-D74	T622M040X070R6HX-D74	M4 X 0,7	63	7	21	4,5	4	DIN 2174	6HX
T622M050X080R6HX-D74	T622M050X080R6HX-D74	M5 X 0,8	70	8	25	6,0	4	DIN 2174	6HX
T622M060X100R6HX-D74	T622M060X100R6HX-D74	M6 X 1	80	10	30	6,0	5	DIN 2174	6HX
T622MF080X100R6HX-D74	T622MF080X100R6HX-D74	M8 X 1	90	10	35	8,0	5	DIN 2174	6HX
T622M080X125R6HX-D74	T622M080X125R6HX-D74	M8 X 1,25	90	14	35	8,0	5	DIN 2174	6HX
T622MF100X100R6HX-D74	T622MF100X100R6HX-D74 *	M10 X 1	90	10	35	10,0	5	DIN 2174	6HX
T622MF100X125R6HX-D74	T622MF100X125R6HX-D74	M10 X 1,25	100	16	39	10,0	5	DIN 2174	6HX
T622M100X150R6HX-D74	T622M100X150R6HX-D74	M10 X 1,5	100	16	39	10,0	5	DIN 2174	6HX
T622MF120X125R6HX-D74	T622MF120X125R6HX-D74	M12 X 1,25	100	15	39	9,0	6	DIN 2174	6HX
T622MF120X150R6HX-D74	T622MF120X150R6HX-D74	M12 X 1,5	100	15	39	9,0	6	DIN 2174	6HX
T622M120X175R6HX-D74	T622M120X175R6HX-D74	M12 X 1,75	110	18	44	9,0	6	DIN 2174	6HX
T622MF140X150R6HX-D74	T622MF140X150R6HX-D74	M14 X 1,5	100	15	47	11,0	6	DIN 2174	6HX
T622MF160X150R6HX-D74	T622MF160X150R6HX-D74	M16 X 1,5	100	15	46	12,0	6	DIN 2174	6HX
T622M160X200R6HX-D74	T622M160X200R6HX-D74	M16 X 2	110	22	51	12,0	6	DIN 2174	6HX

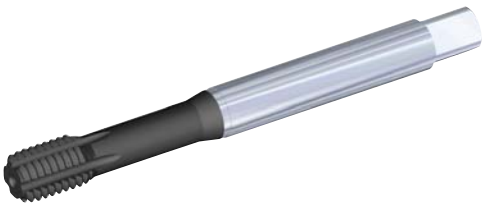
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance	
D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

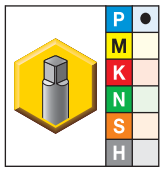
- KSP21 TiN for tapping steel.
- KSN28 DLC for tapping aluminium.

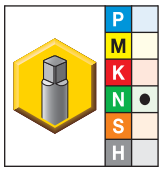






T623 • DIN 2174 • Form C Semi-Bottoming Entry Taper • Through Coolant • Metric • For Steel and Aluminium





● first choice
○ alternate choice

KSP21	KSN28	D1 size	L	L3	L2	D	number of lube grooves	dimension standard	class of fit
T623M050X080R6HX-D74	**T623M050X080R6HX-D74**	M5 X 0,8	70	8	25	6,0	4	DIN 2174	6HX
T623M060X100R6HX-D74	**T623M060X100R6HX-D74**	M6 X 1	80	10	30	6,0	5	DIN 2174	6HX
T623MF080X100R6HX-D74	**T623MF080X100R6HX-D74** *	M8 X 1	90	10	35	8,0	5	DIN 2174	6HX
T623M080X125R6HX-D74	**T623M080X125R6HX-D74**	M8 X 1,25	90	14	35	8,0	5	DIN 2174	6HX
T623MF100X100R6HX-D74	**T623MF100X100R6HX-D74**	M10 X 1	90	10	35	10,0	5	DIN 2174	6HX
T623M100X150R6HX-D74	**T623M100X150R6HX-D74**	M10 X 1,5	100	16	39	10,0	5	DIN 2174	6HX
T623MF120X150R6HX-D74	**T623MF120X150R6HX-D74**	M12 X 1,5	100	15	27	9,0	6	DIN 2174	6HX
T623M120X175R6HX-D74	**T623M120X175R6HX-D74**	M12 X 1,75	110	18	30	9,0	6	DIN 2174	6HX
T623MF140X150R6HX-D74	**T623MF140X150R6HX-D74**	M14 X 1,5	100	15	29	11,0	6	DIN 2174	6HX
T623MF160X150R6HX-D74	**T623MF160X150R6HX-D74**	M16 X 1,5	100	15	31	12,0	6	DIN 2174	6HX
T623M160X200R6HX-D74	**T623M160X200R6HX-D74**	M16 X 2	110	22	38	12,0	6	DIN 2174	6HX

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

Pipe Taps



High-Performance Pipe Taps for Through-Hole and Blind-Hole Applications

- Steel and steel alloys.
- Aluminium.

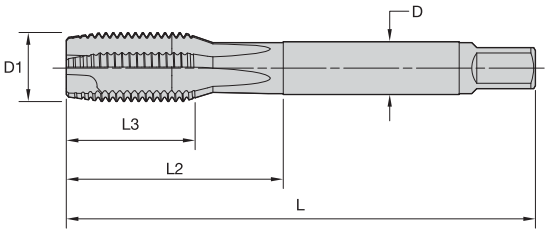
Multipurpose HSS-E GOtap™ Taps

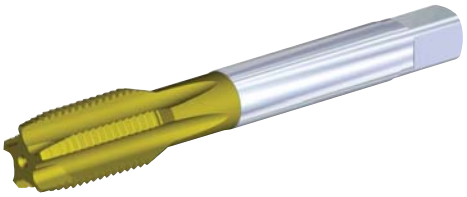
- NPT and NPTF taper pipe taps with standard projections and standard chamfers for ductile materials and mould steels.
- DIN EN ISO 228 G straight pipe taps with Whitworth thread form for ductile materials.
- Manufactured with high-vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Advanced PVD coatings to reduce tapping torque, resulting in high-quality thread finish and longer tool life.
- For use in both synchronous and non-synchronous machines, including rigid, synchronous, and tension/compression tap holders.



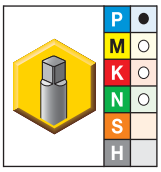
- KSU31 TiN
- KSP39 oxide

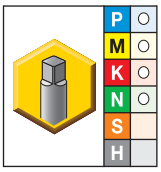






T877 • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form B





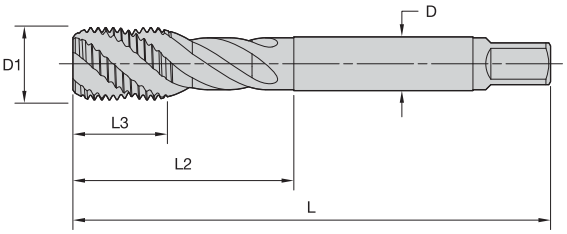
● first choice
○ alternate choice

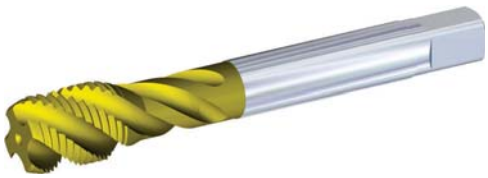
KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	thread type
T877G01250-28R-D56	T877G01250-28R-D56	1/8 - 28	90	15	35	7	3	G
T877G02500-19R-D56	T877G02500-19R-D56	1/4 - 19	100	22	44	11	3	G
T877G03750-19R-D56	T877G03750-19R-D56	3/8 - 19	100	22	47	12	4	G
T877G05000-14R-D56	T877G05000-14R-D56	1/2 - 14	125	25	55	16	4	G
T877G06250-14R-D56	T877G06250-14R-D56	5/8 - 14	125	25	61	18	4	G
T877G07500-14R-D56	T877G07500-14R-D56	3/4 - 14	140	25	60	20	4	G
T877G08750-14R-D56	T877G08750-14R-D56	7/8 - 14	150	28	68	22	4	G
T877G10000-11R-D56	T877G10000-11R-D56	1 - 11	160	30	68	25	5	G

GOtap™ Spiral-Flute HSS-E ISO Pipe Taps • Blind Holes

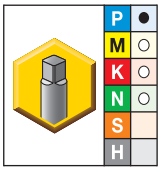
- KSU31 TiN
- KSP39 oxide

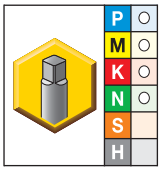






T857 • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form C • Tension/Compression Holders





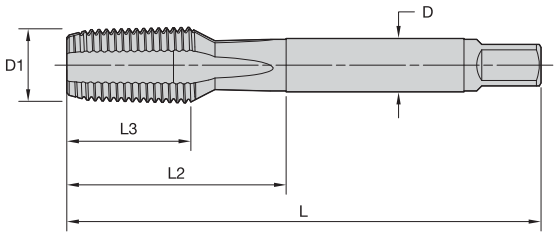
● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	thread type
T857G01250-28R-D56	T857G01250-28R-D56	1/8 - 28	90	15	37	7	3	G
T857G02500-19R-D56	T857G02500-19R-D56	1/4 - 19	100	15	44	11	3	G
T857G03750-19R-D56	T857G03750-19R-D56	3/8 - 19	100	15	47	12	4	G
T857G05000-14R-D56	T857G05000-14R-D56	1/2 - 14	125	18	55	16	4	G
T857G06250-14R-D56	T857G06250-14R-D56	5/8 - 14	125	18	61	18	4	G
T857G07500-14R-D56	T857G07500-14R-D56	3/4 - 14	140	20	65	20	4	G
T857G08750-14R-D56	T857G08750-14R-D56	7/8 - 14	150	22	68	22	4	G
T857G10000-11R-D56	T857G10000-11R-D56	1 - 11	160	24	74	25	5	G

NOTE: Suitable for tension/compression holders.

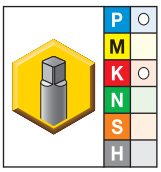
• KSU30 bright







T848 • NPT and NPTF • Standard Projection • Form C



● first choice
○ alternate choice

KSU30	D1 size	L	L3	L2	D	number of flutes	thread type
T848NPT00625-27R-D56	1/16 - 27	90	13	35	6	3	NPT
T848NPTF00625-27R-D56	1/16 - 27	90	13	35	6	3	NPTF
T848NPT01250-27R-D56	1/8 - 27	90	13	36	7	4	NPT
T848NPTF01250-27R-D56	1/8 - 27	90	13	36	7	4	NPTF
T848NPT02500-18R-D56	1/4 - 18	100	20	39	11	4	NPT
T848NPTF02500-18R-D56	1/4 - 18	100	20	39	11	4	NPTF
T848NPT03750-18R-D56	3/8 - 18	110	20	39	12	4	NPT
T848NPTF03750-18R-D56	3/8 - 18	110	20	39	12	4	NPTF
T848NPT05000-14R-D56	1/2 - 14	125	26	56	16	4	NPT
T848NPTF05000-14R-D56	1/2 - 14	125	26	56	16	4	NPTF
T848NPT07500-14R-D56	3/4 - 14	140	26	55	20	4	NPT
T848NPTF07500-14R-D56	3/4 - 14	140	26	55	20	4	NPTF
T848NPT10000-11,5R-D56	1 - 11 1/2	160	32	71	25	5	NPT
T848NPTF10000-11,5R-D56	1 - 11 1/2	160	32	71	25	5	NPTF

High-Performance Solid Carbide Thread Mills

Our solid carbide thread mills are designed to deliver high-quality internal threading on 3-axis CNC machines. Because these mills are made of carbide, they are capable of easily cutting most difficult materials up to 63 HRC. Thread mills make interrupted cuts and short chips.

The combination of these design elements offers a range of benefits to improve overall thread quality and tool production. Short, easily evacuated chips generate less heat and friction, so there is a lower risk of damage to threading. Also, the superior carbide grades make threading easier and machining times shorter.

Features and Benefits

System Requirements

- 3-axis CNC machine.
- Good clamping for tool and workpiece.
- Internal coolant supply.

Advantages

- Versatile.
- Better surface quality.
- No chip problems.
- No need to reverse the spindle.
- More production safety.

Features

- Interrupted cut.
- Short chips.
- Optimised carbide grades.
- Drill, thread, chamfer.





Through and Blind Holes (2 x D)

					
		Thread Mill	Thread Mill and Chamfer	Drill, Thread Mill, and Chamfer	Mill, Thread Mill, and Chamfer
P	<35 HRC	TM711	TM721	—	TM741_RHSF
P	35–43 HRC	—	TM721	—	TM741_RHSF
M		TM711	TM721	—	TM741_RHSF
K		TM711	TM721	TM731	TM741_RHSF
N	Wrought	TM711	TM721	—	TM731
N	Cast	TM711	TM721	TM731	TM741_RHSF
S		TM711	TM721	—	TM741_LHSF
H	44–63 HRC	—	—	—	TM741_RHSF TM741_LHSF

Solid Thread Mills Identification System

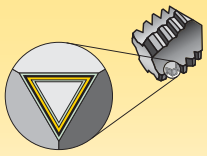


TM721	MF	120	X	150	R	2D	HA
Thread Mill Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Depth of Cut	Shank
		mm or inch (depending on type)		mm or TPI (depending on type)			

M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread

DIN 6535
HA = Plain Shank
HB = Weldon® Shank
HE = Whistle Notch Shank

Style
TM711 = Solid Thread Mill; Through Coolant
TM721 = Solid Thread Mill and Chamfer; Through Coolant
TM731 = Solid Thread Mill, Chamfer, and Drill; Through Coolant
TM741 = Solid Thread Mill, Chamfer, and Mill; Through Coolant

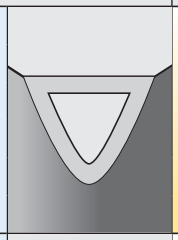
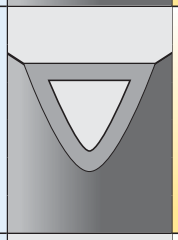
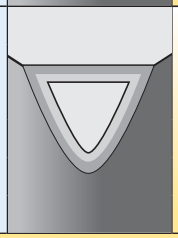


Coatings are designed for optimised tapping performance in specific materials.

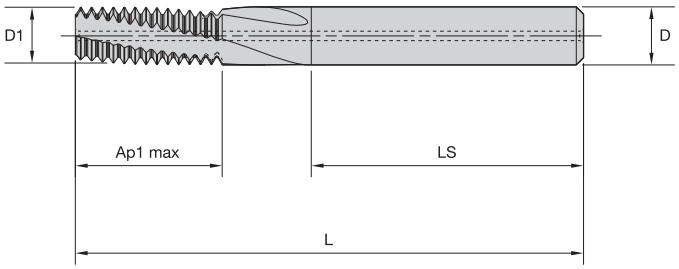
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

Grade

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KCU32		Coated carbide. PVD — Fine-grain carbide substrate with high hardness TiCN coating. Universal grade for thread milling most materials.	P		■	■	■					
			M		■	■	■					
			K		■	■	■					
			N			■	■	■				
			S		■	■	■					
KCU33		Coated carbide. PVD — Carbide substrate with heat-resistant TiAlN coating. Universal grade for thread milling most materials.	P			■	■	■	■			
			M			■	■	■	■			
			K		■	■	■	■				
			N				■	■	■	■		
			S			■	■	■	■			
KCU36		Coated carbide. PVD — two-layer coating with heat-resistant TiAlN base layer and low-friction MoS_2 top layer over carbide substrate. Use for thread milling most materials including high hardness materials.	P				■	■	■	■		
			M				■	■	■	■		
			K			■	■	■	■			
			N			■	■	■	■			
			S				■	■	■	■		
			H					■	■	■	■	







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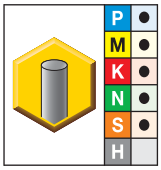


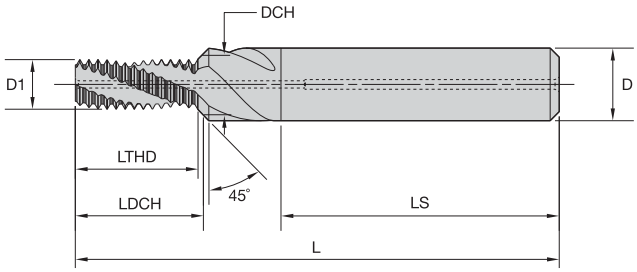
● first choice
○ alternate choice

KCU33	D1 size	D1	Ap1 max	L	LS	D	cutting edges
TM711M030X050R2DHA	M3 X 0.5	2,4	–	42	28	4,0	3
TM711MF040X050R2DHA	M4 X 0.5	3,4	8,2	55	36	6,0	3
TM711M040X070R2DHA	M4 X 0.7	3,2	–	55	36	6,0	3
TM711MF050X050R2DHA	M5 X 0.5	4,3	10,2	55	36	6,0	3
TM711M050X080R2DHA	M5 X 0.8	4,0	–	55	36	6,0	3
TM711MF060X075R2DHA	M6 X 0.75	5,0	12,0	55	36	6,0	3
TM711M060X100R2DHA	M6 X 1	4,8	12,0	55	36	6,0	3
TM711MF080X075R2DHA	M8 X 0.75	6,0	16,8	63	36	6,0	3
TM711MF080X100R2DHA	M8 X 1.0	6,0	16,4	63	36	6,0	3
TM711M080X125R2DHA	M8 X 1.25	5,9	16,0	63	36	6,0	3
TM711MF100X100R2DHA	M10 X 1.0	8,0	20,5	70	36	8,0	3
TM711M100X150R2DHA	M10 X 1.5	8,0	20,2	70	36	8,0	3
TM711MF120X100R2DHA	M12 X 1.0	10,0	24,5	80	40	10,0	4
TM711MF120X150R2DHA	M12 X 1.5	10,0	24,7	80	40	10,0	4
TM711M120X175R2DHA	M12 X 1.75	10,0	25,3	80	40	10,0	4
TM711MF140X150R2DHA	M14 X 1.5	10,0	29,2	80	40	10,0	4
TM711M140X200R2DHA	M14 X 2.0	11,6	28,0	90	45	12,0	4
TM711MF160X150R2DHA	M16 X 1.5	12,0	32,2	90	45	12,0	4
TM711M160X200R2DHA	M16 X 2.0	12,0	32,9	90	45	12,0	4
TM711MF180X150R2DHA	M18 X 1.5	14,0	36,7	90	45	14,0	4
TM711M180X250R2DHA	M18 X 2.5	14,0	38,7	90	45	14,0	4
TM711MF200X150R2DHA	M20 X 1.5	14,0	41,2	90	45	14,0	4
TM711M200X250R2DHA	M20 X 2.5	14,0	41,2	90	45	14,0	4

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







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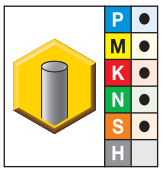


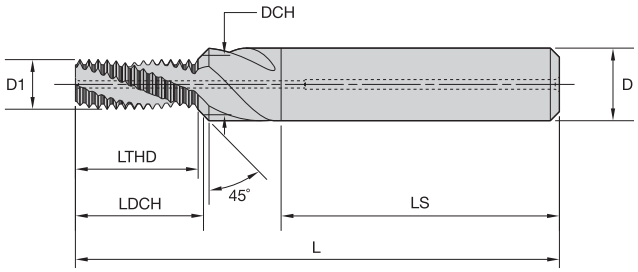
● first choice
○ alternate choice

KCU32	D1 size	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
TM721NC2500-20R2DHA	1/4-20	4,7	6,7	13,36	14,23	62	36	8,0	3
TM721NC3125-18R2DHA	5/16-18	6,2	8,3	16,26	17,19	74	40	10,0	3
TM721NC3750-16R2DHA	3/8-16	7,7	9,8	19,89	20,85	80	45	12,0	3
TM721NC4375-14R2DHA	7/16-14	9,0	11,4	22,72	23,79	80	45	12,0	3
TM721NC0500-13R2DHA	1/2-13	10,4	13,0	26,43	27,60	90	45	14,0	4
TM721NC5625-12R2DHA	9/16-12	11,8	14,6	30,75	31,99	100	48	16,0	4
TM721NC0625-11R2DHA	5/8-11	13,1	16,2	33,54	34,89	102	48	18,0	4

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







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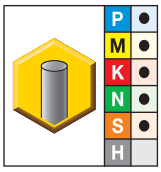


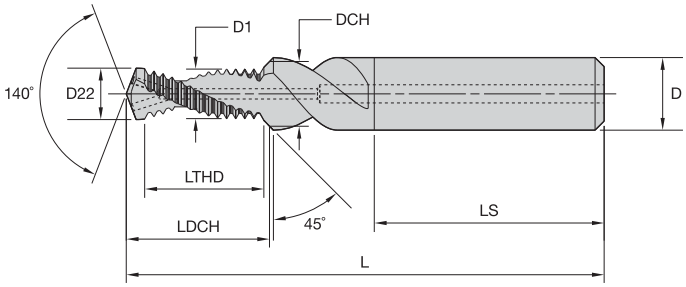
● first choice
○ alternate choice

KCU32	D1 size	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
TM721M060X100R2DHA	M6X1	4,8	6,3	12,52	13,19	62	36	8,0	3
TM721MF080X100R2DHA	M8X1	6,7	8,3	16,53	17,23	74	40	10,0	3
TM721M080X125R2DHA	M8X1.25	6,5	8,3	16,91	17,71	74	40	10,0	3
TM721M100X150R2DHA	M10X1.5	8,2	10,3	20,29	21,22	80	45	12,0	3
TM721MF120X125R2DHA	M12X1.25	10,4	12,3	24,43	25,24	90	45	14,0	4
TM721M120X175R2DHA	M12X1.75	9,9	12,3	25,42	26,48	90	45	14,0	4
TM721MF140X150R2DHA	M14X1.5	12,1	14,3	29,31	30,25	100	48	16,0	4
TM721M140X200R2DHA	M14X2	11,6	14,3	29,05	30,24	100	48	16,0	4
TM721M160X200R2DHA	M16X2	13,6	16,3	33,05	34,24	102	48	18,0	4

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







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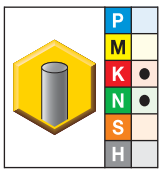


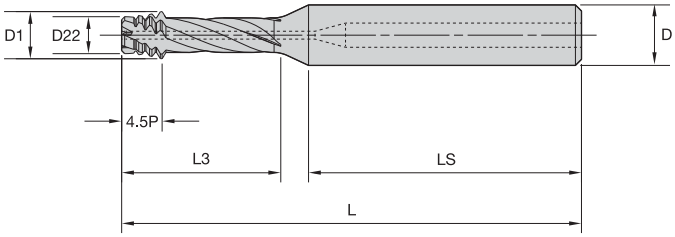
● first choice
○ alternate choice

KCU32	D1 size	D22	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
TM731M040X070R2DHA	M4X0.7	3,3	3,2	4,3	7,74	9,59	49	36	6,0	2
TM731M050X080R2DHA	M5X0.8	4,2	4,0	5,3	9,65	11,82	55	36	6,0	2
TM731M060X100R2DHA	M6X1	5,0	4,8	6,3	12,06	14,69	62	36	8,0	2
TM731MF080X100R2DHA	M8X1	7,0	6,8	8,3	16,09	19,10	74	40	10,0	2
TM731M080X125R2DHA	M8X1.25	6,8	6,5	8,3	15,08	18,42	74	40	10,0	2
TM731M100X150R2DHA	M10X1.5	8,5	8,2	10,3	19,59	23,65	79	45	12,0	2
TM731M120X175R2DHA	M12X1.7w5	10,3	9,9	12,3	22,86	27,63	89	45	14,0	2
TM731M160X200R2DHA	M16X2	14,0	13,6	16,3	32,13	38,00	102	48	18,0	2

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







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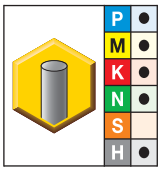


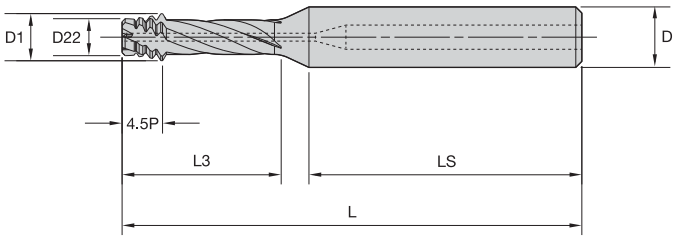
● first choice
○ alternate choice

KCU36	D1 size	D1	D22	L3	L	LS	D	cutting edges
TM741NC2500-20R2DHA	1/4-20	4,64	3,34	17,0	60	36	8,0	3
TM741NF2500-28R2DHA	1/4-28	4,66	3,62	17,0	60	36	8,0	3
TM741NC3125-18R2DHA	5/16-18	5,64	4,12	21,9	76	40	10,0	4
TM741NF3125-24R2DHA	5/16-24	5,64	4,48	21,9	76	40	10,0	4
TM741NC3750-16R2DHA	3/8-16	7,16	5,42	26,3	76	40	10,0	4
TM741NF3750-24R2DHA	3/8-24	7,14	6,00	26,3	76	40	10,0	4
TM741NC0500-13R2DHA	1/2-13	10,08	7,95	33,4	86	45	12,0	4
TM741NF0500-20R2DHA	1/2-20	8,45	7,06	33,0	86	45	12,0	4
TM741NF0625-18R2DHA	5/8-18	12,38	10,83	42,0	98	48	16,0	4
TM741NC0750-10R2DHA	3/4-10	15,50	12,77	51,3	111	50	20,0	5
TM741NC0750-16R2DHA	3/4-16	15,38	13,65	51,3	111	50	20,0	5

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







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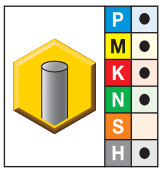


● first choice
○ alternate choice

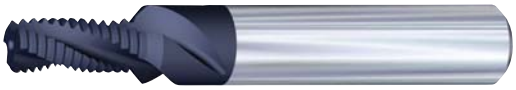
KCU36	D1 size	D1	D22	L3	L	LS	D	cutting edges
TM741M060X100R2DHA	M6X1	4,51	3,41	16,5	60	36	8,0	3
TM741MF080X100R2DHA	M8X1	6,23	5,13	21,9	71	40	10,0	4
TM741M080X125R2DHA	M8X1.25	6,23	4,91	21,9	71	40	10,0	4
TM741MF100X100R2DHA	M10X1	6,23	5,13	21,9	71	40	10,0	4
TM741MF100X125R2DHA	M10X1.25	6,23	4,91	21,9	71	40	10,0	4
TM741M100X150R2DHA	M10X1.5	7,75	6,11	26,3	76	40	10,0	4
TM741MF120X150R2DHA	M12X1.5	7,75	6,11	26,3	76	40	10,0	4
TM741M120X175R2DHA	M12X1.75	9,16	7,21	32,4	86	45	12,0	4
TM741M140X200R2DHA	M14X2	11,08	8,91	41,0	98	48	16,0	4
TM741M160X200R2DHA	M16X2	11,08	8,91	41,0	98	48	16,0	4
TM741M180X250R2DHA	M18X2.5	14,38	11,71	51,3	111	50	20,0	5
TM741M200X250R2DHA	M20X2.5	14,38	11,71	51,3	111	50	20,0	5

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

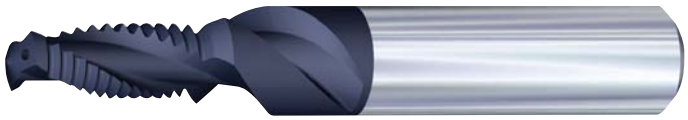


Thread Mill TM711



Thread Mill and Chamfer TM721

Material Group		Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter			Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter		
		min	Starting Value	max		<10mm	>10mm	min	Starting Value	max		<10mm	>10mm
P	1	90	**115**	150	mm/r	0,05	0,08	140	**185**	240	mm/r	0,06	0,10
	2	90	**115**	150	mm/r	0,05	0,08	140	**185**	240	mm/r	0,06	0,10
	3	40	**50**	70	mm/r	0,02	0,03	70	**90**	120	mm/r	0,03	0,04
	4	–	**—**	–	–	–	–	70	**90**	120	mm/r	0,03	0,04
	5	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	6	–	**—**	–	–	–	–	–	**—**	–	–	–	–
M	1	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	2	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	3	–	**—**	–	–	–	–	–	**—**	–	–	–	–
K	1	120	**150**	200	mm/r	0,06	0,10	130	**170**	220	mm/r	0,06	0,11
	2	120	**150**	200	mm/r	0,06	0,10	130	**170**	220	mm/r	0,06	0,11
	3	90	**115**	150	mm/r	0,05	0,07	110	**140**	180	mm/r	0,05	0,07
N	1	250	**275**	300	mm/r	0,07	0,09	270	**300**	330	mm/r	0,08	0,16
	2	200	**225**	250	mm/r	0,05	0,06	270	**300**	330	mm/r	0,08	0,16
	3	170	**190**	210	mm/r	0,04	0,05	160	**175**	190	mm/r	0,08	0,16
	4	250	**275**	300	mm/r	0,07	0,09	270	**300**	330	mm/r	0,08	0,16
	5	270	**300**	330	mm/r	0,12	0,13	250	**275**	300	mm/r	0,11	0,20
	6	170	**190**	210	mm/r	0,05	0,06	90	**100**	110	mm/r	0,11	0,20
S	1	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	2	50	**65**	80	mm/r	0,03	0,04	50	**60**	80	mm/r	0,03	0,05
	3	50	**65**	80	mm/r	0,03	0,04	50	**60**	80	mm/r	0,03	0,05
	4	50	**65**	80	mm/r	0,03	0,04	50	**60**	80	mm/r	0,03	0,05



Drill, Chamfer, and Thread Mill TM731

Material Group		Cutting Speed — vc Range — m/min			Drilling Recommended Feed by Diameter				Milling Feed/Tooth by Diameter			
		min	Starting Value	max		<6mm	6–10mm	10–16mm		<6mm	6–10mm	10–16mm
K	1	130	**175**	230	mm/r	0,10	0,16	0,30	mm/r	0,05	0,07	0,10
N	2	270	**300**	330	mm/r	0,15	0,25	0,34	mm/r	0,06	0,08	0,12
	3	140	**150**	170	mm/r	0,15	0,25	0,34	mm/r	0,06	0,08	0,12
	4	270	**300**	330	mm/r	0,15	0,25	0,34	mm/r	0,06	0,08	0,12
	5	110	**120**	130	mm/r	0,12	0,20	0,32	mm/r	0,06	0,08	0,12



Mill, Chamfer, and Thread Mill TM741

Material Group		TM Style	Grade	Cutting Speed — vc Range — m/min min	Starting Value	max	Feed/Tooth by Diameter	<10mm	>10mm
P	1	TM741 R	KCU36	170	**225**	290	mm/r	0,05	0,08
	2	TM741 R	KCU36	170	**225**	290	mm/r	0,05	0,08
	3	TM741 R	KCU36	120	**150**	200	mm/r	0,03	0,05
	4	TM741 R	KCU36	100	**125**	160	mm/r	0,03	0,05
	5	TM741 R	KCU36	120	**150**	200	mm/r	0,03	0,04
	6	TM741 R	KCU36	60	**80**	100	mm/r	0,03	0,04
M	1	TM741 R	KCU36	120	**150**	200	mm/r	0,03	0,04
	2	TM741 R	KCU36	120	**150**	200	mm/r	0,03	0,04
	3	TM741 R	KCU36	120	**150**	200	mm/r	0,03	0,04
K	1	TM741 R	KCU36	190	**250**	330	mm/r	0,06	0,10
	2	TM741 R	KCU36	190	**250**	330	mm/r	0,06	0,10
	3	TM741 R	KCU36	140	**185**	240	mm/r	0,04	0,07
N	1	–	–	–	**–**	–	–	–	–
	2	–	–	–	**–**	–	–	–	–
	3	TM741 R	KCU36	180	**230**	300	mm/r	0,06	0,07
	4	TM741 R	KCU36	210	**275**	360	mm/r	0,06	0,07
	5	–	–	–	**–**	–	–	–	–
	6	TM741 R	KCU36	210	**275**	360	mm/r	0,06	0,07
S	1	TM741 L	KCU36	120	**150**	200	mm/r	0,025	0,045
	2	TM741 L	KCU36	50	**60**	80	mm/r	0,015	0,025
	3	TM741 L	KCU36	50	**60**	80	mm/r	0,015	0,025
	4	TM741 L	KCU36	70	**90**	120	mm/r	0,025	0,035
H	1	TM741	KCU36	80	**100**	130	mm/r	0,030	0,050
	2	TM741	KCU36	80	**100**	130	mm/r	0,030	0,050
	3	TM741	KCU36	50	**65**	80	mm/r	0,020	0,030
	4	TM741	KCU36	50	**65**	80	mm/r	0,020	0,030

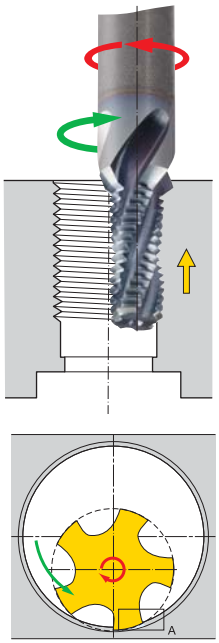
NOTE: For thread depths over 2 x D up to 3 x D, reduce speed and feed by 25%.

Milling Methods

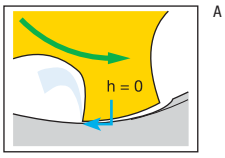
Climb Milling

Properties:

- Tool rotation direction clockwise
- Tool moves anti-clockwise
- Pitch “upwards”
- Right-hand thread



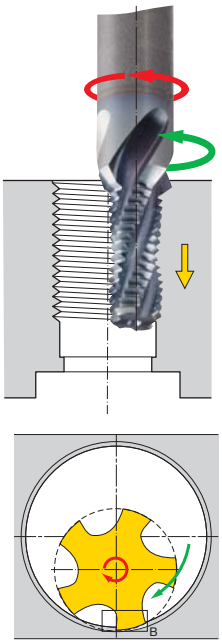
Climb milling is always when the cutting edge goes out of the material with a chip thickness h = 0



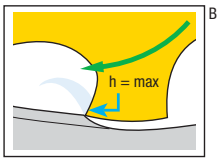
Conventional Milling

Properties:

- Tool rotation direction clockwise
- Tool moves clockwise
- Pitch “downwards”
- Right-hand thread

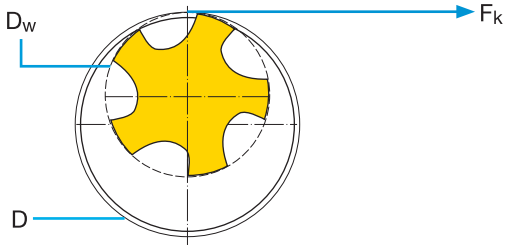


Conventional milling is always when the cutting edge goes out of the material with a chip thickness h = max



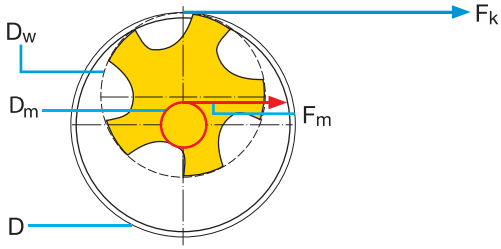
Counter Feed F_k

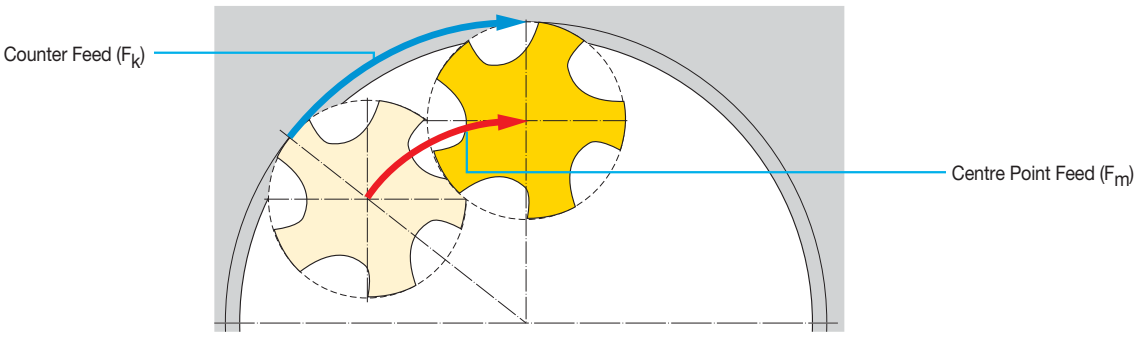
$$F_k = n \bullet f_z \bullet Z \text{ [mm/min]}$$



Centre Point Feed F_m

$$F_m = \frac{F_k \bullet (D\text{-}Dw)}{D} \text{ [mm/min]}$$





D_W = Tool diameter [mm]
n = RPM [min-1]
f_Z = Feed per tooth [mm]
Z = Number of teeth on tool (radial)
D = Nominal diameter of thread = Diameter of external contour [mm]
D_m = Diameter of the centre point ($D\text{-}D_W$) [mm]

Drill Thread Mill TM741 • Right Hand

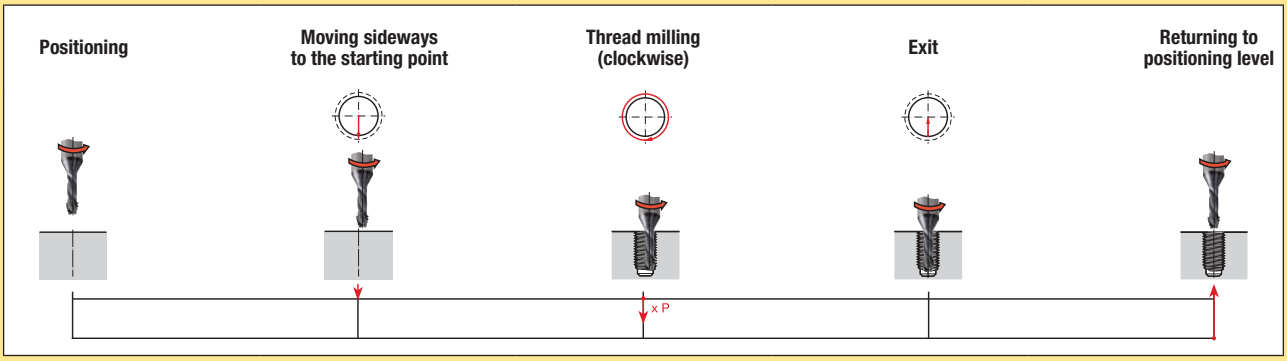
Preparation

None

Process Principle

Milling thread and core hole, countersinking (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H

Thread diameter D	10mm
Pitch P	1,5mm
Core hole diameter D_1	8,5mm

Material — Hard steel, 50 HRC
Grade — KCU36

Tool — TM741 Right Hand

Catalogue number	TM741M100X150R2DHA
Number of teeth Z	4
Tool diameter d_1	7,75mm*
Tool radius compensation k[1]	0,08mm**
Tool radius to be programmed[2]	3,795mm***
Thread depth b[3]	20mm
Cutting speed v_c	100 m/min
Feed (milling) f_z	0,04 mm/tooth
Number of turns [5]	17

$$N = \frac{V_c \bullet 1000}{d_1 \bullet \pi} \qquad S = 4109$$

$$v_f = f_z \bullet Z \bullet n \qquad F = 657 \text{ (contour)}$$

$$N = \frac{v_f \text{ contour} \bullet (D-d_1)}{D} \qquad F = 148 \text{ (centre point)}$$

*(measured on the cutting part) **(0.01 x D; adjust to application) ***(1/2 d_1 - k)

Programme to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X…	Y…	Z 1.500	S 4109	T01 [2]	M03
Incremental programming	N 20	G 91								
Moving sideways to the starting point	N 30	G 42	G 01	X 0	Y-5	F 657 (contour)		[F 148] [4] (centre point)		
Thread milling	N 40	G 02		X 0	Y 0	Z-1.500	I 0	J 5.000		
Repeat thread milling	… [5]									
Exit	N 50	G 40	G 01	X 0	Y 5					
Retracting tool to positioning level	N 70	G 90	G 00	Z 2						

Cutting time t_h

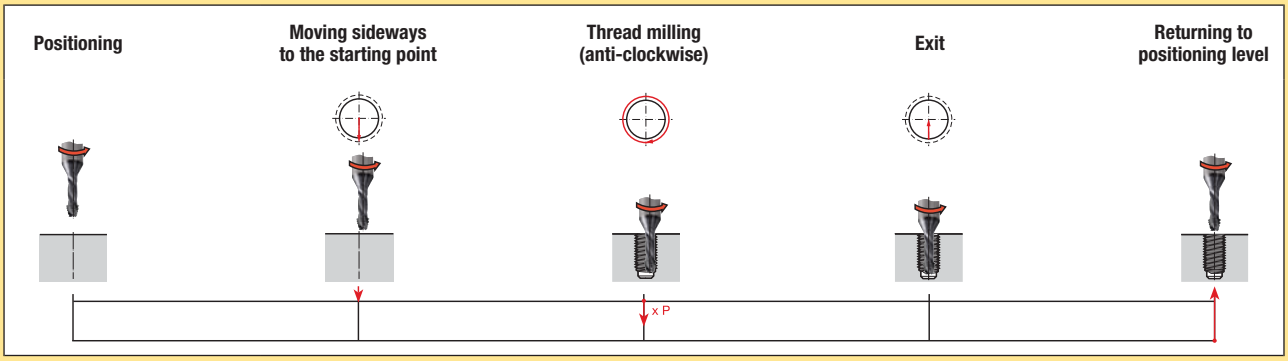
51,6 seconds

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.
[5] **Set N40 must be repeated with the number of threads.** Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

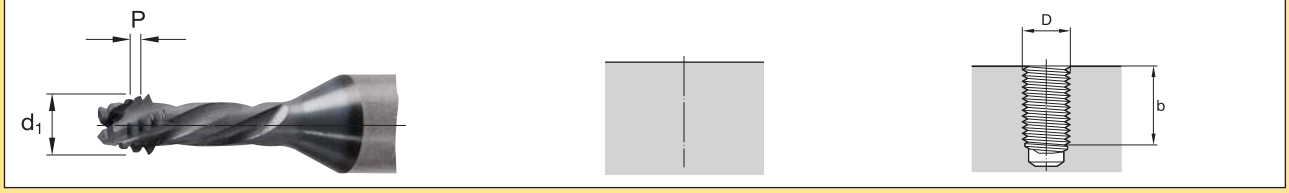
Drill Thread Mill TM741 • Left Hand

Preparation	None
Process Principle	Milling thread and core hole, countersinking (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch P 1,5mm
Core hole diameter D_1 ..... 8,5mm

Material — TiAl6V4 titanium
Grade — KCU36

Tool — TM741 Left Hand
Catalogue number TM741M100X150L2DHA
Number of teeth Z 4
Tool diameter d_1 ..... 7,75mm*
Tool radius compensation k[1] 0,08mm**
Tool radius to be programmed[2] 3,795mm***
Drilling/countersink depth l_E 20mm
Cutting speed v_c ..... 100 m/min
Feed (milling) f_z ..... 0,03 mm/tooth
Number of turns [5] 17

$N = \frac{V_c \bullet 1000}{d_1 \bullet \pi}$ S = 4109

$v_f = f_z \bullet Z \bullet n$ F = 493 (contour)

$v_f = \frac{v_f \text{ contour} \bullet (D-d_1)}{D}$ F = 111 (centre point)

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

Programme to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X… Y… Z 1.500 S 4109 T01 [2] M04
Incremental programming	N 20 G 91
Moving sideways to the starting point	N 30 G 42 G 01 X 0 Y-5 F 493 (contour) [F 111] [4] (centre point)
Thread milling	N 40 G 02 X 0 Y 0 Z-1.500 I 0 J 5.000
Repeat thread milling	… [5]
Exit	N 50 G 40 G 01 X 0 Y 5
Retracting tool to positioning level	N 70 G 90 G 00 Z 2

Cutting time t_h	**68,8 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.
[5] **Set N40 must be repeated with the number of threads.** Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

Drill Thread Mill TM731

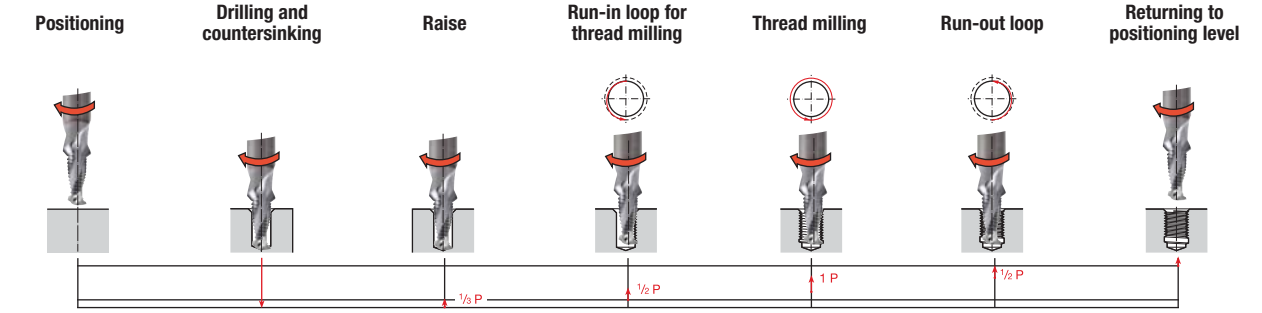
Preparation

None

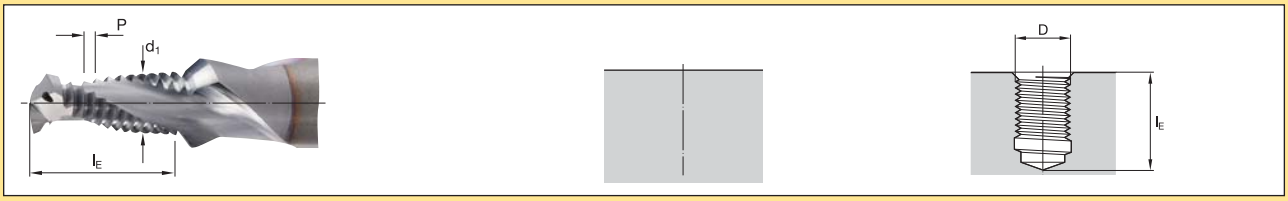
Process Principle

Drilling, countersinking, thread milling (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H

Thread diameter D	10mm
Pitch P	1,5mm
Core hole diameter D_1	8,5mm

Material — Grey cast iron
Grade — KCU32

Tool — TM731

Catalogue number	TM731M100X150R2DHA
Number of teeth Z	2
Tool diameter d_1	8,2mm*
Tool radius compensation k[1]	0,1mm**
Tool radius to be programmed[2]	4mm***
Drilling/countersink depth l_E	19,11mm
Cutting speed v_c	250 m/min
Feed (drilling, countersinking) f_b	0,25 mm/U
Feed (milling) f_z	0,1 mm/tooth

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

$$N = \frac{v_c \bullet 1000}{d_1 \bullet \pi} \qquad S = 9709$$

$$v_b = f_b \bullet n \qquad F = 2427 \text{ (drilling, countersinking)}$$

$$v_f = f_z \bullet Z \bullet n \qquad F = 1942 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \bullet (D-d_1)}{D} \qquad F = 350 \text{ (centre point)}$$

Programme to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X… Y… Z 2 S 9709 T01 [2] M03
Drilling and countersinking	N 20 G 91 G 01 Z-21.110 F 2427 (drill, countersink)
Raise	N 30 G 01 Z 0.500
Moving sideways to the starting point	N 40 G 41 Y-4.250 F 971 (milling, 1/2 contour) [F 175] [3] (1/2 centre point)
Run-in loop in arc	N 50 G 03 X 0 Y 9.250 Z 0.750 I 0 J 4.625
Thread milling	N 60 G 03 X 0 Y 0 Z 1.500 I 0 J -5.000 F1942 [F 350] [3] (centre point)
Run-out loop in arc	N 70 G 03 X 0 Y-9.250 Z 0.750 I 0 J- 4.625
Exit	N 80 G 00 G 40 X 0 Y 4.250
Retracting tool to positioning level	N 90 G 90 Z 2

Cutting time t_h

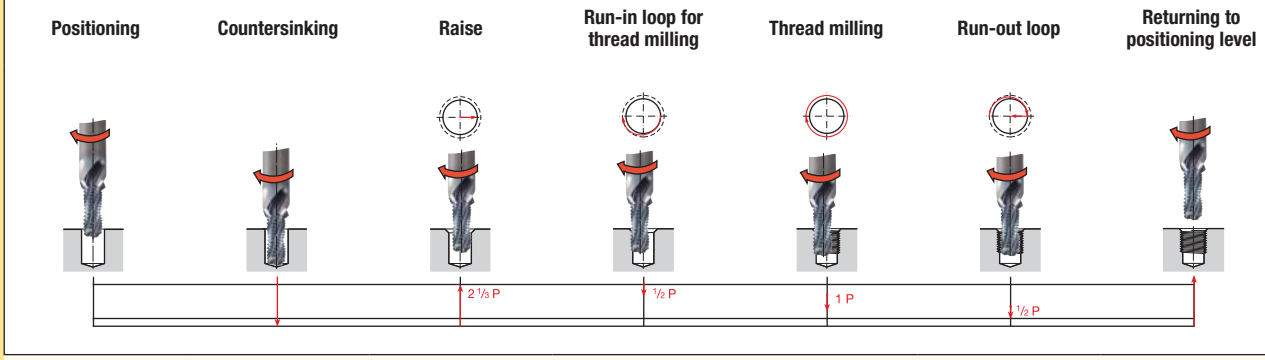
2,3 seconds

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.

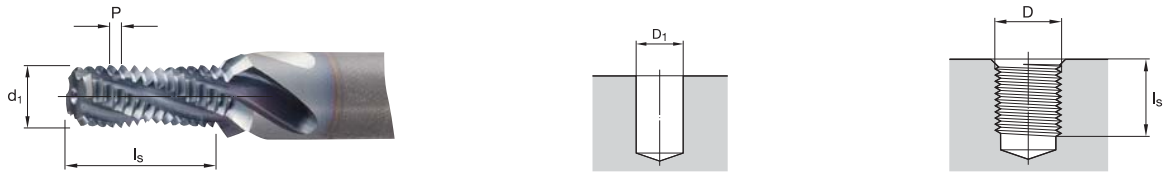
Thread Mill TM721

Preparation	Drilling of thread hole
Process Principle	Countersinking, thread milling (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch P 1,5mm
Core hole diameter D_1 ..... 8,5mm

Material — Cast aluminium
Grade — KCU32

Tool — TM721
Catalogue number TM721M100X150R2DHA
Number of teeth Z 3
Tool diameter d_1 ..... 8,2mm*
Tool radius compensation k[1] 0,1mm**
Tool radius to be programmed[2] 4mm***
Countersink depth l_S 21,2mm
Cutting speed v_c ..... 250 m/min
Feed (countersinking) f_S ..... 0,3 mm/U
Feed (milling) f_z ..... 0,09 mm/tooth

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

$$N = \frac{V_c \bullet 1000}{d_1 \bullet \pi} \qquad S = 9709$$

$$v_S = f_S \bullet n \qquad F = 2913 \text{ (countersinking)}$$

$$v_f = f_z \bullet Z \bullet n \qquad F = 2622 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \bullet (D - d_1)}{D} \qquad F = 472 \text{ (centre point)}$$

Programme to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X…	Y…	Z 2	S 9709	T01 [2]	M03
Advancing tool to full thread depth	N 20	G 91	Z-21.200							
Countersinking	N 30	G 01	Z-2	F 2913	(countersink)					
Raise	N 40	G 00	Z 3.450							
Moving sideways to the starting point	N 50	G 42	G01	X 4.250	F 1311	(milling, 1/2 contour)		[F 236] [3]	(milling,1/2 centre point)	
Run-in loop in arc	N 60	G 02	X-9.25	Y 0.000	Z-0.750	I-4.625	J 0			
Thread milling	N 70	G 02	X 0	Y 0	Z-1.500	I 5	J 0.000	F2622	[F 472] [3]	(centre point)
Run-out loop in arc	N 80	G 02	X 9.25	Y 0.000	Z-0.750	I 4.625	J 0			
Exit	N 90	G 40	G 01	X-4.25						
Retracting tool to positioning level	N 100	G 90	G 00	Z 2						

Cutting time t_h	**1,4 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.

High-Performance Taps • Carbide • Metric

Material Group		Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T320, T321	KC7542	60	**100**	130	T331	KC7542	50	**70**	90
	2	T320, T321	KC7542	60	**90**	120	T331	KC7542	40	**60**	80
	3	T320, T321	KC7542	50	**80**	100	T331	KC7542	40	**60**	80
K	1	T340, T353	KC7542, KCK17	70	**105**	140	T351, T353	KC7542, KCK17	50	**70**	90
	2	T340, T353	KC7542, KCK17	60	**100**	130	T351, T353	KC7542, KCK17	50	**70**	90
	3	T340, T353	KC7542, KCK17	60	**90**	120	T351, T353	KC7542, KCK17	40	**60**	80
N	2	–	–	–	**–**	–	T471, T491	KCN14	60	**80**	100
	3	–	–	–	**–**	–	T471, T491	KCN14	50	**70**	90
	4	–	–	–	**–**	–	T471, T491	KCN14	40	**60**	80
H	1	T410	KCU36	1,2	**1,5**	2,0	T410	KCU36	0,8	**1,1**	1,4
	2	T410	KCU36	0,6	**0,8**	1,0	T410	KCU36	0,4	**0,5**	0,7

NOTE: Increase speed of T321 coolant taps by up to 25% of speeds listed for non-coolant T320 taps.

High-Performance Taps • HSS-E-PM • Metric

Material Group		Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T620	KP6525	20	**30**	45	T630, T632, T650	KP6525	14	**21**	32
		T622	KSP21	18	**30**	50	T622	KSP21	13	**21**	35
	2	T620	KP6525	17	**25**	38	T630, T632, T650	KP6525	12	**18**	26
		T622	KSP21	15	**25**	42	T622	KSP21	10	**18**	29
	3	T620	KP6525	12	**15**	20	T630, T632, T650	KP6525	8	**11**	14
	4	T600	KSP21	5	**6**	8	T604	KSH26	3	**4**	5
	5	T620	KP6525	12	**15**	20	T630, T632, T650	KP6525	8	**11**	14
	6	T600	KSP21	6	**8**	10	T604	KSH26	4	**6**	7
M	1	T620	KM6515	12	**15**	20	T630, T632, T650	KM6515	8	**11**	14
	2	T620	KM6515	9	**12**	16	T630, T632, T650	KM6515	6	**8**	11
	3	T620	KM6515	8	**10**	13	T630, T632, T650	KM6515	5	**7**	9
K	1	T640	KP6525	27	**35**	46	T640, T642	KP6525	19	**25**	32
	2	T640	KP6525	23	**30**	39	T640, T642	KP6525	16	**21**	27
	3	T640	KP6525	19	**25**	33	T640, T642	KP6525	13	**18**	23
N	1	T670	KSN38	42	**55**	72	T680	KSN38	30	**39**	50
		T622	KSN28	37	**55**	72	T622	KSN28	26	**39**	50
	2	T640	KP6525	30	**45**	59	T640, T642	KP6525	21	**32**	41
		T622	KSN28	33	**50**	65	T622	KSN28	23	**35**	46
	4	T640	KP6525	7	**10**	15	T640, T642	KP6525	5	**7**	11
S	1	T620	KP6525	8	**12**	18	T630, T632	KP6525	6	**8**	13

NOTE: Increase speed by up to 25% when using coolant taps (T621, T623, T625, T627, T631, T633, T641, T643, T651).

GOtap™ • Metric

Material Group		Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T820	KSU31, KSP32	23	**30**	38	T830, T832, T838, T839	KSU31, KSP32	15	**21**	30
		T820	KSP39, KSU30	11	**15**	19	T830, T832, T838, T839	KSP39, KSU30	7	**11**	15
		T854	KSU31	6	**8**	10	T854	KSU31	6	**8**	10
		T854	KSP39	5	**6**	8	T854	KSP39	5	**6**	8
		T877	KSU31	17	**22**	28	T857	KSU31	11	**15**	22
		T877	KSP39	8	**10**	13	T857	KSP39	5	**7**	10
		T848	KSU30	5	**6**	8	T848	KSU30	3	**4**	6
	2	T820	KSU31, KSP32	18	**24**	30	T830, T832, T838, T839	KSU31, KSP32	12	**17**	24
		T820	KSP39, KSU30	11	**14**	18	T830, T832, T838, T839	KSP39, KSU30	7	**10**	14
	3	T820	KSU31, KSP32	17	**22**	28	T830, T832, T838, T839	KSU31, KSP32	11	**15**	22
		T820	KSP39, KSU30	9	**12**	15	T830, T832, T838, T839	KSP39, KSU30	6	**8**	12
		T846	KSU31	6	**8**	10	T846	KSU31	6	**8**	10
		T846	KSU30	4	**5**	6	T846	KSU30	4	**5**	6
M	1	T820	KSMN34, KSP32	14	**18**	23	T830, T832, T838, T839	KSMN34, KSP32	9	**13**	18
		T820	KSP39, KSU30	8	**10**	13	T830, T832, T838, T839	KSP39, KSU30	5	**7**	10
		T854	KSU31	6	**8**	10	T854	KSU31	6	**8**	10
		T854	KSP39	4	**5**	6	T854	KSP39	4	**5**	6
		T877	KSU31	9	**12**	15	T857	KSU31	6	**8**	11
		T877	KSP39	5	**7**	9	T857	KSP39	4	**5**	7
		T848	KSU30	4	**5**	6	T848	KSU30	3	**4**	6
	3	T820	KSMN34, KSP32	11	**15**	19	T830, T832, T838, T839	KSMN34, KSP32	7	**11**	15
		T820	KSP39, KSU30	7	**9**	11	T830, T832, T838, T839	KSP39, KSU30	4	**6**	9
K	1	T846	KSU31	11	**15**	19	T846	KSU31	11	**15**	19
		T846	KSU30	6	**8**	10	T846	KSU30	6	**8**	10
	2	T820	KSU31, KSP32	16	**21**	26	T830, T832, T838, T839	KSU31, KSP32	10	**15**	21
		T820	KSP39, KSU30	9	**12**	15	T830, T832, T838, T839	KSP39, KSU30	6	**8**	12
		T877	KSU31	14	**18**	23	T857	KSU31	9	**13**	18
		T877	KSP39	7	**9**	11	T857	KSP39	4	**6**	9
		T848	KSU30	4	**5**	6	T848	KSU30	2	**4**	5
N	1	T820	KSMN34, KSP32	37	**49**	61	T830, T832, T838, T839	KSMN34, KSP32	24	**34**	49
		T820	KSU30	20	**27**	34	T830, T832	KSU30	13	**19**	27
	2	T820	KSMN34, KSP32	30	**40**	50	T830, T832, T838, T839	KSMN34, KSP32	20	**28**	40
		T820	KSU30	16	**21**	26	T830, T832	KSU30	10	**15**	21
		T877	KSU31	17	**22**	27	T857	KSU31	11	**15**	22
		T877	KSP39	8	**10**	12	T857	KSP39	5	**7**	10
		T848	KSU30	10	**13**	16	T848	KSU30	6	**9**	13
	4	T820	KSMN34, KSP32	37	**49**	61	T830, T832, T838, T839	KSMN34, KSP32	24	**34**	49
		T820	KSU30	20	**27**	33	T830, T832	KSU30	13	**19**	27

KSU30 = Bright
KSP39 = Oxide
KSU31 = TiN
KSP32 = TiCN/TiN
KSMN34 = TiN + CrC/C

Taps and Thread Milling Technical Information

Use the technical information offered here to assist with tapping and thread milling operations. This tech data includes information about tap dimensions and recommendations, as well as how to solve basic tapping and thread milling problems.

Included in This Section:

- Illustrations of tap terms.
- Explanations of tap chamfers.
- Dimensional information for various tap styles and lengths.
- Tap limitation data.
- Chip handling methods for different tap styles.
- Tap recommendations.
- Descriptions of screw thread tolerance and tolerance information.
- Information regarding surface treatments and coatings.
- Guidelines and tables for determining tapping speeds.
- Troubleshooting charts.
- Hardness conversion table.
- Taps custom order worksheet.
- Thread milling application sheet.
- Tap drill size charts.

This section will help you learn more about tapping and thread milling applications to maximise the performance of your tools.



How to Apply This Technical Information

Below is an example of how the technical information in this catalogue can be useful:

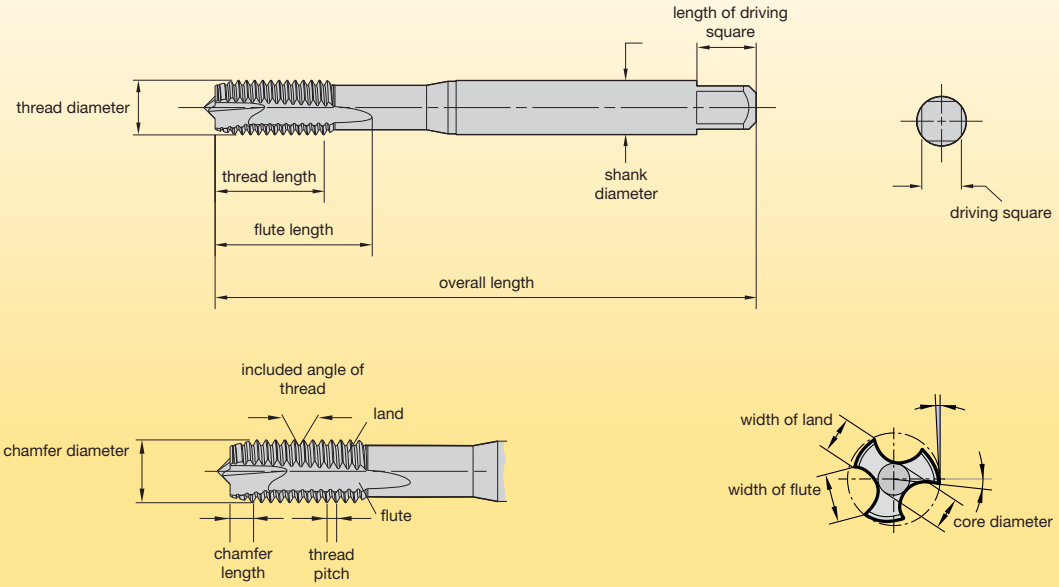
Problem

- Thread holes are oversized and taps are experiencing decreased tool life when used in stainless steel materials.

Solution

- Consult the troubleshooting portion of the technical information section to discover ways to correct the issue.

Definitions and Angles, Centres, and Flute Forms



Flute Forms



Straight-flute, form C plug chamfer **without spiral point**



Right-hand spiral flute

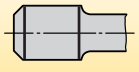
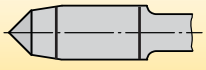
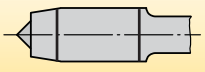
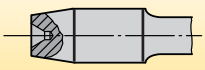


Straight-flute, form B plug chamfer **with spiral point**



Left-hand spiral flute

Types of Centres (Standard to DIN 2197/DIN 2175)

centre on thread section			
tap diameter range			
≤M10, 3/8 bottom or semi-bottom chamfer	≤M10, 3/8 plug chamfer	>M10, 3/8 all chamfers	
			
external centre removed	full external centre	partial external centre	internal centre

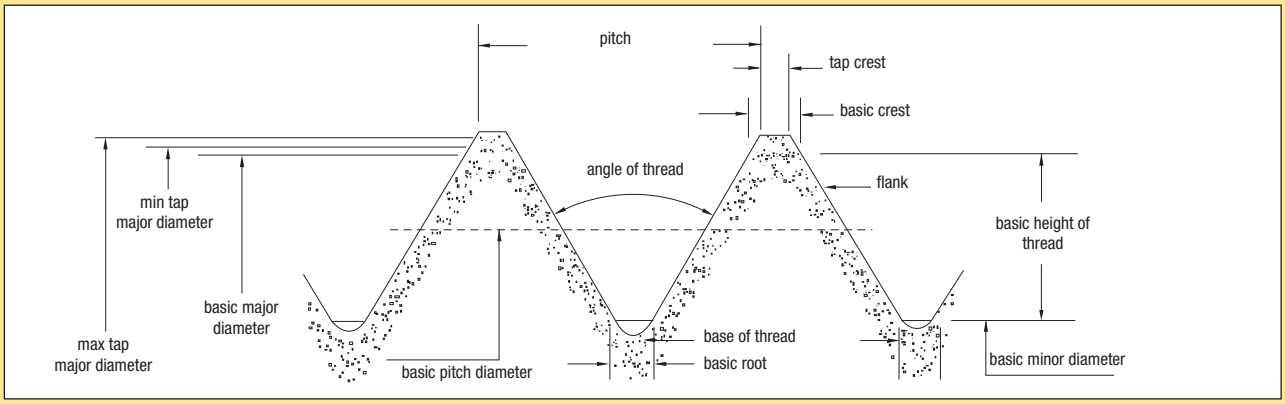
Coolant Hole Types

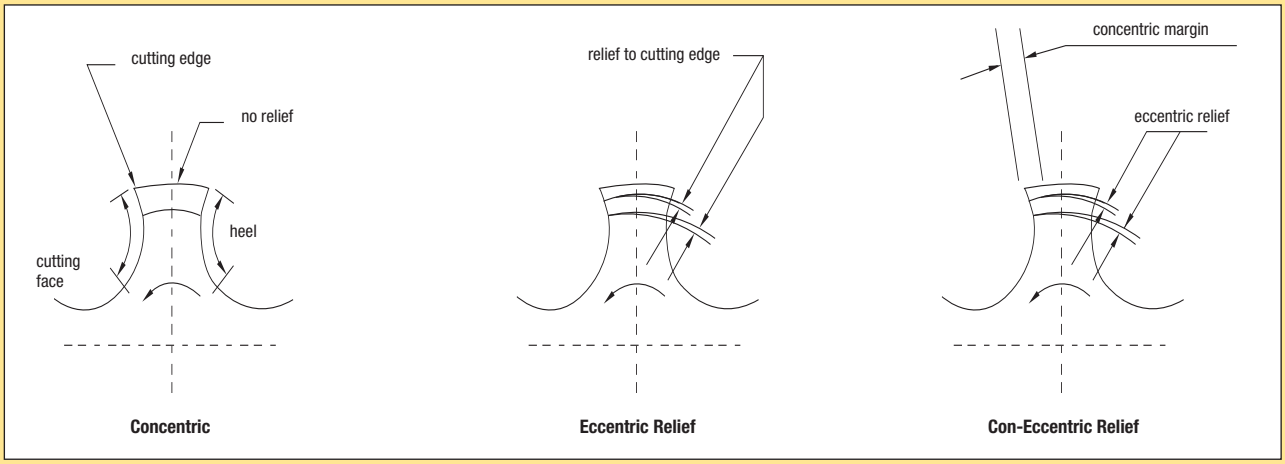


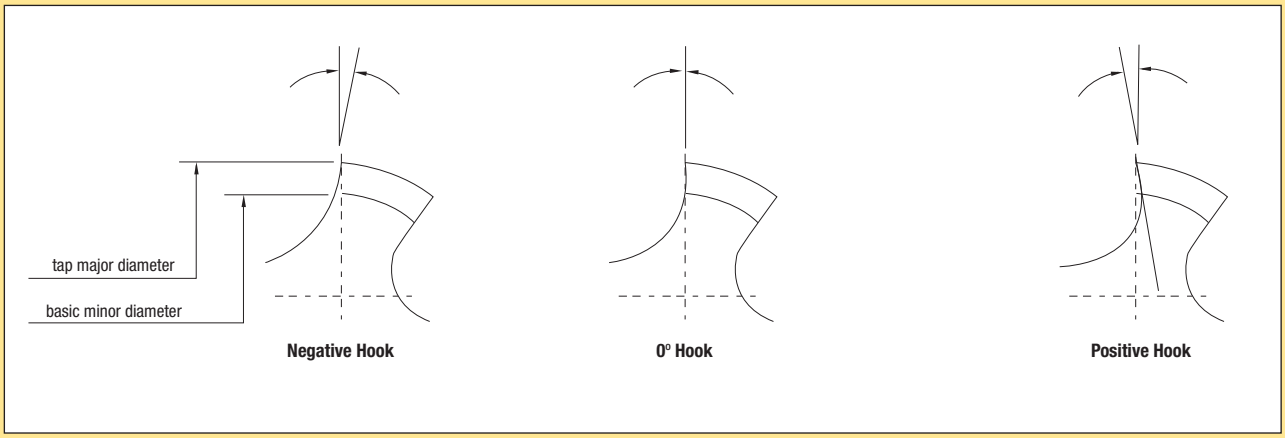
Axial coolant delivery with axial coolant exit hole

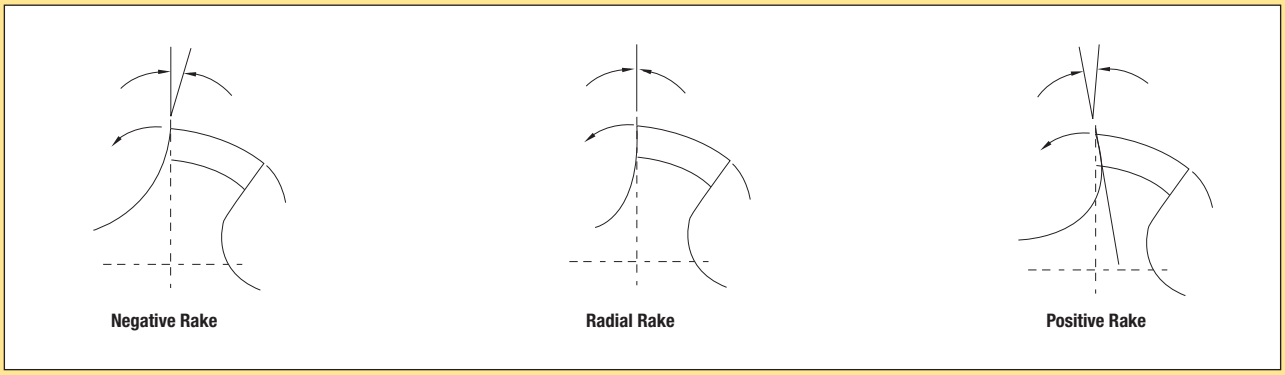


Axial coolant delivery with radial coolant hole exiting in the flutes









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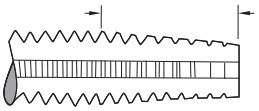
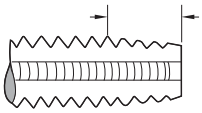
Tap Chamfers • DIN Taps

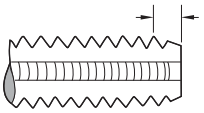
Taper Chamfer
7–10 Pitches



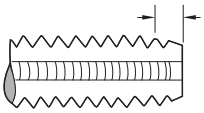
Plug Chamfer
3–5 Pitches



Modified Bottoming Chamfer
2–2.5 Pitches



Full Bottoming Chamfer
1–2 Pitches



Hand Tap Chamfers

Form A (6–8 pitches)

The Form A chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.

Form B/D (3.5–5 pitches)

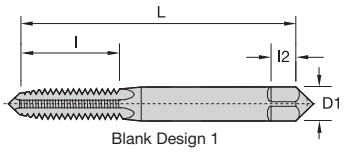
The most common chamfers for use by hand or machine in through or blind holes. Form B applies to spiral-point taps and Form D applies to straight-flute and spiral-flute taps. This chamfer is more efficient than Form E or Form C chamfers.

Form C (2–2.5 pitches)

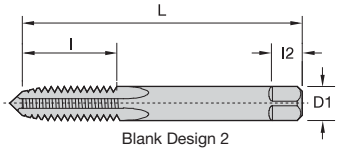
This short chamfer enables threading close to the bottom of blind holes. Due to the slightly longer chamfer and more working teeth, this chamfer is more efficient than a Form E chamfer.

Form E (1.5–2 pitches)

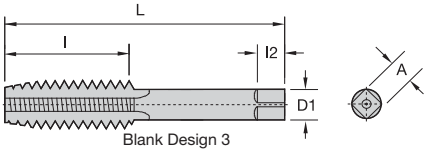
For threading close to the bottom of blind holes, the Form E chamfer is the least efficient chamfer available.



Blank Design 1



Blank Design 2



Blank Design 3

nominal diameter range (in)	machine screw size number	(in)	nominal fractional diameter	(in)	nominal metric diameter mm	(in)	blank design number	overall length L	thread length l	square length l2	shank diameter D1	square size A
.052–.065	0	(.0600)	–		M1.6	(.0630)	1	1.63	.31	.19	.1410	.110
.065–.078	1	(.0730)	–		M1.8	(.0709)	1	1.69	.38	.19	.1410	.110
.078–.091	2	(.0860)	–		M2 (0787),	M2.2 (.0866)	1	1.75	.44	.19	.1410	.110
.091–.104	3	(.0990)	–		M2.5	(.0984)	1	1.81	.50	.19	.1410	.110
.104–.117	4	(.1120)	–		–	–	1	1.88	.56	.19	.1410	.110
.117–.130	5	(.1250)	–		M3	(.1181)	1	1.94	.63	.19	.1410	.110
.130–.145	6	(.1380)	–		M3.5	(.1378)	1	2.00	.69	.19	.1410	.110
.145–.171	8	(.1640)	–		M4	(.1575)	1	2.13	.75	.25	.1680	.131
.171–.197	10	(.1900)	–		M4.5 (.1772),	M5 (.1969)	1	2.38	.88	.25	.1940	.152
.197–.223	12	(.2160)	–		–	–	1	2.38	.94	.28	.2200	.165
.223–.260	–		1/4	(.2500)	M6	(.2362)	2	2.50	1.00	.31	.2550	.191
.260–.323	–		5/16	(.3125)	M7 (.2756),	M8 (.3150)	2	2.72	1.13	.38	.3180	.238
.323–.395	–		3/8	(.3750)	M10	(.3937)	2	2.94	1.25	.44	.3810	.286
.395–.448	–		7/16	(.4375)	–	–	3	3.16	1.44	.41	.3230	.242
.448–.510	–		1/2	(.5000)	M12	(.4724)	3	3.38	1.66	.44	.3670	.275
.510–.573	–		9/16	(.5625)	M14	(.5512)	3	3.59	1.66	.50	.4290	.322
.573–.635	–		5/8	(.6250)	M16	(.6299)	3	3.81	1.81	.56	.4800	.360
.635–.709	–		11/16	(.6875)	M18	(.7087)	3	4.03	1.81	.63	.5420	.406
.709–.760	–		3/4	(.7500)	–	–	3	4.25	2.00	.69	.5900	.442
.760–.823	–		13/16	(.8125)	M20	(.7874)	3	4.47	2.00	.69	.6520	.489
.823–.885	–		7/8	(.8750)	M22	(.8661)	3	4.69	2.22	.75	.6970	.523
.885–.948	–		15/16	(.9375)	M24	(.9449)	3	4.91	2.22	.75	.7600	.570
.948–1.010	–		1	(1.0000)	M25	(.9843)	3	5.13	2.50	.81	.8000	.600
1.010–1.073	–		1-1/16	(1.0625)	M27	(1.0630)	3	5.13	2.50	.88	.8960	.672
1.073–1.135	–		1-1/8	(1.1250)	–	–	3	5.44	2.56	.88	.8960	.672
1.135–1.198	–		1-3/16	(1.1875)	M30	(1.1811)	3	5.44	2.56	1.00	1.0210	.766
1.198–1.260	–		1-1/4	(1.2500)	–	–	3	5.75	2.56	1.00	1.0210	.766
1.260–1.323	–		1-5/16	(1.3125)	M33	(1.2992)	3	5.75	2.56	1.06	1.1080	.831
1.323–1.385	–		1-3/8	(1.3750)	–	–	3	6.06	3.00	1.06	1.1080	.831
1.358–1.448	–		1-7/16	(1.4375)	M36	(1.4173)	3	6.06	3.00	1.13	1.2330	.925
1.448–1.510	–		1-1/2	(1.5000)	–	–	3	6.38	3.00	1.13	1.2330	.925
1.510–1.635	–		1-5/8	(1.6250)	M39	(1.5354)	3	6.69	3.19	1.13	1.3050	.979
1.635–1.760	–		1-3/4	(1.7500)	M42	(1.6535)	3	7.00	3.19	1.25	1.4300	1.072
1.760–1.885	–		1-7/8	(1.8750)	–	–	3	7.31	3.56	1.25	1.5190	1.139
1.885–2.010	–		2	(2.0000)	M48	(1.8898)	3	7.63	3.56	1.38	1.6440	1.233
2.010–2.135	–		2-1/8	(2.1250)	–	–	3	8.00	3.56	1.38	1.7690	1.327
2.135–2.260	–		2-1/4	(2.2500)	M56	(2.2047)	3	8.25	3.56	1.44	1.8940	1.420
2.260–2.385	–		2-3/8	(2.3750)	–	–	3	8.50	4.00	1.44	2.0190	1.514
2.385–2.510	–		2-1/2	(2.5000)	–	–	3	8.75	4.00	1.50	2.1000	1.575
2.510–2.635	–		2-5/8	(2.6250)	M64	(2.5197)	3	8.75	4.00	1.50	2.2250	1.669
2.635–2.760	–		2-3/4	(2.7500)	–	–	3	9.25	4.00	1.56	2.3500	1.762
2.760–2.885	–		2-7/8	(2.8750)	M72	(2.8346)	3	9.25	4.00	1.56	2.4750	1.856
2.885–3.010	–		3	(3.0000)	–	–	3	9.75	4.56	1.63	2.5430	1.907
3.010–3.135	–		3-1/8	(3.1250)	–	–	3	9.75	4.56	1.63	2.6680	2.001
3.135–3.260	–		3-1/4	(3.2500)	M80	(3.1496)	3	10.00	4.56	1.75	2.7930	2.095
3.260–3.385	–		3-3/8	(3.3750)	–	–	3	10.00	4.56	1.75	2.8830	2.162
3.385–3.510	–		3-1/2	(3.5000)	–	–	3	10.25	4.94	2.00	3.0080	2.256
3.510–3.635	–		3-5/8	(3.6250)	M90	(3.5433)	3	10.25	4.94	2.00	3.1330	2.350
3.635–3.760	–		3-3/4	(3.7500)	–	–	3	10.50	5.31	2.13	3.2170	2.413
3.760–3.885	–		3-7/8	(3.8750)	–	–	3	10.50	5.31	2.13	3.3420	2.506
3.885–4.010	–		4	(4.0000)	M100	(3.9370)	3	10.75	5.31	2.25	3.4670	2.600

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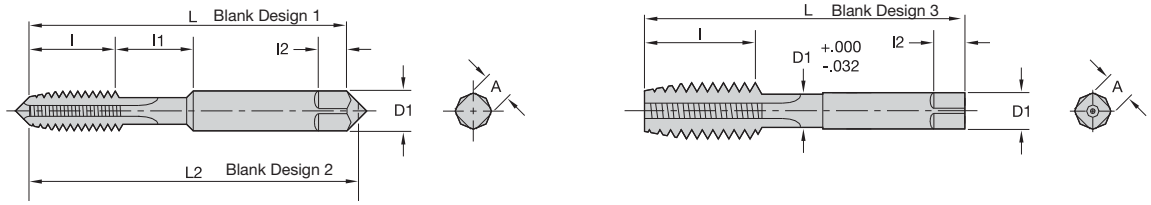

General Dimensions

Tap Dimensions — Inches

nominal diameter range (in)		machine screw size number (in)		nominal fractional diameter (in)		nominal metric diameter mm (in)		blank design number	overall length L	thread length l	neck length l1	square length l2	shank diameter D1	square size A
.104	.117	4	(.1120)	—		—	—	1	1.88	.31	.25	.19	.1410	.110
.117	.130	5	(.1250)			M3	(.1181)	1	1.94	.31	.31	.19	.1410	.110
.130	.145	6	(.1380)	—		M3.5	(.1378)	1	2.00	.38	.31	.19	.1410	.110
.145	.171	8	(.1640)			M4	(.1575)	1	2.13	.38	.38	.25	.1680	.131
.171	.197	10	(.1900)	—		M4.5	(.1772)	1	2.38	.50	.38	.25	.1940	.152
—	—	—	—			M5	(.1969)	—	—	—	—	—	—	—
.197	.223	12	(.2160)	—	—	—	—	1	2.38	.50	.44	.28	.2200	.165
.223	.260	—	—	1/4	(.2500)	M6	(.2362)	2	2.50	.63	.38	.31	.2550	.191
.260	.323	—		5/16	(.3125)	M7, M8	(.2756), (.3150)	2	2.72	.69	.44	.38	.3180	.238
.323	.395			3/8	(.3750)	M10	(.3937)	2	2.94	.75	.50	.44	.3810	.286
.395	.448	—		7/16	(.4375)	—	—	3	3.16	.88	—	.41	.3230	.242
.448	.510			1/2	(.5000)	M12	(.4724)	3	3.38	.94	—	.44	.3670	.275
.510	.573	—		9/16	(.5625)	M14	(.5541)	3	3.59	1.00	—	.50	.4290	.322
.573	.635			5/8	(.6250)	M16	(.6299)	3	3.81	1.09	—	.56	.4800	.360
.635	.709	—		11/16	(.6875)	M18	(.7087)	3	4.03	1.09	—	.63	.5420	.406
.709	.760			3/4	(.7500)	—	—	3	4.25	1.22	—	.69	.5900	.442
.760	.823	—		13/16	(.8125)	M20	(.7874)	3	4.47	1.22	—	.69	.6520	.489
.823	.885			7/8	(.8750)	M22	(.8661)	3	4.69	1.34	—	.75	.3670	.523
.885	.948	—		15/16	(.9375)	M24	(.9449)	3	4.91	1.34	—	.75	.7600	.570
.948	1.010			1	(1.0000)	M25	(.9843)	3	5.13	1.50	—	.81	.8000	.600

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NOTE: Thread length l is based on a length of 12 pitches of the UNC thread series. Thread length "l" is a minimum value and has no tolerance. When thread length "l" is added to neck length "l1", the total shall be no less than the minimum USCTI Table 302 thread length "l". Unless otherwise specified, all tolerances are in accordance with USCTI Table 302. For eccentricity tolerances, see USCTI Table 317. Table 302 is provided for reference only. The Kennametal tap dimensions may differ.

Tolerances

element	nominal diameter range (in)	direction	tolerance (in)
length overall — L	.0520–1.0100	plus or minus	.031
	1.0100–4.0100	plus or minus	.063
length of thread — l	.0520–.2230	plus or minus	.047
	.2230–.5100	plus or minus	.063
	.5100–1.5100	plus or minus	.094
	1.5100–4.0100	plus or minus	.125
length of square — l2	.0520–1.0100	plus or minus	.031
	1.0100–4.0100	plus or minus	.063
diameter of shank — d1	.0520–.2230	minus	.0015
	.2230–.6350	minus	.0015
	.6350–1.0100	minus	.0020
	1.0100–1.5100	minus	.0020
	1.5100–2.0100	minus	.0030
	2.0100–4.0100	minus	.0030
size of square — a	.0520–.5100	minus	.004
	.5100–1.0100	minus	.006
	1.0100–2.0100	minus	.008
	2.0100–4.0100	minus	.010

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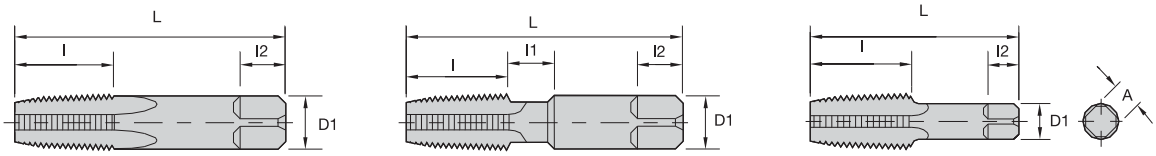
Special Taps

Unless otherwise specified: Special taps over 1.010–1.510" diameter inclusive, having 14 or more threads per inch or 1,75mm pitch and finer, and sizes over 1.510" diameter with 10 or more threads per inch or 2,5mm pitch and finer, are made to general dimensions shown in USCTI Table 303. Special tap thread limits are determined using the formulas shown in USCTI Table 331 for Unified Inch Screw Threads and USCTI Table 341 for metric m-profile screw threads.

NOTE: Tap sizes .395" and smaller have an external center on the thread end (may be removed on bottoming taps). Sizes .125" and smaller have an external centre on the shank end. Sizes .224–.395" have truncated partial cone centres on the shank end (length of cone approximately 1/4 of diameter of shank). Sizes over .395" have internal centres on both the thread and shank ends.

For standard thread limits and tolerances for Unified Inch Screw Threads, see USCTI Table 327, and for metric threads, see USCTI Table 337.

For eccentricity tolerances of tap elements, see USCTI Table 317.



General Dimensions

nominal size (in)	dimensions (in) overall length L	thread length l	square length l2	shank diameter D1	square size A	optional neck length l1
1/16	2.13	.69	.38	.3125	.234	.375
1/8	2.13	.75	.38	.3125	.234	–
1/8	2.13	.75	.38	.4375	.328	.375
1/4	2.44	1.06	.44	.5625	.421	.375
3/8	2.56	1.06	.50	.7000	.531	.375
1/2	3.13	1.38	.63	.6875	.515	–
3/4	3.25	1.38	.69	.9063	.679	–
1	3.75	1.75	.81	1.1250	.843	–
1-1/4	4.00	1.75	.94	1.3125	.984	–
1-1/2	4.25	1.75	1.00	1.5000	1.125	–
2	4.25	1.75	1.13	1.8750	1.406	–
2-1/2	5.50	2.56	1.25	2.2500	1.687	–
3	6.00	2.63	1.38	2.6250	1.968	–
3-1/2	6.50	2.69	1.50	2.8125	2.108	–
4	6.75	2.75	1.56	3.0000	2.250	–

Tolerances

element	range	direction	tolerance
length overall — L	1/16–3/4 inc.	plus/minus	.031
	1–4 inc.	plus/minus	.063
length of thread — l	1/16–3/4 inc.	plus/minus	.063
	1–1-1/4 inc.	plus/minus	.094
	1-1/2–4	plus/minus	.125
length of square — l2	1/16–3/4 inc.	plus/minus	.031
	1–4 inc.	plus/minus	.063
diameter of shank — d1	1/16–1/8	minus	.0015
	1/4–1 inc.	minus	.0020
	1-1/4–4 inc.	minus	.0030
size of square — a	1/16–1/8	minus	.004
	1/4–3/4 inc.	minus	.006
	1–4 inc.	minus	.008

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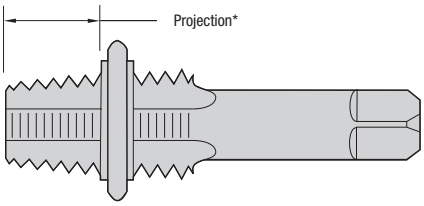
American National Standard Taper Pipe Thread Form (NPT)
Aeronautical National Taper Pipe Thread Form (ANPT)
Dryseal American National Standard Taper Pipe Thread Form (NPTF)



nominal size (in)	threads per inch	projection* (in)	projection tolerance + / –	taper per foot limits min	taper per foot limits max	length L1	tap drill size** NPT, ANPT, NFTF
1/16	27	.312	.063	.719	.781	.160	C
1/8	27	.312	.063	.719	.781	.1615	Q
1/4	18	.459	.063	.719	.781	.2278	7/16
3/8	18	.454	.063	.719	.781	.240	9/16
1/2	14	.579	.063	.719	.781	.320	45/64
3/4	14	.565	.063	.719	.781	.339	29/32
1	11-1/2	.678	.094	.719	.781	.400	1-9/64
1-1/4	11-1/2	.686	.094	.719	.781	.420	1-31/64
1-1/2	11-1/2	.699	.094	.719	.781	.420	1-23/32
2	11-1/2	.667	.094	.719	.781	.436	2-3/16
2-1/2	8	.925	.094	.734	.781	.682	2-39/64
3	8	.925	.094	.734	.781	.766	3-15/64
3-1/2	8	.938	.125	.734	.781	.821	—
4	8	.950	.125	.734	.781	.844	—

*Distance from small end of tap projects through L1 taper thread ring gage.
**Recommended size given permits direct tapping without reaming the hole, but only gives a full thread for approximately the L1 length.
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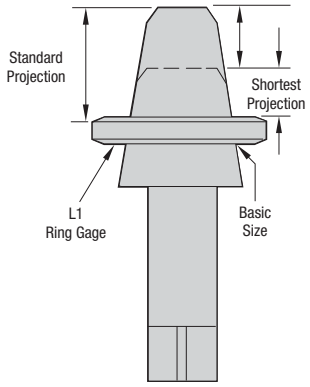
Pipe Taps

General-purpose pipe taps are appropriate for threading a wide variety of materials, both ferrous and non-ferrous.

Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPFT). NPT threads require the use of a sealer, like Teflon® tape or pipe compound. Dryseal taps are used to tap fittings, which will give a pressure-tight joint without the use of a sealer.

The nominal size of a pipe tap is that of the pipe fitting to be tapped, not the actual size of the tap. The thread tapers 3/4" per foot.

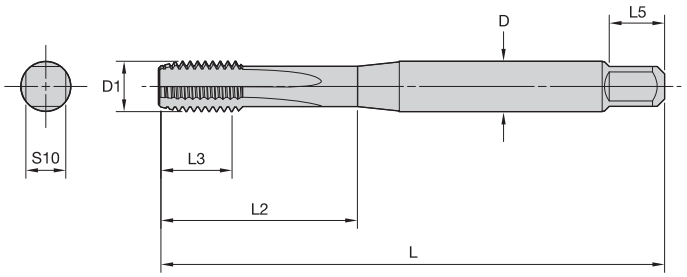
All pipe taps are furnished with 2-1/2–3-1/2 thread chamfer.



Short projection pipe taps are made with a projection shorter than standard for taper pipe tapping where the depth of tapping is limited.

Special short projection taper pipe taps can be furnished with American National Standard Taper Pipe thread (ANPT) or Dryseal American National Standard Taper Pipe thread (NPTF, PTF-SAE Short, or PTF-SPL Extra Short).

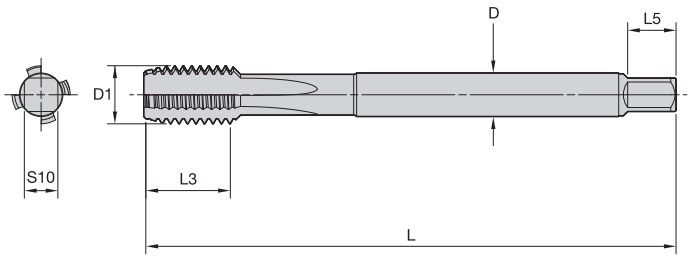
For information on short projection pipe taps and hole preparation for NPT, NPTF, and ANPT internal pipe threads, consult Kennametal Technical Bulletins.



DIN 371

D1	pitch	D	L	L3*	L2	L5	S10
M3	0,5	3,5	56	11	18	6	2,7
M3,5	0,6	4	56	12	20	6	3
M4	0,7	4,5	63	13	21	6	3,4
M4,5	0,75	6	70	16	25	8	4,9
M5	0,8	6	70	16	25	8	4,9
M6	1	6	80	19	30	8	4,9
M7	1	7	80	19	30	8	5,5
M8	0,75	8	80	18	30	9	6,2
M8	1,25	8	90	22	35	9	6,2
M9	0,75	9	80	18	30	10	7
M9	1,25	9	90	22	35	10	7
M10	1	10	90	20	35	11	8
M10	1,5	10	100	24	39	11	8

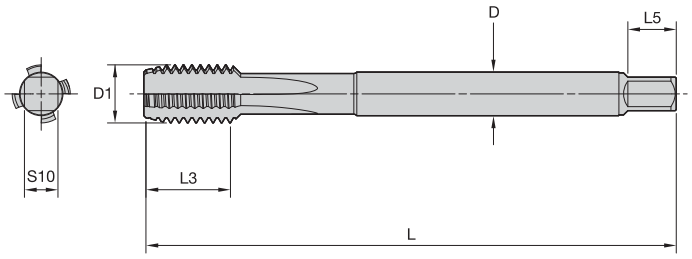
*Maximum



DIN 376

D1	pitch	D	L	L3*	L5	S10
M8	1,25	6	90	22	8	4,9
M9	1,25	7	90	22	8	5,5
M10	1,5	7	100	24	8	5,5
M11	1,5	8	100	24	9	6,2
M12	1,75	9	110	28	10	7
M14	2	11	110	30	12	9
M16	2	12	110	32	12	9
M18	2,5	14	125	34	14	11
M20	2,5	16	140	34	15	12
M22	2,5	18	140	34	17	14,5
M24	3	18	160	38	17	14,5
M27	3	20	160	38	19	16
M30	3,5	22	180	45	21	18
M33	3,5	25	180	50	23	20
M36	4	28	200	56	25	22
M39	4	32	200	60	27	24
M42	4,5	32	200	60	27	24
M45	4,5	36	220	65	32	29

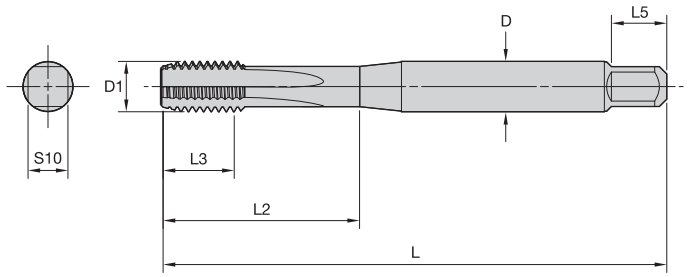
*Maximum



DIN 374

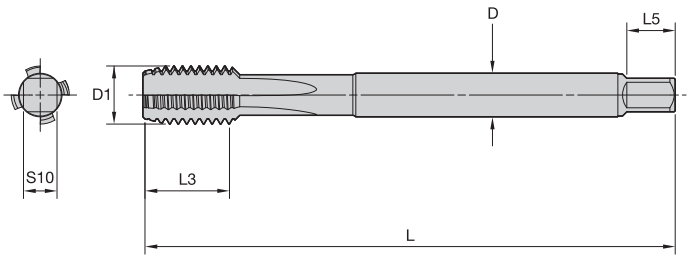
	pitch						
D1	**minimum**	**maximum**	**D**	**L**	**L3***	**L5**	**S10**
M8	0,2	0,75	6	80	18	8	4,9
M8	–	1	6	90	22	8	4,9
M9	0,2	0,75	7	80	18	8	5,5
M9	–	1	7	90	22	8	5,5
M10	0,2	1	7	90	20	8	5,5
M10	–	1,25	7	100	24	8	5,5
M11	0,35	1	8	90	20	9	6,2
M12	0,35	1,5	9	100	22	10	7
M14	0,35	1,5	11	100	22	12	9
M16	0,35	1,5	12	100	22	12	9
M16	–	2	12	110	32	12	9
M18	0,35	1,5	14	110	25	14	11
M18	–	2	14	125	34	14	11
M20	0,35	1,5	16	125	25	15	12
M20	–	2	16	140	34	15	12
M22	0,35	1,5	18	125	25	17	14,5
M22	–	2	18	140	34	17	14,5
M24	0,35	2	18	140	28	17	14,5
M27	0,35	2	20	140	28	19	16
M30	0,35	2	22	150	28	21	18
M30	–	3	22	180	45	21	18

*Maximum



JIS Type 2 Metric Coarse

				metric dimensions			
D1	**pitch**	**D**	**L**	**L3**	**L2**	**L5**	**S10**
M3	0,5	4	46	11	19	6	3,2
M3,5	0,6	4	48	13	20	6	3,2
M4	0,7	5	52	13	21	7	4
M4,5	0,75	5	55	13	21	7	4
M5	0,8	5,5	60	16	24	7	4,5
M6	1	6	62	19	29	7	4,5



JIS Type 3 Metric Coarse

			metric dimensions			
D1	**pitch**	**D**	**L**	**L3**	**L5**	**S10**
M8	1,25	6,2	70	22	8	5
M9	1,25	7	72	22	8	5,5
M10	1,5	7	75	24	8	5,5
M11	1,5	8	80	25	9	6
M12	1,75	8,5	82	29	9	6,5
M14	2	10,5	88	30	11	8
M16	2	12,5	95	32	13	10
M18	2,5	14	100	37	14	11
M20	2,5	15	105	37	15	12
M22	2,5	17	115	38	16	13
M24	3	19	120	45	18	15

Thread Cutting • UNC, UNF, and 8-pitch

tap size	Threads per Inch			65% thread						70% thread						75% thread					
				Metric			Inch			Metric			Inch			Metric			Inch		
	UNC	UNF	8-pitch	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill
#0	–	80	–	1.20	**1.26**	1.30	0.0472	**0.0494**	0.0512	1.20	**1.24**	1.30	0.0472	**0.0486**	0.0512	1.20	**1.21**	1.30	0.0472	**0.0478**	0.0512
#1	64	–	–	1.50	**1.52**	1.60	0.0591	**0.0598**	0.0630	1.40	**1.49**	1.50	0.0551	**0.0588**	0.0591	1.40	**1.47**	1.50	0.0551	**0.0578**	0.0591
	–	72	–	1.50	**1.56**	1.60	0.0591	**0.0613**	0.0630	1.50	**1.53**	1.60	0.0591	**0.0604**	0.0630	1.50	**1.51**	1.60	0.0591	**0.0595**	0.0630
#2	56	–	–	1.80	**1.80**	1.80	0.0709	**0.0709**	0.0709	1.70	**1.77**	1.80	0.0669	**0.0698**	0.0709	1.70	**1.74**	1.80	0.0669	**0.0686**	0.0709
	–	64	–	1.80	**1.85**	1.90	0.0709	**0.0728**	0.0748	1.80	**1.82**	1.90	0.0709	**0.0718**	0.0748	1.80	**1.80**	1.80	0.0669	**0.0708**	0.0709
#3	48	–	–	2.00	**2.07**	2.10	0.0787	**0.0814**	0.0827	2.00	**2.03**	2.10	0.0787	**0.0801**	0.0827	2.00	**2.00**	2.00	0.0787	**0.0787**	0.0787
	–	56	–	2.10	**2.13**	2.20	0.0827	**0.0839**	0.0866	2.10	**2.10**	2.10	0.0827	**0.0828**	0.0866	2.00	**2.07**	2.10	0.0787	**0.0816**	0.0827
#4	40	–	–	2.30	**2.31**	2.38	0.0906	**0.0909**	0.0938	2.20	**2.27**	2.30	0.0866	**0.0893**	0.0906	2.20	**2.23**	2.30	0.0866	**0.0876**	0.0906
	–	48	–	2.40	**2.40**	2.40	0.0938	**0.0944**	0.0945	2.30	**2.36**	2.38	0.0906	**0.0931**	0.0938	2.30	**2.33**	2.38	0.0906	**0.0917**	0.0938
#5	40	–	–	2.64	**2.64**	2.64	0.1024	**0.1039**	0.1040	2.60	**2.60**	2.60	0.1015	**0.1023**	0.1024	2.50	**2.56**	2.58	0.0984	**0.1006**	0.1015
	–	44	–	2.64	**2.69**	2.70	0.1040	**0.1058**	0.1063	2.64	**2.65**	2.70	0.1040	**0.1043**	0.1063	2.60	**2.61**	2.64	0.1024	**0.1029**	0.1040
#6	32	–	–	2.82	**2.83**	2.87	0.1100	**0.1116**	0.1130	2.78	**2.78**	2.78	0.1094	**0.1096**	0.1102	2.71	**2.73**	2.78	0.1065	**0.1076**	0.1094
	–	40	–	2.95	**2.97**	3.00	0.1160	**0.1169**	0.1181	2.90	**2.93**	2.95	0.1142	**0.1153**	0.1160	2.87	**2.89**	2.90	0.1130	**0.1136**	0.1142
#8	32	–	–	3.50	**3.50**	3.50	0.1360	**0.1376**	0.1378	3.40	**3.44**	3.46	0.1339	**0.1356**	0.1360	3.30	**3.39**	3.40	0.1299	**0.1336**	0.1339
	–	36	–	3.57	**3.57**	3.57	0.1378	**0.1405**	0.1406	3.50	**3.52**	3.57	0.1378	**0.1387**	0.1406	3.46	**3.48**	3.50	0.1360	**0.1369**	0.1378
#10	24	–	–	3.90	**3.93**	3.97	0.1535	**0.1548**	0.1563	3.80	**3.86**	3.90	0.1496	**0.1521**	0.1535	3.73	**3.79**	3.80	0.1470	**0.1494**	0.1496
	–	32	–	4.10	**4.16**	4.20	0.1614	**0.1636**	0.1654	4.10	**4.10**	4.10	0.1614	**0.1616**	0.1654	4.04	**4.05**	4.09	0.1590	**0.1596**	0.1610
#12	24	–	–	4.50	**4.59**	4.60	0.1772	**0.1808**	0.1811	4.50	**4.52**	4.60	0.1772	**0.1781**	0.1811	4.40	**4.46**	4.50	0.1732	**0.1754**	0.1772
	–	28	–	4.70	**4.72**	4.76	0.1850	**0.1858**	0.1875	4.62	**4.66**	4.70	0.1820	**0.1835**	0.1850	4.60	**4.60**	4.60	0.1811	**0.1812**	0.1820
1/4	20	–	–	5.20	**5.28**	5.30	0.2047	**0.2078**	0.2087	5.20	**5.20**	5.20	0.2031	**0.2045**	0.2047	5.11	**5.11**	5.11	0.2010	**0.2013**	0.2031
	–	28	–	5.56	**5.58**	5.60	0.2188	**0.2198**	0.2205	5.50	**5.53**	5.56	0.2165	**0.2175**	0.2188	5.41	**5.47**	5.50	0.2130	**0.2152**	0.2165
5/16	18	–	–	6.75	**6.75**	6.75	0.2656	**0.2656**	0.2656	6.63	**6.65**	6.70	0.2610	**0.2620**	0.2638	6.53	**6.56**	6.60	0.2570	**0.2584**	0.2598
	–	24	–	7.00	**7.04**	7.10	0.2756	**0.2773**	0.2795	6.90	**6.98**	7.00	0.2717	**0.2746**	0.2756	6.90	**6.91**	7.00	0.2717	**0.2719**	0.2756
3/8	16	–	–	8.10	**8.18**	8.20	0.3189	**0.3222**	0.3228	8.00	**8.08**	8.10	0.3150	**0.3182**	0.3189	7.94	**7.98**	8.00	0.3125	**0.3141**	0.3150
	–	24	–	8.60	**8.63**	8.70	0.3386	**0.3398**	0.3425	8.50	**8.56**	8.60	0.3346	**0.3371**	0.3386	8.43	**8.49**	8.50	0.3320	**0.3344**	0.3346
7/16	14	–	–	9.53	**9.58**	9.60	0.3750	**0.3772**	0.3780	9.40	**9.46**	9.50	0.3701	**0.3726**	0.3740	9.30	**9.34**	9.35	0.3661	**0.3679**	0.3680
	–	20	–	10.00	**10.04**	10.10	0.3937	**0.3953**	0.3976	9.92	**9.96**	10.00	0.3906	**0.3920**	0.3937	9.80	**9.88**	9.90	0.3858	**0.3888**	0.3898
1/2	13	–	–	11.00	**11.05**	11.10	0.4331	**0.4351**	0.4370	10.90	**10.92**	11.00	0.4291	**0.4301**	0.4331	10.80	**10.80**	10.80	0.4219	**0.4251**	0.4252
	–	20	–	11.60	**11.63**	11.70	0.4528	**0.4578**	0.4606	11.51	**11.55**	11.60	0.4528	**0.4545**	0.4606	11.40	**11.46**	11.50	0.4488	**0.4513**	0.4528
9/16	12	–	–	12.50	**12.50**	12.50	0.4921	**0.4921**	0.4921	12.30	**12.36**	12.40	0.4844	**0.4867**	0.4882	12.20	**12.23**	12.30	0.4803	**0.4813**	0.4843
	–	18	–	13.10	**13.10**	13.10	0.5118	**0.5156**	0.5157	13.00	**13.00**	13.00	0.5118	**0.5120**	0.5157	12.80	**12.91**	13.00	0.5039	**0.5084**	0.5118
5/8	11	–	–	13.80	**13.93**	14.00	0.5433	**0.5482**	0.5512	13.50	**13.78**	13.80	0.5315	**0.5423**	0.5433	13.50	**13.63**	13.80	0.5315	**0.5364**	0.5433
	–	18	–	14.50	**14.68**	15.00	0.5709	**0.5781**	0.5906	14.50	**14.59**	15.00	0.5709	**0.5745**	0.5906	14.50	**14.50**	14.50	0.5709	**0.5709**	0.5709
3/4	10	–	–	16.50	**16.91**	17.00	0.6496	**0.6656**	0.6693	16.50	**16.74**	17.00	0.6496	**0.6591**	0.6693	16.50	**16.58**	17.00	0.6496	**0.6526**	0.6560
	–	16	–	17.50	**17.71**	18.00	0.6890	**0.6972**	0.7087	17.50	**17.61**	18.00	0.6890	**0.6932**	0.7087	17.50	**17.50**	17.50	0.6890	**0.6891**	0.6969
7/8	9	–	–	19.50	**19.84**	20.00	0.7677	**0.7812**	0.7874	19.50	**19.66**	20.00	0.7677	**0.7740**	0.7874	19.00	**19.48**	19.50	0.7660	**0.7668**	0.7677
	–	14	–	20.50	**20.69**	21.00	0.8071	**0.8147**	0.8268	20.50	**20.58**	21.00	0.8071	**0.8101**	0.8268	20.00	**20.46**	20.50	0.8012	**0.8054**	0.8071
1	8	–	–	22.50	**22.72**	22.77	0.8858	**0.8945**	0.8965	22.50	**22.51**	22.77	0.8858	**0.8863**	0.8965	22.23	**22.31**	22.44	0.8750	**0.8782**	0.8840
	–	12	–	23.50	**23.61**	23.81	0.9252	**0.9296**	0.9375	23.42	**23.48**	23.50	0.9220	**0.9242**	0.9252	23.30	**23.34**	23.42	0.9173	**0.9188**	0.9220
1-1/8	7	–	–	25.50	**25.51**	25.60	1.0039	**1.0044**	1.0080	25.07	**25.28**	25.40	0.9870	**0.9951**	1.0000	25.00	**25.04**	25.07	0.9843	**0.9858**	0.9870
	–	12	–	26.70	**26.79**	27.00	1.0512	**1.0546**	1.0610	26.59	**26.65**	26.70	1.0470	**1.0492**	1.0512	26.50	**26.51**	26.59	1.0433	**1.0438**	1.0470
	–	–	8	25.81	**25.89**	26.00	1.0160	**1.0195**	1.0236	25.67	**25.69**	25.81	1.0110	**1.0113**	1.0160	25.40	**25.48**	25.50	1.0000	**1.0032**	1.0039
1-1/4	7	–	–	28.58	**28.69**	29.00	1.1250	**1.1294**	1.1417	28.18	**28.45**	28.50	1.1090	**1.1201**	1.1220	28.18	**28.21**	28.50	1.1090	**1.1108**	1.1220
	–	12	–	29.77	**29.96**	30.00	1.1720	**1.1796**	1.1811	29.77	**29.83**	30.00	1.1720	**1.1742**	1.1811	29.50	**29.69**	29.73	1.1614	**1.1688**	1.1720
	–	–	8	29.00	**29.07**	29.50	1.1417	**1.1445**	1.1560	28.58	**28.86**	29.00	1.1250	**1.1363**	1.1417	28.58	**28.66**	29.00	1.1250	**1.1282**	1.1417

(continued)

(Thread Cutting • UNC, UNF, and 8-pitch — continued)

tap size	Threads per Inch			65% thread						70% thread						75% thread					
				Metric			Inch			Metric			Inch			Metric			Inch		
	UNC	UNF	8-pitch	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill
	6	–	–	31.00	**31.35**	31.50	1.2200	**1.2343**	1.2402	31.00	**31.08**	31.50	1.2200	**1.2235**	1.2402	30.56	**30.80**	30.96	1.2030	**1.2126**	1.2190
1-3/8	–	12	–	33.00	**33.14**	33.34	1.2992	**1.3046**	1.3130	33.00	**33.00**	33.00	1.2992	**1.2992**	1.2992	32.54	**32.86**	32.94	1.2810	**1.2938**	1.2970
	–	–	8	32.00	**32.24**	32.50	1.2598	**1.2695**	1.2795	32.00	**32.04**	32.50	1.2598	**1.2613**	1.2795	31.75	**31.83**	32.00	1.2500	**1.2532**	1.2598
	6	–	–	34.50	**34.53**	34.93	1.3583	**1.3593**	1.3750	34.13	**34.25**	34.50	1.3440	**1.3485**	1.3583	33.73	**33.98**	34.00	1.3280	**1.3376**	1.3386
1-1/2	–	12	–	36.12	**36.31**	36.50	1.4220	**1.4296**	1.4375	36.12	**36.18**	36.50	1.4220	**1.4242**	1.4375	36.00	**36.04**	36.12	1.4173	**1.4188**	1.4220
	–	–	8	35.00	**35.42**	35.50	1.3780	**1.3945**	1.3976	35.00	**35.21**	35.50	1.3780	**1.3863**	1.3976	35.00	**35.01**	35.50	1.3780	**1.3782**	1.3976
1-5/8	–	–	8	38.50	**38.59**	39.00	1.5157	**1.5195**	1.5354	38.10	**38.39**	38.46	1.5000	**1.5113**	1.5140	38.10	**38.18**	38.46	1.5000	**1.5032**	1.5140
1-3/4	5	–	–	40.00	**40.16**	41.00	1.5750	**1.5811**	1.6140	39.50	**39.83**	40.00	1.5551	**1.5681**	1.5748	39.50	**39.50**	39.50	1.5551	**1.5552**	1.5748
	–	–	8	41.00	**41.77**	42.00	1.6140	**1.6445**	1.6540	41.00	**41.56**	42.00	1.6140	**1.6363**	1.6540	41.00	**41.36**	42.00	1.6140	**1.6282**	1.6540
1-7/8	–	–	8	44.00	**44.94**	45.00	1.7320	**1.7695**	1.7720	44.00	**44.74**	45.00	1.7320	**1.7613**	1.7720	44.00	**44.53**	45.00	1.7320	**1.7532**	1.7720
2	4 1/2	–	–	46.00	**46.03**	47.00	1.8110	**1.8124**	1.8500	45.00	**45.67**	46.00	1.7720	**1.7979**	1.8110	45.00	**45.30**	46.00	1.7720	**1.7835**	1.8110
	–	–	8	48.00	**48.12**	49.00	1.8900	**1.8945**	1.9290	47.00	**47.91**	48.00	1.8500	**1.8863**	1.8900	47.00	**47.71**	48.00	1.8500	**1.8782**	1.8900
2-1/4	4 1/2	–	–	52.00	**52.38**	53.00	2.0470	**2.0624**	2.0870	52.00	**52.02**	53.00	2.0470	**2.0479**	2.0870	51.00	**51.65**	52.00	2.0080	**2.0335**	2.0470
	–	–	8	54.00	**54.47**	55.00	2.1260	**2.1445**	2.1650	54.00	**54.26**	55.00	2.1260	**2.1363**	2.1650	54.00	**54.06**	55.00	2.1260	**2.1282**	2.1650
2-1/2	4	–	–	58.00	**58.14**	59.00	2.2840	**2.2889**	2.3230	57.00	**57.73**	58.00	2.2440	**2.2727**	2.2840	57.00	**57.31**	58.00	2.2440	**2.2564**	2.2840
	–	–	8	60.00	**60.82**	61.00	2.3620	**2.3945**	2.4020	60.00	**60.61**	61.00	2.3620	**2.3863**	2.4020	60.00	**60.41**	61.00	2.3620	**2.3782**	2.4020

Thread Cutting • M and MF

tap size	pitch		65% thread						70% thread						75% thread					
			Metric			Inch			Metric			Inch			Metric			Inch		
	M	MF	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill
M1.6	0.35	–	1.20	**1.30**	1.30	0.0512	**0.0512**	0.0512	1.20	**1.28**	1.30	0.0472	**0.0504**	0.0512	1.20	**1.26**	1.30	0.0472	**0.0496**	0.0512
M1.7	0.35	–	1.40	**1.40**	1.40	0.0551	**0.0551**	0.0551	1.32	**1.38**	1.40	0.0520	**0.0543**	0.0550	1.32	**1.36**	1.40	0.0520	**0.0535**	0.0550
M1.8	0.35	–	1.50	**1.50**	1.50	0.0591	**0.0591**	0.0591	1.40	**1.48**	1.50	0.0551	**0.0583**	0.0591	1.40	**1.46**	1.50	0.0551	**0.0575**	0.0591
M2	0.4	–	1.60	**1.66**	1.70	0.0630	**0.0654**	0.0669	1.60	**1.64**	1.70	0.0630	**0.0646**	0.0669	1.60	**1.61**	1.70	0.0630	**0.0634**	0.0669
M2.2	0.45	–	1.80	**1.82**	1.90	0.0709	**0.0717**	0.0748	1.70	**1.79**	1.80	0.0669	**0.0705**	0.0709	1.70	**1.76**	1.80	0.0669	**0.0693**	0.0709
M2.5	0.45	–	2.10	**2.12**	2.20	0.0827	**0.0835**	0.0866	2.00	**2.09**	2.10	0.0787	**0.0823**	0.0827	2.00	**2.06**	2.10	0.0787	**0.0811**	0.0827
M2.6	0.45	–	2.20	**2.22**	2.30	0.0866	**0.0874**	0.0906	2.10	**2.19**	2.20	0.0827	**0.0862**	0.0866	2.10	**2.16**	2.20	0.0827	**0.0850**	0.0866
M3	0.5	–	2.58	**2.58**	2.58	0.1015	**0.1016**	0.1024	2.50	**2.55**	2.58	0.0984	**0.1004**	0.1015	2.50	**2.51**	2.58	0.0984	**0.0988**	0.1015
	–	0.35	2.70	**2.70**	2.70	0.1063	**0.1063**	0.1063	2.64	**2.68**	2.70	0.1040	**0.1055**	0.1063	2.64	**2.66**	2.70	0.1040	**0.1047**	0.1063
M3.5	0.6	–	2.95	**2.99**	3.00	0.1160	**0.1177**	0.1181	2.95	**2.95**	3.00	0.1160	**0.1161**	0.1181	2.90	**2.92**	2.95	0.1142	**0.1150**	0.1160
M4	0.7	–	3.40	**3.41**	3.46	0.1339	**0.1343**	0.1360	3.30	**3.36**	3.40	0.1299	**0.1323**	0.1339	3.30	**3.32**	3.40	0.1299	**0.1307**	0.1339
	–	0.5	3.57	**3.58**	3.60	0.1406	**0.1409**	0.1417	3.50	**3.54**	3.57	0.1378	**0.1394**	0.1406	3.50	**3.51**	3.57	0.1378	**0.1382**	0.1406
M4.5	0.75	–	3.80	**3.87**	3.90	0.1496	**0.1524**	0.1535	3.80	**3.82**	3.90	0.1496	**0.1504**	0.1535	3.73	**3.77**	3.80	0.1470	**0.1484**	0.1496
M5	0.8	–	4.30	**4.32**	4.37	0.1693	**0.1701**	0.1719	4.22	**4.27**	4.30	0.1660	**0.1681**	0.1693	4.22	**4.22**	4.30	0.1660	**0.1661**	0.1693
	–	0.5	4.50	**4.58**	4.60	0.1772	**0.1803**	0.1811	4.50	**4.54**	4.60	0.1772	**0.1787**	0.1811	4.50	**4.51**	4.60	0.1772	**0.1776**	0.1811
M6	1	–	5.16	**5.16**	5.16	0.2031	**0.2031**	0.2031	5.00	**5.09**	5.10	0.1969	**0.2004**	0.2008	5.00	**5.03**	5.10	0.1969	**0.1980**	0.2008
	–	0.75	5.30	**5.37**	5.40	0.2087	**0.2114**	0.2126	5.30	**5.32**	5.40	0.2087	**0.2094**	0.2126	5.20	**5.27**	5.30	0.2047	**0.2075**	0.2087
M7	1	–	6.10	**6.16**	6.20	0.2402	**0.2425**	0.2441	6.00	**6.09**	6.10	0.2362	**0.2398**	0.2402	6.00	**6.03**	6.10	0.2362	**0.2374**	0.2402

(continued)

(Thread Cutting • M and MF — continued)

tap size	pitch M	pitch MF	65% thread Metric smallest drill	65% thread Metric theoretical	65% thread Metric largest drill	65% thread Inch smallest drill	65% thread Inch theoretical	65% thread Inch largest drill	70% thread Metric smallest drill	70% thread Metric theoretical	70% thread Metric largest drill	70% thread Inch smallest drill	70% thread Inch theoretical	70% thread Inch largest drill	75% thread Metric smallest drill	75% thread Metric theoretical	75% thread Metric largest drill	75% thread Inch smallest drill	75% thread Inch theoretical	75% thread Inch largest drill
M8	1.25	–	6.90	**6.94**	7.00	0.2717	**0.2732**	0.2756	6.80	**6.86**	6.90	0.2677	**0.2701**	0.2717	6.75	**6.78**	6.80	0.2656	**0.2669**	0.2677
	–	1	7.15	**7.16**	7.20	0.2813	**0.2819**	0.2835	7.00	**7.09**	7.10	0.2756	**0.2791**	0.2795	7.00	**7.03**	7.10	0.2756	**0.2768**	0.2795
	–	0.75	7.30	**7.37**	7.40	0.2874	**0.2902**	0.2913	7.30	**7.32**	7.40	0.2874	**0.2882**	0.2913	7.20	**7.27**	7.30	0.2835	**0.2862**	0.2874
M10	1.5	–	8.70	**8.73**	8.73	0.3425	**0.3437**	0.3438	8.60	**8.64**	8.70	0.3386	**0.3402**	0.3425	8.50	**8.54**	8.60	0.3346	**0.3362**	0.3386
	–	1.25	8.90	**8.94**	9.00	0.3504	**0.3520**	0.3543	8.80	**8.86**	8.90	0.3465	**0.3488**	0.3504	8.73	**8.78**	8.80	0.3438	**0.3457**	0.3465
	–	1	9.13	**9.16**	9.20	0.3594	**0.3606**	0.3622	9.00	**9.09**	9.10	0.3543	**0.3579**	0.3583	9.00	**9.03**	9.10	0.3543	**0.3555**	0.3583
	–	0.75	9.35	**9.37**	9.40	0.3680	**0.3689**	0.3701	9.30	**9.32**	9.35	0.3661	**0.3669**	0.3680	9.20	**9.27**	9.30	0.3622	**0.3650**	0.3661
M12	1.75	–	10.50	**10.52**	10.60	0.4134	**0.4142**	0.4173	10.40	**10.41**	10.50	0.4094	**0.4098**	0.4134	10.30	**10.30**	10.30	0.4055	**0.4055**	0.4055
	–	1.5	10.72	**10.73**	10.80	0.4219	**0.4224**	0.4252	10.60	**10.64**	10.70	0.4173	**0.4189**	0.4213	10.50	**10.54**	10.60	0.4134	**0.4150**	0.4173
	–	1.25	10.90	**10.94**	11.00	0.4291	**0.4307**	0.4331	10.80	**10.86**	10.90	0.4252	**0.4276**	0.4291	10.72	**10.78**	10.80	0.4219	**0.4244**	0.4252
	–	1	11.15	**11.16**	11.20	0.4375	**0.4394**	0.4409	11.00	**11.09**	11.10	0.4331	**0.4366**	0.4370	11.00	**11.03**	11.10	0.4331	**0.4343**	0.4370
M14	2	–	12.30	**12.31**	12.40	0.4844	**0.4846**	0.4882	12.10	**12.18**	12.20	0.4764	**0.4795**	0.4803	12.00	**12.05**	12.10	0.4724	**0.4744**	0.4764
	–	1.5	12.70	**12.73**	12.80	0.5000	**0.5012**	0.5039	12.60	**12.64**	12.70	0.4961	**0.4976**	0.5000	12.50	**12.54**	12.60	0.4921	**0.4937**	0.4961
M16	2	–	14.20	**14.31**	14.50	0.5591	**0.5634**	0.5709	14.00	**14.18**	14.20	0.5512	**0.5583**	0.5591	14.00	**14.05**	14.20	0.5512	**0.5531**	0.5591
	–	1.5	14.50	**14.73**	15.00	0.5709	**0.5799**	0.5906	14.50	**14.64**	15.00	0.5709	**0.5764**	0.5906	14.50	**14.54**	15.00	0.5709	**0.5724**	0.5906
M18	2.5	–	15.80	**15.89**	16.00	0.6220	**0.6256**	0.6299	15.50	**15.73**	15.80	0.6102	**0.6193**	0.6220	15.50	**15.56**	15.80	0.6102	**0.6126**	0.6220
	–	1.5	16.50	**16.73**	17.00	0.6496	**0.6587**	0.6693	16.50	**16.64**	17.00	0.6496	**0.6551**	0.6693	16.50	**16.54**	17.00	0.6496	**0.6512**	0.6693
M20	2.5	–	17.50	**17.89**	18.00	0.6890	**0.7043**	0.7087	17.50	**17.73**	18.00	0.6890	**0.6980**	0.7087	17.50	**17.56**	18.00	0.6890	**0.6913**	0.7087
	–	1.5	18.50	**18.73**	19.00	0.7283	**0.7374**	0.7480	18.50	**18.64**	19.00	0.7283	**0.7339**	0.7480	18.50	**18.54**	19.00	0.7283	**0.7299**	0.7480
	–	1	19.00	**19.16**	19.50	0.7480	**0.7543**	0.7677	19.00	**19.09**	19.50	0.7480	**0.7516**	0.7677	19.00	**19.03**	19.50	0.7480	**0.7492**	0.7677
M22	2.5	–	19.50	**19.89**	20.00	0.7677	**0.7831**	0.7874	19.50	**19.73**	20.00	0.7677	**0.7768**	0.7874	19.50	**19.56**	20.00	0.7677	**0.7701**	0.7874
	–	2	20.00	**20.31**	20.50	0.7874	**0.7996**	0.8071	20.00	**20.18**	20.50	0.7874	**0.7945**	0.8071	20.00	**20.05**	20.50	0.7874	**0.7894**	0.8071
	–	1.5	20.50	**20.73**	21.00	0.8071	**0.8161**	0.8268	20.50	**20.64**	21.00	0.8071	**0.8126**	0.8268	20.50	**20.54**	21.00	0.8071	**0.8087**	0.8268
M24	3	–	21.43	**21.47**	21.50	0.8440	**0.8453**	0.8460	21.15	**21.27**	21.33	0.8327	**0.8374**	0.8398	21.00	**21.08**	21.15	0.8268	**0.8299**	0.8327
	–	2	22.23	**22.31**	22.44	0.8750	**0.8783**	0.8840	22.00	**22.18**	22.23	0.8661	**0.8732**	0.8750	22.00	**22.05**	22.23	0.8661	**0.8681**	0.8750
	–	1.5	22.50	**22.73**	22.77	0.8858	**0.8949**	0.8965	22.50	**22.64**	22.77	0.8858	**0.8913**	0.8965	22.50	**22.54**	22.77	0.8858	**0.8874**	0.8965
M27	3	–	24.30	**24.47**	24.50	0.9567	**0.9634**	0.9646	24.00	**24.27**	24.30	0.9449	**0.9555**	0.9567	24.00	**24.08**	24.30	0.9449	**0.9480**	0.9567
	–	2	25.07	**25.31**	25.40	0.9870	**0.9965**	1.0000	25.07	**25.18**	25.40	0.9870	**0.9913**	1.0000	25.00	**25.05**	25.07	0.9843	**0.9862**	0.9870
	–	1.5	25.67	**25.73**	25.81	1.0110	**1.0130**	1.0160	25.61	**25.64**	25.65	1.0080	**1.0094**	1.0098	25.50	**25.54**	25.60	1.0039	**1.0055**	1.0080
M30	3.5	–	27.00	**27.04**	27.50	1.0630	**1.0646**	1.0827	26.70	**26.82**	27.00	1.0512	**1.0559**	1.0610	26.59	**26.59**	26.59	1.0433	**1.0469**	1.0470
	–	2	28.18	**28.31**	28.50	1.1090	**1.1146**	1.1220	28.18	**28.18**	28.18	1.1090	**1.1094**	1.1220	28.00	**28.05**	28.10	1.1024	**1.1043**	1.1063
	–	1.5	28.58	**28.73**	29.00	1.1250	**1.1311**	1.1417	28.58	**28.64**	29.00	1.1250	**1.1276**	1.1417	28.50	**28.54**	28.58	1.1220	**1.1236**	1.1250
M33	3.5	–	30.00	**30.04**	30.16	1.1811	**1.1827**	1.1875	29.77	**29.82**	30.00	1.1720	**1.1740**	1.1811	29.50	**29.59**	29.73	1.1614	**1.1650**	1.1720
	–	2	31.00	**31.31**	31.50	1.2200	**1.2327**	1.2402	31.00	**31.18**	31.50	1.2200	**1.2276**	1.2402	31.00	**31.05**	31.50	1.2200	**1.2224**	1.2402
M36	4	–	32.54	**32.62**	32.94	1.2810	**1.2843**	1.2970	32.00	**32.36**	32.50	1.2598	**1.2740**	1.2795	32.00	**32.10**	32.50	1.2598	**1.2638**	1.2795
	–	3	33.40	**33.47**	33.50	1.3130	**1.3177**	1.3189	33.00	**33.27**	33.34	1.2992	**1.3098**	1.3130	33.00	**33.08**	33.34	1.2992	**1.3024**	1.3130
	–	2	34.13	**34.31**	34.50	1.3440	**1.3508**	1.3583	34.13	**34.18**	34.50	1.3440	**1.3457**	1.3583	34.00	**34.05**	34.13	1.3386	**1.3406**	1.3440
M39	4	–	35.50	**35.62**	35.72	1.3976	**1.4024**	1.4060	35.00	**35.36**	35.50	1.3780	**1.3921**	1.3976	35.00	**35.10**	35.50	1.3780	**1.3819**	1.3976
	–	2	37.31	**37.31**	37.31	1.4567	**1.4689**	1.4690	37.00	**37.18**	37.31	1.4567	**1.4638**	1.4690	37.00	**37.05**	37.31	1.4567	**1.4587**	1.4690
M42	4.5	–	38.10	**38.20**	38.46	1.5000	**1.5039**	1.5140	37.50	**37.91**	38.00	1.4764	**1.4925**	1.4961	37.50	**37.62**	38.00	1.4764	**1.4811**	1.4961
	–	3	39.00	**39.47**	39.50	1.5354	**1.5539**	1.5551	39.00	**39.27**	39.50	1.5354	**1.5461**	1.5551	39.00	**39.08**	39.50	1.5354	**1.5386**	1.5551
	–	2	40.00	**40.31**	41.00	1.5750	**1.5870**	1.6140	40.00	**40.18**	41.00	1.5750	**1.5819**	1.6140	40.00	**40.05**	41.00	1.5750	**1.5768**	1.6140

Thread Forming • UNC and UNF

tap size	pitch UNC	pitch UNF	65% thread Metric smallest drill	65% thread Metric theoretical	65% thread Metric largest drill	65% thread Inch smallest drill	65% thread Inch theoretical	65% thread Inch largest drill	70% thread Metric smallest drill	70% thread Metric theoretical	70% thread Metric largest drill	70% thread Inch smallest drill	70% thread Inch theoretical	70% thread Inch largest drill	75% thread Metric smallest drill	75% thread Metric theoretical	75% thread Metric largest drill	75% thread Inch smallest drill	75% thread Inch theoretical	75% thread Inch largest drill
#0	–	80	1.32	**1.38**	1.40	0.0520	**0.0545**	0.0550	1.32	**1.38**	1.40	0.0520	**0.0540**	0.0550	1.32	**1.36**	1.40	0.0520	**0.0536**	0.0550
#1	64	–	1.60	**1.68**	1.70	0.0630	**0.0661**	0.0669	1.60	**1.67**	1.70	0.0630	**0.0655**	0.0669	1.60	**1.65**	1.70	0.0630	**0.0650**	0.0669
	–	72	1.70	**1.70**	1.70	0.0669	**0.0669**	0.0669	1.60	**1.69**	1.70	0.0630	**0.0663**	0.0669	1.60	**1.67**	1.70	0.0630	**0.0659**	0.0669
#2	56	–	1.98	**1.98**	1.98	0.0781	**0.0781**	0.0781	1.90	**1.97**	1.98	0.0748	**0.0774**	0.0781	1.90	**1.95**	1.98	0.0748	**0.0769**	0.0781
	–	64	2.00	**2.01**	2.10	0.0787	**0.0791**	0.0827	2.00	**2.00**	2.00	0.0781	**0.0785**	0.0787	1.98	**1.98**	1.98	0.0748	**0.0780**	0.0781
#3	48	–	2.20	**2.28**	2.30	0.0866	**0.0898**	0.0906	2.20	**2.27**	2.30	0.0866	**0.0890**	0.0906	2.20	**2.25**	2.30	0.0866	**0.0884**	0.0906
	–	56	2.30	**2.31**	2.38	0.0906	**0.0911**	0.0938	2.30	**2.31**	2.38	0.0866	**0.0904**	0.0906	2.20	**2.28**	2.30	0.0866	**0.0899**	0.0906
#4	40	–	2.50	**2.57**	2.58	0.0984	**0.1010**	0.1015	2.50	**2.55**	2.58	0.0984	**0.1000**	0.1015	2.50	**2.52**	2.58	0.0984	**0.0993**	0.1015
	–	48	2.60	**2.61**	2.64	0.1024	**0.1028**	0.1040	2.60	**2.60**	2.60	0.1015	**0.1020**	0.1024	2.58	**2.58**	2.58	0.0984	**0.1014**	0.1015
#5	40	–	2.90	**2.90**	2.90	0.1130	**0.1140**	0.1142	2.87	**2.88**	2.90	0.1130	**0.1130**	0.1130	2.82	**2.85**	2.87	0.1110	**0.1123**	0.1130
	–	44	2.90	**2.92**	2.95	0.1142	**0.1150**	0.1160	2.90	**2.91**	2.95	0.1130	**0.1141**	0.1142	2.87	**2.88**	2.90	0.1130	**0.1134**	0.1142
#6	32	–	3.10	**3.16**	3.18	0.1220	**0.1243**	0.1250	3.10	**3.14**	3.18	0.1220	**0.1230**	0.1250	3.10	**3.10**	3.10	0.1220	**0.1221**	0.1250
	–	40	3.20	**3.23**	3.26	0.1260	**0.1270**	0.1285	3.20	**3.21**	3.26	0.1260	**0.1260**	0.1260	3.18	**3.18**	3.18	0.1250	**0.1253**	0.1260
#8	32	–	3.80	**3.82**	3.90	0.1496	**0.1503**	0.1535	3.80	**3.80**	3.80	0.1470	**0.1490**	0.1496	3.73	**3.76**	3.80	0.1470	**0.1481**	0.1496
	–	36	3.80	**3.86**	3.90	0.1496	**0.1518**	0.1535	3.80	**3.84**	3.90	0.1496	**0.1507**	0.1535	3.80	**3.80**	3.80	0.1496	**0.1498**	0.1535
#10	24	–	4.30	**4.36**	4.37	0.1693	**0.1716**	0.1719	4.30	**4.34**	4.37	0.1693	**0.1700**	0.1719	4.22	**4.29**	4.30	0.1660	**0.1688**	0.1693
	–	32	4.40	**4.48**	4.50	0.1732	**0.1762**	0.1772	4.40	**4.46**	4.50	0.1732	**0.1750**	0.1772	4.40	**4.42**	4.50	0.1732	**0.1741**	0.1772
#12	24	–	5.00	**5.02**	5.10	0.1969	**0.1976**	0.2008	5.00	**5.00**	5.00	0.1929	**0.1960**	0.1969	4.90	**4.95**	5.00	0.1929	**0.1948**	0.1969
	–	28	5.00	**5.09**	5.10	0.1969	**0.2002**	0.2008	5.00	**5.07**	5.10	0.1969	**0.1990**	0.2008	5.00	**5.02**	5.10	0.1969	**0.1978**	0.2008
1/4	20	–	5.70	**5.79**	5.80	0.2244	**0.2279**	0.2283	5.70	**5.76**	5.80	0.2244	**0.2260**	0.2283	5.70	**5.70**	5.70	0.2244	**0.2245**	0.2283
	–	28	5.95	**5.95**	5.95	0.2323	**0.2342**	0.2344	5.90	**5.94**	5.95	0.2323	**0.2329**	0.2344	5.80	**5.89**	5.90	0.2283	**0.2318**	0.2323
5/16	18	–	7.30	**7.31**	7.40	0.2874	**0.2879**	0.2913	7.30	**7.30**	7.30	0.2835	**0.2861**	0.2874	7.20	**7.22**	7.30	0.2835	**0.2842**	0.2874
	–	24	7.40	**7.47**	7.50	0.2913	**0.2941**	0.2953	7.40	**7.46**	7.50	0.2913	**0.2927**	0.2953	7.40	**7.40**	7.40	0.2874	**0.2912**	0.2913
3/8	16	–	8.80	**8.82**	8.90	0.3465	**0.3474**	0.3504	8.80	**8.80**	8.80	0.3438	**0.3452**	0.3465	8.70	**8.71**	8.73	0.3425	**0.3431**	0.3438
	–	24	9.00	**9.06**	9.10	0.3543	**0.3566**	0.3583	9.00	**9.06**	9.10	0.3543	**0.3552**	0.3583	8.90	**8.98**	9.00	0.3504	**0.3537**	0.3543
7/16	14	–	10.30	**10.31**	10.32	0.4055	**0.4059**	0.4063	10.20	**10.29**	10.30	0.4016	**0.4035**	0.4055	10.10	**10.19**	10.20	0.3976	**0.4011**	0.4016
	–	20	10.50	**10.55**	10.60	0.4134	**0.4154**	0.4173	10.50	**10.55**	10.60	0.4134	**0.4137**	0.4173	10.40	**10.46**	10.50	0.4094	**0.4120**	0.4134
1/2	13	–	11.80	**11.84**	11.90	0.4646	**0.4660**	0.4685	11.80	**11.82**	11.90	0.4606	**0.4634**	0.4646	11.70	**11.70**	11.70	0.4606	**0.4608**	0.4646
	–	20	12.10	**12.14**	12.20	0.4764	**0.4779**	0.4803	12.10	**12.14**	12.20	0.4724	**0.4762**	0.4764	12.00	**12.05**	12.10	0.4724	**0.4745**	0.4764
9/16	12	–	13.10	**13.35**	13.50	0.5157	**0.5257**	0.5315	13.10	**13.33**	13.50	0.5157	**0.5229**	0.5315	13.10	**13.21**	13.50	0.5157	**0.5200**	0.5315
	–	18	13.50	**13.66**	13.80	0.5315	**0.5379**	0.5433	13.50	**13.67**	13.80	0.5315	**0.5361**	0.5433	13.50	**13.57**	13.80	0.5315	**0.5342**	0.5433
5/8	11	–	14.50	**14.85**	15.00	0.5709	**0.5848**	0.5906	14.50	**14.83**	15.00	0.5709	**0.5817**	0.5906	14.50	**14.70**	15.00	0.5709	**0.5787**	0.5906
	–	18	15.10	**15.25**	15.50	0.5945	**0.6004**	0.6102	15.10	**15.26**	15.50	0.5945	**0.5986**	0.6102	15.10	**15.16**	15.50	0.5945	**0.5967**	0.6102
3/4	10	–	17.50	**17.93**	18.00	0.6890	**0.7058**	0.7087	17.50	**17.91**	18.00	0.6890	**0.7024**	0.7087	17.50	**17.75**	18.00	0.6890	**0.6990**	0.7087
	–	16	18.00	**18.35**	18.50	0.7087	**0.7224**	0.7283	18.00	**18.37**	18.50	0.7087	**0.7202**	0.7283	18.00	**18.24**	18.50	0.7087	**0.7181**	0.7283
7/8	9	–	20.50	**20.98**	21.00	0.8071	**0.8259**	0.8268	20.50	**20.96**	21.00	0.8071	**0.8221**	0.8268	20.50	**20.78**	21.00	0.8071	**0.8183**	0.8268
	–	14	21.33	**21.42**	21.43	0.8398	**0.8434**	0.8440	21.43	**21.45**	21.50	0.8398	**0.8410**	0.8440	21.15	**21.30**	21.33	0.8327	**0.8386**	0.8398
1	8	–	24.00	**24.00**	24.00	0.9380	**0.9448**	0.9449	23.81	**23.98**	24.00	0.9380	**0.9405**	0.9449	23.50	**23.78**	23.81	0.9252	**0.9363**	0.9375
	–	12	24.30	**24.47**	24.50	0.9567	**0.9632**	0.9646	24.30	**24.49**	24.50	0.9567	**0.9603**	0.9646	24.30	**24.32**	24.50	0.9567	**0.9575**	0.9646

Thread Forming • M and MF

tap size	pitch M	pitch MF	65% thread Metric smallest drill	65% thread Metric theoretical	65% thread Metric largest drill	65% thread Inch smallest drill	65% thread Inch theoretical	65% thread Inch largest drill	70% thread Metric smallest drill	70% thread Metric theoretical	70% thread Metric largest drill	70% thread Inch smallest drill	70% thread Inch theoretical	70% thread Inch largest drill	75% thread Metric smallest drill	75% thread Metric theoretical	75% thread Metric largest drill	75% thread Inch smallest drill	75% thread Inch theoretical	75% thread Inch largest drill
M1.6	0.35	–	1.40	**1.45**	1.50	0.0551	**0.0571**	0.0591	1.40	**1.43**	1.50	0.0551	**0.0563**	0.0591	1.40	**1.42**	1.50	0.0551	**0.0559**	0.0591
M1.7	0.35	–	1.50	**1.58**	1.60	0.0591	**0.0623**	0.0630	1.50	**1.57**	1.60	0.0591	**0.0620**	0.0630	1.50	**1.56**	1.60	0.0591	**0.0617**	0.0630
M1.8	0.35	–	1.60	**1.65**	1.70	0.0630	**0.0650**	0.0669	1.60	**1.63**	1.70	0.0630	**0.0642**	0.0669	1.60	**1.62**	1.70	0.0630	**0.0638**	0.0669
M2	0.4	–	1.80	**1.82**	1.90	0.0709	**0.0717**	0.0748	1.80	**1.81**	1.90	0.0709	**0.0713**	0.0748	1.80	**1.80**	1.80	0.0709	**0.0709**	0.0709
M2.2	0.45	–	2.00	**2.00**	2.00	0.0787	**0.0787**	0.0787	1.98	**1.99**	2.00	0.0781	**0.0783**	0.0787	1.90	**1.97**	1.98	0.0748	**0.0776**	0.0781
M2.5	0.45	–	2.30	**2.30**	2.30	0.0906	**0.0906**	0.0906	2.20	**2.29**	2.30	0.0866	**0.0902**	0.0906	2.20	**2.27**	2.30	0.0866	**0.0894**	0.0906
M2.6	0.45	–	2.40	**2.43**	2.44	0.0945	**0.0957**	0.0960	2.40	**2.42**	2.44	0.0945	**0.0953**	0.0960	2.40	**2.41**	2.44	0.0945	**0.0949**	0.0960
M3	0.5	–	2.78	**2.78**	2.80	0.1094	**0.1094**	0.1094	2.71	**2.76**	2.78	0.1065	**0.1087**	0.1094	2.71	**2.75**	2.78	0.1065	**0.1083**	0.1094
	–	0.35	2.87	**2.88**	2.90	0.1130	**0.1134**	0.1142	2.87	**2.87**	2.87	0.1130	**0.1130**	0.1130	2.82	**2.86**	2.87	0.1110	**0.1126**	0.1130
M3.5	0.6	–	3.20	**3.23**	3.26	0.1260	**0.1272**	0.1285	3.20	**3.21**	3.26	0.1260	**0.1264**	0.1285	3.18	**3.19**	3.20	0.1250	**0.1256**	0.1260
M4	0.7	–	3.66	**3.69**	3.70	0.1440	**0.1453**	0.1457	3.66	**3.67**	3.70	0.1440	**0.1445**	0.1457	3.60	**3.64**	3.66	0.1417	**0.1433**	0.1440
	–	0.5	3.73	**3.78**	3.80	0.1470	**0.1488**	0.1496	3.73	**3.76**	3.80	0.1470	**0.1480**	0.1496	3.73	**3.75**	3.80	0.1470	**0.1476**	0.1496
M4.5	0.75	–	4.10	**4.17**	4.20	0.1614	**0.1642**	0.1654	4.10	**4.14**	4.20	0.1614	**0.1630**	0.1654	4.10	**4.12**	4.20	0.1614	**0.1622**	0.1654
M5	0.8	–	4.62	**4.65**	4.70	0.1820	**0.1831**	0.1850	4.60	**4.62**	4.62	0.1811	**0.1819**	0.1820	4.50	**4.59**	4.60	0.1772	**0.1807**	0.1811
	–	0.5	4.76	**4.78**	4.80	0.1875	**0.1882**	0.1890	4.70	**4.76**	4.76	0.1850	**0.1874**	0.1875	4.70	**4.75**	4.76	0.1850	**0.1870**	0.1875
M6	1	–	5.56	**5.56**	5.60	0.2188	**0.2189**	0.2205	5.50	**5.52**	5.56	0.2165	**0.2173**	0.2188	5.41	**5.49**	5.50	0.2130	**0.2161**	0.2165
	–	0.75	5.62	**5.67**	5.70	0.2211	**0.2232**	0.2244	5.62	**5.64**	5.70	0.2211	**0.2220**	0.2244	5.62	**5.62**	5.70	0.2211	**0.2213**	0.2244
M7	1	–	6.53	**6.56**	6.60	0.2570	**0.2583**	0.2598	6.50	**6.52**	6.53	0.2559	**0.2567**	0.2570	6.40	**6.49**	6.50	0.2520	**0.2555**	0.2559
M8	1.25	–	7.40	**7.45**	7.50	0.2913	**0.2933**	0.2953	7.40	**7.41**	7.50	0.2913	**0.2917**	0.2953	7.30	**7.36**	7.40	0.2874	**0.2898**	0.2913
	–	1	7.54	**7.56**	7.60	0.2969	**0.2976**	0.2992	7.50	**7.52**	7.54	0.2953	**0.2961**	0.2969	7.40	**7.49**	7.50	0.2913	**0.2949**	0.2953
	–	0.75	7.60	**7.67**	7.70	0.2992	**0.3020**	0.3031	7.60	**7.64**	7.70	0.2992	**0.3008**	0.3031	7.60	**7.62**	7.70	0.2992	**0.3000**	0.3031
M10	1.5	–	9.30	**9.34**	9.35	0.3661	**0.3677**	0.3680	9.20	**9.29**	9.30	0.3622	**0.3657**	0.3661	9.20	**9.24**	9.30	0.3622	**0.3638**	0.3661
	–	1.25	9.40	**9.45**	9.50	0.3701	**0.3720**	0.3740	9.40	**9.41**	9.50	0.3701	**0.3705**	0.3740	9.35	**9.36**	9.40	0.3680	**0.3685**	0.3701
	–	1	9.53	**9.56**	9.60	0.3750	**0.3764**	0.3780	9.50	**9.52**	9.53	0.3740	**0.3748**	0.3750	9.40	**9.49**	9.50	0.3701	**0.3736**	0.3740
	–	0.75	9.60	**9.67**	9.70	0.3780	**0.3807**	0.3819	9.60	**9.64**	9.70	0.3780	**0.3795**	0.3819	9.60	**9.62**	9.70	0.3780	**0.3787**	0.3819
M12	1.75	–	11.20	**11.23**	11.30	0.4409	**0.4421**	0.4449	11.15	**11.17**	11.20	0.4375	**0.4398**	0.4409	11.10	**11.11**	11.15	0.4370	**0.4374**	0.4375
	–	1.5	11.30	**11.34**	11.40	0.4449	**0.4465**	0.4488	11.20	**11.29**	11.30	0.4449	**0.4484**	0.4488	11.20	**11.24**	11.30	0.4409	**0.4425**	0.4449
	–	1.25	11.40	**11.45**	11.50	0.4488	**0.4508**	0.4528	11.40	**11.41**	11.50	0.4488	**0.4492**	0.4528	11.30	**11.36**	11.40	0.4449	**0.4472**	0.4488
	–	1	11.51	**11.56**	11.60	0.4531	**0.4551**	0.4567	11.51	**11.52**	11.60	0.4531	**0.4535**	0.4567	11.40	**11.49**	11.50	0.4488	**0.4524**	0.4528
M14	2	–	13.10	**13.12**	13.50	0.5157	**0.5165**	0.5315	13.00	**13.05**	13.10	0.5118	**0.5138**	0.5157	12.80	**12.98**	13.00	0.5039	**0.5110**	0.5118
	–	1.5	13.10	**13.34**	13.50	0.5157	**0.5252**	0.5315	13.10	**13.29**	13.50	0.5157	**0.5232**	0.5315	13.10	**13.24**	13.50	0.5157	**0.5213**	0.5315
M16	2	–	15.10	**15.12**	15.50	0.5945	**0.5953**	0.6102	15.00	**15.05**	15.10	0.5906	**0.5925**	0.5945	14.50	**14.98**	15.00	0.5709	**0.5898**	0.5906
	–	1.5	15.10	**15.34**	15.50	0.5945	**0.6039**	0.6102	15.10	**15.29**	15.50	0.5945	**0.6020**	0.6102	15.10	**15.24**	15.50	0.5945	**0.6000**	0.6102
M18	2.5	–	16.50	**16.90**	17.00	0.6496	**0.6654**	0.6693	16.50	**16.81**	17.00	0.6496	**0.6618**	0.6693	16.50	**16.73**	17.00	0.6496	**0.6587**	0.6693
	–	1.5	17.00	**17.34**	17.50	0.6693	**0.6827**	0.6890	17.00	**17.29**	17.50	0.6693	**0.6807**	0.6890	17.00	**17.24**	17.50	0.6693	**0.6787**	0.6890
M20	2.5	–	18.50	**18.90**	19.00	0.7283	**0.7441**	0.7480	18.50	**18.81**	19.00	0.7283	**0.7406**	0.7480	18.50	**18.73**	19.00	0.7283	**0.7374**	0.7480
	–	1.5	19.00	**19.34**	19.50	0.7480	**0.7614**	0.7677	19.00	**19.29**	19.50	0.7480	**0.7594**	0.7677	19.00	**19.24**	19.50	0.7480	**0.7575**	0.7677
	–	1	19.50	**19.56**	20.00	0.7677	**0.7701**	0.7874	19.50	**19.52**	20.00	0.7677	**0.7685**	0.7874	19.00	**19.49**	19.50	0.7480	**0.7673**	0.7677
M22	2.5	–	20.50	**20.90**	21.00	0.8071	**0.8228**	0.8268	20.50	**20.81**	21.00	0.8071	**0.8193**	0.8268	20.50	**20.73**	21.00	0.8071	**0.8161**	0.8268
	–	2	21.00	**21.12**	21.15	0.8268	**0.8315**	0.8327	21.00	**21.05**	21.15	0.8268	**0.8287**	0.8327	20.50	**20.98**	21.00	0.8071	**0.8260**	0.8268
	–	1.5	21.33	**21.34**	21.43	0.8398	**0.8402**	0.8440	21.15	**21.29**	21.33	0.8327	**0.8382**	0.8398	21.15	**21.24**	21.33	0.8327	**0.8362**	0.8398
M24	3	–	22.50	**22.67**	22.77	0.8858	**0.8925**	0.8965	22.50	**22.57**	22.77	0.8858	**0.8886**	0.8965	22.44	**22.47**	22.50	0.8840	**0.8846**	0.8858
	–	2	23.10	**23.12**	23.30	0.9094	**0.9102**	0.9173	23.00	**23.05**	23.10	0.9055	**0.9075**	0.9094	22.77	**22.98**	23.00	0.8965	**0.9047**	0.9055
	–	1.5	23.30	**23.34**	23.42	0.9173	**0.9189**	0.9220	23.10	**23.29**	23.30	0.9094	**0.9169**	0.9173	23.10	**23.24**	23.30	0.9094	**0.9150**	0.9173

Pipe Taps

pipe tap size	NPT and NPTF		NPSM	NPSC	NPSF
	without reamer	with reamer			
1/16-27	0.2420	0.2344	—	0.2500	0.2460
1/8-27	0.3320	0.3281	0.3580	0.3320	0.3390
1/4-18	0.4375	0.4219	0.4688	0.4375	0.4375
3/8-18	0.5625	0.5625	0.6030	0.5781	0.5781
1/2-14	0.7031	0.6875	0.7480	0.7087	0.7087
3/4-14	0.9063	0.8906	0.9531	0.9219	0.9219
1-11 1/2	1.1406	1.1250	1.2031	1.1563	1.1563
1 1/4-11 1/2	1.4844	1.4688	1.5460	1.5000	—
1 1/2-11 1/2	1.7188	1.7031	1.7813	1.7344	—
2-11 1/2	2.1875	2.1719	2.2500	2.2031	—

Through Holes Push Chips



Spiral Point



LHSF



- Spiral point or LHSF (Left-Hand Spiral Flute).
- Ideal for materials with long chips.

Blind Holes Pull Chips



RHSF



- RHSF (Right-Hand Spiral Flute).
- Ideal for materials with long chips.

Blind or Through Holes Store Chips



STFL



- STFL (Straight Flute).
- Ideal for materials with short chips.

Blind or Through Holes No Chips



Forming Tap



- Forming.
- Ideal for ductile materials <32 HRC.

Unified Inch Screw Threads

thread size/pitch	recommended tap limits[1] class 2B	recommended tap limits[1] class 3B	internal thread pitch diameter limits min all classes (Basic)	internal thread pitch diameter limits max class 2B	internal thread pitch diameter limits max class 3B
0 - 80	H2	H2	0.0519	0.0542	0.0536
1 - 64	H2	H2	0.0629	0.0655	0.0648
1 - 72	H2	H2	0.0640	0.0665	0.0659
2 - 56	H2	H2	0.0744	0.0772	0.0765
2 - 64	H2	H2	0.0759	0.0786	0.0779
3 - 48	H3	H2	0.0855	0.0885	0.0877
3 - 56	H2	H2	0.0874	0.0902	0.0895
4 - 40	H3	H2	0.0958	0.0991	0.0982
4 - 48	H3	H2	0.0985	0.1016	0.1008
5 - 40	H3	H2	0.1088	0.1121	0.1113
5 - 44	H3	H2	0.1102	0.1134	0.1126
6 - 32	H3	H2	0.1177	0.1214	0.1204
6 - 40	H3	H2	0.1218	0.1252	0.1243
8 - 32	H3	H3	0.1437	0.1475	0.1465
8 - 36	H3	H3	0.1460	0.1496	0.1487
10 - 24	H3	H3	0.1629	0.1672	0.1661
10 - 32	H3	H3	0.1697	0.1736	0.1726
12 - 24	H3	H3	0.1889	0.1933	0.1922
12 - 28	H3	H3	0.1928	0.1970	0.1959
1/4 - 20	H5	H3	0.2175	0.2224	0.2211
1/4 - 28	H4	H3	0.2268	0.2311	0.2300
5/16 - 18	H5	H3	0.2764	0.2817	0.2803
5/16 - 24	H4	H3	0.2854	0.2902	0.2890
3/8 - 16	H5	H3	0.3344	0.3401	0.3387
3/8 - 24	H4	H3	0.3479	0.3528	0.3516
7/16 - 14	H5	H3	0.3911	0.3972	0.3957
7/16 - 20	H5	H3	0.4050	0.4104	0.4091
1/2 - 13	H5	H4	0.4500	0.4565	0.4548
1/2 - 20	H5	H3	0.4675	0.4731	0.4717
9/16 - 12	H5	H4	0.5084	0.5152	0.5135
9/16 - 18	H5	H3	0.5264	0.5323	0.5308
5/8 - 11	H5	H4	0.5660	0.5732	0.5714
5/8 - 18	H5	H3	0.5889	0.5949	0.5934
3/4 - 10	H5	H4	0.6850	0.6927	0.6907

(continued)

[1]Tap H limit selected for 3B will also produce thread to 2B.

NOTE: The above recommended taps normally produce the class of thread indicated in average materials when used with reasonable care. However, if the specified tap does not provide a satisfactory gage fit, choose an alternate tap limit.

Unified Inch Screw Threads *(continued)*

thread size/pitch	recommended tap limits[1] class 2B	recommended tap limits[1] class 3B	internal thread pitch diameter limits min all classes (Basic)	internal thread pitch diameter limits max class 2B	internal thread pitch diameter limits max class 3B
3/4 - 16	H5	H4	0.7094	0.7159	0.7143
7/8 - 9	H6	H4	0.8028	0.8110	0.8089
7/8 - 14	H6	H4	0.8286	0.8356	0.8339
1" - 8	H6	H5	0.9188	0.9276	0.9254
1" - 12	H6	H4	0.9459	0.9535	0.9516
1-1/8 - 7	H8	H6	1.0322	1.0416	1.0393
1-1/8 - 8	H8	H6	1.0438	1.0528	1.0505
1-1/8 - 12	H6	H5	1.0709	1.0787	1.0768
1-1/4 - 7	H8	H6	1.1572	1.1668	1.1644
1-1/4 - 8	H8	H6	1.1688	1.1780	1.1757
1-1/4 - 12	H6	H5	1.1959	1.2039	1.2019
1-3/8 - 6	H8	H6	1.2667	1.2771	1.2745
1-3/8 - 8	H8	H6	1.2938	1.3031	1.3008
1-3/8 - 12	H6	H5	1.3209	1.3291	1.3270
1-1/2 - 6	H8	H6	1.3917	1.4022	1.3996
1-1/2 - 8	H8	H6	1.4188	1.4283	1.4259
1-1/2 - 12	H6	H5	1.4459	1.4542	1.4522
1-3/4 - 5	H8	H7	1.6201	1.6317	1.6288
2 - 4 1/2	H8	H7	1.8557	1.8681	1.8650

[1]Tap H limit selected for 3B will also produce thread to 2B.

Tap Recommendations for Class 6H Metric Screw Threads

thread size nominal diameter (mm)	thread size pitch (mm)	recommended tap limit number	internal thread product limits — class 6H pitch diameter (mm) min	pitch diameter (mm) max	pitch diameter (in) min	pitch diameter (in) max
1,6	0,35	D3	1,373	1,458	.05406	.05740
2	0,4	D3	1,740	1,830	.06850	.07205
2,5	0,45	D3	2,208	2,303	.08693	.09067
3	0,5	D3	2,675	2,775	.10531	.10925
3,5	0,6	D4	3,110	3,222	.12244	.12685
4	0,7	D4	3,545	3,663	.13957	.14421
4,5	0,75	D4	4,013	4,131	.15789	.16264
5	0,8	D4	4,480	4,605	.17638	.18130
6	1	D5	5,350	5,500	.21063	.21654
7	1	D5	6,350	6,500	.25000	.25591
8	1,25	D5	7,188	7,348	.28299	.28929
10	1,5	D6	9,026	9,206	.35535	.36244
12	1,75	D6	10,863	11,063	.42768	.43555
14	2	D7	12,701	12,913	.50004	.50839
16	2	D7	14,701	14,913	.57878	.58713
20	2,5	D7	18,376	18,600	.72346	.73228
24	3	D8	22,051	22,316	.86815	.87858
30	3,5	D9	27,727	28,007	1.09161	1.10264
36	4	D9	33,402	33,702	1.31504	1.32685

In addition to the nominal size and pitch of a tap, there is another important dimensional factor to be considered when selecting a ground thread tap for a given job. This factor is the pitch diameter tap limit, "H" and "L". "H" represents (high) above basic pitch diameter; "L" (low) is below basic pitch diameter. Tap limits have been established to provide a choice in the selection of the tap size best suited to produce the class of thread desired.

Figure 1 Illustrates the numbering system and the .0005" diameter increment separation between successive limits. Because the starting point is basic pitch diameter, dividing the limit number by two establishes, in thousandths of an inch, the amount the maximum tap pitch diameter is above basic in the "H" series and the amount the minimum tap pitch diameter is under basic in the "L" series.

Figure 2 Illustrates the positioning of the tap limits in relation to the various classes of threads for a 1/4–20 size.

Figure 1

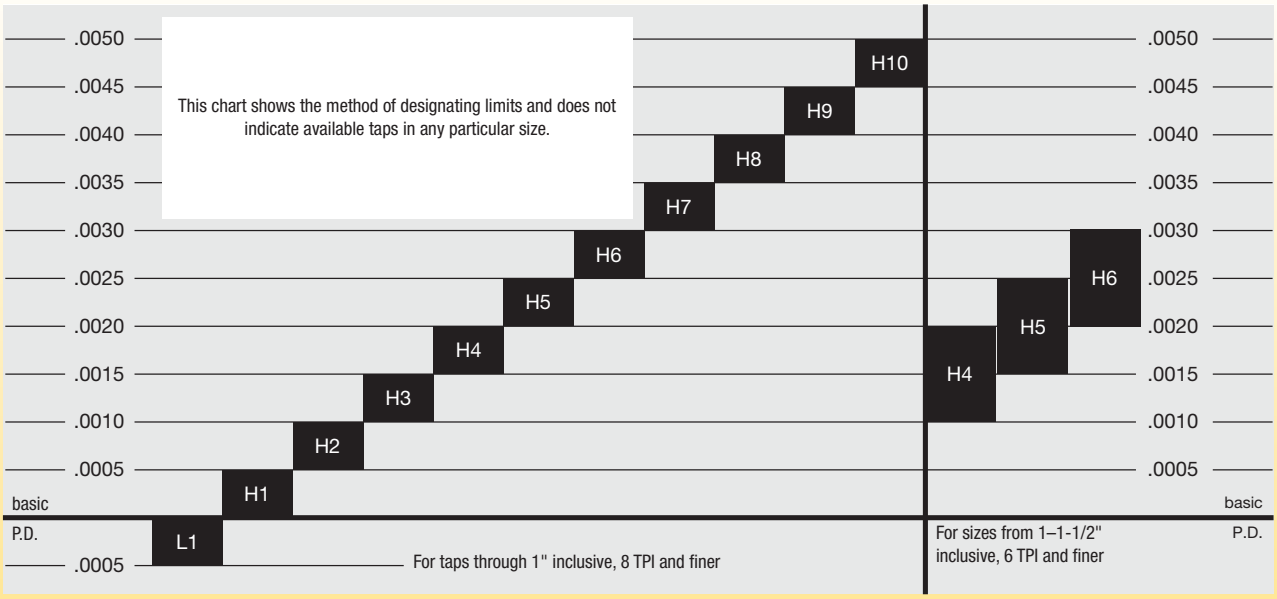
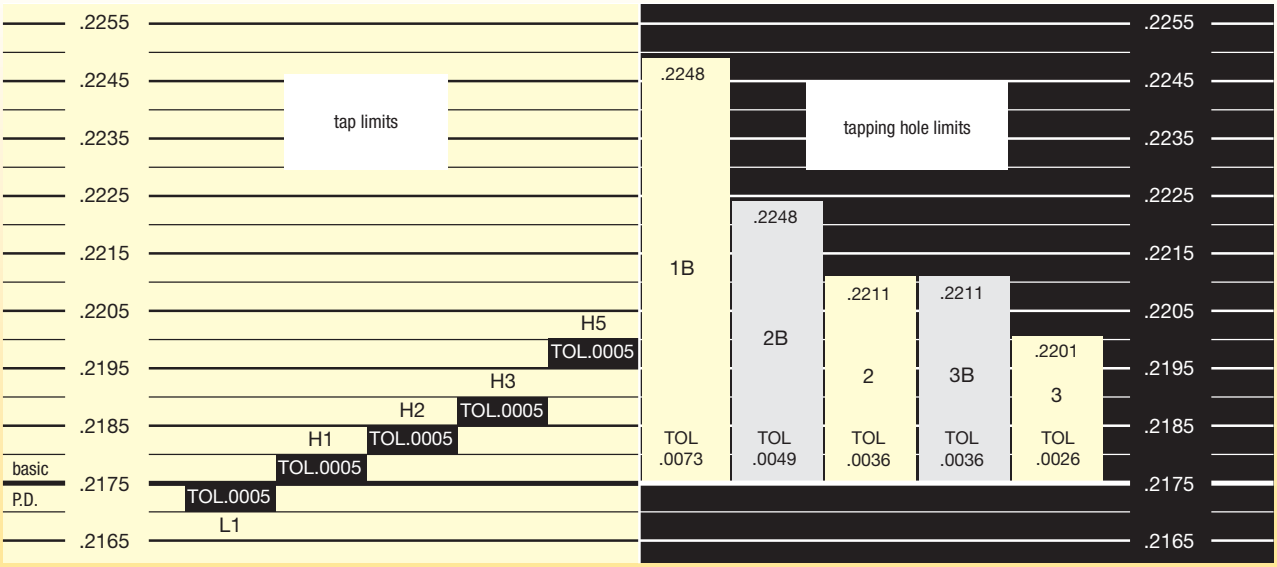
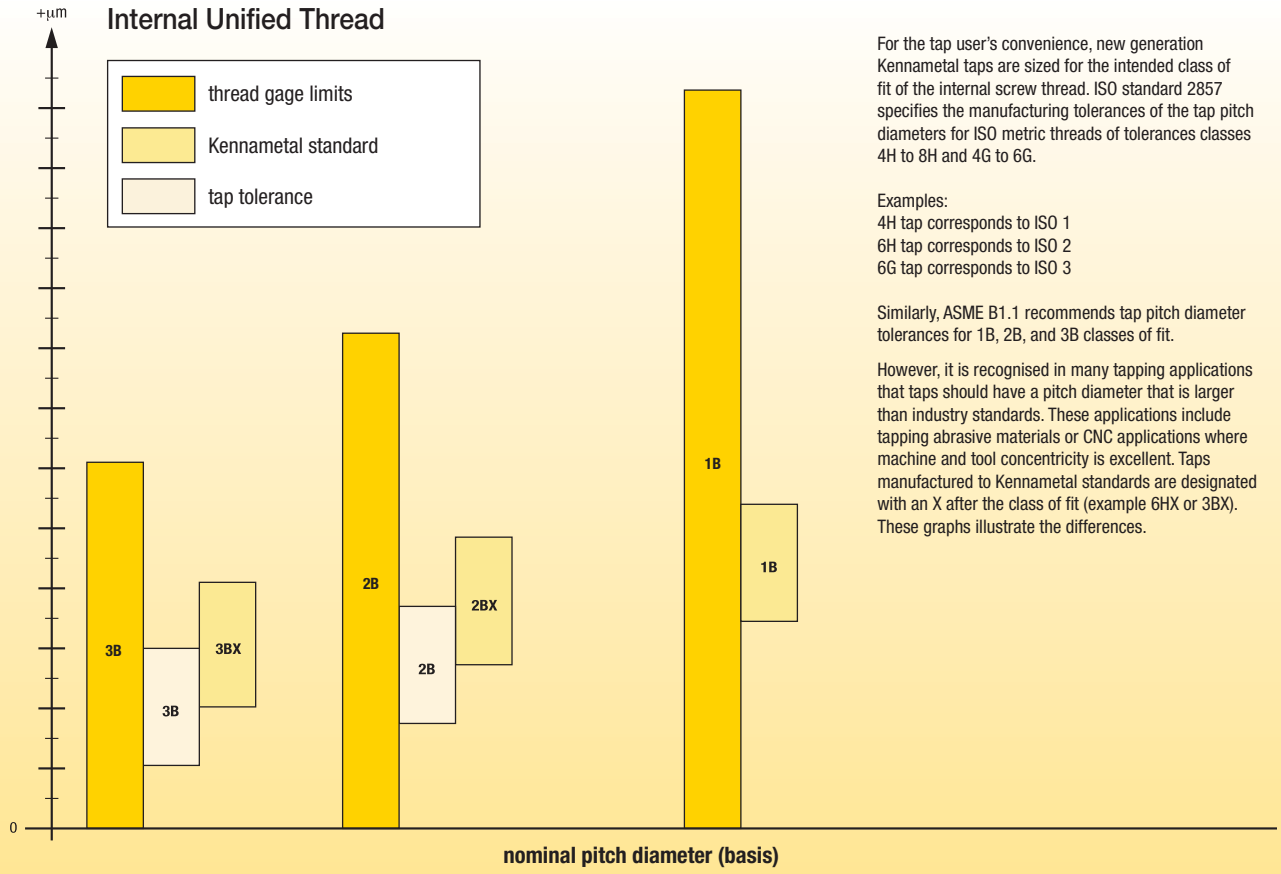


Figure 2

Class of Thread – 1/4–20 UNC and NC



Internal Unified Thread



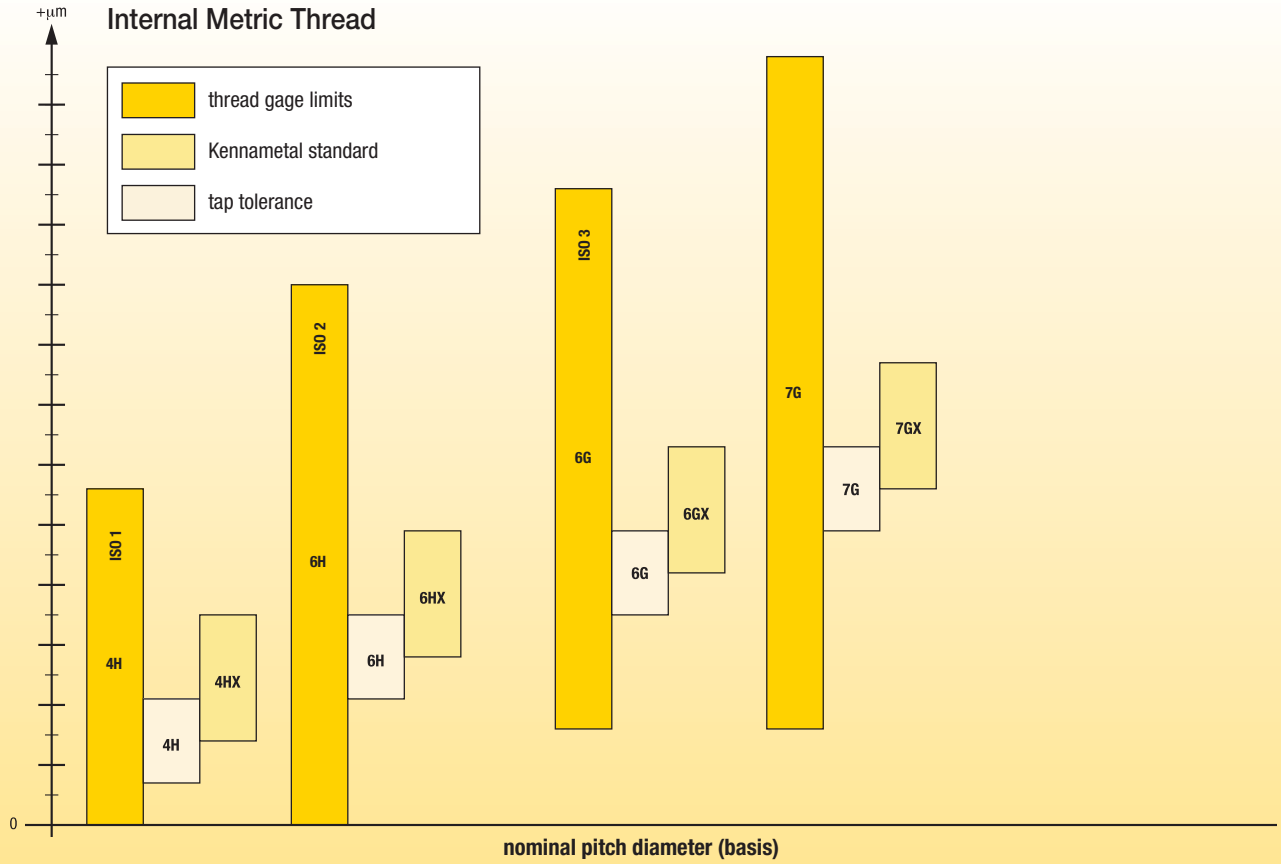
For the tap user's convenience, new generation Kennametal taps are sized for the intended class of fit of the internal screw thread. ISO standard 2857 specifies the manufacturing tolerances of the tap pitch diameters for ISO metric threads of tolerances classes 4H to 8H and 4G to 6G.

Examples:
4H tap corresponds to ISO 1
6H tap corresponds to ISO 2
6G tap corresponds to ISO 3

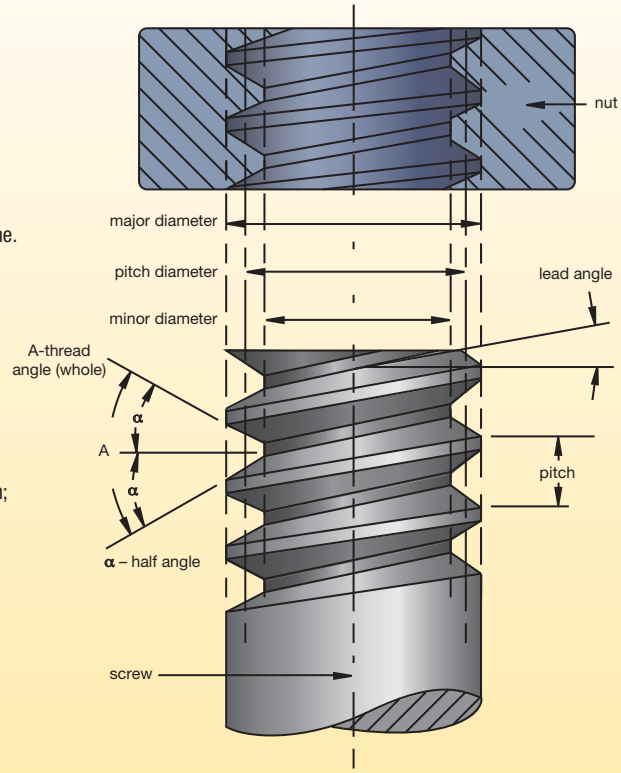
Similarly, ASME B1.1 recommends tap pitch diameter tolerances for 1B, 2B, and 3B classes of fit.

However, it is recognised in many tapping applications that taps should have a pitch diameter that is larger than industry standards. These applications include tapping abrasive materials or CNC applications where machine and tool concentricity is excellent. Taps manufactured to Kennametal standards are designated with an X after the class of fit (example 6HX or 3BX). These graphs illustrate the differences.

Internal Metric Thread



It is generally recognised that, in mass production, it is impossible to reproduce in exact detail the theoretically perfect product as laid out on the drawing board. The allowed slight variation between the theoretically perfect product drawing and each unit of the actual product is called the tolerance.



Allowance

An intentional difference in correlated dimensions of mating parts. It is the minimum clearance or maximum interference between such parts.

Angle of Thread

The angle included between the flanks of the thread measured in an axial plane.

Half Angle of Thread

The angle included between a flank of the thread and the normal (90°) to the axis, measured in an axial plane.

Lead of Thread

The distance a screw thread advances axially in one turn. On a single-thread screw, the lead and pitch are identical. On a double thread, the lead is 2x pitch; on a triple thread, the lead is 3x pitch, etc.

Major Diameter

The largest diameter of a straight-screw thread.

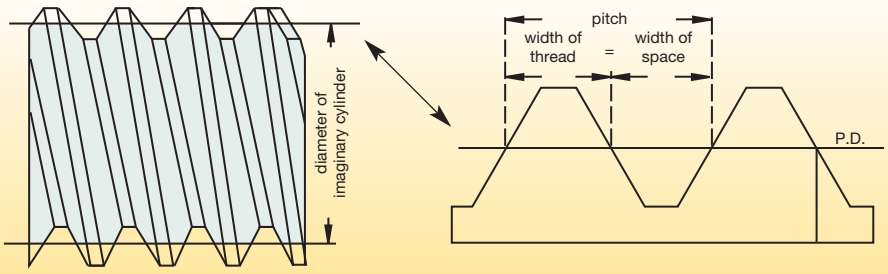
Minor Diameter

The smallest diameter of a straight-screw thread.

Pitch

The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the axis.

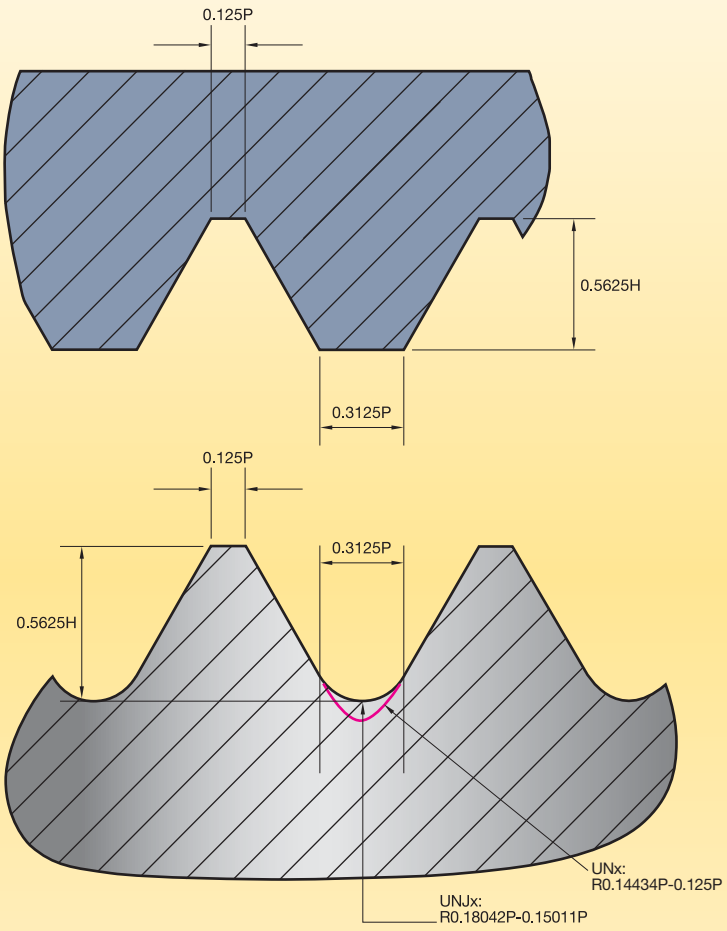
The pitch in inches = $\frac{1}{\text{number of threads per inch}}$



Pitch Diameter

On a straight-screw thread, the diameter of an imaginary cylinder that would pass through the threads at such points as to make equal the width of the threads and the width of the spaces cut by the surface of the cylinder.

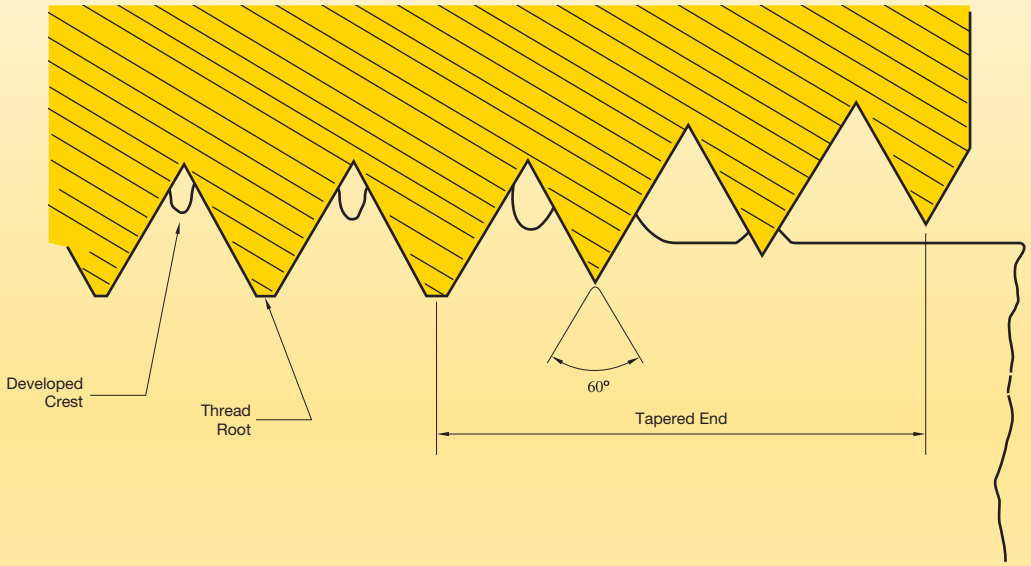
A thread system is available for aerospace and other applications where high fatigue strength is required. The UNJ thread form is defined by ASME B1.15 and is similar to Military Specification MIL-S-8879. Screw thread assemblies consist of external and internal threads. In order to minimise the stress on the external UNJ thread, a controlled root radius is required that is equal to 0.15011P to 0.18042P, where P is the thread pitch. Internal UNJ threads are not required to have a radius at either the major or minor diameters.



Because external UNJ threads must be produced with a defined root radius, standard UN tooling may not be used. However, internal UNF threads may be produced with ground thread UN taps sized to produce the proper class of fit. The tap does not need to be marked with a letter J. Attention must be paid to the tap drill since the minor diameter has to be specified so as to provide clearance with the root radius on the external thread.

For UNJ thread specifications, the reader is referred to ASME B1.15. Please note this standard includes Class 3 and Class 2 UNJ screw threads. However, only Class 3 UNJ threads meet the requirements of Military Specification MIL-S-8879. For Unified Inch (UN) thread specifications, refer to ASME B1.1.

Unlike cutting taps, which remove material, forming taps generate an internal screw thread by displacing material and forming it into the V-shaped thread. A common misconception is that a thread rolling action occurs. Instead, the threads are formed over the tapered entry section of the tap as the tap rotates into the hole. A succession of deeper penetrating lobes over the entry plastically displaces material radially between the tap's thread flanks until the entry length is reached. At this point, the thread is fully formed at the correct thread height.



Forming taps have numerous advantages over cutting taps. The most obvious advantage is that forming taps do not create chips. There are no chip removal problems. Bird nesting is a situation that occurs when chips wrap around the shank of spiral-fluted taps when tapping blind holes in long chipping materials. Forming taps help this to be avoided. Since forming taps avoid this problem, they are stronger and more resistant to breakage. Another misconception is that forming taps produce stronger threads. Although the forming process strain hardens the thread flanks, it has very little effect on the major diameter, the location where internal threads strip.

Forming taps can only be used in ductile materials. Due to increased friction relative to cutting, forming taps require higher torque than cutting taps. In some situations, oil-based lubrications are required, and this might not be convenient on CNC machining centres that use water soluble coolant. In this situation, the lubricant concentration should be increased.

Since forming taps displace material, larger diameter pre-tap holes are required. This is especially important when converting from cutting taps to forming taps. If a cutting tap hole size is used, the displaced material will over-fill the tap's threads and breakage will result. Please consult hole size charts for forming taps.

coating	properties and application	precautions
Titanium Nitride (TiN)	Proprietary TiN coating (hardness 2300 Vickers) offers significantly improved wear life and thread finish, often at higher tapping speeds, in a broad range of materials, especially steels, irons, and plastics. Golden colour.	Use with caution in non-ferrous materials such as aluminium because of tendency to gall.
Titanium Carbonitride (TiCN)	Proprietary TiCN coating (hardness 3000 Vickers) is harder, tougher, and more wear resistant than TiN under conditions of moderate cutting temperatures. Like TiN, TiCN may be used at higher cutting speeds in a broad range of materials, especially steels and irons. Blue-grey colour.	Use with caution in non-ferrous materials such as aluminium because of tendency to gall. TiAlN is a better choice when used at extreme temperatures.
Titanium Nitride + Chromium Carbide Carbon (TiN + CrC/C)	Proprietary coating (hardness 2300 Vickers) that combines the wear resistance of smooth TiN coating with a lubricous top layer of chromium carbide carbon. Effective in stainless steel and non-ferrous materials including aluminium and titanium. Ideal choice for 300 series stainless steels, wrought, and die cast aluminiums. Black/grey colour.	Effective in both ferrous and non-ferrous materials.
Titanium Aluminium Nitride (TiAlN)	Nanolayer TiAlN coating (hardness 3300 Vickers) offers improved wear life and thread finish, especially in conditions where high temperatures can be generated. Use for PH stainless steels and nickel-based alloys like INCONEL®. Violet/grey colour.	Use with caution in non-ferrous materials because of tendency to gall.
Chromium Nitride (CrN)	CrN is medium hard (hardness 1800 Vickers) and has a lower wear resistance than TiN, TiCN, and TiAlN. However, unlike these coatings, CrN does not gall when used in some non-ferrous work materials. Use for brass, bronze, zinc alloys, and magnesium alloys. Silver colour.	Ineffective in ferrous materials.
Nitride	Hardened case extends wear life in abrasive materials. Use for aluminium and other non-ferrous materials.	Avoid on taper pipe, fast spiral, and small diameter (<#6) or fine pitch taps due to tendency for thread chipping.
Oxide	Helps prevent galling in ferrous (iron-based) materials. For free machining steel. Use for steels, stainless steels, and irons.	Has a tendency to cause galling in non-ferrous materials such as aluminium.
Nitride and Oxide	Combines the benefits of nitride and oxide surface treatments. For steels, stainless steels, and nickel alloys.	See precautions for nitride and oxide surface treatments.

Factors when trying to determine the best tapping speeds:

- Material to be tapped
- Length of chamfer on tap
- Percentage of full thread to be cut
- Length of hole (depth of thread)
- Pitch of thread
- Cutting fluids
- Machine equipment
- Horizontal or vertical tapping

The best and most efficient operating speeds for taps cannot be calculated with the same certainty, as for many other metalcutting tools.

With other tools, the feed per revolution can be set at any desired point and can be varied as conditions demand. Taps, on the other hand, must always be advanced at a rate equal to one pitch for every revolution. The style of tap may vary the conditions.

For example, with a bottoming tap, the first thread on each land cuts the full height of thread, while, with a taper or starting tap, a number of threads do their share of the cutting before the full height of thread is reached.

The depth of thread also varies, depending on the pitch. The coarser the thread, the greater the advance of the tap per revolution and the greater the amount of material removed.

The method of feeding the tap, and the type of equipment for driving, also influences the permissible speeds. If taps are mechanically fed at the proper rate of advance, they can be operated at higher speeds than if they are required to feed themselves and pull some part of the machine along with them.

Speeds may be modified to take into account any or all of these factors:

- Speeds must be lowered as length of thread increases because, in deep thread holes, the accumulated chips increase friction and interfere with lubrication.
- Bottoming taps must be run slower than plug taps.
- Tapping full height of thread calls for slower speed than if the commercial 75% height only is required.
- Coarse-thread taps in the larger diameters should be run more slowly than fine-thread taps of the same diameters.
- The quantity and quality of cutting fluid may affect the permissible speeds as much as 100%.
- Taper threaded taps, such as pipe taps, should be operated from 1/2–3/4 the speed of a straight thread tap of comparable major diameter.

RPM Formulas

SFM = Surface Feet per Minute
RPM = Revolutions per Minute
IPM = Inches per Minute
TPI = Threads per Inch

S m/min = Surface Metres per Minute
$\pi = 3.1416$
mm/min = millimetres per minute
P = Pitch (1/number of threads per inch)

Inch Sizes

SFM	=	$\frac{\text{RPM x tool diameter}}{3.82}$	or	0.26 x RPM x tool diameter
RPM	=	$\frac{3.82 \text{ x SFM}}{\text{tool diameter}}$		
IPM	=	$\frac{\text{RPM}}{\text{TPI*}}$	or	*P x RPM

Metric Sizes

S m/min	=	$\frac{\pi \text{ x tool diameter x RPM}}{1000}$
RPM	=	$\frac{\text{mm/min x 1000}}{\pi \text{ x tool diameter}}$
mm/min	=	mm P x RPM

UNC/UNF and NPT/NPTF

tap size	taper pipe taps	surface feet per minute (SFM) 5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
		revolutions per minute (RPM)																	
0	–	318	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5729	6366	7003	7639	8276	8913	9549
1	–	273	546	819	1046	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6805	7326	1849
2	–	212	424	637	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
3	–	191	382	573	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
4	–	174	347	521	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5115
5	–	147	294	441	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
6	–	136	273	409	553	691	829	1106	1382	1859	1935	2212	2488	2766	3042	3318	3595	3871	4148
8	–	119	239	358	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
10	–	101	201	302	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
12	–	87	174	260	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4	–	76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16	–	62	123	185	245	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8	–	50	101	151	204	255	305	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	1/8	43	87	130	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	–	38	76	115	153	191	229	305	382	458	535	611	688	764	840	917	993	1070	1146
9/16	1/4	34	68	102	137	172	206	274	342	410	478	547	616	683	752	820	888	952	1020
5/8	–	32	64	96	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
11/16	3/8	28	55	83	111	138	167	222	278	333	389	444	500	556	611	667	722	778	833
3/4	–	25	51	76	102	128	153	203	255	305	357	407	458	509	560	611	662	713	764
7/8	1/2	22	43	65	87	109	131	175	218	262	306	350	392	437	480	524	568	611	655
1	–	19	38	57	76	96	115	153	191	230	268	305	344	382	420	458	497	535	573
1-1/8	3/4	17	34	51	68	84	102	136	170	204	238	272	306	340	373	407	441	475	509
1-1/4	–	15	31	46	61	76	92	122	153	183	214	244	275	305	336	367	397	428	458
1-3/8	1	14	28	42	56	69	83	111	139	167	194	222	250	278	306	333	361	389	417
1-1/2	–	13	25	38	51	63	76	102	127	153	178	204	229	255	280	305	331	356	382
1-5/8	–	12	23	35	47	59	71	94	118	141	165	188	212	235	259	282	306	329	353
1-3/4	–	11	22	33	44	55	65	87	109	131	153	175	196	218	240	262	284	306	327
1-7/8	–	10	20	30	41	51	61	81	102	122	143	163	183	204	224	244	265	285	306
2	–	9	19	29	38	48	57	76	96	115	134	153	172	191	210	229	248	267	287

Metric

metric taps	vc = metres per minute (m/min) 1,5	3	4,5	6	7,5	10	12	15	18	21	24	27	30	33	36	39	42	45
	revolutions per minute (RPM)																	
M1	490	979	1469	1959	2449	2938	3918	4897	5877	6856	7836	8815	9795	10774	11754	12733	13713	14692
M2	242	484	725	967	1209	1451	1934	2418	2901	3385	3868	4352	4835	5319	5803	6286	6770	7253
M3	162	324	486	347	809	971	1295	1619	1942	2266	2590	2914	3237	3561	3885	4208	4532	4856
M3.5	138	277	415	554	692	830	1107	1384	1661	1938	2214	1491	2768	3045	3322	3599	3875	4152
M4	122	243	365	487	608	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3163	3406	3650
M5	97	194	291	388	485	582	776	970	1163	1357	1551	1745	1939	2133	2327	2521	2715	2905
M6	81	162	243	324	405	486	647	809	971	1133	1295	1457	1619	1781	1942	2104	2266	2428
M7	69	138	208	277	346	415	554	692	830	969	1107	1246	1384	1522	1661	1799	1938	2076
M8	61	121	182	243	303	364	485	606	728	849	970	1091	1213	1334	1455	1577	1698	1819
M10	48	97	145	194	242	291	388	485	582	679	776	873	970	1067	1163	1260	1357	1454
M12	40	81	121	162	202	243	324	405	486	567	647	728	809	890	971	1052	1133	1214
M14	35	69	104	139	173	208	277	347	416	485	555	624	693	763	832	901	971	1040
M16	30	61	91	121	152	182	243	303	364	424	485	546	606	667	728	788	849	910
M18	27	54	81	108	135	162	216	269	323	377	431	485	539	593	647	700	754	808
M20	24	49	73	97	121	146	194	243	291	340	388	437	485	534	582	631	680	728
M22	22	44	66	88	110	132	176	221	265	309	353	397	441	485	529	573	618	662
M24	20	40	61	81	101	121	162	202	243	283	323	364	404	445	485	526	566	606
M27	18	36	54	72	90	108	144	180	216	252	287	323	359	395	431	467	503	539
M30	16	32	49	65	81	97	129	162	194	226	259	291	323	356	388	420	453	485

Partial List of Solutions to Tapping Problems

application	symptom	common cause	remedy
general	gage out of limits	tap size and gage mismatch	select tap size for gage
	oversize thread	alignment, spindle feed	correct
	oversize at top	runout or alignment	correct
	go gage binds part way	worn tool, tap cuts off lead	replace tap, synchronous holder
	thread shaving	feed error, high axial force	programme, synchronous holder
	chipping	high cutting force, worn tap	tap geometry, replace tap
	breakage	chip jamming flutes	tap geometry, tapping depth
	–	worn tool, high torque	replace tap with new tool
	short life, low speed	excessive wear	SC or HSS-E-PM HP taps
steel	birdnest blind hole	long, ductile chips	T630 KP6505 (oxide), peck feed
	chipping	high material hardness	T600, T602 KSP21 (TiN)
	breakage in blind holes	hole depth >2D, chip jamming	T604 KHS26 (TiN/MoS_2)
stainless steel	oversize thread, low life	galling	T620, T630 KM6515 (TiN-CrC/C)
	short life	work hardened core hole	replace drill
cast iron	excessive wear	abrasion	T640 KP6525 (TiCN)
aluminium, cast	excessive wear	high silicon	T640 KP6525 (TiCN)
aluminium, wrought	oversize thread	galling	T672, T682, T686 KSMN34 (TiN-CrC/C)
nickel, cobalt alloys	short life	high cutting temperature	T690, T692, T694 KSP27 (AlCrTiN)
titanium	short life	high cutting temperature	T660, T662 KSSM24 (TiN-CrC/C)

Thread Mills

	vibration marks	major crest wear	edge chipping	cone-shaped thread	entry marks
cutting speed	check	reduce	–	–	–
feed per tooth	check	increase	reduce	–	–
workpiece clamping	improve	improve	improve	–	improve
machine tool stability	improve	improve	improve	–	improve
cantilever arm	shorten	shorten	–	–	shorten
helix angle	increase	reduce	–	–	–
radial runout	check	check	–	–	–
coating	–	improve	improve	–	–
milling operation	–	climb mill	climb mill	climb mill	–
line feed/entry ramp	check	check	–	–	improve
coolant pressure	–	check (>20 bar, 290 psi)	check (>20 bar, 290 psi)	–	–

drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)
0,30mm	.0118	54	.0550	3,10mm	.1220	5,50mm	.2165	8,50mm	.3346	9/16	.5625
0,32mm	.0126	1,40mm	.0551	1/18	.1250	7/32	.2188	8,60mm	.3386	14,50mm	.5709
80	.0135	1,45mm	.0571	3,20mm	.1260	5,60mm	.2205	R	.3390	37/64	.5781
0,35mm	.0138	1,50mm	.0591	30	.1285	2	.2210	8,70mm	.3425	14,75mm	.5807
79	.0145	53	.0595	3,30mm	.1299	5,70mm	.2244	11/32	.3438	15,00mm	.5906
0,38mm	.0150	1,55mm	.0610	3,40mm	.1339	1	.2280	8,80mm	.3465	19/32	.5938
1/64	.0156	1/16	.0625	29	.1360	5,80mm	.2283	S	.3480	15,25mm	.6004
0,40mm	.0157	1,60mm	.0630	3,50mm	.1378	5,90mm	.2323	8,90mm	.3504	39/64	.6094
78	.0160	52	.0635	28	.1405	A	.2340	9,00mm	.3543	15,50mm	.6102
0,42mm	.0165	1,65mm	.0650	9/64	.1406	15/64	.2344	T	.3580	15,75mm	.6201
0,45mm	.0177	1,70mm	.0669	3,60mm	.1417	6,00mm	.2362	9,10mm	.3583	5/8	.6250
77	.0180	51	.0670	27	.1440	B	.2380	23/64	.3594	16,00mm	.6299
0,48mm	.0189	1,75mm	.0689	3,70mm	.1457	6,10mm	.2402	9,20mm	.3622	16,25mm	.6398
0,50mm	.0197	50	.0700	26	.1470	C	.2420	9,30mm	.3661	41/64	.6406
76	.0200	1,80mm	.0709	25	.1495	6,20mm	.2441	U	.3680	16,50mm	.6496
75	.0210	1,85mm	.0728	3,80mm	.1496	D	.2460	9,40mm	.3701	21/32	.6562
0,55mm	.0217	49	.0730	24	.1520	6,30mm	.2480	9,50mm	.3740	16,75mm	.6594
74	.0225	1,90mm	.0748	3,90mm	.1535	1/4, E	.2500	3/8	.3750	17,00mm	.6693
0,60mm	.0236	48	.0760	23	.1540	6,40mm	.2520	V	.3770	43/64	.6719
73	.0240	1,95mm	.0768	5/32	.1562	6,50mm	.2559	9,60mm	.3780	17,25mm	.6791
0,62mm	.0244	5/64	.0781	22	.1570	F	.2570	9,70mm	.3819	11/16	.6875
72	.0250	47	.0785	4,00mm	.1575	6,60mm	.2598	9,80mm	.3858	17,50mm	.6890
0,65mm	.0256	2,00mm	.0787	21	.1590	G	.2610	W	.3860	45/64	.7031
71	.0260	2,05mm	.0807	20	.1610	6,70mm	.2638	9,90mm	.3898	18,00mm	.7087
0,70mm	.0276	46	.0810	4,10mm	.1614	17/64	.2656	25/64	.3906	23/32	.7188
70	.0280	45	.0820	4,20mm	.1654	H	.2660	10,00mm	.3937	18,50mm	.7283
69	.0292	2,10mm	.0827	19	.1660	6,80mm	.2677	X	.3970	47/64	.7344
0,75mm	.0295	2,15mm	.0846	4,30mm	.1693	6,90mm	.2717	10,20mm	.4016	19,00mm	.7480
68	.0310	44	.0860	18	.1695	I	.2720	Y	.4040	3/4	.7500
1/32	.0312	2,20mm	.0866	11/64	.1719	7,00mm	.2756	13/32	.4062	49/64	.7656
0,80mm	.0315	2,25mm	.0886	17	.1730	J	.2770	Z	.4130	19,50mm	.7677
67	.0320	43	.0890	4,40mm	.1732	7,10mm	.2795	10,50mm	.4134	25/32	.7812
66	.0330	2,30mm	.0906	16	.1770	K	.2810	27/64	.4219	20,00mm	.7874
0,85mm	.0335	2,35mm	.0925	4,50mm	.1772	9/32	.2812	10,80mm	.4252	51/64	.7969
65	.0350	42	.0935	15	.1800	7,20mm	.2835	11,00mm	.4331	20,50mm	.8071
0,90mm	.0354	3/32	.0938	4,60mm	.1811	7,30mm	.2874	7/16	.4375	13/16	.8125
64	.0360	2,40mm	.0945	14	.1820	L	.2900	11,20mm	.4409	21,00mm	.8268
63	.0370	41	.0960	4,70mm, 13	.1850	7,40mm	.2913	11,50mm	.4528	53/64	.8281
0,95mm	.0374	2,45mm	.0965	3/16	.1875	M	.2950	29/64	.4531	27/32	.8438
62	.0380	40	.0980	4,80mm, 12	.1890	7,50mm	.2953	11,80mm	.4646	21,50mm	.8465
61	.0390	2,50mm	.0984	11	.1910	19/64	.2969	15/32	.4688	55/64	.8594
1,00mm	.0394	39	.0995	4,90mm	.1929	7,60mm	.2992	12,00mm	.4724	22,00mm	.8661
60	.0400	38	.1015	10	.1935	N	.3020	12,20mm	.4803	7/8	.8750
59	.0410	2,60mm	.1024	9	.1960	7,70mm	.3031	31/64	.4844	22,50mm	.8858
1,05mm	.0413	37	.1040	5,00mm	.1969	7,80mm	.3071	12,50mm	.4921	57/64	.8906
58	.0420	2,70mm	.1063	8	.1990	7,90mm	.3110	1/2	.5000	23,00mm	.9055
57	.0430	36	.1065	5,10mm	.2008	5/16	.3125	12,80mm	.5039	29/32	.9062
1,10mm	.0433	7/64	.1094	7	.2010	8,00mm	.3150	13,00mm	.5118	59/64	.9219
1,15mm	.0453	35	.1100	13/64	.2031	O	.3160	33/64	.5156	23,50mm	.9252
56	.0465	2,80mm	.1102	6	.2040	8,10mm	.3189	13,20mm	.5197	15/16	.9375
3/64	.0469	34	.1110	5,20mm	.2047	8,20mm	.3228	17/32	.5312	24,00mm	.9449
1,20mm	.0472	33	.1130	5	.2055	P	.3230	13,50mm	.5315	61/64	.9531
1,25mm	.0492	2,90mm	.1142	5,30mm	.2087	8,30mm	.3268	13,80mm	.5433	24,50mm	.9646
1,30mm	.0512	32	.1160	4	.2090	21/64	.3281	35/64	.5469	31/32	.9688
55	.0520	3,00mm	.1181	5,40mm	.2126	8,40mm	.3307	14,00mm	.5512	25,00mm	.9843
1,35mm	.0531	31	.1200	3	.2130	Q	.3320	14,25mm	.5610	63/64	.9844
–	–	–	–	–	–	–	–	–	–	1"	1.0000

Metric Fractional Wire gage Letter size

Tap Custom-Order Worksheet

Use this Custom-Order Worksheet to modify an existing product to meet your specifications. If your custom requirements do not fall into these categories, simply contact your Kennametal Distributor.

Trust our experienced distributors and Kennametal engineering team to design the best solution for you.

1. Start with the standard product most similar to your specifications:

catalogue number _____ **grade/coating** _____

2. Type of tap needed:

❑ solid carbide ❑ high-performance HSS ❑ general purpose ❑ spiral point

❑ hand ❑ forming ❑ spiral flute

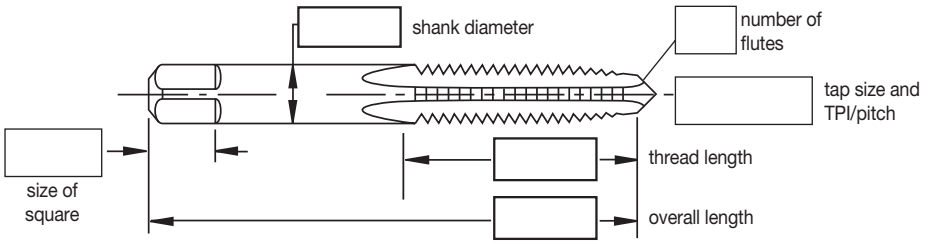
_____ pipe (and style) _____ other

3. Direction of cut (circle one): left hand right hand

4. Material overview:

❑ ANSI ❑ DIN ❑ JIS ❑ other

5. Desired dimension:

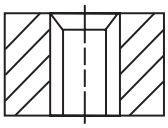


6. Choose one:

through hole:

hole diameter _____

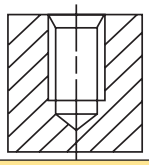
hole depth _____



blind hole:

hole diameter _____

hole depth _____



7. Chamfer:

❑ taper: 7–10 pitch ❑ plug: 3–5 pitch ❑ semi-bottom: 2–3 pitch ❑ bottom: 1–2 pitch



8. Class of fit: **H limit** _____ **metric D limit** _____ **diameter pitch limit** _____

9. Workpiece material: _____

10. Hardness: _____

11. Number of taps required: _____

12. Price

Contact your Authorised Kennametal Distributor partners.

13. Other comments or special characteristics:

customer company name	**date**
address	**phone number**
city, state, zip	**fax number**
customer contact	**customer email address**
sales representative	

Application Sheet for Thread Milling

Test form thread data:				**Date:**	
Customer Data					
Company:				**Department:**	
Street:				**Position:**	
Postal code:				**Telephone:**	
City:				**Fax:**	
Country:				**E-mail:**	
Tool Data					
Engaged Kennametal tool:				**Tool life:**	
Competitive tool:					
Workpiece Data					
Thread size:				**Name of workpiece:**	
Class of fit:				**Picture, sketch...**	
Thread depth:		mm			
Thread type:	❑ Through hole	❑ Blind hole			
Drill hole ø:		mm			
Depth of drill hole:		mm			
Type of drilled hole:	❑ Drilled	❑ No hole			
Material:					
Hardness:					
Machine Data					
Manufacturer:				**Description:**	
CNC-machine type:	❑ Turning machine	❑ Milling machine		**Working direction:**	❑ Horizontal ❑ Vertical
Control type:	❑ DIN	❑ Heidenhain		**Coolant:**	❑ Emulsion ❑ MQL ❑ Compressed air ❑ Dry
Coolant supply type:	❑ Internal	❑ External		**Coolant pressure:**	Bar
Revolutions max:		❑ 1/min		**Spindle power:**	kW
Clamping device:	❑ Weldon® ❑ Shrinking	❑ Collet ❑ Hydraulic expansion			
Cutting Conditions					
Cutting speed vc:			m/min	**Revolutions:**	1/min
Feed fz:			mm/tooth	**Programmed feed:**	mm/min
Milling direction:	❑ Climb milling	❑ Down milling		**Type of feed:**	❑ Feed on contour ❑ Feed on center
Allocated cut over depth of thread:	❑ Yes	❑ No		**Allocated cut over profile:**	❑ By depth of profile ❑ By thread depth
Number of cuts:				**Number of cuts:**	

Knowing the hardness of the work material to be tapped is essential in selecting the best tap for the job.

10 mm/min ball 3000 kg	120° cone 150 kg	1/16" ball 100 kg	model C	1000 lb per sq. in.	10 mm/min ball 3000 kg	120° cone 150 kg	1/16" ball 100 kg	model C	1000 lb per sq. in.
Brinell	Rockwell C	Rockwell B	Shore Scleroscope	tensile strength	Brinell	Rockwell C	Rockwell B	Shore Scleroscope	tensile strength
800	72	–	100	–	276	30	105	42	136
780	71	–	99	–	269	29	104	41	132
760	70	–	98	–	261	28	103	40	129
745	68	–	97	367	258	27	102	39	127
725	67	–	96	357	255	26	102	39	125
712	66	–	95	350	249	25	101	38	123
682	65	–	93	337	245	24	100	37	119
668	64	–	91	326	240	23	99	36	117
652	63	–	89	318	237	23	99	35	115
626	62	–	87	306	229	22	98	34	113
614	61	–	85	299	224	21	97	33	110
601	60	–	83	292	217	20	96	33	107
590	59	–	81	290	211	19	95	32	104
576	57	–	79	281	206	18	94	32	102
552	56	–	76	270	203	17	94	31	100
545	55	–	75	268	200	16	93	31	98
529	54	–	74	259	196	15	92	30	96
514	53	120	72	254	191	14	92	30	94
502	52	119	70	247	187	13	91	29	92
495	51	119	69	244	185	12	91	29	91
477	49	118	67	233	183	11	90	28	90
461	48	117	66	227	180	10	89	28	89
451	47	117	65	223	175	9	88	27	86
444	46	116	64	219	170	7	87	27	84
427	46	115	62	209	167	6	87	27	82
415	44	115	60	204	165	5	86	26	81
401	43	114	58	196	163	4	85	26	80
388	42	114	57	191	160	3	84	25	78
375	41	113	55	184	156	2	83	25	76
370	40	112	54	182	154	1	82	25	75
362	39	111	53	179	152	–	82	24	74
351	38	111	51	173	150	–	81	24	74
346	37	110	50	170	147	–	80	24	72
341	37	110	49	168	145	–	79	23	71
331	36	109	47	163	143	–	79	23	70
323	35	109	46	158	141	–	78	23	69
311	34	108	46	153	140	–	77	22	69
301	33	107	45	148	135	–	75	22	67
293	32	106	44	144	130	–	72	22	65
285	31	105	43	140	–	–	–	–	–

High-Performance Multipurpose HSS-E GOtap™



GOtap is the solution for high-performance multipurpose tapping. GOtap includes optimised flute geometries and PVD coatings capable of tapping a broad assortment of ductile materials, such as stainless steels, carbon and alloy steels, cast aluminium, and ductile iron. The unmatched versatility of GOtap means lower inventory costs with no loss of productivity, consistent tool life, and high-quality thread finish.

ADVANCED TECHNOLOGY

- Manufactured with high-vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Optimised geometries for efficient chip evacuation in both through and blind holes.
- Advanced PVD coatings to reduce tapping torque resulting in high-quality thread finish and longer tool life.

Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

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Solid End Milling

Solid End Milling Introduction N2–N3

Duo-Lock Modular Milling O1–O59

High-Performance Solid Carbide End Mills P1–P197

General Purpose Solid Carbide End Mills Q1–Q43



Solid End Milling Products

Our latest Metalcutting Innovations are designed to deliver higher productivity, longer tool life, and increased application versatility.

For more information about the latest products and services from Kennametal, please contact your Kennametal Representative or Authorised Kennametal Distributor, or visit **kennametal.com**.

MODULAR END MILLS

See Section O for more details.

HARVI™ I
HARVI II
HARVI III
MaxiMet™
High-Performance Rougher
High-Performance Finisher
Corner Tooling

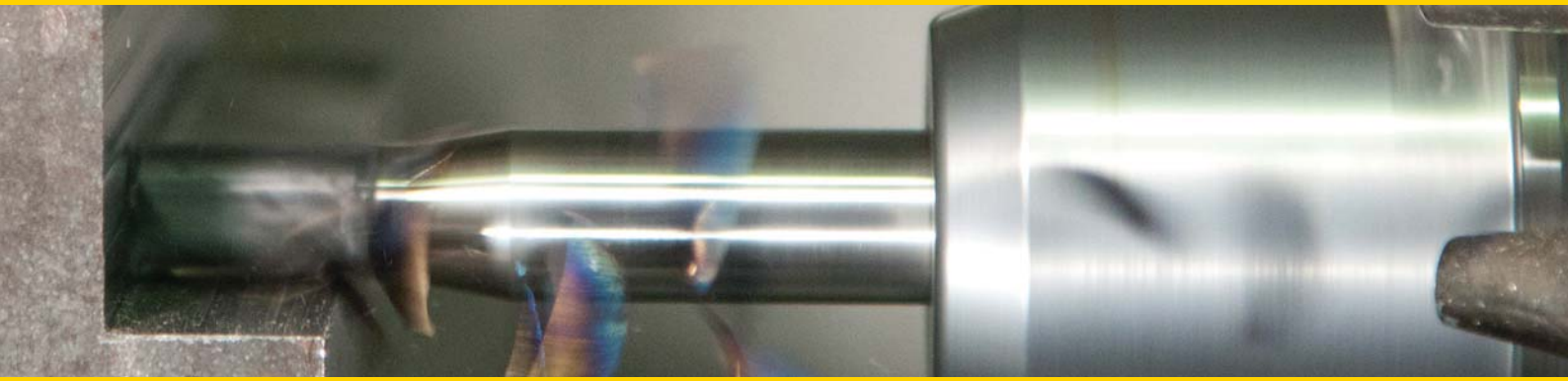


HIGH CAPABILITY END MILLS

See Section P for more details.

HARVI I
HARVI II
HARVI II Long
HARVI II Trochoidal
HARVI III
XE/XER





MATERIAL SPECIFIC END MILLS

See Section P for more details.

Aluminium Machining
Hard Materials Machining
CFRP Machining



APPLICATION SPECIFIC END MILLS

See Section P for more details.

High-Performance Roughing End Mills
High-Performance Finishing End Mills
RSM II
KenFeed™
GOmill™

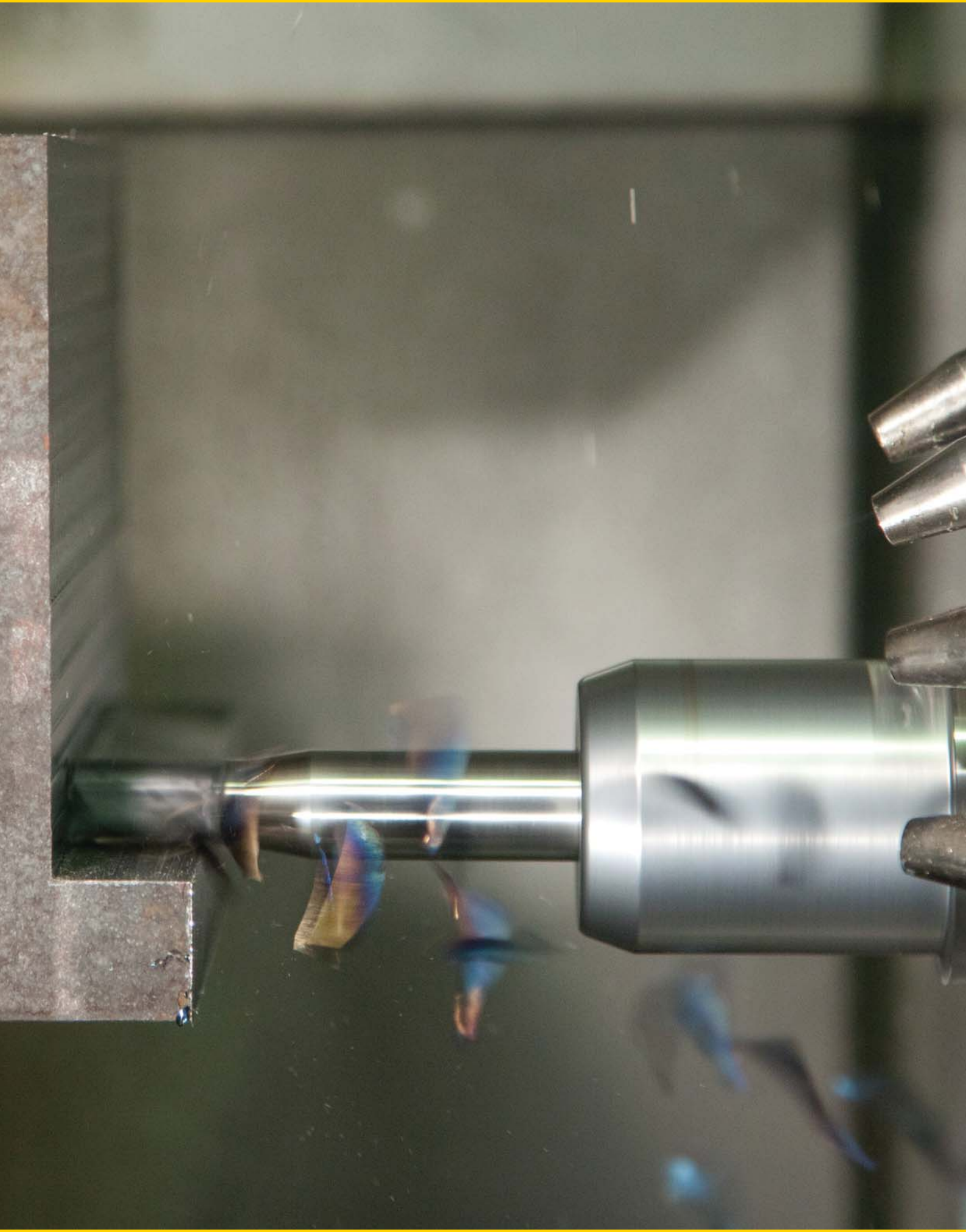


GENERAL PURPOSE END MILLS

See Section Q for more details.

GOmill GP 2FL
GOmill GP 3FL
GOmill GP 4FL





Solid End Milling • Duo-Lock Modular Milling

Duo-Lock Tool Selector and Grades O2–O4

HARVI Modular End Mills O6–O24

MaxiMet Modular End Mills O26–O30

Modular Roughing End Mills O32–O39

Modular Finishing End Mills O40–O45

Modular Corner Rounding and Chamfering End Mills O46–O51

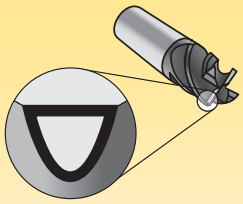
Adaptors O52–O58

Assembly Information O59

product line		series	D1 diameter (mm)	length of cut	flute Z	helix	internal coolant	
HARVI™ I		UKDV	10–32	1,5 x D	ZU=4	37°		
HARVI I		ULDV	10–32	1,5 x D	ZU=4	37°		
HARVI II		UCDV	10–32	1,5 x D	ZU=5	37°		
HARVI II		UDDV	10–32	1,5 x D	ZU=5	37°		
HARVI III		UJDV	10–32	1,5 x D	ZU=6	37°		
HARVI Ball Nose		UKBV	10–25	1,5 x D	ZU=4	37°		
HARVI III Ball Nose		UJBV	10–25	1,5 x D	ZU=6	37°		
MaxiMet™		ABDF	10–20	1,5 x D	ZU=2	45°		
MaxiMet		ABDE	10–25	1,5 x D	ZU=3	38°		
KenFeed™		KMDA	10–20	0,75 x D	ZU=6	20°		
HP Rougher		RQDB	10–25	1,5 x D	ZU=X	20°		
HP Rougher		RKDF	10–25	1,5 x D	ZU=X	45°		
HP Rougher		RQBB	10–25	1,5 x D	ZU=4	40°		
HP Finisher		FMDF	10–25	1,5 x D	ZU=6	45°		
HP Finisher		FSDE	10–25	1,5 x D	ZU=X	36°		
Corner Tooling		XADA	10–16	2–4	ZU=X	0°		
Corner Tooling		XRDA	10–16	1,5–4	ZU=X	0°		

							shank	centre cutting	neck	P	M	K	N	S	H							product page(s)	cutting data page(s)
				✓				✓	✓	●	●			○		✓	✓	✓	✓			O8	O10
					✓			✓	✓	●	●	○		●	○	✓	✓	✓	✓			O9	O11
				✓					✓	●	●	●		○	○	✓	✓	✓				O12	O14
					✓				✓	●				●	○	✓	✓	✓				O13	O15
					✓			✓	✓	○	●			●	○	✓		✓				O16	O17
						✓		✓	✓	●	●	●		○	○	✓	✓			✓		O18	O20
						✓		✓	✓	○	●	○		●	○	✓				✓		O19	O21–O22
		✓						✓	✓				●			✓	✓	✓	✓			O28	O30
					✓			✓	✓				●			✓	✓	✓	✓			O29	O30
	✓								✓	○					●			✓		✓		contact us	contact us
				✓				✓	✓	●	●	●		○	○	✓	✓	✓				O34	O37
				✓				✓	✓	○	●	○		●	○	✓	✓	✓				O35	O38
						✓		✓	✓	●	●	●		○	○	✓	✓			✓		O36	O39
					✓			✓	✓	●	●	●		○	○	✓						O42	O44
					✓				✓	○	●			●	○	✓						O43	O45
									✓	●	●	●	●	○	○							O48	O50
									✓	●	●	●	●	○	○							O49	O51

● first choice
○ alternate choice



Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Grades

Coating	Grade Description	wear resistance ← → toughness: 05	10	15	20	25	30	35	40	45
K600	Carbide grade made from high-quality, micrograin materials for cutting all types of workpiece materials. Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp cutting edges.	N	N	N	N	N	N			
KCPM15	Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	P	P	P	P	P	P			
		M	M	M	M	M	M			
		K	K	K	K	K	K			
KC643M	Coated fine-grain grade with PVD multilayer (AlTiN). KC643M™ is a very thin and hard PVD coating particularly suited for cutting steel, cast iron, stainless steel (wet), and titanium (wet). This grade can be used for materials with hardness up to 52 HRC.	P	P	P	P	P	P			
		M	M	M	M	M	M			
		K	K	K	K	K	K			
		S	S	S	S	S	S			
KC639M	PVD (AlTiN)-coated carbide on a submicron carbide substrate. This hard coating provides outstanding performance in milling hardened materials (58–65 HRC).	P	P	P	P	P	P			
		H	H	H						
KCSM15	Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	S	S	S	S					
		H	H	H	H					

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DUO-λOCK® HARVI™

Primary Application

HARVI geometries for Duo-Lock™ target applications where solid carbide end mills are currently used.
The Duo-Lock™ system combines the highest runout accuracy and length repeatability with maximum coupling stability.
This enables the Duo-Lock™ system to use the full potential of Kennametal cutting geometries and grades with the flexibility of a modular system. Significant metal removal rates can be achieved. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock.

- Cutting data and tool life comparable to high-performance solid carbide.
- Proprietary HARVI geometries enable roughing and finishing with one tool.
- 1,5 x D standard cutting edge length enables fewer passes.
- Up to 1 x D full slotting increases metal removal rates, increasing productivity significantly.
- Extensive offering of straight and conical shank tools, and integral adaptors that include DV, BT, and HSK.

Features and Benefits

Advanced Technology

- New asymmetrical HARVI 4-flute geometry for higher feed-per-tooth rates.
- Variable helix design for chatter-free machining at high feed rates.
- Less pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core for highest tool stability when roughing and finishing.

Tailored Grades

- KCSM15™ Beyond™ grade for exceptional tool life in titanium and stainless steels.
- KCPM15™ Beyond grade for outstanding wear protection in stainless steel to mitigate cratering, depth-of-cut notching, and flank wear.
- Universal KC643M™ grade for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customisation

- Intermediate diameters are available between 10–32mm.
- Chip divider geometry helps reduce power usage and improve chip formation in difficult-to-cut materials.
- Engineered solutions including shank and non-standard length versions available.
- Custom solutions within standard blank dimension are available.

Extensive Standard Offering

- Diameter ranges 10–32mm.
- Necked, corner radii, chamfer, and square-end tips available.
- Integral adaptors to reduce interface for maximum accuracy.
- Steel extensions with Safe-Lock™ by HAIMER shanks to prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

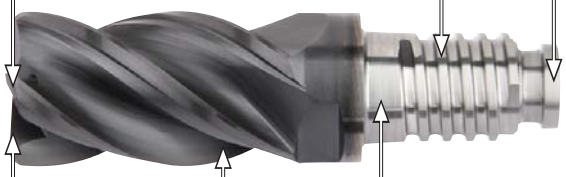
High-performance modular solid carbide end mills.



Intelligent Thread
Ensures that stress levels remain below critical values.

High-Performance Geometries
Highest metal removal rates with up to 1 x D full slotting and up to 1,5 x D side milling at 50% ae capability.

3rd Contact Surface
Delivers high stiffness and highest accuracy below 5µm runout.



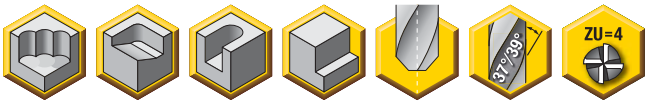
DUO-LOCK®
by HAIMER® and Kennametal

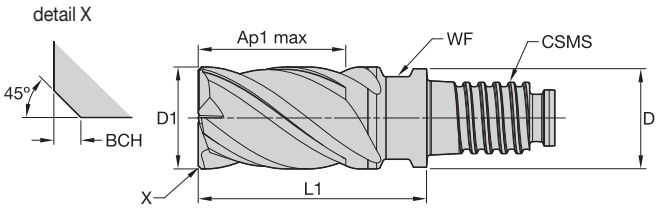
Unequal Flute Spacing
Reduces vibrations. Improves surface finish.

Double Cone
Eliminates expensive presetting processes by providing an axial 10µm repeatability.

37°/39° Variable Helix Technology
Minimises chatter and harmonics for smoother machining.

- Asymmetrical flute spacing and variable helix configuration minimises chatter and harmonics for smoother machining.
- Centre cutting.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



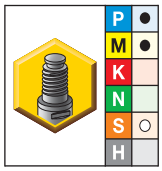




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

UKDV • 4 Flute • Metric

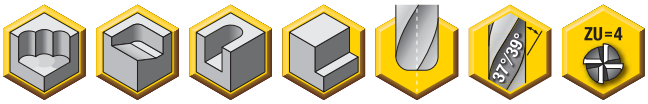


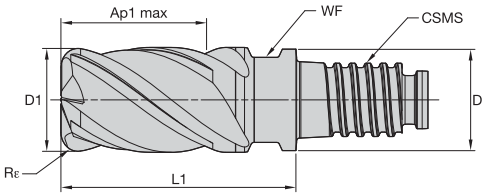
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH
UKDV1000X4CV	10,00	9,60	15,00	22,50	DL10	8,00	0,50
UKDV1200X4CV	12,00	11,50	18,00	27,00	DL12	9,50	0,50
UKDV1600X4CV	16,00	15,50	24,00	36,00	DL16	13,00	0,50
UKDV2000X4CV	20,00	19,30	30,00	45,00	DL20	16,00	0,50
UKDV2500X4CV	25,00	24,00	37,50	56,50	DL25	21,00	0,50
UKDV3200X4CV	32,00	31,00	48,00	71,20	DL32	28,00	0,50

NOTE: For application data, please see page O10.

- Asymmetrical flute spacing and variable helix configuration minimises chatter and harmonics for smoother machining.
- Centre cutting.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



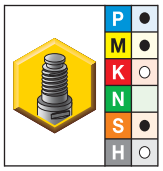




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

ULDV • 4 Flute • Metric



● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
ULDV1000X4CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50
ULDV1000X4CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00
ULDV1000X4CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50
ULDV1200X4CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50
ULDV1200X4CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00
ULDV1200X4CQJ	12,00	11,50	18,00	27,00	DL12	9,50	1,50
ULDV1200X4CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50
ULDV1600X4CQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00
ULDV1600X4CQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50
ULDV1600X4CQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00
ULDV1600X4CQL	16,00	15,50	24,00	36,00	DL16	13,00	2,50
ULDV1600X4CQM	16,00	15,50	24,00	36,00	DL16	13,00	3,00
ULDV2000X4CQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00
ULDV2000X4CQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00
ULDV2000X4CQL	20,00	19,30	30,00	45,00	DL20	16,00	2,50
ULDV2000X4CQM	20,00	19,30	30,00	45,00	DL20	16,00	3,00
ULDV2000X4CQN	20,00	19,30	30,00	45,00	DL20	16,00	4,00
ULDV2500X4CQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50
ULDV2500X4CQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00
ULDV3200X4CQL	32,00	31,00	48,00	71,70	DL32	28,00	2,50
ULDV3200X4CQN	32,00	31,00	48,00	71,70	DL32	28,00	4,00

NOTE: For application data, please see page O11.

HARVI • UKDV • Asymmetrical Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach KCPM15 Cutting Speed — vc m/min			adaptor reach KCPM15 Cutting Speed — vc m/min			adaptor reach KCPM15 Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,5 x D	0,4 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,5 x D	0,4 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,5 x D	0,4 x D	0,75 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,5 x D	0,4 x D	1 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,5 x D	0,4 x D	1 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	1,5 x D	0,4 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

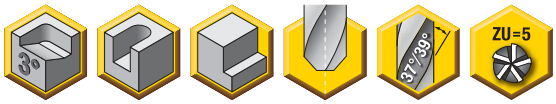
HARVI • ULDV • Asymmetrical Flute Spacing

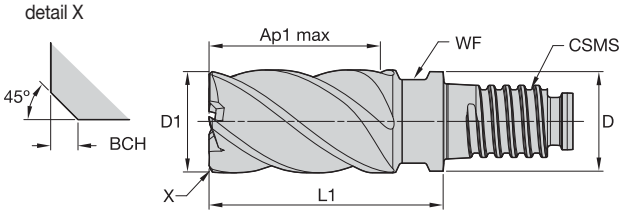


Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach KCSM15 Cutting Speed – vc m/min			adaptor reach KCSM15 Cutting Speed – vc m/min			adaptor reach KCSM15 Cutting Speed – vc m/min			D1 – Diameter						
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,5 x D	0,4 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,5 x D	0,4 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,5 x D	0,4 x D	0,75 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,5 x D	0,4 x D	1 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,5 x D	0,4 x D	1 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,5 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	1,5 x D	0,4 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,5 x D	0,4 x D	0,75 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

- Unequal flute spacing and variable helix configuration minimise chatter and harmonics for smoother machining.
- Non-centre cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



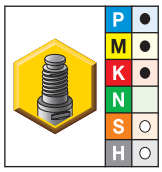




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

UCDV • 5 Flute • Metric

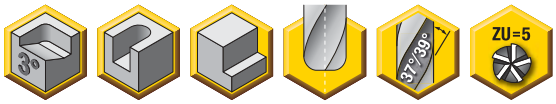


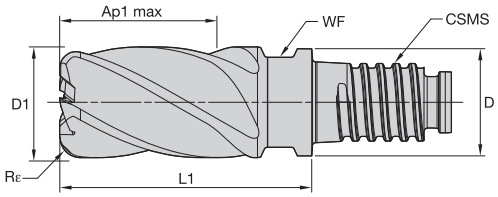
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH
UCDV1000X5CV	10,00	9,60	15,00	22,50	DL10	8,00	0,50
UCDV1200X5CV	12,00	11,50	18,00	27,00	DL12	9,50	0,50
UCDV1600X5CV	16,00	15,50	24,00	36,00	DL16	13,00	0,50
UCDV2000X5CV	20,00	19,30	30,00	45,00	DL20	16,00	0,50
UCDV2500X5CV	25,00	24,00	37,50	56,50	DL25	21,00	0,50
UCDV3200X5CV	32,00	31,00	48,00	71,20	DL32	28,00	0,50

NOTE: For application data, please see page O14.

- Unequal flute spacing and variable helix configuration minimise chatter and harmonics for smoother machining.
- Non-centre cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



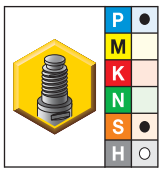




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

UDDV • 5 Flute • Metric



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
UDDV1000X5CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50
UDDV1000X5CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00
UDDV1000X5CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50
UDDV1200X5CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50
UDDV1200X5CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00
UDDV1200X5CQJ	12,00	11,50	18,00	27,00	DL12	9,50	1,50
UDDV1200X5CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50
UDDV1600X5CQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00
UDDV1600X5CQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50
UDDV1600X5CQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00
UDDV1600X5CQL	16,00	15,50	24,00	36,00	DL16	13,00	3,00
UDDV1600X5CQM	16,00	15,50	24,00	36,00	DL16	13,00	3,00
UDDV1600X5CQN	16,00	15,50	24,00	36,00	DL16	13,00	4,00
UDDV1600X5CQP	16,00	15,50	24,00	36,00	DL16	13,00	6,00
UDDV2000X5CQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00
UDDV2000X5CQM	20,00	19,30	30,00	45,00	DL20	16,00	1,00
UDDV2000X5CQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00
UDDV2000X5CQL	20,00	19,30	30,00	45,00	DL20	16,00	2,50
UDDV2000X5CQN	20,00	19,30	30,00	45,00	DL20	16,00	3,00
UDDV2000X5CQQ	20,00	19,30	30,00	45,00	DL20	16,00	5,00
UDDV2500X5CQG	25,00	24,00	37,50	56,50	DL25	21,00	1,00
UDDV2500X5CQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50
UDDV2500X5CQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00
UDDV2500X5CQQ	25,00	24,00	37,50	56,50	DL25	21,00	5,00
UDDV3200X5CQG	32,00	31,00	48,00	71,70	DL32	28,00	1,00
UDDV3200X5CQL	32,00	31,00	48,00	71,70	DL32	28,00	2,50
UDDV3200X5CQN	32,00	31,00	48,00	71,70	DL32	28,00	4,00
UDDV3200X5CQQ	32,00	31,00	48,00	71,70	DL32	28,00	5,00

NOTE: For application data, please see page O15.

HARVI II • UCDV • Unequal Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach KCPM15 Cutting Speed — vc m/min			adaptor reach KCPM15 Cutting Speed — vc m/min			adaptor reach KCPM15 Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,5 x D	0,4 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,5 x D	0,4 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,5 x D	0,4 x D	0,75 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,5 x D	0,4 x D	1 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,5 x D	0,4 x D	1 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,5 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	1,5 x D	0,4 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,5 x D	0,4 x D	0,75 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI II • UDDV • Unequal Flute Spacing

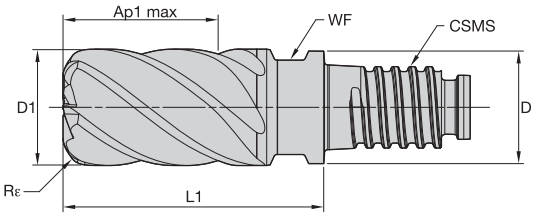


Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach KC643M Cutting Speed — vc m/min			adaptor reach KC643M Cutting Speed — vc m/min			adaptor reach KC643M Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	5	1,5 x D	0,4 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,5 x D	0,4 x D	0,75 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	1,5 x D	0,4 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,5 x D	0,4 x D	0,75 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

- Unequal flute spacing and variable helix configuration minimise chatter and harmonics for smoother machining.
- Centre cutting.
- Optimised geometry for titanium machining.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



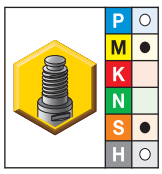




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

UJDV • 6-Flute with Eccentric Relief Grind • Metric



● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
UJDV1000X6CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50
UJDV1000X6CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00
UJDV1000X6CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50
UJDV1200X6CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50
UJDV1200X6CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00
UJDV1200X6CQJ	12,00	11,50	18,00	27,00	DL12	9,50	1,50
UJDV1200X6CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50
UJDV1600X6CQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00
UJDV1600X6CQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50
UJDV1600X6CQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00
UJDV1600X6CQL	16,00	15,50	24,00	36,00	DL16	13,00	2,50
UJDV1600X6CQM	16,00	15,50	24,00	36,00	DL16	13,00	3,00
UJDV2000X6CQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00
UJDV2000X6CQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00
UJDV2000X6CQL	20,00	19,30	30,00	45,00	DL20	16,00	2,50
UJDV2000X6CQM	20,00	19,30	30,00	45,00	DL20	16,00	3,00
UJDV2000X6CQN	20,00	19,30	30,00	45,00	DL20	16,00	4,00
UJDV2500X6CQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50
UJDV2500X6CQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00
UJDV3200X6CQL	32,00	31,00	48,00	71,70	DL32	28,00	2,50
UJDV3200X6CQN	32,00	31,00	48,00	71,70	DL32	28,00	4,00

NOTE: For application data, please see page O17.

HARVI III • UJDV • Unequal Flute Spacing • Roughing



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		adaptor reach KCSM15 Cutting Speed — vc m/min			adaptor reach KCSM15 Cutting Speed — vc m/min			adaptor reach KCSM15 Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	4	Ap max	0,4 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	Ap max	0,4 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
M	1	Ap max	0,4 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	Ap max	0,4 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	Ap max	0,4 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
S	1	Ap max	0,4 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	Ap max	0,4 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	Ap max	0,4 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	Ap max	0,4 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	Ap max	0,4 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	Ap max	0,4 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI III • UJDV • Unequal Flute Spacing • Finishing

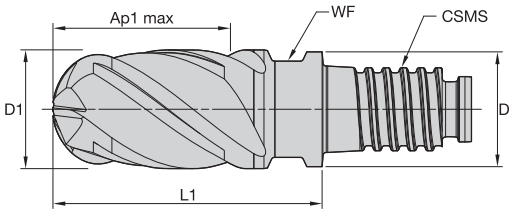


Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		adaptor reach KCSM15 Cutting Speed — vc m/min			adaptor reach KCSM15 Cutting Speed — vc m/min			adaptor reach KCSM15 Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	4	Ap max	0,06 x D	171	–	285	153,9	–	256,5	153,9	–	256,5	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	Ap max	0,06 x D	114	–	190	96,9	–	161,5	91,2	–	152	fz	0,041	0,048	0,059	0,069	0,077	0,084
M	1	Ap max	0,06 x D	171	–	218,5	136,8	–	174,8	119,7	–	152,95	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	Ap max	0,06 x D	114	–	152	91,2	–	121,6	79,8	–	106,4	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	Ap max	0,06 x D	114	–	133	91,2	–	106,4	79,8	–	93,1	fz	0,034	0,040	0,048	0,055	0,060	0,062
S	1	Ap max	0,06 x D	95	–	171	76	–	136,8	57	–	102,6	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	Ap max	0,06 x D	47,5	–	76	38	–	60,8	28,5	–	45,6	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	Ap max	0,06 x D	47,5	–	76	38	–	60,8	28,5	–	45,6	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	Ap max	0,06 x D	95	–	114	76	–	91,2	57	–	68,4	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	Ap max	0,06 x D	152	–	266	121,6	–	212,8	91,2	–	159,6	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	Ap max	0,06 x D	133	–	228	106,4	–	182,4	79,8	–	136,8	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

- Asymmetrical flute spacing and variable helix configuration minimise chatter and harmonics for smoother machining.
- Centre cutting.
- Single tool for both roughing and finishing operations, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



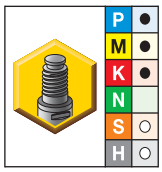




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073

UKBV • 4-Flute Ball Nose • Metric



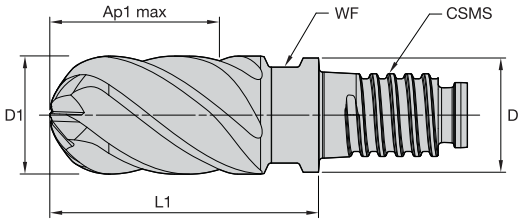
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF
UKBV1000X4CN	10,00	9,60	15,00	22,50	DL10	8,00
UKBV1200X4CN	12,00	11,50	18,00	27,00	DL12	9,50
UKBV1600X4CN	16,00	15,50	24,00	36,00	DL16	13,00
UKBV2000X4CN	20,00	19,30	30,00	45,00	DL20	16,00
UKBV2500X4CN	25,00	24,00	37,50	56,50	DL25	21,00

NOTE: For application data, please see page O20.

- Unequal flute spacing and variable helix configuration minimise chatter and harmonics for smoother machining.
- Centre cutting.
- Optimised geometry for titanium machining.
- Single tool for both roughing and finishing operations, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



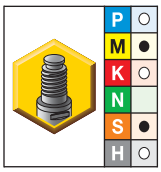




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073

UJBV • 6-Flute Ball Nose with Eccentric Relief Grind • Metric

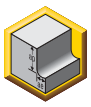


● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF
UJBV1000X6CN	10,00	9,60	15,00	22,50	DL10	8,00
UJBV1200X6CN	12,00	11,50	18,00	27,00	DL12	9,50
UJBV1600X6CN	16,00	15,50	24,00	36,00	DL16	13,00
UJBV2000X6CN	20,00	19,30	30,00	45,00	DL20	16,00
UJBV2500X6CN	25,00	24,00	37,50	56,50	DL25	21,00

NOTE: For application data, please see pages O21–O22.

HARVI Ball Nose • UKBV • Asymmetrical Flute Spacing • Roughing • Finishing





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
		A		B	adaptor reach KCPM15 Cutting Speed — vc m/min			adaptor reach KCPM15 Cutting Speed — vc m/min			adaptor reach KCPM15 Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	1,25 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105
	1	1,25 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105
	2	1,25 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105
	3	1,25 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097
	4	1,25 x D	0,4 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083
	5	1,25 x D	0,4 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077
	6	1,25 x D	0,4 x D	0,75 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060
M	1	1,25 x D	0.4 x D	1 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097
	2	1,25 x D	0,4 x D	1 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077
	3	1,25 x D	0,4 x D	1 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060
K	1	1,25 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105
	2	1,25 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097
	3	1,25 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077
S	1	1 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097
	2	1 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052
	3	1,25 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052
	4	1,25 x D	0,4 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071
H	1	1,25 x D	0,4 x D	0,75 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083
	2	1,25 x D	0,2 x D	0,5 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI III Ball Nose • UJBV • Unequal Flute Spacing • Roughing



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		adaptor reach KCSM15 Cutting Speed — vc m/min			KCSM15 Cutting Speed — vc m/min			KCSM15 Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	Ap max	0,4 x D	150	–	200	135	–	180	135	–	180	fz	0,052	0,060	0,073	0,082	0,089
	1	Ap max	0,4 x D	150	–	200	135	–	180	135	–	180	fz	0,052	0,060	0,073	0,082	0,089
	2	Ap max	0,4 x D	140	–	190	126	–	171	126	–	171	fz	0,052	0,060	0,073	0,082	0,089
	3	Ap max	0,4 x D	120	–	160	108	–	144	108	–	144	fz	0,044	0,051	0,063	0,073	0,082
	4	Ap max	0,4 x D	90	–	150	81	–	135	81	–	135	fz	0,039	0,045	0,055	0,064	0,070
	5	Ap max	0,4 x D	60	–	100	51	–	85	48	–	80	fz	0,035	0,041	0,050	0,058	0,066
	6	Ap max	0,4 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,029	0,034	0,041	0,047	0,051
M	1	Ap max	0,4 x D	90	–	115	72	–	92	63	–	80,5	fz	0,044	0,051	0,063	0,073	0,082
	2	Ap max	0,4 x D	60	–	80	48	–	64	42	–	56	fz	0,035	0,041	0,050	0,058	0,066
	3	Ap max	0,4 x D	60	–	70	48	–	56	42	–	49	fz	0,029	0,034	0,041	0,047	0,051
K	1	Ap max	0,4 x D	120	–	150	108	–	135	108	–	135	fz	0,052	0,060	0,073	0,082	0,089
	2	Ap max	0,4 x D	110	–	140	99	–	126	99	–	126	fz	0,044	0,051	0,063	0,073	0,082
	3	Ap max	0,4 x D	110	–	130	99	–	117	99	–	117	fz	0,035	0,041	0,050	0,058	0,066
S	1	Ap max	0,4 x D	50	–	90	40	–	72	30	–	54	fz	0,044	0,051	0,063	0,073	0,082
	2	Ap max	0,4 x D	25	–	40	20	–	32	15	–	24	fz	0,023	0,027	0,034	0,039	0,044
	3	Ap max	0,4 x D	25	–	40	20	–	32	15	–	24	fz	0,023	0,027	0,034	0,039	0,044
	4	Ap max	0,4 x D	50	–	60	40	–	48	30	–	36	fz	0,032	0,037	0,046	0,054	0,060
H	1	Ap max	0,4 x D	80	–	140	64	–	112	48	–	84	fz	0,039	0,045	0,055	0,064	0,070
	2	Ap max	0,4 x D	70	–	120	56	–	96	42	–	72	fz	0,029	0,034	0,041	0,047	0,051

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI III Ball Nose • UJBV • Unequal Flute Spacing • Finishing



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		adaptor reach									D1 — Diameter					
				KCSM15			KCSM15			KCSM15								
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min								
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	Ap max	0,06 x D	285	–	380	257	–	342	257	–	342	fz	0,061	0,070	0,086	0,097	0,105
	1	Ap max	0,06 x D	285	–	380	257	–	342	257	–	342	fz	0,061	0,070	0,086	0,097	0,105
	2	Ap max	0,06 x D	266	–	361	239	–	325	239	–	325	fz	0,061	0,070	0,086	0,097	0,105
	3	Ap max	0,06 x D	228	–	304	205	–	274	205	–	274	fz	0,051	0,060	0,074	0,086	0,097
	4	Ap max	0,06 x D	171	–	285	154	–	257	154	–	257	fz	0,046	0,053	0,065	0,075	0,083
	5	Ap max	0,06 x D	114	–	190	97	–	162	91	–	152	fz	0,041	0,048	0,059	0,069	0,077
	6	Ap max	0,06 x D	95	–	143	81	–	121	76	–	114	fz	0,034	0,040	0,048	0,055	0,060
M	1	Ap max	0,06 x D	171	–	219	137	–	175	120	–	153	fz	0,051	0,060	0,074	0,086	0,097
	2	Ap max	0,06 x D	114	–	152	91	–	122	80	–	106	fz	0,041	0,048	0,059	0,069	0,077
	3	Ap max	0,06 x D	114	–	133	91	–	106	80	–	93	fz	0,034	0,040	0,048	0,055	0,060
K	1	Ap max	0,06 x D	228	–	285	205	–	257	205	–	257	fz	0,061	0,070	0,086	0,097	0,105
	2	Ap max	0,06 x D	209	–	266	188	–	239	188	–	239	fz	0,051	0,060	0,074	0,086	0,097
	3	Ap max	0,06 x D	209	–	247	188	–	222	188	–	222	fz	0,041	0,048	0,059	0,069	0,077
S	1	Ap max	0,06 x D	95	–	171	76	–	137	57	–	103	fz	0,051	0,060	0,074	0,086	0,097
	2	Ap max	0,06 x D	48	–	76	38	–	61	29	–	46	fz	0,027	0,032	0,039	0,046	0,052
	3	Ap max	0,06 x D	48	–	76	38	–	61	29	–	46	fz	0,027	0,032	0,039	0,046	0,052
	4	Ap max	0,06 x D	95	–	114	76	–	91	57	–	68	fz	0,038	0,044	0,055	0,063	0,071
H	1	Ap max	0,06 x D	152	–	266	122	–	213	91	–	160	fz	0,046	0,053	0,065	0,075	0,083
	2	Ap max	0,06 x D	133	–	228	106	–	182	80	–	137	fz	0,034	0,040	0,048	0,055	0,060

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.



Duo-Lock™ HARVI™ III

CHALLENGE

- Facing steel (1215) material.
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock™ Ø 15,875mm
- HARVI III UJDV
- Corner Radius R = 0,4mm

CUTTING DATA

- v_c 213 m/min
- f_z 0,05 mm/Z
- a_p 1,27mm
- a_e 12,0mm

RESULT

- 40% higher feed per tooth.
- 15% increase in cutting speed.
- Good surface finish and minimum wear on edges.

BENEFIT

- Reduced machining time.
- Increased productivity.
- Reduced tooling cost.



Duo-Lock™ HARVI

CHALLENGE

- Roughing of sensor mounting slot in cast iron.
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock™ Ø 16mm — cylindrical shank
- HARVI UKDV
- Corner Radius R = 0,5mm

CUTTING DATA

- v_c 58 m/min
- f_z 0,065 mm/Z
- a_p 22mm
- a_e 8,0mm

RESULT

- Less wear.
- More stable process.

BENEFIT

- No unpredictable breakage like with competitive solid carbide tool.
- Stable machining process.

(continued)

(continued)



Duo-Lock™ HARVI™ III

CHALLENGE

- Finishing contour milling with lightly interrupted cut.
- Blade machining of X20Cr and X22Cr (M3).
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock™ Ø 16mm – cylindrical shank
- HydroForce™ with reducer sleeve
- HARVI III UJDV geometry in KCSM15™
- Corner Radius R = 4mm

CUTTING DATA

- v_c 350 m/min
- f_z 0,12 mm/Z
- a_p 0,5mm
- a_e 4,0mm

RESULT

- Tool life increased from 34 to 103 parts.
- Machining time per part reduced by 50%.

BENEFIT

- Increase of productivity.
- Cost reduction through almost triple tool life.
- Improved surface finish.



Duo-Lock™ HARVI III

CHALLENGE

- Hard machining — side milling.
- Hardened steel (17–4 PH) — 35 HRC.
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock™ Ø 15,875mm
- HARVI III UJDV
- Corner Radius R = 0,4mm

CUTTING DATA

- v_c 224 m/min
- f_z 0,113 mm/Z
- a_p 15,25mm
- a_e 0,76mm

RESULT

- 15% increase in cutting speed.
- Good surface finish and minimum wear on edges.

BENEFIT

- Increased productivity.
- Reduced tooling cost.
- Long reach capability.

CFRP Machining Tooling

KCN05™

Engineered for machining difficult CFRP (Carbon-Fibre Reinforced Polymer) and non-ferrous components. KCN05 solid carbide tooling provides excellent tool life and produces smooth finishes with improved edge quality.

- Excellent tool life due to KCN05 diamond-film coating.
- Proprietary substrate improves coating adhesion to extend tool life.
- Design minimises delamination and bur formation.
- Compression-style end mills for trimming operations.
- Left-hand down cut and ball nose cutters for machining cavities.
- Bur-style router for highest Metal Removal Rates (MRR).



Visit **kennametal.com** or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

kennametal.com

DUO-λOCK® MaxiMet™

High-Performance Modular Solid Carbide End Mills

Primary Application

The MaxiMet system provides extraordinary metal removal rates by combining roughing and finishing operations with any aluminium plunging, slotting, and profiling application. Its proprietary flute geometry is designed for high stiffness and improved chip evacuation to generate exceptional wall-to-floor perpendicularity, even in thin-wall applications. To ensure a superior floor surface finish, the MaxiMet front geometry is equipped with a wiper facet grind.

- Only one tool needed for roughing and finishing operations.
- Slotting depths up to 1 x D and side milling up to 0,5 x D radial and 1,5 x D axial engagement.
- Unequal flute spacing for chatter-free performance with 3-flute series.
- Multiple corner radii and extended neck configurations available as standard with 3-flute series.

Features and Benefits

Advanced Technology

- Increase output with fewer tool changes and higher metal removal rates.
- No specific tools necessary for roughing and finishing.
- Fewer passes due to 1 x D slotting capability.
- Perfect for MQL (minimum quantity lubrication) methods.

Tailored Grades

- K600 uncoated grade for longest tool life in aluminium and other non-ferrous materials.

Customisation

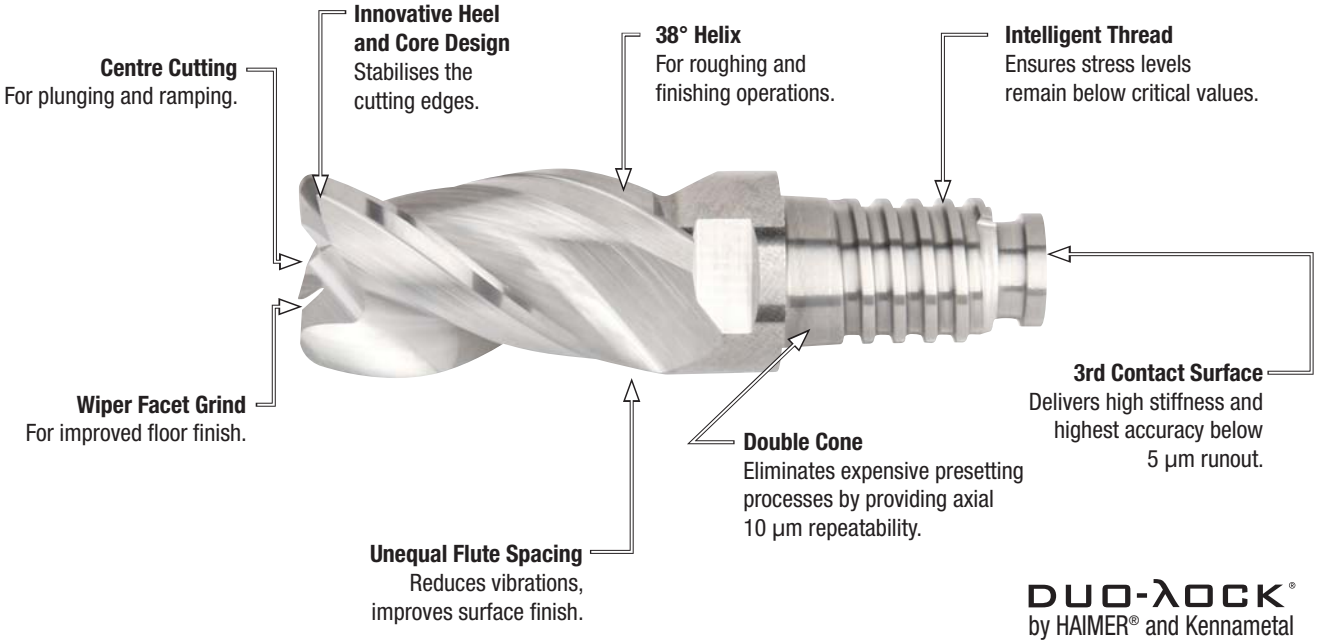
- Intermediate diameters are available between 10–32mm.

Extensive Standard Offering

- Diameter ranges 10–25mm.
- Necked, corner radii, and square-end tips available.
- Integral adaptors reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

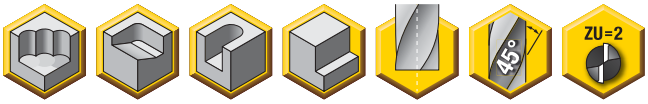
For high metal removal rates and superior surface finishes.

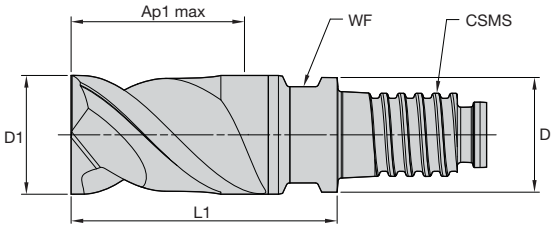




DUO-LOCK®
by HAIMER® and Kennametal

- Centre cutting.
- Optimised for thin wall applications.
- Wiper facet, special end gash, and flute geometry enable improved surface finishes.
- Standard items listed. Additional styles and coatings made-to-order.



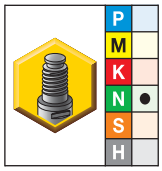




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073

ABDF • 2 Flute • Metric

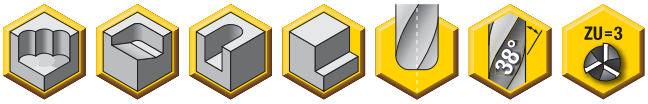


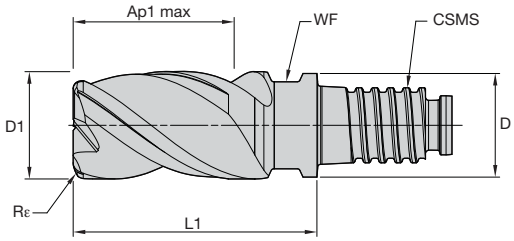
● first choice
○ alternate choice

K600	D1	D	Ap1 max	L1	CSMS system size	WF
ABDF1000X2CU	10,00	9,60	15,00	22,50	DL10	8,00
ABDF1200X2CU	12,00	11,50	18,00	27,00	DL12	9,50
ABDF1600X2CU	16,00	15,50	24,00	36,00	DL16	13,00
ABDF2000X2CU	20,00	19,30	30,00	45,00	DL20	16,00

NOTE: For application data, please see page O30.

- Centre cutting.
- Optimised for thin wall applications.
- Wiper facet, special end gash, and flute geometry enable improved surface finishes.
- Standard items listed. Additional styles and coatings made-to-order.



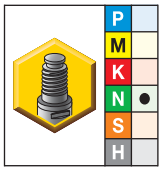




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073

ABDE • 3 Flute • Metric



● first choice
○ alternate choice

K600	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
ABDE1000X3CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50
ABDE1000X3CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00
ABDE1000X3CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50
ABDE1200X3CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50
ABDE1200X3CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00
ABDE1200X3CQJ	12,00	11,50	18,00	27,00	DL12	9,50	1,50
ABDE1200X3CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50
ABDE1600X3CQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00
ABDE1600X3CQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50
ABDE1600X3CQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00
ABDE1600X3CQL	16,00	15,50	24,00	36,00	DL16	13,00	2,50
ABDE1600X3CQM	16,00	15,50	24,00	36,00	DL16	13,00	3,00
ABDE2000X3CQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00
ABDE2000X3CQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00
ABDE2000X3CQL	20,00	19,30	30,00	45,00	DL20	16,00	2,50
ABDE2000X3CQM	20,00	19,30	30,00	45,00	DL20	16,00	3,00
ABDE2000X3CQN	20,00	19,30	30,00	45,00	DL20	16,00	4,00
ABDE2500X3CQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50
ABDE2500X3CQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00

NOTE: For application data, please see page O30.

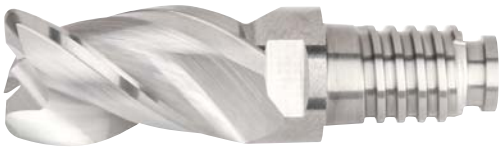
MaxiMet • ABDF • Wiper Facet



Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
		A		B	adaptor reach													
					K600			K600			K600			D1 — Diameter				
		Cutting Speed — vc m/min																
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0
N	1	1,5 x D	0,3 x D	1,0 x D	500	–	2000	400	–	1200	300	–	1200	fz	0,077	0,092	0,122	0,153
	2	1,5 x D	0,3 x D	1,0 x D	500	–	1500	400	–	900	300	–	900	fz	0,069	0,083	0,110	0,138
	3	1,5 x D	0,3 x D	1,0 x D	500	–	1500	400	–	900	300	–	900	fz	0,054	0,064	0,086	0,107
	4	1,5 x D	0,3 x D	1,0 x D	400	–	750	320	–	450	240	–	450	fz	0,054	0,064	0,086	0,107
	5	1,5 x D	0,3 x D	1,0 x D	250	–	1000	200	–	600	150	–	600	fz	0,069	0,083	0,110	0,138

NOTE: Ap for spindle with ceramic bearings multiply by 0,5.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

MaxiMet • ABDE • Wiper Facet • Unequal Flute Spacing



Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
		A		B	adaptor reach													
					K600			K600			K600			D1 — Diameter				
		Cutting Speed — vc m/min																
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0
N	1	1,5 x D	0,3 x D	1,0 x D	500	–	2000	400	–	1200	300	–	1200	fz	0,077	0,092	0,122	0,153
	2	1,5 x D	0,3 x D	1,0 x D	500	–	1500	400	–	900	300	–	900	fz	0,069	0,083	0,110	0,138
	3	1,5 x D	0,3 x D	1,0 x D	500	–	1500	400	–	900	300	–	900	fz	0,054	0,064	0,086	0,107
	4	1,5 x D	0,3 x D	1,0 x D	400	–	750	320	–	450	240	–	450	fz	0,054	0,064	0,086	0,107
	5	1,5 x D	0,3 x D	1,0 x D	250	–	1000	200	–	600	150	–	600	fz	0,069	0,083	0,110	0,138

NOTE: Ap for spindle with ceramic bearings multiply by 0,5.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI™ II Long

- Long wall semi- and fine-finishing.
- Significant straight wall accuracy.
- Thin wall machining up to 5 x D.
- Eliminates feed rate reduction in corner machining.
- For machining titanium, steels, and stainless steels.



KC643M™

- Universal grade suitable for cutting steel, cast iron, stainless steel, and titanium.

Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates, improving surface finish and tool life.
- Innovative core design increases stability for exceptionally straight walls.

Visit **kennametal.com** or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

kennametal.com

DUO-λOCK®

High-Performance Modular Roughing Solid Carbide End Mills

Primary Application

Duo-Lock™ high-performance roughing tools provide superior metal removal rates while reducing machine power consumption. Applicable on a wide range of workpiece materials such as steels, stainless steels, and difficult-to-machine materials. Tailored to roughing profiles, provides excellent chip management, and reduces cutting forces to the necessary level. Combines roughing and semi-finishing for fewer tool changes.

- High-performance universal tools for almost all cutting materials.
- Lowering cutting forces and spindle power consumption.
- Centre cutting for ramping, profiling, high-feed slotting, and side milling.

Features and Benefits

Advanced Technology

- Up to full length of cut for:
  - — Slotting
  - — Side milling
  - — Profiling
  - — Semi-finishing
- Various roughing profiles available to choose from for the right balance between cutting forces, feed rates, and surface quality.
- Fewer passes due to 1 x D slotting capability.

Tailored Grades

- KCPM15™ Beyond™ grade for outstanding wear protection in stainless steel to mitigate crater, depth-of-cut notching, and flank wear.
- KCSM15™ Beyond grade for exceptional tool life in titanium and stainless steels.

Customisation

- Intermediate diameters are available between 10–32mm.

Extensive Standard Offering

- Diameter ranges 10–25mm.
- Necked, corner radii, and chamfered tips offered.
- Integral adaptors reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks to prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

For high metal removal rates and low power consumption.





Various Roughing Profiles
Tailored cord and shallow-pitch profile for improved chip formation.

Centre Cutting
For plunging and ramping.

Intelligent Thread
Ensures stress levels remain below critical values.

Various Helix Configurations
20° for roughing ISO P-M-K materials.
45° for roughing ISO S-M materials.

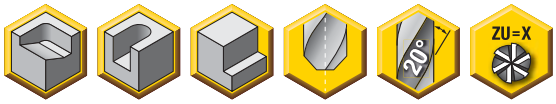
3rd Contact Surface
Delivers high stiffness and highest accuracy below 5 µm runout.

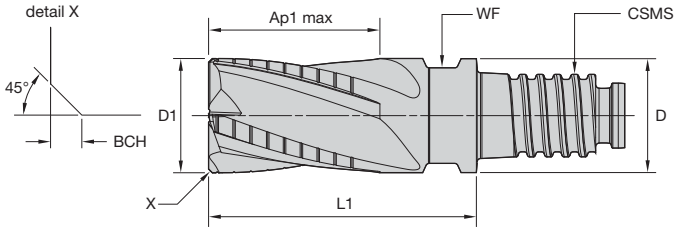
Double Cone
Eliminates expensive presetting processes by providing axial 10 µm repeatability.

KCPM15™ and KCSM15™ Grades
Long tool life.
Enables higher cutting speeds.

DUO-LOCK®
by HAIMER® and Kennametal

- Centre cutting.
- Cord profile reduces machine power consumption.
- Standard items listed. Additional styles and coatings made-to-order.



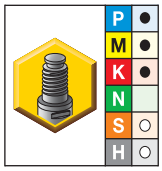




End Mill Tolerances

D1	tolerance d11
> 10–18	-0,050/-0,160
> 18–30	-0,065/-0,195

RQDB • Metric



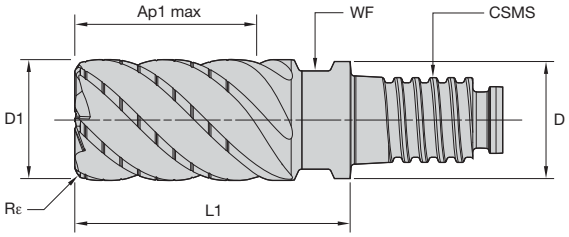
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH	Z U
RQDB1000X4CV	10,00	9,60	15,00	22,50	DL10	8,00	0,50	4
RQDB1200X4CV	12,00	11,50	18,00	27,00	DL12	9,50	0,50	4
RQDB1600X4CV	16,00	15,50	24,00	36,00	DL16	13,00	0,50	4
RQDB2000X4CV	20,00	19,30	30,00	45,00	DL20	16,00	0,50	4
RQDB2500X5CV	25,00	24,00	37,50	56,50	DL25	21,00	0,50	5

NOTE: For application data, please see page O37.

- Centre cutting.
- Shallow-pitch profile reduces machine power consumption.
- Standard items listed. Additional styles and coatings made-to-order.



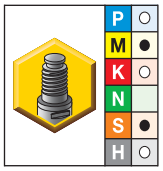




End Mill Tolerances

D1	tolerance d11
> 10–18	-0,050/-0,160
> 18–30	-0,065/-0,195

RKDF • Metric

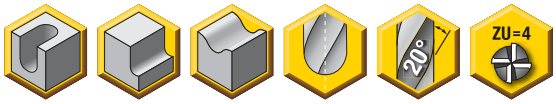


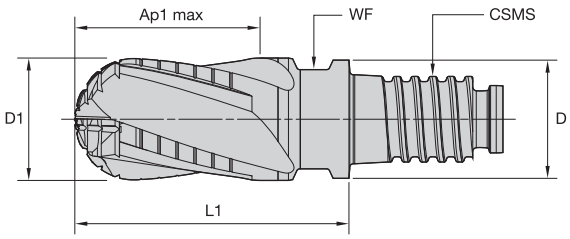
● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε	Z U
RKDF1000X4CQE	10,00	9,60	15,00	23,00	DL10	8,00	0,50	4
RKDF1200X4CQF	12,00	11,50	18,00	27,50	DL12	9,50	0,75	4
RKDF1600X6CQF	16,00	15,50	24,00	36,50	DL16	13,00	0,75	6
RKDF2000X6CQF	20,00	19,30	30,00	45,50	DL20	16,00	0,75	6
RKDF2500X6CQF	25,00	24,00	37,50	57,00	DL25	21,00	0,75	6

NOTE: For application data, please see page O38.

- Centre cutting.
- Cord profile reducing machine power consumption.
- Standard items listed. Additional styles and coatings made-to-order.



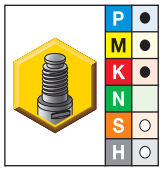




End Mill Tolerances

D1	tolerance d11
> 10–18	-0,050/-0,160
> 18–30	-0,065/-0,195

RQBB • Metric



● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF
RQBB1000X4CN	10,00	9,60	15,00	22,50	DL10	8,00
RQBB1200X4CN	12,00	11,50	18,00	27,00	DL12	9,50
RQBB1600X4CN	16,00	15,50	24,00	36,00	DL16	13,00
RQBB2000X4CN	20,00	19,30	30,00	45,00	DL20	16,00
RQBB2500X4CN	25,00	24,00	37,50	56,50	DL25	21,00

NOTE: For application data, please see page O39.

RQDB • Metric





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
		A		B	adaptor reach									D1 — Diameter					
					KCPM15			KCPM15			KCPM15								
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min								
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,061	0,070	0,086	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,061	0,070	0,086	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	112	–	152	100,8	–	136,8	100,8	–	136,8	fz	0,061	0,070	0,086	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	96	–	128	86,4	–	115,2	86,4	–	115,2	fz	0,051	0,060	0,074	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	72	–	120	64,8	–	108	64,8	–	108	fz	0,046	0,053	0,065	0,075	0,083
	5	1,5 x D	0,4 x D	0,75 x D	48	–	80	40,8	–	68	38,4	–	64	fz	0,041	0,048	0,059	0,069	0,077
M	1	1,5 x D	0,4 x D	0,75 x D	72	–	92	57,6	–	73,6	50,4	–	64,4	fz	0,051	0,060	0,074	0,086	0,097
	2	1,5 x D	0,4 x D	0,75 x D	48	–	64	38,4	–	51,2	33,6	–	44,8	fz	0,041	0,048	0,059	0,069	0,077
	3	1,5 x D	0,4 x D	0,75 x D	48	–	56	38,4	–	44,8	33,6	–	39,2	fz	0,034	0,040	0,048	0,055	0,060
K	1	1,5 x D	0,5 x D	1 x D	96	–	120	86,4	–	108	86,4	–	108	fz	0,061	0,070	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	88	–	112	79,2	–	100,8	79,2	–	100,8	fz	0,051	0,060	0,074	0,086	0,097
	3	1,5 x D	0,4 x D	1 x D	88	–	104	79,2	–	93,6	79,2	–	93,6	fz	0,041	0,048	0,059	0,069	0,077
S	1	1,5 x D	0,4 x D	0,75 x D	40	–	72	32	–	57,6	24	–	43,2	fz	0,051	0,060	0,074	0,086	0,097
	3	1,5 x D	0,4 x D	0,75 x D	20	–	32	16	–	25,6	12	–	19,2	fz	0,027	0,032	0,039	0,046	0,052
H	1	1,5 x D	0,3 x D	0,3 x D	64	–	112	51,2	–	89,6	38,4	–	67,2	fz	0,046	0,053	0,065	0,075	0,083

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

RKDF • Metric

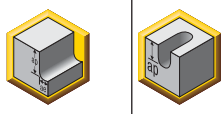




Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
		A		B	adaptor reach									D1 — Diameter					
					KCSM15			KCSM15			KCSM15								
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min								
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	3	1,0 x D	0,5 x D	0,75 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097
	4	1,0 x D	0,3 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083
	5	1,0 x D	0,4 x D	0,75 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077
	6	1,0 x D	0,3 x D	0,3 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060
M	1	1,0 x D	0,4 x D	0,75 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097
	2	1,0 x D	0,4 x D	0,75 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077
	3	1,0 x D	0,4 x D	0,75 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060
K	1	1,0 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105
	2	1,0 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097
	3	1,0 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077
S	1	1,0 x D	0,3 x D	0,75 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097
	2	1,0 x D	0,3 x D	0,75 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052
	3	1,0 x D	0,3 x D	0,75 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052
	4	1,0 x D	0,4 x D	0,75 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071
H	1	1,0 x D	0,3 x D	0,3 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083
	2	1,0 x D	0,2 x D	0,2 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060
	3	1,0 x D	0,2 x D	0,2 x D	60	–	90	48	–	72	36	–	54	fz	0,027	0,032	0,039	0,046	0,052

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

RQBB • Metric





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
		A		B	adaptor reach									D1 — Diameter					
					KCPM15			KCPM15			KCPM15								
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min								
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083
	5	1,5 x D	0,4 x D	0,75 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077
	6	1,5 x D	0,3 x D	0,3 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060
M	1	1,5 x D	0,4 x D	0,75 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097
	2	1,5 x D	0,4 x D	0,75 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077
	3	1,5 x D	0,4 x D	0,75 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097
	3	1,5 x D	0,4 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077
S	1	1,5 x D	0,4 x D	0,75 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052
	4	1,5 x D	0,3 x D	0,75 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071
H	1	1,5 x D	0,3 x D	0,3 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083
	2	1,5 x D	0,2 x D	0,2 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060
	3	1,5 x D	0,2 x D	0,2 x D	60	–	90	48	–	72	36	–	54	fz	0,027	0,032	0,039	0,046	0,052

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

DUO-λOCK®

High-Performance Modular Finishing Solid Carbide End Mills

Primary Application

Duo-Lock™ high-performance finishing tools are designed for machining titanium, steels, and stainless steels with excellent surface finishes at maximum Metal Removal Rates (MRR) in two basic geometries. The FMDF geometry is perfectly suited for finishing steels and stainless steels. The Duo-Lock™ RSM II geometry is designed for high-speed peel milling with secure chip formation and evacuation in deep cavities with the maximum amount of edges at a given diameter.

- Specifically designed geometries for finishing in a wide range of materials.
- Higher number of flutes and higher helix angles for super finishing applications.
- High metal removal rates for fewer passes, longer tool life, and superior surface finishes.

Features and Benefits

Advanced Technology

- RSM II FSDE geometry:
  - — Maximum number of flutes increases feed rates and reduces vibration.
  - — Proprietary W-shaped flute form improves chip formation and reduces cutting forces.
  - — Unequal flute spacing increases tool life and surface quality.
- FMDF geometry:
  - — Excellent geometry for steels and stainless steel.
  - — Protection radii helps extend tool life.

Tailored Grades

- KCPM15™ Beyond™ grade for outstanding wear protection in stainless steel to mitigate cratering, depth-of-cut notching, and flank wear.
- KC643M™ grade provides highest fine finishing and longest tool life.

Customisation

- Intermediate diameters are available from 10–32mm.

Extensive Standard Offering

- Diameter ranges 10–25mm.
- Necked and corner radii tips available.
- Integral adaptors reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

For highest surface quality.





45° Helix Angle with FMDF
Specifically engineered for fine finishing steels and stainless steels.

KCPM15™ Grade
Longest tool life.
Enables higher cutting speeds.

36° Helix Angle with FSDE
Specifically engineered for fine finishing titanium and other ISO S-M materials.

Intelligent Thread
Ensures stress levels remain below critical values.

DUO-LOCK®
by HAIMER® and Kennametal



3rd Contact Surface
Delivers high stiffness and highest accuracy below 5 µm runout.

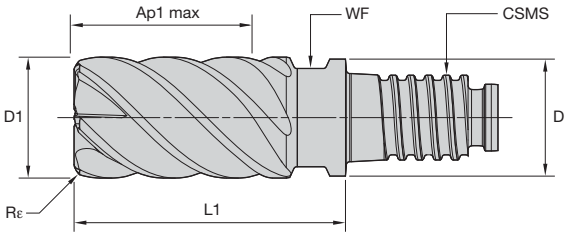
W-shaped Flute Design with FSDE
Wider flute space for optimised chip evacuation.

KC643M™ Grade
Unmatched fine finishing and tool life.

Double Cone
Eliminates expensive presetting processes by providing axial 10 µm repeatability.

- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



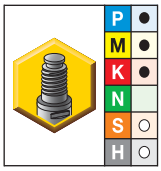




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

FMDF • Metric



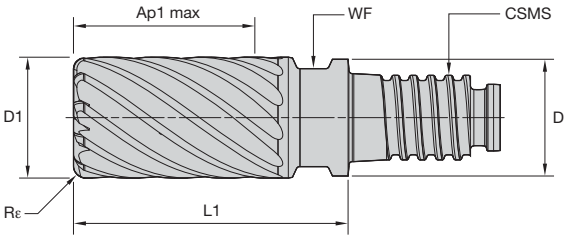
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
FMDF1000X6CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50
FMDF1200X6CQF	12,00	11,50	18,00	27,00	DL12	9,50	0,75
FMDF1600X6CQF	16,00	15,50	24,00	36,00	DL16	13,00	0,75
FMDF2000X6CQF	20,00	19,30	30,00	45,00	DL20	16,00	0,75
FMDF2500X6CQF	25,00	24,00	37,50	56,50	DL25	21,00	0,75

NOTE: For application data, please see page O44.

- Non-centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Standard items listed. Additional styles and coatings made-to-order.



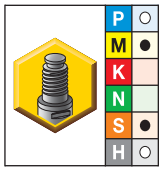




End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

FSDE • Metric



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L1	CSMS system size	WF	Rε	Z U
FSDE1000X9CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50	9
FSDE1000X9CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00	9
FSDE1000X9CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50	9
FSDE1200X9CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50	9
FSDE1200X9CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00	9
FSDE1200X9CQJ	12,00	11,50	18,00	27,00	DL12	9,50	1,50	9
FSDE1200X9CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50	9
FSDE1600XBCQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00	11
FSDE1600XBCQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50	11
FSDE1600XBCQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00	11
FSDE1600XBCQL	16,00	15,50	24,00	36,00	DL16	13,00	2,50	11
FSDE1600XBCQM	16,00	15,50	24,00	36,00	DL16	13,00	3,00	11
FSDE2000XFCQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00	15
FSDE2000XFCQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00	15
FSDE2000XFCQL	20,00	19,30	30,00	45,00	DL20	16,00	2,50	15
FSDE2000XFCQM	20,00	19,30	30,00	45,00	DL20	16,00	3,00	15
FSDE2000XFCQN	20,00	19,30	30,00	45,00	DL20	16,00	4,00	15
FSDE2500XJCQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50	19
FSDE2500XJCQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00	19

NOTE: For application data, please see page O45.

FMDF • Metric



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		adaptor reach									D1 — Diameter					
				KCPM15			KCPM15			KCPM15								
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min								
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	1,5 x D	0,1 x D	150	–	200	135	–	180	135	–	180	fz	0,072	0,083	0,101	0,114	0,124
	1	1,5 x D	0,1 x D	150	–	200	135	–	180	135	–	180	fz	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,1 x D	140	–	190	126	–	171	126	–	171	fz	0,072	0,083	0,101	0,114	0,124
	3	1,5 x D	0,1 x D	120	–	160	108	–	144	108	–	144	fz	0,061	0,070	0,087	0,101	0,114
	4	1,5 x D	0,1 x D	90	–	150	81	–	135	81	–	135	fz	0,054	0,062	0,077	0,088	0,098
	5	1,5 x D	0,1 x D	60	–	100	51	–	85	48	–	80	fz	0,048	0,056	0,070	0,081	0,091
	6	1,5 x D	0,1 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,040	0,047	0,057	0,065	0,071
M	1	1,5 x D	0,1 x D	90	–	115	72	–	92	63	–	80,5	fz	0,061	0,070	0,087	0,101	0,114
	2	1,5 x D	0,1 x D	60	–	80	48	–	64	42	–	56	fz	0,048	0,056	0,070	0,081	0,091
	3	1,5 x D	0,1 x D	60	–	70	48	–	56	42	–	49	fz	0,040	0,047	0,057	0,065	0,071
K	1	1,5 x D	0,1 x D	120	–	150	108	–	135	108	–	135	fz	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,1 x D	110	–	140	99	–	126	99	–	126	fz	0,061	0,070	0,087	0,101	0,114
	3	1,5 x D	0,1 x D	110	–	130	99	–	117	99	–	117	fz	0,048	0,056	0,070	0,081	0,091
S	1	1,5 x D	0,1 x D	50	–	90	40	–	72	30	–	54	fz	0,061	0,070	0,087	0,101	0,114
	2	1,5 x D	0,1 x D	25	–	40	20	–	32	15	–	24	fz	0,032	0,037	0,046	0,054	0,061
	3	1,5 x D	0,1 x D	25	–	40	20	–	32	15	–	24	fz	0,032	0,037	0,046	0,054	0,061
	4	1,5 x D	0,15 x D	50	–	60	40	–	48	30	–	36	fz	0,045	0,052	0,064	0,074	0,084
H	1	1,5 x D	0,1 x D	80	–	140	64	–	112	48	–	84	fz	0,054	0,062	0,077	0,088	0,098
	2	1,5 x D	0,1 x D	70	–	120	56	–	96	42	–	72	fz	0,040	0,047	0,057	0,065	0,071

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

FSDE • Metric



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		adaptor reach									D1 — Diameter					
				KC643M			KC643M			KC643M								
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min								
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	4	1,5 x D	0,2–0,3mm	135	–	495	122	–	446	122	–	446	fz	0,120	0,129	0,149	0,163	0,166
	5	1,5 x D	0,2–0,3mm	90	–	330	77	–	281	72	–	264	fz	0,108	0,116	0,135	0,150	0,155
M	1	1,5 x D	0,2–0,3mm	135	–	379,5	108	–	304	95	–	266	fz	0,135	0,145	0,169	0,187	0,193
	2	1,5 x D	0,2–0,3mm	90	–	264	72	–	211	63	–	185	fz	0,108	0,116	0,135	0,150	0,155
	3	1,5 x D	0,2–0,3mm	90	–	231	72	–	185	63	–	162	fz	0,090	0,096	0,110	0,120	0,121
S	1	1,5 x D	0,2–0,3mm	75	–	297	60	–	238	45	–	178	fz	0,135	0,145	0,169	0,187	0,193
	2	1,5 x D	0,2–0,3mm	37,5	–	132	30	–	106	23	–	79	fz	0,071	0,077	0,090	0,100	0,104
	3	1,5 x D	0,2–0,3mm	37,5	–	132	30	–	106	23	–	79	fz	0,071	0,077	0,090	0,100	0,104
	4	1,5 x D	0,2–0,3mm	75	–	198	60	–	158	45	–	119	fz	0,099	0,107	0,124	0,138	0,142
H	1	1,5 x D	0,2–0,3mm	120	–	462	96	–	370	72	–	277	fz	0,120	0,129	0,149	0,163	0,166
	2	1,5 x D	0,2–0,3mm	105	–	396	84	–	317	63	–	238	fz	0,090	0,096	0,110	0,120	0,121

NOTE: For better surface finish, reduce feed per tooth.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

DUO-λOCK®

Corner Rounding and Chamfering Solid Carbide Tips

Primary Application

Duo-Lock™ XRDA corner rounding and XADA chamfering tools perfectly complete the offering of high-performance end mills.

- Universal tools for almost all workpiece materials.
- Able to be reconditioned multiple times.

Features and Benefits

Advanced Technology

- Tailored amount of edges for each diameter.

Tailored Grades

- KCPM15™ Beyond™ grade for outstanding wear protection in various materials to mitigate crater, depth-of-cut notching, and flank wear.

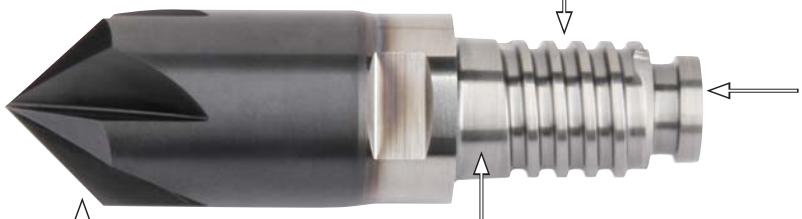
Customisation

- Intermediate diameters are available between 10–32mm.
- Various angles and inverse radii possible.

Extensive Standard Offering

- Diameter ranges 10–16mm.
- Integral adaptors reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.





Intelligent Thread
Ensures stress levels remain below critical values.

3rd Contact Surface
Delivers high stiffness and highest accuracy below 5 µm runout.

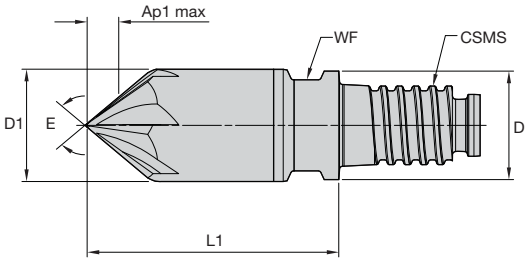
KCPM15™ Grade
Longest tool life.

Double Cone
Eliminates expensive presetting processes by providing axial 10 µm repeatability.

DUO-LOCK®
by HAIMER® and Kennametal

- Non-centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



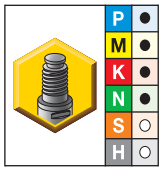




End Mill Tolerances

D1	tolerance h10 + / -
> 10–18	0/-0,070

XADA • Metric



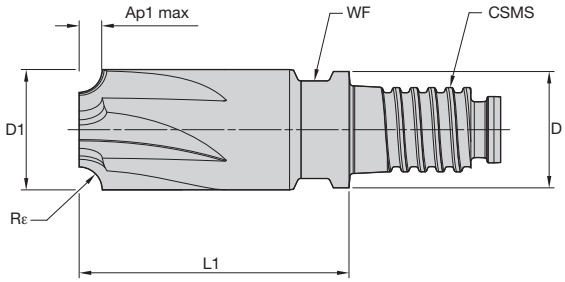
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	E	Z U
XADA1000X4CH45	10,00	9,60	2,00	22,60	DL10	8,00	90	4
XADA1000X4CH60	10,00	9,60	2,00	22,60	DL10	8,00	60	4
XADA1200X5CH45	12,00	11,50	3,00	27,20	DL12	9,50	90	5
XADA1200X5CH60	12,00	11,50	3,00	27,20	DL12	9,50	60	5
XADA1600X6CH45	16,00	15,50	4,00	36,25	DL16	13,00	90	6
XADA1600X6CH60	16,00	15,50	4,00	36,00	DL16	13,00	60	6

NOTE: For application data, please see page O50.

- Non-centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



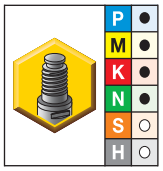




End Mill Tolerances

D1	tolerance h10 + / -
> 10–18	0/-0,070

XRDA • Metric



● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε	Z U
XRDA1000X4CHJ	10,00	9,60	1,50	22,50	DL10	8,00	1,50	4
XRDA1000X4CRM	10,00	9,60	3,00	22,50	DL10	8,00	3,00	4
XRDA1200X5CRG	12,00	11,50	1,00	27,00	DL12	9,50	1,00	5
XRDA1200X5CRK	12,00	11,50	2,00	27,20	DL12	9,50	2,00	5
XRDA1200X5CRM	12,00	11,50	3,00	27,00	DL12	9,50	3,00	5
XRDA1600X6CRK	16,00	15,50	2,00	36,10	DL16	13,00	2,00	6
XRDA1600X6CRM	16,00	15,50	3,00	35,93	DL16	13,00	3,00	6
XRDA1600X6CRN	16,00	15,50	4,00	35,95	DL16	13,00	4,00	6

NOTE: For application data, please see page O51.

XADA • Metric





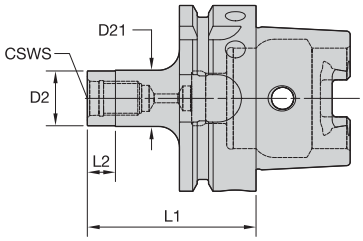
Material Group		Chamfering (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).			
		A		adaptor reach									D1 — Diameter			
				KCPM15			KCPM15			KCPM15						
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min						
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0
P	0	0,35 x D	0,35 x D	150	–	200	135	–	180	135	–	180	fz	0,058	0,066	0,081
	1	0,35 x D	0,35 x D	150	–	200	135	–	180	135	–	180	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	140	–	190	126	–	171	126	–	171	fz	0,058	0,066	0,081
	3	0,35 x D	0,35 x D	120	–	160	108	–	144	108	–	144	fz	0,048	0,056	0,070
	4	0,35 x D	0,35 x D	90	–	150	81	–	135	81	–	135	fz	0,043	0,050	0,061
	5	0,35 x D	0,35 x D	60	–	100	51	–	85	48	–	80	fz	0,039	0,045	0,056
	6	0,35 x D	0,35 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,032	0,037	0,046
M	1	0,35 x D	0,35 x D	90	–	115	72	–	92	63	–	80,5	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	60	–	80	48	–	64	42	–	56	fz	0,039	0,045	0,056
	3	0,35 x D	0,35 x D	60	–	70	48	–	56	42	–	49	fz	0,032	0,037	0,046
K	1	0,35 x D	0,35 x D	120	–	150	108	–	135	108	–	135	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	110	–	140	99	–	126	99	–	126	fz	0,048	0,056	0,070
	3	0,35 x D	0,35 x D	110	–	130	99	–	117	99	–	117	fz	0,039	0,045	0,056
N	1	0,35 x D	0,35 x D	500	–	2000	400	–	1600	300	–	1200	fz	0,080	0,096	0,128
	2	0,35 x D	0,35 x D	500	–	1500	400	–	1200	300	–	900	fz	0,072	0,086	0,115
	3	0,35 x D	0,35 x D	500	–	1500	400	–	1200	300	–	900	fz	0,056	0,067	0,090
	4	0,35 x D	0,35 x D	400	–	750	320	–	600	240	–	450	fz	0,056	0,067	0,090
	5	0,35 x D	0,35 x D	250	–	1000	200	–	800	150	–	600	fz	0,072	0,086	0,115
	6	0,35 x D	0,35 x D	100	–	750	80	–	600	60	–	450	fz	0,080	0,096	0,128
	7	0,35 x D	0,35 x D	100	–	750	80	–	600	60	–	450	fz	0,056	0,067	0,090
S	1	0,35 x D	0,35 x D	50	–	90	40	–	72	30	–	54	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	25	–	40	20	–	32	15	–	24	fz	0,026	0,030	0,037
	3	0,35 x D	0,35 x D	25	–	40	20	–	32	15	–	24	fz	0,026	0,030	0,037
	4	0,35 x D	0,35 x D	50	–	60	40	–	48	30	–	36	fz	0,036	0,041	0,051
H	1	0,35 x D	0,35 x D	80	–	140	64	–	112	48	–	84	fz	0,043	0,050	0,061

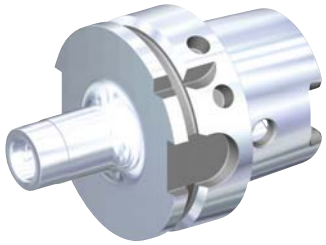
XRDA • Metric



Material Group		Corner Rounding (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).			
		A		adaptor reach									D1 — Diameter			
				KCPM15			KCPM15			KCPM15						
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min						
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0
P	0	0,35 x D	0,35 x D	150	–	200	135	–	180	135	–	180	fz	0,058	0,066	0,081
	1	0,35 x D	0,35 x D	150	–	200	135	–	180	135	–	180	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	140	–	190	126	–	171	126	–	171	fz	0,058	0,066	0,081
	3	0,35 x D	0,35 x D	120	–	160	108	–	144	108	–	144	fz	0,048	0,056	0,070
	4	0,35 x D	0,35 x D	90	–	150	81	–	135	81	–	135	fz	0,043	0,050	0,061
	5	0,35 x D	0,35 x D	60	–	100	51	–	85	48	–	80	fz	0,039	0,045	0,056
	6	0,35 x D	0,35 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,032	0,037	0,046
M	1	0,35 x D	0,35 x D	90	–	115	72	–	92	63	–	80,5	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	60	–	80	48	–	64	42	–	56	fz	0,039	0,045	0,056
	3	0,35 x D	0,35 x D	60	–	70	48	–	56	42	–	49	fz	0,032	0,037	0,046
K	1	0,35 x D	0,35 x D	120	–	150	108	–	135	108	–	135	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	110	–	140	99	–	126	99	–	126	fz	0,048	0,056	0,070
	3	0,35 x D	0,35 x D	110	–	130	99	–	117	99	–	117	fz	0,039	0,045	0,056
N	1	0,35 x D	0,35 x D	500	–	2000	400	–	1600	300	–	1200	fz	0,080	0,096	0,128
	2	0,35 x D	0,35 x D	500	–	1500	400	–	1200	300	–	900	fz	0,072	0,086	0,115
	3	0,35 x D	0,35 x D	500	–	1500	400	–	1200	300	–	900	fz	0,056	0,067	0,090
	4	0,35 x D	0,35 x D	400	–	750	320	–	600	240	–	450	fz	0,056	0,067	0,090
	5	0,35 x D	0,35 x D	250	–	1000	200	–	800	150	–	600	fz	0,072	0,086	0,115
	6	0,35 x D	0,35 x D	100	–	750	80	–	600	60	–	450	fz	0,080	0,096	0,128
	7	0,35 x D	0,35 x D	100	–	750	80	–	600	60	–	450	fz	0,056	0,067	0,090
S	1	0,35 x D	0,35 x D	50	–	90	40	–	72	30	–	54	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	25	–	40	20	–	32	15	–	24	fz	0,026	0,030	0,037
	3	0,35 x D	0,35 x D	25	–	40	20	–	32	15	–	24	fz	0,026	0,030	0,037
	4	0,35 x D	0,35 x D	50	–	60	40	–	48	30	–	36	fz	0,036	0,041	0,051
H	1	0,35 x D	0,35 x D	80	–	140	64	–	112	48	–	84	fz	0,043	0,050	0,061





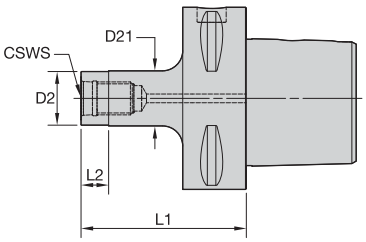


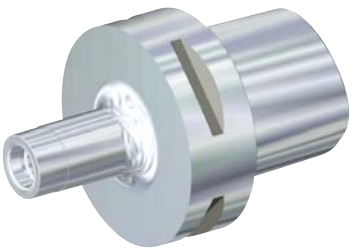
DL HSK Form A Metric

order number	catalogue number	CSWS system size	D2	D21	L1	L2	kg
6136949	HSK63ADL10048M	DL10	10	10	48	5	0,69
6136950	HSK63ADL12052M	DL12	12	12	52	6	0,69
6136951	HSK63ADL16057M	DL16	16	16	57	8	0,70
6136952	HSK63ADL20057M	DL20	19	20	57	10	0,72
6136953	HSK63ADL25061M	DL25	24	25	61	12	0,74
6136954	HSK63ADL32072M	DL32	31	32	72	16	0,83

PSC63 Duo-Lock™ Integrated



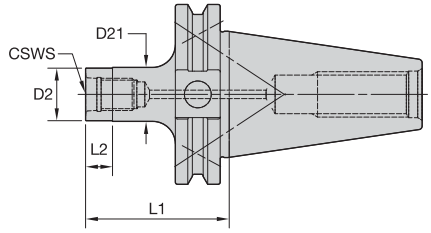


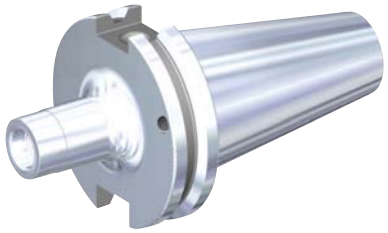


DL PSC63 Metric

order number	catalogue number	CSWS system size	D2	D21	L1	L2	kg
6136955	PSC63DL10050M	DL10	10	10	50	5	0,77
6136956	PSC63DL12050M	DL12	12	12	50	6	0,77
6136957	PSC63DL16055M	DL16	16	16	55	8	0,78
6136958	PSC63DL20055M	DL20	19	20	55	10	0,80
6136959	PSC63DL25060M	DL25	24	25	60	12	0,83
6136960	PSC63DL32068M	DL32	31	32	68	16	0,91





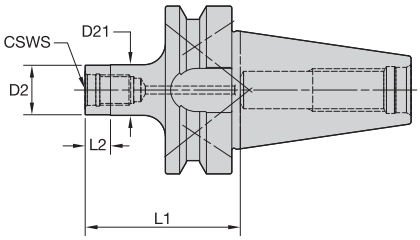


DL CV40 Metric

order number	catalogue number	CSWS system size	D2	D21	L1	L2	kg
6136971	**CV40BDL10041M**	DL10	10	10	41	5	0,82
6136972	**CV40BDL12041M**	DL12	12	12	41	6	0,81
6136973	**CV40BDL16050M**	DL16	16	16	50	8	0,83
6136974	**CV40BDL20050M**	DL20	19	20	50	10	0,84
6136975	**CV40BDL25056M**	DL25	24	25	56	12	0,87
6136976	**CV40BDL32065M**	DL32	31	32	65	16	0,95

BT40 Duo-Lock™ Integrated



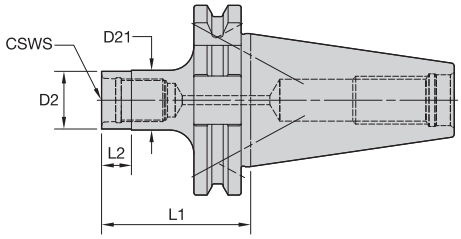


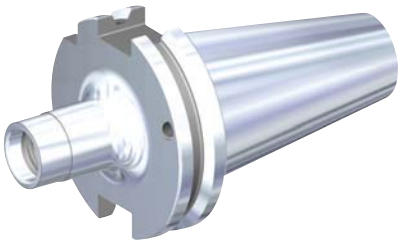


DL BT40 Metric

order number	catalogue number	CSWS system size	D2	D21	L1	L2	kg
6136977	**BT40BDL10049M**	DL10	10	10	49	5	0,98
6136978	**BT40BDL12049M**	DL12	12	12	49	6	0,97
6136979	**BT40BDL16058M**	DL16	16	16	58	8	1,00
6136980	**BT40BDL20058M**	DL20	19	20	58	10	1,00
6136991	**BT40BDL25060M**	DL25	24	25	60	12	1,02
6136992	**BT40BDL32068M**	DL32	31	32	68	16	1,09

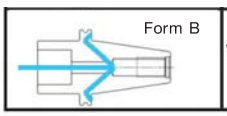






DL DV40 Metric

order number	catalogue number	CSWS system size	D2	D21	L1	L2	kg
6136993	**DV40BDL10041M**	DL10	10	10	41	5	0,82
6136994	**DV40BDL12041M**	DL12	12	12	41	6	0,81
6136995	**DV40BDL16050M**	DL16	16	16	50	8	0,83
6136996	**DV40BDL20050M**	DL20	19	20	50	10	0,84
6136997	**DV40BDL25056M**	DL25	24	25	56	12	0,87
6136998	**DV40BDL32065M**	DL32	31	32	65	16	0,95

 Form B			**40**	(2x) MS2221**S**	2,5mm
			50	(2x) MS1296**S**	3mm

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SERVICES	Operating parameters. Process optimisation. Hardware support. Tooling selection. Troubleshooting.
BEST-IN-CLASS SUPPORT TOOLS AND TECHNOLOGY	Materials database. Application calculators. Tooling performance experts.



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Poland	Polish	0080 04411887	eu.techsupport@kennametal.com
Russia (landline)	Russian	8800 5556394	eu.techsupport@kennametal.com
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Sweden	English	020799246	na.techsupport@kennametal.com
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Thailand	English	1800 4417820	ap-kmt.techsupport@kennametal.com
UK	English	0800 032 8339	na.techsupport@kennametal.com
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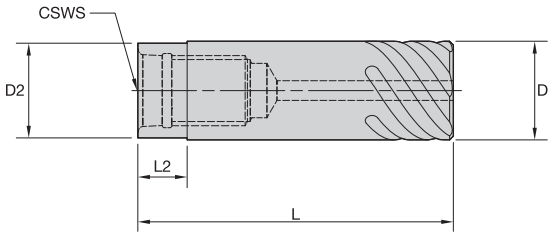
Numbers shown only serve the originating country listed.





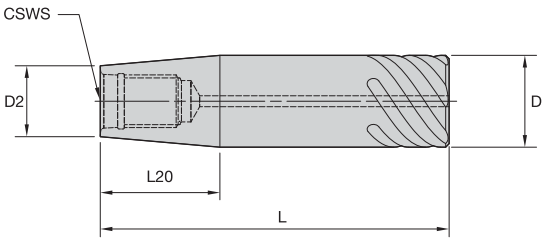


DL SS SL Cylindrical Metric

order number	catalogue number	CSWS system size	D	D2	L	L2	kg
6134889	**SS10SLDL10055M**	DL10	10	9,58	55	6	0,03
6135043	**SS12SLDL12065M**	DL12	12	11,50	65	7	0,05
6135049	**SS16SLDL16070M**	DL16	16	15,50	70	9	0,09
6135057	**SS20SLDL20080M**	DL20	20	19,30	80	11	0,16
6135063	**SS25SLDL25090M**	DL25	25	24,00	90	13	0,27
6135067	**SS32SLDL32105M**	DL32	32	31,00	105	17	0,52

NOTE: Cylindrical shanks not recommended for full slotting.



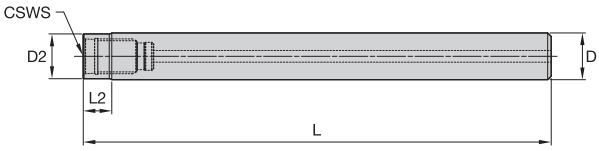




DL SS SL Conical Metric

order number	catalogue number	CSWS system size	D	D2	L	L20	kg
6135041	**SS12SLDL10065M**	DL10	12	9,58	65	14	0,05
6135045	**SS16SLDL10090M**	DL10	16	9,58	90	37	0,11
6135051	**SS20SLDL10115M**	DL10	20	9,58	115	59	0,21
6135047	**SS16SLDL12080M**	DL12	16	11,50	80	26	0,11
6135053	**SS20SLDL12105M**	DL12	20	11,50	105	49	0,20
6135055	**SS20SLDL16080M**	DL16	20	15,50	80	26	0,16
6135059	**SS25SLDL16115M**	DL16	25	15,50	115	54	0,35
6135061	**SS25SLDL20095M**	DL20	25	19,30	95	33	0,30
6135065	**SS32SLDL25105M**	DL25	32	24,00	105	46	0,52
6135069	**SS40SLDL32140M**	DL32	40	31,00	140	51	1,13
6135081	**SS50SLDL32200M**	DL32	50	31,00	200	109	2,35





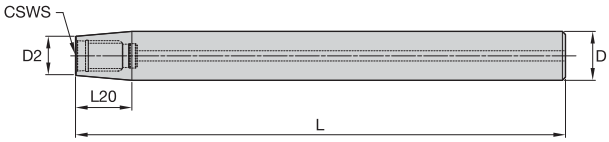


DL SS Cylindrical Cut Off to Modify Length Metric

order number	catalogue number	CSWS system size	D	D2	L	L2	kg
6134890	**SS10DL10100M**	DL10	10	9,58	100	5	0,05
6135044	**SS12DL12120M**	DL12	12	11,50	120	6	0,09
6135050	**SS16DL16160M**	DL16	16	15,50	160	8	0,23
6135058	**SS20DL20200M**	DL20	20	19,30	200	10	0,45
6135064	**SS25DL25250M**	DL25	25	24,00	250	13	0,86
6135068	**SS32DL32250M**	DL32	32	31,00	250	16	1,41

NOTE: Standard catalogue cutting data does not apply. Consult tooling application expert before use.







DL SS Conical Cut Off to Modify Length Metric

order number	catalogue number	CSWS system size	D	D2	L	L20	kg
6135042	**SS12DL10120M**	DL10	12	9,58	120	14	0,10
6135046	**SS16DL10160M**	DL10	16	9,58	160	37	0,22
6135052	**SS20DL10200M**	DL10	20	9,58	200	59	0,42
6135048	**SS16DL12160M**	DL12	16	11,50	160	26	0,23
6135054	**SS20DL12200M**	DL12	20	11,50	200	48	0,43
6135056	**SS20DL16200M**	DL16	20	15,50	200	26	0,45
6135060	**SS25DL16250M**	DL16	25	15,50	250	54	0,86
6135062	**SS25DL20250M**	DL20	25	19,30	250	32	0,89
6135066	**SS32DL25250M**	DL25	32	24,00	250	45	1,42
6135070	**SS40DL32250M**	DL32	40	31,00	250	51	2,20
6135082	**SS50DL32250M**	DL32	50	31,00	250	108	3,14

NOTE: Standard catalogue cutting data does not apply. Consult tooling application expert before use.



Torque Wrench

order number	catalogue number	Description
6135413	TWDLTM	BASIC DUO LOCK WRENCH
6135414	TWTMINSERTDL10	TORQUE WRENCH INSERT DL10
6135415	TWTMINSERTDL12	TORQUE WRENCH INSERT DL12
6135416	TWTMINSERTDL16	TORQUE WRENCH INSERT DL16
6135417	TWTMINSERTDL20	TORQUE WRENCH INSERT DL20
6135418	TWTMINSERTDL25	TORQUE WRENCH INSERT DL25
6135419	TWTMINSERTDL32	TORQUE WRENCH INSERT DL32
6135420	TWTMINSERTDL10W	TORQUE WRENCH INSERT DL10 WEAR
6135421	TWTMINSERTDL12W	TORQUE WRENCH INSERT DL12 WEAR
6135422	TWTMEXT	TORQUE WRENCH EXTENSION HANDLE
6135423	TWTMBC	TORQUE WRENCH BOLT SET

NOTE: Combine basic Duo-Lock™ wrench with selected torque wrench inserts needed.

Wrench Kit

1 Basic Duo-Lock™ Wrench

2 Insert

3 Extension Handle



Order this

Get that

order number	catalogue number	kit description	
6342967	TWDL10TM	D-L WRENCH WITH DL10 INSERT AND HANDLES	1+2+3
6342968	TWDL12TM	D-L WRENCH WITH DL12 INSERT AND HANDLES	
6342969	TWDL16TM	D-L WRENCH WITH DL16 INSERT AND HANDLES	
6342970	TWDL20TM	D-L WRENCH WITH DL20 INSERT AND HANDLES	
6343061	TWDL25TM	D-L WRENCH WITH DL25 INSERT AND HANDLES	
6343062	TWDL32TM	D-L WRENCH WITH DL32 INSERT AND HANDLES	

Assembly

Please wear sufficient personal safety equipment such as gloves and eye protection during assembly.

1 Clean the Duo-Lock™ cutting insert and shank coupling.





2 Mount the Duo-Lock™ adaptor in a mounting block with a clamping chuck sufficient to enable torque transmission.



3 Screw the Duo-Lock™ cutting tip into adaptor by hand.

Attention: Use of protective gloves is mandatory!



4 A gap of approx. 0,15–0,3mm should be visible.



5 Apply the torque shown in the table. Use of a high quality common torque wrench is mandatory. The ERICKSON™ Torque Master wrench is recommended.



Duo-Lock™ Size	Torque Nm
DL 10	20
DL 12	30
DL 16	60
DL 20	80
DL 25	100
DL 32	130



Solid End Milling •
High-Performance Solid Carbide End Mills

High-Performance Tool Selector and Grades P2–P11

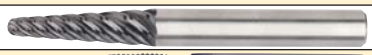
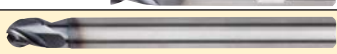
High-Performance Capability End Mills P12–P74

High-Performance Roughing End Mills P76–P98

High-Performance Finishing End Mills P100–P114

High-Performance Material Specific End Mills P116–P138

High-Performance Application Specific End Mills P140–P197

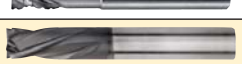
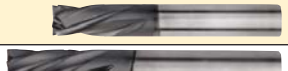
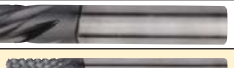
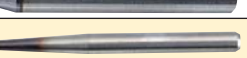
beyond *Beyond™ grade		series	D1 diameter (mm)	length of cut	flute Z	helix	internal coolant
HARVI™ I*		F4AS...DL	4–25	1,8–3 x D1			
HARVI I		UADE	4–25	3–4 x D			
HARVI I*		F4AS..WM-WX-WL/UBDE	6–25	2–2,5 x D1			
HARVI I Chipbreaker*		F4BS..WM-WX-WL	6–25	1,5 x D1			
HARVI I Extended Reach		UADE	6–20	2 x D1			
HARVI I Ball Nose*		F4AW..WL-WX	6–16	1 x D1			
HARVI I Taper Ball Nose		F4AW..AWL38-AWX38	4–16	5–7 x D			
XE		XE	2–20	2–2,5 x D1			
XER		XER	2–20	2 x D			
HARVI II*		UCDE	4–25	1,8–2,7 x D1			
HARVI II		UDDE	6–25	1,8–2,2 x D1			
HARVI II LONG		UGDE	6–25	3 x D			
HARVI II LONG		UGDE	6–25	5 x D			
HARVI II Trochoidal		TCDE	8–25	3 x D			
HARVI III		UJDE	10–25	2 x D			
HARVI III		UJDE	10–25	3 x D			
HARVI III Ball Nose		UJBE	10–20	1 x D1			
HARVI III Taper Ball Nose		UJBE	4–10	5–6 x D			
HP Rougher*		F3BH-F4BJ-F5BJ... WS-WM-WL-WX	4–25	1,8–2,7 x D1			
HP Rougher*		F3BH-F4BJ... WS-WM-WL-WX	8–20	1,3–1,9 x D1			
HP Rougher		RUDC	4–25	2 x D			
HP Rougher*		F3BH...DL	4–25	1,8–2 x D1			
HP Rougher*		F3BS..DK-DL	6–20	1–1,6 x D1			
HP Rougher*		F4BJ...DL	6–20	1,9–2,2 x D1			
HP Rougher*		F4BJ-F6BJ...DL	6–25	1,8–2,1 x D1			
RSM II Short		FSDE	10–25	2 x D			
RSM II with neck		FSDE	6–25	2 x D			
HP Finisher*		F3AS...DK	3–20	1–1,3 x D1			
HP Finisher		F3AW...WL-WX	6–16	1 x D1			
HP Finisher*		F8AJ-F10AJ...DK	8–20	1 x D1			
HP Finisher*		F6AJ-F8AJ...DL	6–25	2–3 x D1			
Aluminium MaxiMet™		ABDF	1,5–20	1,9–4 x D1			
Aluminium MaxiMet		ABDE	3–20	1,9–4 x D1			
Aluminium MaxiMet		ABDE	6–25	1,5 x D1			
Aluminium		F1AA	2–12	2–3 x D			
Aluminium		F2AA...DL	4–20	1,6–2 x D7			

							shank	centre cutting	neck	P	M	K	N	C	S	H							product page(s)	cutting data page(s)
				✓				✓		●	●	●			●	○	✓	✓	✓	✓		✓	P16	P23
				✓				✓	✓	●	●	●			○	○	✓	✓	✓	✓		✓	P17	P23
					✓			✓	✓	●	●	●				○	✓	✓	✓	✓		✓	P18	P23–P24
					✓			✓	✓	●	●	●				○	✓	✓	✓	✓		✓	P19	P24
				✓				✓	✓	●	●	●				○	✓	✓	✓			✓	P20	P25
						✓		✓	✓	●	●	●				○	✓	✓			✓	✓	P21	P26
	✓							✓		○	○				○	○	✓				✓		P22	P27
					✓			✓		●	●		●				✓	✓	✓	✓		✓	P72	P74
					✓			✓		●	●		●				✓	✓	✓	✓		✓	P73	P74
			✓		✓					●	●	●				○	✓	✓	✓			✓	P30	P33
			✓		✓				✓	●	●	●			●		✓	✓	✓			✓	P31–P32	P33
					✓					●	●	○			●	○	✓					✓	P36	P38
					✓					●	●	○			●	○	✓					✓	P37	P39
					✓					○	●				●	○	✓		✓	✓		✓	P42	P43–P44
			✓		✓			✓		○	●				●	○	✓		✓			✓	P48	P50
			✓		✓			✓	✓	○	●				●	○	✓		✓			✓	P49	P51
						✓				○	●				●	○	✓				✓	✓	P54	P58–P59
	✓									○	●				●	○	✓	✓			✓		P62	P68–P69
				✓				✓		○	●	●				○	✓	✓	✓				P78	P85
				✓				✓		●	●	●				○	✓	✓	✓				P79	P85
				✓				✓		●	●	●			●	○	✓	✓	✓				P80	P86
				✓				✓		●	●	●					✓	✓	✓	✓			P81	P86
					✓			✓		●	●	●				○	✓	✓	✓	✓			P82	P87
				✓				✓		●	●	○			○	○	✓	✓	✓	✓			P83	P87
				✓				✓		●	●	●				○	✓	✓	✓				P84	P88
					✓					○	●				●	○	✓						P92	P93
					✓				✓	○	●				●	○	✓						P94	P95
					✓			✓		●	●	●				○	✓	✓	✓	✓			P102	P106
						✓		✓		●	●	●				○	✓	✓			✓		P103	P106
					✓			✓	✓	●	●	●				○	✓					✓	P104	P107
				✓						●	●	●				○	✓					✓	P105	P107
			✓					✓					●				✓	✓	✓	✓			P110	P114
			✓					✓					●				✓	✓	✓	✓			P111	P114
					✓			✓	✓				●				✓	✓	✓	✓			P112–P113	P114
			✓					✓					●				✓	✓	✓				P118	P126
			✓					✓					●				✓	✓	✓	✓		✓	P119	P126

● first choice
○ alternate choice

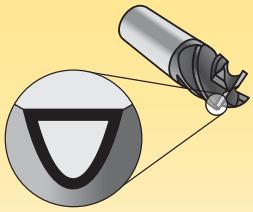
(continued)

(High-Performance Solid Carbide End Mills — continued)

beyond *Beyond™ grade		series	D1 diameter (mm)	length of cut	flute Z	helix	internal coolant
Aluminium		F2AA... WM-WL-WX	6–25	1,5 x D1	ZU-2	35°	
Aluminium		F3AA... WS-WM-WL-WX	3–20	1,9–4 x D7	ZU-3	35°	
Aluminium		F3AA... WS-WM-WL-WX	6–25	1,5 x D1	ZU-3	35°	
Aluminium		F3BA... WS-WM-WL-WX	6–25	1,8–2,1 x D1	ZU-3	35°	
Aluminium		F3BA... WS-WM-WL-WX	8–25	1,8–2 x D1	ZU-3	35°	
Aluminium		F3BA...DL	6–20	1,2 x D1	ZU-3	35°	
CFRP*		CCNC	6–12	3 x D1	ZU-X	35°	
CFRP*		CDDC	6–12	3 x D1	ZU-6	35°	
CFRP*		CBDB	6–12	3 x D1	ZU-12	35°	
KenFeed™		KHDA	6–20	—	ZU-6	35°	
KenFeed		KMDA	6–20	—	ZU-6	35°	
Hard Steels		F2AT...WM-WL-WX	2–12	1 x D1	ZU-2	35°	
Hard Steels		F4AT... WS-WM-WL-WX	4–12	1 x D1	ZU-4	35°	
Hard Steels		F4AJ-F5AJ... WS-WM-WL-WX	6–25	1,5 x D1	ZU-X	35°	
Hard Steels		F4AJ-F5AJ-F6AJ WS-WL-WX	6–25	1,5 x D1	ZU-X	35°	
Hard Steels		F6AV-F8AV...DL	6–25	2,2–3 x D1	ZU-X	35°	
Hard Steels Ball Nose		F2AL... WL-WM-WX	2–12	1 x D1	ZU-2	35°	
Hard Steels Ball Nose		F2AL... WL-WM	1–16	1 x D1	ZU-2	35°	
Hard Steels Ball Nose		F2AL... WL-WM-WX	6–16	1 x D1	ZU-2	35°	
Hard Steels Ball Nose		F2AB... WL-WM-WX	2–12	0,5 x D1	ZU-2	35°	
Hard Steels Ball Nose		F4AL... WL-WM-WX	3–10	1,2–1,5 x D1	ZU-4	35°	
Micro		F2AH...WS-WM	0,3–2,5	—	ZU-2	35°	
Micro		F2AH...WS	0,3–2,5	—	ZU-2	35°	
Micro		F3AH...WS	0,4–3	—	ZU-3	35°	
Micro		F2AL...WS	0,5–3	—	ZU-2	35°	
Micro		F2AL...WS	0,5–3	—	ZU-2	35°	
Micro		F2AL...WM	0,5–4	—	ZU-2	35°	
Ceramic Rougher		EADE	4–25	0,75 x D1	ZU-4	35°	
Ceramic Rougher		EADE	4–25	0,75 x D	ZU-6	35°	
HP Finisher		F2AU...DK	1,8–19,7	1 x D1	ZU-2	35°	
HP Finisher		F3AU...DK	2,8–19,7	1–1,3 x D1	ZU-3	35°	
GOmill™		UEDE	2–12	1,2–2 x D1	ZU-3	35°	
GOmill		UEDE	4–12	1,2–1,7 x D1	ZU-4	35°	
GOmill		UEBC	2–12	1,2–2 x D1	ZU-2	35°	
GOmill		UEBE	2–12	1,2–2 x D1	ZU-3	35°	

							shank	centre cutting	neck	P	M	K	N	C	S	H							product page(s)	cutting data page(s)
					✓			✓	✓				●				✓	✓	✓	✓		✓	P120	P126
		✓						✓					●				✓	✓	✓	✓		✓	P121	P126
					✓			✓	✓				●				✓	✓	✓	✓			P122	P127
					✓			✓					●				✓	✓	✓	✓		✓	P123	P127
					✓			✓					●				✓	✓	✓	✓			P124	P127
					✓			✓	✓				●				✓	✓	✓	✓			P125	P127
			✓											●			✓		✓				P130	P133
			✓					✓						●			✓	✓	✓	✓			P131	P133
			✓											●			✓	✓	✓				P132	P133
	✓								✓							●			✓		✓		P136	P138
	✓								✓	○						●			✓		✓		P137	P138
	✓							✓	✓	●						●	✓	✓			✓		P142	P152
	✓							✓	✓	●						●	✓	✓	✓		✓		P143	P152
					✓			✓		●						●	✓	✓					P144	P152
		✓						✓		●						●	✓	✓					P145	P153
					✓			✓		●						●	✓						P146	P153
						✓		✓	✓	●						●	✓				✓		P147	P154
						✓		✓		●						●	✓				✓		P148	P155
						✓		✓	✓	●						●	✓				✓		P149	P156
						✓		✓	✓	●						●	✓				✓		P150	P157
						✓		✓		●						●	✓				✓		P151	P158
		✓						✓	✓	●		●				●	✓	✓	✓				P162	P168
		✓						✓	✓	●	●	●	●	●		●		✓	✓				P163	P168
		✓						✓		●	●	●	●				✓	✓	✓				P164	P169
						✓		✓	✓	●						●	✓				✓		P165	P170
						✓				●						●	✓				✓		P166	P171
						✓		✓	✓	●						●	✓				✓		P167	P172
					✓				✓						●		✓	✓	✓				P176	P178
					✓										●		✓	✓	✓				P177	P178
					✓			✓	✓	●	●	●			●	○	✓	✓	✓	✓			P186	P188
					✓			✓	✓	●	●	●			●	○	✓	✓	✓	✓			P187	P189
		✓								●	●	●			●	○	✓	✓	✓	✓			P192	P196
			✓							●	●	●			●	○	✓	✓	✓	✓			P193	P196
						✓				●	●	●			●	○	✓	✓			✓		P194	P197
						✓				●	●	●			●	○	✓	✓		✓	✓		P195	P197

● first choice
○ alternate choice



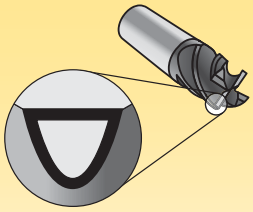
Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
K600	Carbide grade made from high-quality, micrograin materials for cutting all types of workpiece materials. Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp cutting edges.	N									
KCPM15	Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	P, M, K									
KC643M	Coated fine-grain grade with PVD multilayer (AlTiN). KC643M™ is a very thin and hard PVD coating particularly suited for cutting steel, cast iron, stainless steel (wet), and titanium (wet). This grade can be used for materials with hardness up to 52 HRC.	P, M, K, S									
KC637M	Coated, tough, wear-resistant carbide grade with hard PVD coating, particularly suitable for machining steels above 48 HRC.	S, H									
KC635M	Coated carbide grade with TiAlN coating. KC635M is a high-performance grade for higher speeds and is the first choice for stainless steels. KC635M grade is characterised by a high hardness and wear resistance. This grade is suitable for cutting hard materials (up to 65 HRC).	P, M, K, S									

wear resistance ⟷ toughness



Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

Grades

Coating	Grade Description		wear resistance ← → toughness								
			05	10	15	20	25	30	35	40	45
KC625M	Coated carbide grade with PVD (TiCN) coating. For universal use due to its high wear resistance and hardness. Only use wet or with MQL (minimum quantity lubrication).	P			■	■	■	■			
		K			■	■	■	■			
		S			■	■	■	■			
KC639M	PVD (AlTiN)-coated carbide on a submicron carbide substrate. This hard coating provides outstanding performance in milling hardened materials (58–65 HRC).	P			■	■	■	■			
		H	■	■	■						
KCSM15	Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	M		■	■	■	■				
		S	■	■	■	■	■				
		H	■	■	■	■					
KCN05	High-performance grade A pure, diamond-coated carbide for milling CFRP and graphite. It is a very tough and wear-resistant grade.	C	■	■							
KC633M	Coated carbide grade with PVD multilayer coating. KC633M™ is designed for dry milling most types of material, apart from the hardened variety. This grade is characterised by good hardness and wear resistance. It provides outstanding protection for solid carbide tools against cratering and abrasion.	P			■	■	■	■			
		M			■	■	■	■			
		S			■	■	■	■			

Beyond™ Solid Carbide End Milling

High-Performance milling in a new dimension

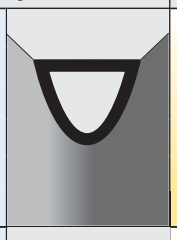
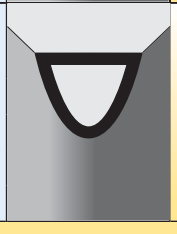
Kennametal is pleased to announce the KCPM15™ and KCSM15™ grades — the first Beyond grades for solid carbide end mills. KCPM15 and KCSM15 grades feature an improved high-performance carbide substrate with proprietary aluminium titanium nitride (AlTiN) PVD coating.

Features and Benefits

- Engineered to increase tool life and productivity by up to 30%.
- For use in milling steels and stainless steels.
- Improved resistance to cratering, flank wear, and depth-of-cut notching.

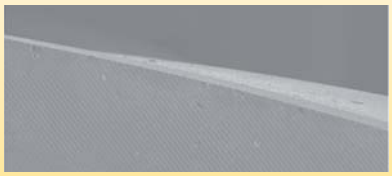
Workpiece Materials:

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

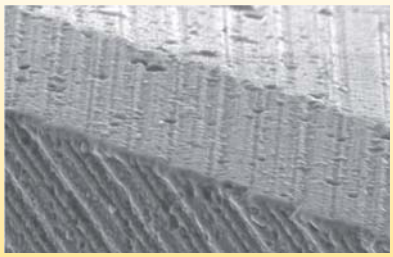
Coating		Grade Description	
KCPM15		Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	P M K
KCSM15		Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	S H

Conventional End Mill Cutting Edge

Conventional



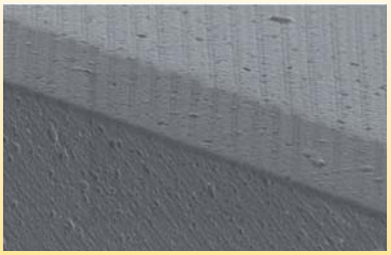


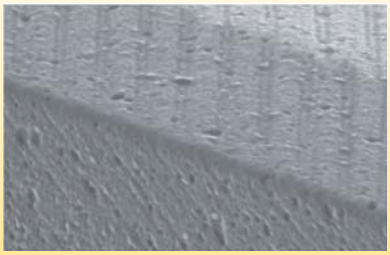


KCPM15™/KCSM15™ End Mill Cutting Edge

KCPM15/KCSM15 grade

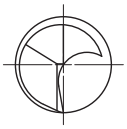
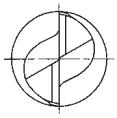
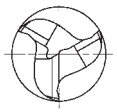
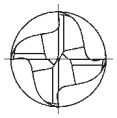
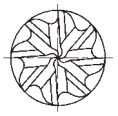
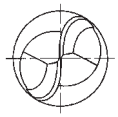
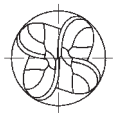
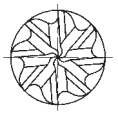






View: 1st and 2nd relief.

End Mill Type Recommendation

End Mills									
Z = number of teeth		Fine Finishing	Finishing	Roughing	Slot Milling	Plunging	Contour Milling	Peel Milling	Trochoidal Milling
end mill Z = 1		○	○	●	●	●	○	○	○
end mill Z = 2		○	○	◑	●	●	○	○	○
end mill Z = 3		○	◑	◑	●	◑	○	○	○
end mill Z = 4/5		◑	●	●	●	○	○	●	●
multi-flute cutter Z = 6–19		●	●	○	○	○	○	●	●
Ball Nose and Torus End Mills									
ball nose end mill Z = 2					●		●		
ball nose end mill Z = 4					◑		●		
ball nose end mill Z = 6							●		

● first choice

◑ suitable with limitations

○ not recommended

Always select a tool with the shortest possible flute length whenever possible. This will increase the stability of the tool and give the best results.

When selecting an end mill, the following machining factors will affect your selection of the correct end mill for your application:

1. Tool overhang.
2. Coolant flow.
3. Machine and setup stability.
4. Machine power and torque.
5. Material to be machined.
6. Machine adaptor size (DV40, DV50, HSK63, etc.).
7. See Tool Reference Guides on pages P2–P5.

Recommended Adaptors per End Mill Platform

SCEM Platform	Recommended Adaptors	
	First Choice	Alternate Choice
HARVI™ I	HydroForce™	Shrink Fit
HARVI II	HydroForce	Shrink Fit
HARVI III	HydroForce	Shrink Fit
HARVI II Long	HydroForce	Shrink Fit
High-Performance Roughers	HydroForce	Weldon® Adaptor
RSM II	Shrink Fit	Shrink Fit
High-Performance Finishers	HydroForce	Shrink Fit
MaxiMet™/Aluminium Tools	HydroForce	Shrink Fit
Hard Material End Mills/KenFeed™	HydroForce	Shrink Fit
GOmill™	Shrink Fit	Weldon Adaptor

Select Adaptor per Technical Data/Characteristics

Technical data/characteristics	Toolholders				
	HydroForce high torque	Shrink Fit	Milling chuck	ER collet chuck	Weldon adaptor
torque transmission	★★★★★	★★★★	★★★★★	★★	★★★★★
radial runout (T.I.R.)[1]	★★★★★	★★★★★	★★★★	★★★	★
radial rigidity[2]	★★★★	★★★★★	★★★	★★★	★★★
tool length adjustment	★★★★★	★★★★	★	★★★★	★★
tool shank tolerance requirement	★★★★	★★	★★★	★★★★★	★★★
through coolant	★★★★★	★★★★★	★★★	★★★	★★
minimum quantity lubrication (MQL)	★★★★★	★★★★★	★	★	★
dampening capability	★★★★★	★	★★★	★★★	★★★
shank diameter range[3]	★★★★★	★	★★★★★	★★★★★	★
cost of toolholder	★★	★★★	★	★★★★	★★★★★
low requirement of external devices[4]	★★★★★	★	★★★★	★★★★	★★★★★
ease of handling	★★★★★	★★★	★★	★★★★	★★★★
dust resistance	★★★★★	★★★★★	★★★	★★★	★★★★
high-speed capability	★★★★★	★★★★★	★★★	★★★	★
balancing accuracy	★★★★★	★★★★★	★★★	★★★	★

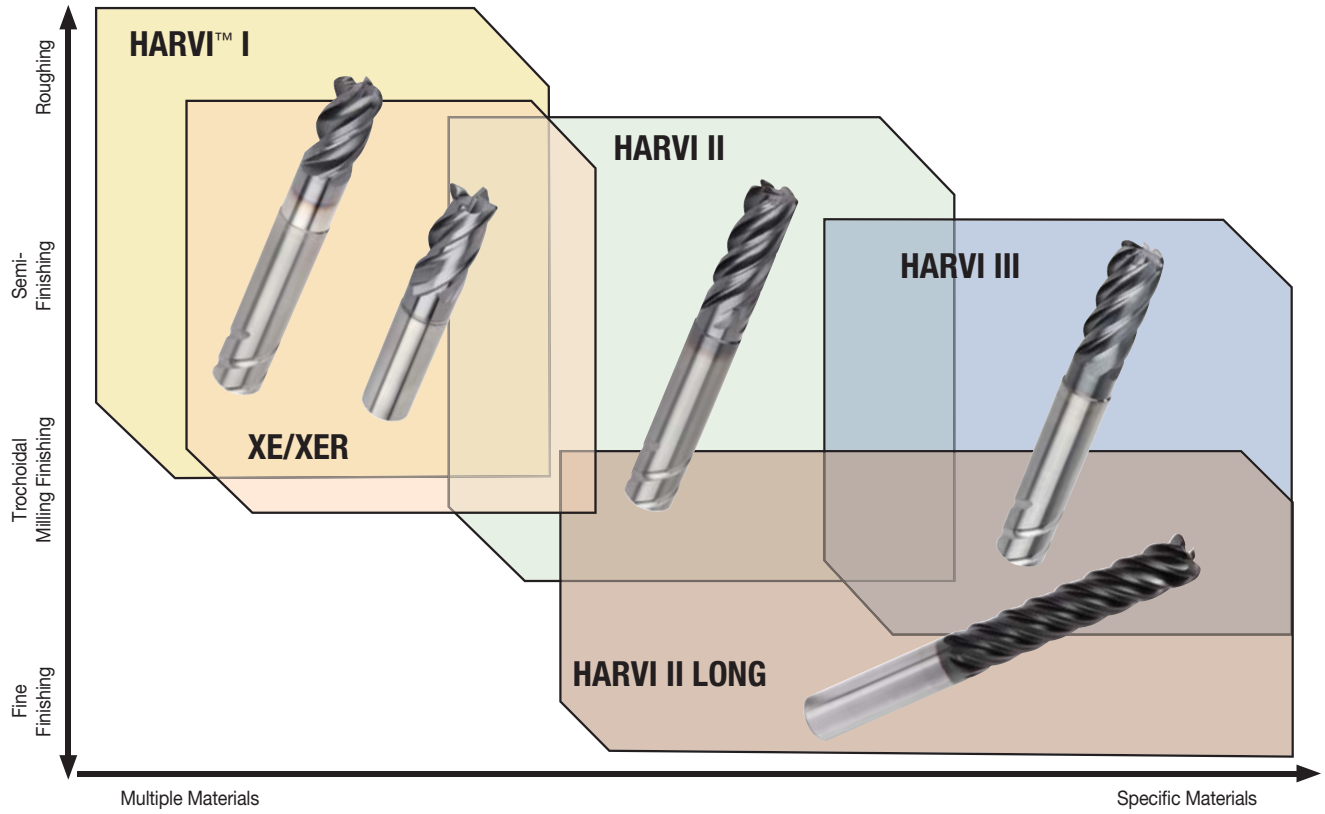
[1] Radial runout may affect tool life.
[2] Radial rigidity for Weldon holder is low at a direction perpendicular to the screw.
[3] Accepts different shank diameters through the use of reduction sleeves or due to collapse range.
[4] Collet chucks and milling chucks may require the use of a torque or special wrench; Shrink Fit adaptor requires a shrinking unit.

High-Performance Capability End Mills

Primary Application

High-performance capability offers plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials from steel, stainless steel, cast iron, and high-temperature alloys to hard materials. These end mills are designed to provide maximum Metal Removal Rates (MRR) and to achieve superior surface conditions.

Several platforms with a wide range of diameters and corner configurations, such as chamfer, radii, sharp edges, and ball nose, are available from stock.



Designed for roughing and finishing with one tool in a wide range of applications and workpiece materials.



- Roughing, semi-finishing, and finishing with one tool.
- Outstanding metal removal rates increase productivity.
- Excellent surface quality and accuracy.
- KCPM15™ and KCSM15™ Beyond™ grades for long tool life.
- Increased process safety with Safe-Lock™ by HAIMER® shanks.

HARVI™ I

High-Performance Solid Carbide End Mills

Primary Application

The HARVI I system offers plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials. These end mills are designed to provide maximum Metal Removal Rates (MRR) and to achieve superior surface conditions. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock. To prevent pull out of end mills during heavy cuts, the HARVI I system is available equipped with the Safe-Lock™ system by HAIMER®.

- Roughing and finishing with one tool.
- Outstanding metal removal rates increase productivity.
- KCPM15™ and KCSM15™ Beyond™ grades for long tool life.

Features and Benefits

Advanced Technology

- Four unequally spaced flutes for chatter-free machining at high feed rates.
- Centre cutting design for plunging and improved ramping and helical interpolation capabilities.
- 1 x D full slotting capability in:
  - Steel
  - Stainless steel
  - Titanium

Tailored Grades

- KCPM15 Beyond grade for outstanding wear protection in stainless steel to mitigate crater, depth-of-cut notching, and flank wear.
- KCSM15 Beyond grade for exceptional tool life in titanium.
- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customisation

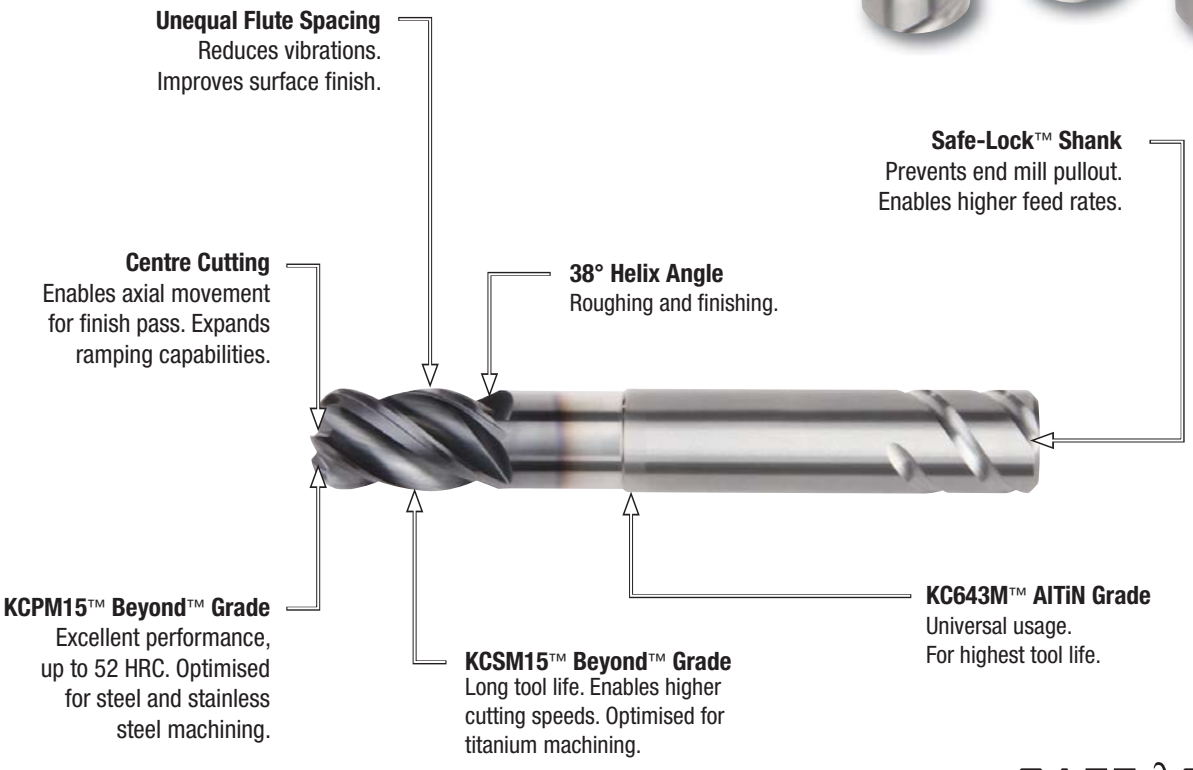
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.
- Chip divider geometry reduces power consumption and improves chip formation in difficult-to-cut materials.
- Internal coolant axial and radial available.
- Various shanks and non-standard coatings available.
- Multiple steps possible.

Extensive Standard Offering

- Diameter range 4–25mm.
- Necked, corner radii and chamfer offering.
- Extended-reach length.
- Ball nose with extended length of cut.
- Chip divider geometry for reduced power consumption and improved chip formation in difficult-to-cut materials.

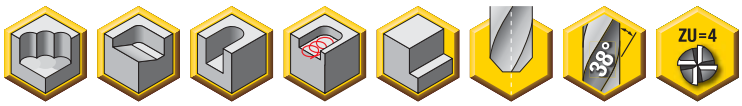
Designed for roughing and finishing with one tool in almost all materials.



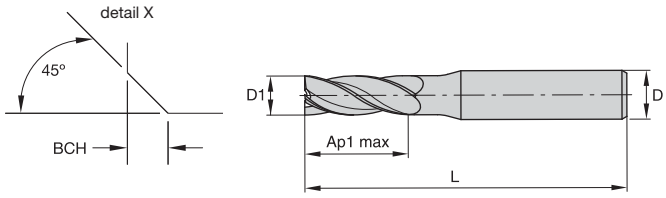


SAFE-λOCK®
by HAIMER®

- Single tool for roughing and finishing applications.
- Unequal flute spacing minimises chatter for smoother machining.
- Centre cutting.





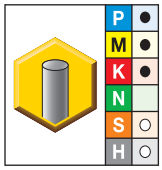


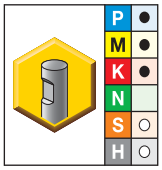
End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

F4AS...DL • 4-Flute • Metric



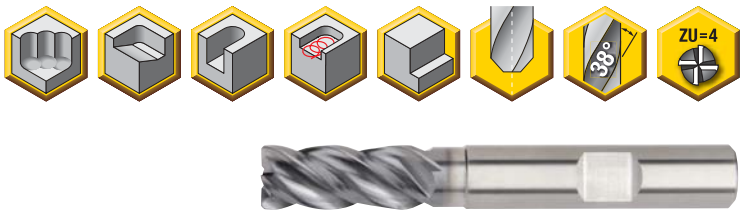


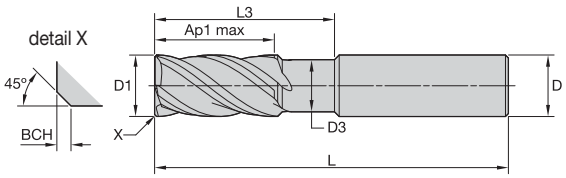
● first choice
○ alternate choice

KCPM15	KCPM15	D1	D	Ap1 max	L	BCH
F4AS0400ADL38	**F4AS0400BDL38**	4,00	6,00	12,00	55,00	0,40
F4AS0500ADL38	**F4AS0500BDL38**	5,00	6,00	13,00	57,00	0,40
F4AS0600ADL38	**F4AS0600BDL38**	6,00	6,00	13,00	57,00	0,40
F4AS0800ADL38	**F4AS0800BDL38**	8,00	8,00	16,00	63,00	0,40
F4AS1000ADL38	**F4AS1000BDL38**	10,00	10,00	22,00	72,00	0,50
F4AS1200ADL38	**F4AS1200BDL38**	12,00	12,00	26,00	83,00	0,50
F4AS1400ADL38	**F4AS1400BDL38**	14,00	14,00	26,00	83,00	0,50
F4AS1600ADL38	**F4AS1600BDL38**	16,00	16,00	32,00	92,00	0,50
F4AS1800ADL38	**F4AS1800BDL38**	18,00	18,00	32,00	92,00	0,50
F4AS2000ADL38	**F4AS2000BDL38**	20,00	20,00	38,00	104,00	0,50
F4AS2500ADL38	**F4AS2500BDL38**	25,00	25,00	45,00	121,00	0,50

NOTE: For application data, see page P23.

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.

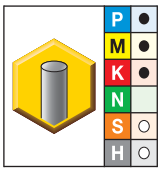


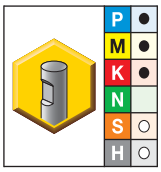


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

UADE.. • 4-Flute with Neck • Metric



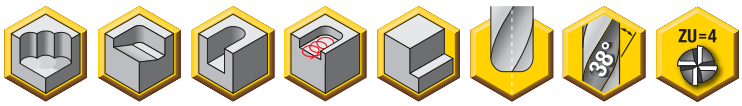


● first choice
○ alternate choice

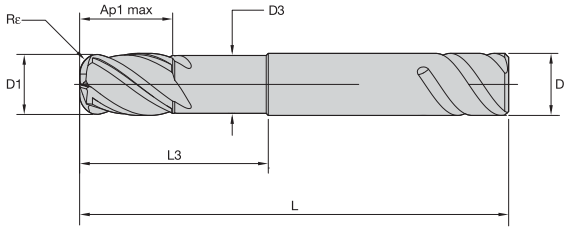
KCPM15	KCPM15	D1	D	D3	Ap1 max	L3	L	BCH
UADE0400A4BV	**UADE0400B4BV**	4,00	6,00	3,76	11,00	16,00	57,00	0,40
UADE0500A4BV	**UADE0500B4BV**	5,00	6,00	4,70	13,00	18,00	57,00	0,40
UADE0600A4BV	**UADE0600B4BV**	6,00	6,00	5,64	13,00	18,00	57,00	0,40
UADE0800A4BV	**UADE0800B4BV**	8,00	8,00	7,52	16,00	24,00	63,00	0,40
UADE1000A4BV	**UADE1000B4BV**	10,00	10,00	9,40	22,00	30,00	72,00	0,50
UADE1200A4BV	**UADE1200B4BV**	12,00	12,00	11,28	26,00	36,00	83,00	0,50
UADE1400A4BV	**UADE1400B4BV**	14,00	14,00	13,16	26,00	42,00	83,00	0,50
UADE1600A4BV	**UADE1600B4BV**	16,00	16,00	15,04	32,00	48,00	92,00	0,50
UADE2000A4BV	**UADE2000B4BV**	20,00	20,00	18,80	38,00	60,00	104,00	0,50
UADE2500A4BV	**UADE2500B4BV**	25,00	25,00	23,50	45,00	75,00	121,00	0,50

NOTE: For application data, see page P23.

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





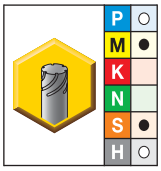


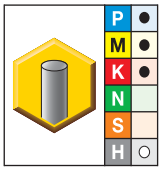
End Mill Tolerances

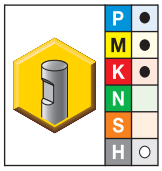
D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

UBDE • F4AS.. • 4-Flute with Neck • Metric







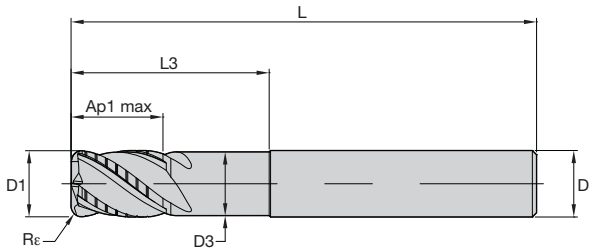
● first choice
○ alternate choice

KCSM15	KCPM15	KCPM15	D1	D	D3	Ap1 max	L3	L	Rε
–	F4AS0600AWM38R050	F4AS0600BWM38R050	6,00	6,00	5,64	9,00	18,00	63,00	0,50
–	F4AS0600AWM38R100	F4AS0600BWM38R100	6,00	6,00	5,64	9,00	18,00	63,00	1,00
–	F4AS0800AWM38R050	F4AS0800BWM38R050	8,00	8,00	7,52	12,00	24,00	68,00	0,50
–	F4AS0800AWM38R100	F4AS0800BWM38R100	8,00	8,00	7,52	12,00	24,00	68,00	1,00
–	F4AS1000AWL38R050	F4AS1000BWL38R050	10,00	10,00	9,40	15,00	30,00	76,00	0,50
–	F4AS1000AWL38R100	F4AS1000BWL38R100	10,00	10,00	9,40	15,00	30,00	76,00	1,00
–	F4AS1000AWL38R200	F4AS1000BWL38R200	10,00	10,00	9,40	15,00	30,00	76,00	2,00
–	F4AS1000AWL38R300	F4AS1000BWL38R300	10,00	10,00	9,40	15,00	30,00	76,00	3,00
–	F4AS1000AWL38R400	F4AS1000BWL38R400	10,00	10,00	9,40	15,00	30,00	76,00	4,00
UBDE1200E4AQE *	F4AS1200AWL38R050	F4AS1200BWL38R050	12,00	12,00	11,28	18,00	36,00	83,00	0,50
UBDE1200E4AQG *	F4AS1200AWL38R100	F4AS1200BWL38R100	12,00	12,00	11,28	18,00	36,00	83,00	1,00
UBDE1200E4AQK *	F4AS1200AWL38R200	F4AS1200BWL38R200	12,00	12,00	11,28	18,00	36,00	83,00	2,00
UBDE1200E4AQM *	F4AS1200AWL38R300	F4AS1200BWL38R300	12,00	12,00	11,28	18,00	36,00	83,00	3,00
UBDE1200E4AQN *	F4AS1200AWL38R400	F4AS1200BWL38R400	12,00	12,00	11,28	18,00	36,00	83,00	4,00
UBDE1600E4AQE *	F4AS1600AWX38R050	F4AS1600BWX38R050	16,00	16,00	15,04	24,00	48,00	100,00	0,50
UBDE1600E4AQG *	F4AS1600AWX38R100	F4AS1600BWX38R100	16,00	16,00	15,04	24,00	48,00	100,00	1,00
UBDE1600E4AQK *	F4AS1600AWX38R200	F4AS1600BWX38R200	16,00	16,00	15,04	24,00	48,00	100,00	2,00
UBDE1600E4AQM *	F4AS1600AWX38R300	F4AS1600BWX38R300	16,00	16,00	15,04	24,00	48,00	100,00	3,00
UBDE1600E4AQN *	F4AS1600AWX38R400	F4AS1600BWX38R400 *	16,00	16,00	15,04	24,00	48,00	100,00	4,00
UBDE1600E4AQP *	F4AS1600AWX38R600	F4AS1600BWX38R600	16,00	16,00	15,04	24,00	48,00	100,00	6,00
UBDE2000E4AQE *	F4AS2000AWX38R050	F4AS2000BWX38R050	20,00	20,00	18,80	30,00	60,00	115,00	0,50
UBDE2000E4AQG *	F4AS2000AWX38R100	F4AS2000BWX38R100	20,00	20,00	18,80	30,00	60,00	115,00	1,00
UBDE2000E4AQK *	F4AS2000AWX38R200	F4AS2000BWX38R200 *	20,00	20,00	18,80	30,00	60,00	115,00	2,00
UBDE2000E4AQM *	F4AS2000AWX38R300	F4AS2000BWX38R300	20,00	20,00	18,80	30,00	60,00	115,00	3,00
UBDE2000E4AQN *	F4AS2000AWX38R400	F4AS2000BWX38R400	20,00	20,00	18,80	30,00	60,00	115,00	4,00
UBDE2000E4AQP *	F4AS2000AWX38R600	F4AS2000BWX38R600	20,00	20,00	18,80	30,00	60,00	115,00	6,00
UBDE2500E4AQE *	F4AS2500AWX38R050	F4AS2500BWX38R050	25,00	25,00	23,50	37,50	75,00	135,00	0,50
UBDE2500E4AQG *	F4AS2500AWX38R100	–	25,00	25,00	23,50	37,50	75,00	135,00	1,00
UBDE2500E4AQK *	F4AS2500AWX38R200	F4AS2500BWX38R200	25,00	25,00	23,50	37,50	75,00	135,00	2,00
UBDE2500E4AQM *	–	F4AS2500BWX38R300	25,00	25,00	23,50	37,50	75,00	135,00	3,00
UBDE2500E4AQN *	F4AS2500AWX38R400	F4AS2500BWX38R400	25,00	25,00	23,50	37,50	75,00	135,00	4,00
UBDE2500E4AQP *	F4AS2500AWX38R600	F4AS2500BWX38R600	25,00	25,00	23,50	37,50	75,00	135,00	6,00

NOTE: For application data, see pages P23–P24.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Chipbreaker profile.



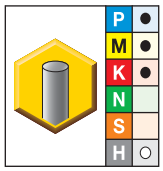


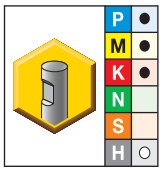
End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

F4BS.. • 4-Flute with Neck and Chipbreaker • Metric



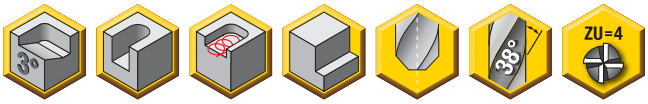


● first choice
○ alternate choice

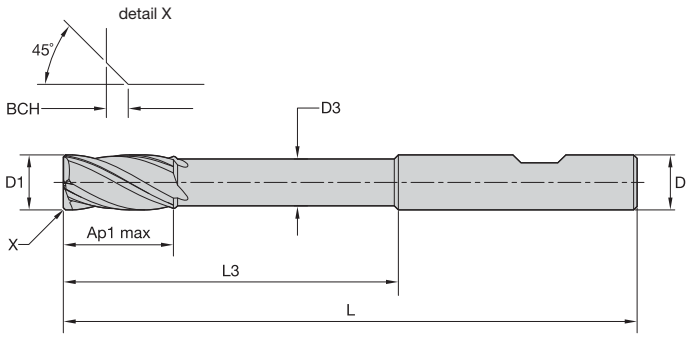
KCPM15	KCPM15	D1	D	D3	Ap1 max	L3	L	Rε
F4BS0600AWM38R050	F4BS0600BWM38R050	6,00	6,00	5,80	9,00	18,00	63,00	0,50
F4BS0600AWM38R100	F4BS0600BWM38R100 *	6,00	6,00	5,80	9,00	18,00	63,00	1,00
F4BS0800AWM38R050	F4BS0800BWM38R050	8,00	8,00	7,80	12,00	24,00	68,00	0,50
F4BS0800AWM38R100	F4BS0800BWM38R100	8,00	8,00	7,80	12,00	24,00	68,00	1,00
F4BS1000AWL38R050	F4BS1000BWL38R050	10,00	10,00	9,50	15,00	30,00	76,00	0,50
F4BS1000AWL38R100	F4BS1000BWL38R100	10,00	10,00	9,50	15,00	30,00	76,00	1,00
F4BS1000AWL38R200	F4BS1000BWL38R200 *	10,00	10,00	9,50	15,00	30,00	76,00	2,00
F4BS1000AWL38R300	F4BS1000BWL38R300	10,00	10,00	9,50	15,00	30,00	76,00	3,00
F4BS1000AWL38R400 *	F4BS1000BWL38R400	10,00	10,00	9,50	15,00	30,00	76,00	4,00
F4BS1200AWL38R050	F4BS1200BWL38R050	12,00	12,00	11,50	18,00	36,00	84,00	0,50
F4BS1200AWL38R100	F4BS1200BWL38R100	12,00	12,00	11,50	18,00	36,00	84,00	1,00
F4BS1200AWL38R200	F4BS1200BWL38R200	12,00	12,00	11,50	18,00	36,00	84,00	2,00
F4BS1200AWL38R300	F4BS1200BWL38R300 *	12,00	12,00	11,50	18,00	36,00	84,00	3,00
F4BS1200AWL38R400	F4BS1200BWL38R400	12,00	12,00	11,50	18,00	36,00	84,00	4,00
F4BS1600AWX38R050	F4BS1600BWX38R050 *	16,00	16,00	15,00	24,00	48,00	100,00	0,50
F4BS1600AWX38R100	F4BS1600BWX38R100 *	16,00	16,00	15,00	24,00	48,00	100,00	1,00
F4BS1600AWX38R200	F4BS1600BWX38R200 *	16,00	16,00	15,00	24,00	48,00	100,00	2,00
F4BS1600AWX38R300 *	F4BS1600BWX38R300	16,00	16,00	15,00	24,00	48,00	100,00	3,00
F4BS1600AWX38R400 *	F4BS1600BWX38R400	16,00	16,00	15,00	24,00	48,00	100,00	4,00
F4BS2000AWX38R050	F4BS2000BWX38R050	20,00	20,00	19,00	30,00	60,00	115,00	0,50
F4BS2000AWX38R100	F4BS2000BWX38R100 *	20,00	20,00	19,00	30,00	60,00	115,00	1,00
F4BS2000AWX38R200 *	F4BS2000BWX38R200 *	20,00	20,00	19,00	30,00	60,00	115,00	2,00
F4BS2000AWX38R300 *	F4BS2000BWX38R300 *	20,00	20,00	19,00	30,00	60,00	115,00	3,00
F4BS2000AWX38R400 *	F4BS2000BWX38R400 *	20,00	20,00	19,00	30,00	60,00	115,00	4,00
F4BS2500AWX38R050 *	F4BS2500BWX38R050 *	25,00	25,00	24,00	37,50	75,00	135,00	0,50
F4BS2500AWX38R100 *	F4BS2500BWX38R100 *	25,00	25,00	24,00	37,50	75,00	135,00	1,00
F4BS2500AWX38R200 *	F4BS2500BWX38R200 *	25,00	25,00	24,00	37,50	75,00	135,00	2,00
F4BS2500AWX38R300 *	F4BS2500BWX38R300 *	25,00	25,00	24,00	37,50	75,00	135,00	3,00
F4BS2500AWX38R400 *	F4BS2500BWX38R400 *	25,00	25,00	24,00	37,50	75,00	135,00	4,00

NOTE: For application data, see page P24.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





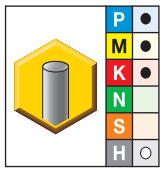


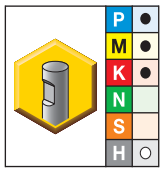
End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

beyond

UADE • 4-Flute Extended Reach • Metric





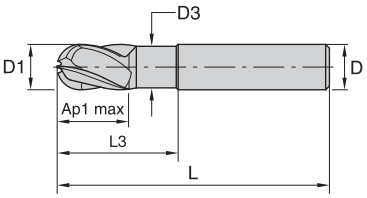
● first choice
○ alternate choice

KCPM15	KCPM15	D1	D	D3	Ap1 max	L3	L	BCH
UADE0600A4AL	**UADE0600B4AL**	6,00	6,00	5,50	12,00	42,00	100,00	0,40
UADE0800A4AL	**UADE0800B4AL**	8,00	8,00	7,30	16,00	62,00	100,00	0,40
UADE1000A4AL	**UADE1000B4AL**	10,00	10,00	9,10	20,00	60,00	100,00	0,50
UADE1200A4AL	**UADE1200B4AL**	12,00	12,00	11,00	24,00	73,00	125,00	0,50
UADE1600A4AL	**UADE1600B4AL**	16,00	16,00	15,00	32,00	100,00	150,00	0,50
UADE2000A4AL	**UADE2000B4AL**	20,00	20,00	19,00	40,00	98,00	175,00	0,50

NOTE: For application data, see page P25.

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



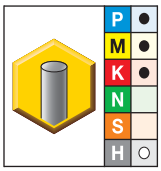


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

F4AW.. • 4-Flute Extended Reach • Ball Nose • Metric



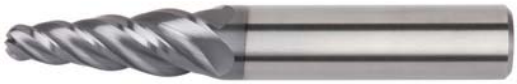
● first choice
○ alternate choice

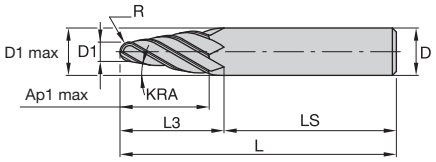
KCPM15	D1	D	D3	Ap1 max	L3	L
F4AW0600AWL38E120	6,00	6,00	5,80	6,00	12,00	76,00
F4AW0800AWL38E160	8,00	8,00	7,80	8,00	16,00	100,00
F4AW1000AWX38E200	10,00	10,00	9,50	10,00	20,00	121,50
F4AW1200AWX38E240	12,00	12,00	11,50	12,00	24,00	125,00
F4AW1600AWX38E320	16,00	16,00	15,00	16,00	32,00	150,00

NOTE: For application data, see page P26.

- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Side milling, slotting, and 3D milling.



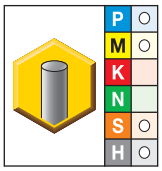




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F4AW..AWL38-WX38 • Unequal Flute Spacing • Taper Ball Nose



● first choice
○ alternate choice

KC633M	D1	D	Ap1 max	L2	LS	L	R	KRA
F4AW0400AWL38W040	4,00	8,0	30,5	36	45	76	2	4.0
F4AW0400AWL38W060	4,00	10,0	30,5	49	58	89	2	6.0
F4AW0500AWL38W040	5,00	10,0	38,0	44	57	89	3	4.0
F4AW0500AWL38W060	5,00	12,0	35,7	55	64	100	3	6.0
F4AW0600AWL38W040	6,00	12,0	45,8	55	54	100	3	4.0
F4AW0600AWL38W060	6,00	16,0	50,4	62	59	110	3	6.0
F4AW0800AWL38W060	8,00	16,0	42,0	62	68	110	4	6.0
F4AW0800AWL38W040	8,00	16,0	61,0	52	49	110	4	4.0
F4AW1000AWX38W040	10,00	16,0	47,7	60	62	110	5	4.0
F4AW1000AWX38W060	10,00	20,0	52,3	75	72	125	5	6.0

NOTE: For application data, see page P27.

HARVI I • UBDE • F4AS...DL • Unequal Flute Spacing



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KCPM15 Cutting Speed — vc m/min min	max	mm	Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	1,5 x D	0,5 x D	1 x D	120	160	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	1,5 x D	0,5 x D	0,75 x D	90	150	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	100	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	75	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	115	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	80	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	70	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	140	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	110	130	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	–	–	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	–	–	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,3 x D	0,3 x D	–	–	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D	–	–	fz	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For better surface finish, reduce feed per tooth.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI I • UADE.. • Unequal Flute Spacing • With Neck



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KCPM15 Cutting Speed — vc m/min min	max	mm	Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	1,5 x D	0,5 x D	1 x D	120	160	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	1,5 x D	0,5 x D	0,75 x D	90	150	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	100	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	75	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	115	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	80	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	70	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	140	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	110	130	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	50	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
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For better surface finish, reduce feed per tooth.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI I • F4AS.. WM-WX-WL • Unequal Flute Spacing • With Neck



Material Group		Side Milling (A) and Slotting (B)			KCPM15		KCSM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.												
		A		B	Cutting Speed — vc m/min					D1 — Diameter											
		ap	ae	ap	min	max	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	150	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	1,5 x D	0,5 x D	1 x D	150	200	150	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	140	190	140	190	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	1,5 x D	0,5 x D	1 x D	120	160	120	160	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	1,5 x D	0,5 x D	0,75 x D	90	150	90	150	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	100	60	100	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	75	50	75	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	115	90	115	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	80	60	80	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	70	60	70	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	150	–	–	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	140	–	–	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	110	130	–	–	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	–	–	50	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	–	–	25	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,3 x D	0,3 x D	–	–	25	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D	–	–	50	60	fz	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	80	140	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

NOTE: Those guidelines may require variations to achieve optimum results.
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Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
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For better surface finish, reduce feed per tooth.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI I • F4BS.. WM-WX-WL • Unequal Flute Spacing • With Neck and Chipbreaker



Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.							
		A		B	Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	3	1,5 x D	0,5 x D	1 x D	120	160	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	4	1,5 x D	0,5 x D	0,75 x D	90	150	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	100	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	75	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	115	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	70	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	130	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	100	130	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098

NOTE: Those guidelines may require variations to achieve optimum results.
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Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For better surface finish, reduce feed per tooth.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI I • UADE • Unequal Flute Spacing • Extended Reach



Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.							
		A		B	Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	0,75 x D	0,5 x D	0,75 x D	150	200	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	0,75 x D	0,5 x D	0,75 x D	150	200	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	0,75 x D	0,5 x D	0,75 x D	140	190	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	0,75 x D	0,5 x D	0,75 x D	120	160	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	0,75 x D	0,5 x D	0,5 x D	90	150	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	5	0,75 x D	0,5 x D	0,75 x D	60	100	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	6	0,75 x D	0,5 x D	0,5 x D	50	75	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
M	1	0,75 x D	0,5 x D	0,75 x D	90	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	0,75 x D	0,5 x D	0,75 x D	60	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	3	0,75 x D	0,5 x D	0,75 x D	60	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
K	1	0,75 x D	0,5 x D	0,75 x D	120	150	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	0,75 x D	0,5 x D	0,75 x D	110	140	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	3	0,75 x D	0,5 x D	0,75 x D	110	130	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
S	1	0,75 x D	0,5 x D	0,5 x D	80	140	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088

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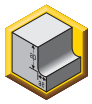
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For better surface finish, reduce feed per tooth.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI I • F4AW..WL-WX • Unequal Flute Spacing • Extended Reach • Ball Nose

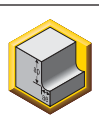




Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
		A		B	Cutting Speed — vc m/min			D1 — Diameter				
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	16,0
P	0	0,5 x D	0,5 x D	0,5 x D	150	200	fz	0,044	0,060	0,072	0,083	0,101
	1	0,5 x D	0,5 x D	0,5 x D	150	200	fz	0,044	0,060	0,072	0,083	0,101
	2	0,5 x D	0,5 x D	0,5 x D	140	190	fz	0,044	0,060	0,072	0,083	0,101
	3	0,5 x D	0,5 x D	0,5 x D	120	160	fz	0,036	0,050	0,061	0,070	0,087
	4	0,5 x D	0,5 x D	0,5 x D	90	150	fz	0,033	0,045	0,054	0,062	0,077
	5	0,5 x D	0,5 x D	0,5 x D	60	100	fz	0,029	0,040	0,048	0,056	0,070
	6	0,5 x D	0,5 x D	0,5 x D	50	75	fz	0,025	0,034	0,040	0,047	0,057
M	1	0,5 x D	0,5 x D	0,5 x D	90	115	fz	0,036	0,050	0,061	0,070	0,087
	2	0,5 x D	0,5 x D	0,5 x D	60	80	fz	0,029	0,040	0,048	0,056	0,070
	3	0,5 x D	0,5 x D	0,5 x D	60	70	fz	0,025	0,034	0,040	0,047	0,057
K	1	0,5 x D	0,5 x D	0,5 x D	120	150	fz	0,044	0,060	0,072	0,083	0,101
	2	0,5 x D	0,5 x D	0,5 x D	110	130	fz	0,036	0,050	0,061	0,070	0,087
	3	0,5 x D	0,5 x D	0,5 x D	110	130	fz	0,029	0,040	0,048	0,056	0,070
H	1	0,5 x D	0,5 x D	0,5 x D	80	140	fz	0,033	0,045	0,054	0,062	0,077

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

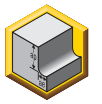
HARVI I • F4AW..AWL38-WX38 • Unequal Flute Spacing • Taper Ball Nose • Roughing




Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min		max	mm	4,0	5,0	6,0	8,0	10,0
P	0	Ap max	0,4 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072
	1	Ap max	0,4 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072
	2	Ap max	0,4 x D	140	–	190	fz	0,028	0,036	0,044	0,060	0,072
	3	Ap max	0,4 x D	120	–	160	fz	0,023	0,030	0,036	0,050	0,061
	4	Ap max	0,4 x D	90	–	150	fz	0,021	0,027	0,033	0,045	0,054
	5	Ap max	0,4 x D	60	–	100	fz	0,019	0,024	0,029	0,040	0,048
	6	Ap max	0.4 x D	50	–	75	fz	0,016	0,020	0,025	0,034	0,040
M	1	Ap max	0,4 x D	90	–	115	fz	0,023	0,030	0,036	0,050	0,061
	2	Ap max	0,4 x D	60	–	80	fz	0,019	0,024	0,029	0,040	0,048
	3	Ap max	0,4 x D	60	–	70	fz	0,016	0,020	0,025	0,034	0,040
S	1	Ap max	0,4 x D	50	–	90	fz	0,023	0,030	0,036	0,050	0,061
	2	Ap max	0,4 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032
	3	Ap max	0,4 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032
	4	Ap max	0,4 x D	50	–	60	fz	0,016	0,021	0,026	0,037	0,045
H	1	Ap max	0,4 x D	80	–	140	fz	0,021	0,027	0,033	0,045	0,054

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI I • F4AW...AWL38-WX38 • Unequal Flute spacing • Taper Ball Nose • Finishing




Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min		max	mm	4,0	5,0	6,0	8,0	10,0
P	0	Ap max	0,06 x D	285	–	380	fz	0,034	0,043	0,053	0,072	0,086
	1	Ap max	0,06 x D	285	–	380	fz	0,034	0,043	0,053	0,072	0,086
	2	Ap max	0,06 x D	266	–	361	fz	0,034	0,043	0,053	0,072	0,086
	3	Ap max	0,06 x D	228	–	304	fz	0,028	0,036	0,044	0,060	0,073
	4	Ap max	0,06 x D	171	–	285	fz	0,026	0,033	0,039	0,054	0,065
	5	Ap max	0,06 x D	114	–	190	fz	0,023	0,029	0,035	0,048	0,058
	4	Ap max	0,06 x D	95	–	142,5	fz	0,019	0,024	0,030	0,040	0,048
M	1	Ap max	0,06 x D	171	–	218,5	fz	0,028	0,036	0,044	0,060	0,073
	2	Ap max	0,06 x D	114	–	152	fz	0,023	0,029	0,035	0,048	0,058
	3	Ap max	0,06 x D	114	–	133	fz	0,019	0,024	0,030	0,040	0,048
S	1	Ap max	0,06 x D	95	–	171	fz	0,028	0,036	0,044	0,060	0,073
	2	Ap max	0,06 x D	47,5	–	76	fz	0,015	0,019	0,023	0,032	0,038
	3	Ap max	0,06 x D	47,5	–	76	fz	0,015	0,019	0,023	0,032	0,038
	4	Ap max	0,06 x D	95	–	114	fz	0,019	0,025	0,031	0,044	0,053
H	1	Ap max	0,06 x D	152	–	266	fz	0,026	0,033	0,039	0,054	0,065

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI™ II

High-Performance Solid Carbide End Mills

Primary Application

The HARVI II system is designed to provide maximum metal removal rates with five unequally spaced flutes for roughing and finishing operations in side milling, slotting, and profiling. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock. To prevent pullout of end mills during heavy cuts, the HARVI II system is available equipped with the Safe-Lock™ system by HAIMER®.

- 1 x D slotting in titanium and stainless steels with five unequally spaced flutes.
- Roughing and finishing with one tool.
- KCPM15™ and KCSM15™ Beyond™ grades for long tool life.

Features and Benefits

Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates.
- Proprietary parabolic core design increases stability.
- Ramping up to 3°.
- 1 x D full slotting capability in:
  - — Titanium
  - — Stainless steel

Tailored Grades

- KCPM15™ Beyond grade for outstanding wear protection in stainless steel to mitigate crater, depth-of-cut notching, and flank wear.
- KCSM15™ Beyond grade for exceptional tool life in titanium.
- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customisation

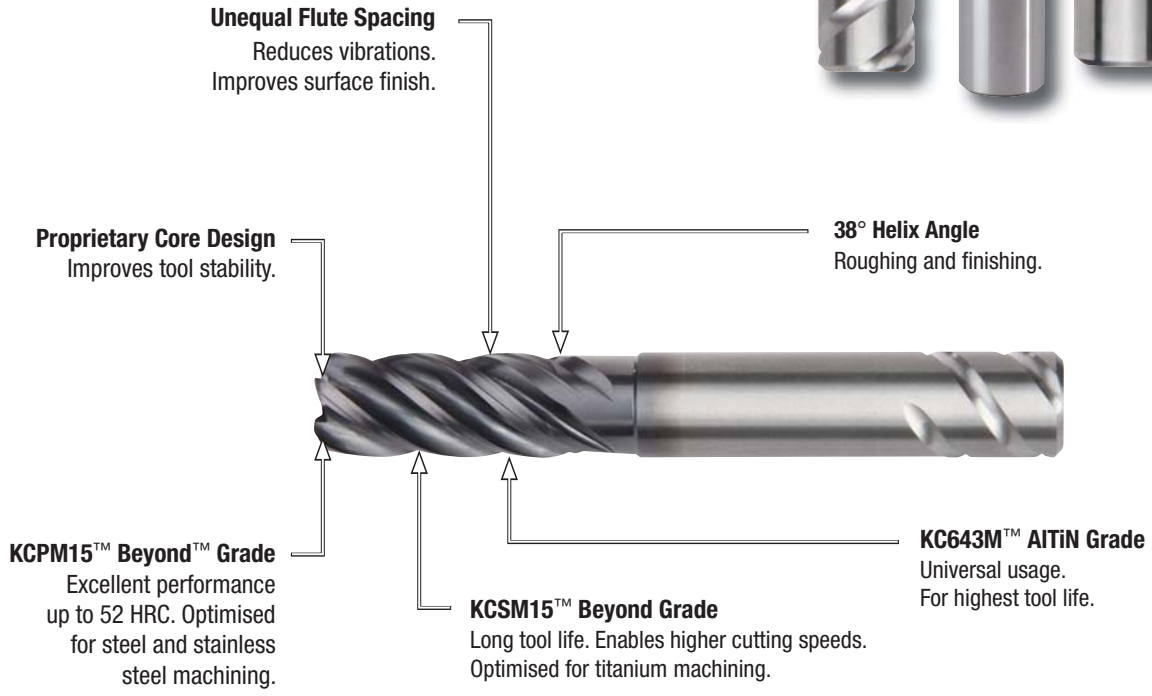
- Intermediate diameters available.
- Expanded length of tool and increased length of cut possible.
- Chip divider geometry reduces power consumption and improves chip formation in difficult-to-cut materials.
- Ball-nose version available.
- Internal coolant axial and radial available.
- Various shanks and non-standard coatings available.
- Multiple steps possible.

Extensive Standard Offering

- Diameter range 4–25mm.
- Necked, corner radii, and square-end offering.

High-feed roughing and finishing with one tool at highest length of cut.

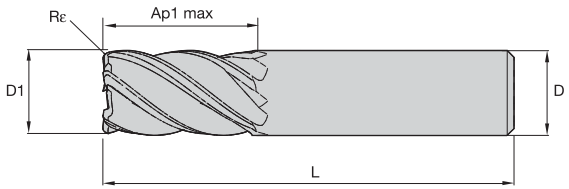




SAFE-λOCK®
by HAIMER®

- Single tool for both roughing and finishing operations for fewer setups.
- Unequal flute spacing minimises chatter for smoother machining.
- Kennametal standard dimensions.
- Non-centre cutting.
- Five-flute geometry enables slotting up to 1 x D.



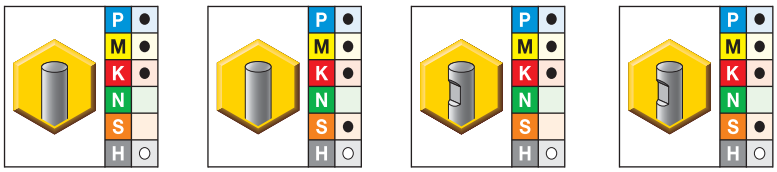


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

UCDE • 5-Flute • Metric



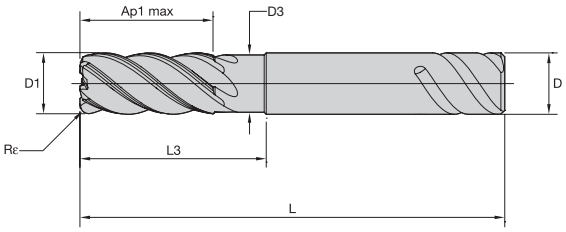
● first choice
○ alternate choice

KCPM15	KC643M	KCPM15	KC643M	D1	D	Ap1 max	L	Rε
UCDE0400A5ARA	UCDE0400A5ARA	UCDE0400B5ARA	UCDE0400B5ARA	4,00	6,00	11,00	55,00	0,25
UCDE0400A5ASA	UCDE0400A5ASA	–	–	4,00	6,00	11,00	55,00	–
UCDE0500A5ARA	UCDE0500A5ARA	UCDE0500B5ARA	UCDE0500B5ARA	5,00	6,00	13,00	57,00	0,25
UCDE0500A5ASA	UCDE0500A5ASA	–	–	5,00	6,00	13,00	57,00	–
UCDE0600A5ARA	UCDE0600A5ARA	UCDE0600B5ARA	UCDE0600B5ARA	6,00	6,00	13,00	57,00	0,40
UCDE0600A5ASA	UCDE0600A5ASA	–	–	6,00	6,00	13,00	57,00	–
UCDE0700A5ARA	UCDE0700A5ARA	UCDE0700B5ARA	UCDE0700B5ARA	7,00	8,00	16,00	63,00	0,40
UCDE0700A5ASA	UCDE0700A5ASA	–	–	7,00	8,00	16,00	63,00	–
UCDE0800A5ARA	UCDE0800A5ARA	UCDE0800B5ARA	UCDE0800B5ARA	8,00	8,00	19,00	63,00	0,50
UCDE0800A5ASA	UCDE0800A5ASA	–	–	8,00	8,00	19,00	63,00	–
UCDE0900A5ARA	UCDE0900A5ARA	UCDE0900B5ARA	UCDE0900B5ARA *	9,00	10,00	19,00	72,00	0,50
UCDE0900A5ASA	UCDE0900A5ASA	–	–	9,00	10,00	19,00	72,00	–
UCDE1000A5ARA	UCDE1000A5ARA	UCDE1000B5ARA	UCDE1000B5ARA	10,00	10,00	22,00	72,00	0,50
UCDE1000A5ASA	UCDE1000A5ASA	–	–	10,00	10,00	22,00	72,00	–
UCDE1200A5ARA	UCDE1200A5ARA	UCDE1200B5ARA	UCDE1200B5ARA	12,00	12,00	26,00	83,00	0,75
UCDE1200A5ASA	UCDE1200A5ASA	–	–	12,00	12,00	26,00	83,00	–
UCDE1400A5ARA	UCDE1400A5ARA	UCDE1400B5ARA	UCDE1400B5ARA	14,00	14,00	26,00	83,00	0,75
UCDE1400A5ASA	UCDE1400A5ASA	–	–	14,00	14,00	26,00	83,00	–
UCDE1600A5ARA	UCDE1600A5ARA	UCDE1600B5ARA	UCDE1600B5ARA	16,00	16,00	32,00	92,00	0,75
UCDE1600A5ASA	UCDE1600A5ASA	–	–	16,00	16,00	32,00	92,00	–
UCDE1800A5ARA	UCDE1800A5ARA	UCDE1800B5ARA	UCDE1800B5ARA	18,00	18,00	32,00	92,00	0,75
UCDE1800A5ASA	UCDE1800A5ASA	–	–	18,00	18,00	32,00	92,00	–
UCDE2000A5ARA	UCDE2000A5ARA	UCDE2000B5ARA	UCDE2000B5ARA	20,00	20,00	38,00	104,00	0,75
UCDE2000A5ASA	UCDE2000A5ASA	–	–	20,00	20,00	38,00	104,00	–
UCDE2500A5ARA	UCDE2500A5ARA	UCDE2500B5ARA	UCDE2500B5ARA	25,00	25,00	45,00	121,00	0,75
UCDE2500A5ASA	UCDE2500A5ASA	–	–	25,00	25,00	45,00	121,00	–

NOTE: For application data, see page P33.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Non-centre cutting.
- Ramping up to 3°.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Five-flute geometry enables slotting up to 1 x D.



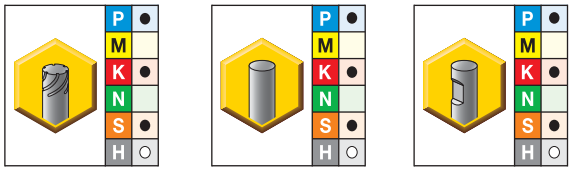


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014 / -0,028	≤3	+0 / -0,006
>3–6	-0,020 / -0,038	>3–6	+0 / -0,008
>6–10	-0,025 / -0,047	>6–10	+0 / -0,009
>10–18	-0,032 / -0,059	>10–18	+0 / -0,011
>18–30	-0,040 / -0,073	>18–30	+0 / -0,013

beyond

UDDE • 5-Flute with Neck • Metric

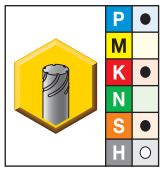


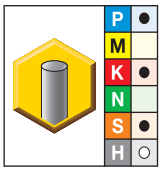
● first choice
○ alternate choice

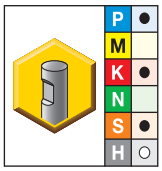
KCSM15	KC643M	KC643M	D1	D	D3	Ap1 max	L3	L	Rε
–	–	UDDE0600B5ARA	6,00	6,00	5,64	13,00	18,00	63,00	0,20
–	UDDE0600A5ARA	UDDE0600B5ARB	6,00	6,00	5,64	13,00	18,00	63,00	0,50
–	UDDE0600A5ARB	UDDE0600B5ARC	6,00	6,00	5,64	13,00	18,00	63,00	1,00
–	UDDE0600A5ARC	UDDE0600B5ARD	6,00	6,00	5,64	13,00	18,00	63,00	1,50
–	UDDE0600A5ASA	–	6,00	6,00	5,64	13,00	18,00	63,00	–
–	–	UDDE0800B5ARA	8,00	8,00	7,52	19,00	24,00	76,00	0,20
–	UDDE0800A5ARA	UDDE0800B5ARB	8,00	8,00	7,52	19,00	24,00	76,00	0,50
–	UDDE0800A5ARB	UDDE0800B5ARC	8,00	8,00	7,52	19,00	24,00	76,00	1,00
–	UDDE0800A5ARC	UDDE0800B5ARD	8,00	8,00	7,52	19,00	24,00	76,00	2,00
–	UDDE0800A5ASA	–	8,00	8,00	7,52	19,00	24,00	76,00	–
–	UDDE1000A5ARA	UDDE1000B5ARA	10,00	10,00	9,40	22,00	30,00	76,00	0,50
–	UDDE1000A5ARB	UDDE1000B5ARB	10,00	10,00	9,40	22,00	30,00	76,00	1,00
–	UDDE1000A5ARC	UDDE1000B5ARC	10,00	10,00	9,40	22,00	30,00	76,00	2,00
–	UDDE1000A5ARD	UDDE1000B5ARD	10,00	10,00	9,40	22,00	30,00	76,00	2,50
–	UDDE1000A5ASA	–	10,00	10,00	9,40	22,00	30,00	76,00	–
UDDE1200E5AQE *	UDDE1200A5ARA	UDDE1200B5ARA	12,00	12,00	11,28	26,00	36,00	83,00	0,50
UDDE1200E5AQG *	UDDE1200A5ARB	UDDE1200B5ARB	12,00	12,00	11,28	26,00	36,00	83,00	1,00
UDDE1200E5AQK *	UDDE1200A5ARC	UDDE1200B5ARC	12,00	12,00	11,28	26,00	36,00	83,00	2,00
UDDE1200E5AQM *	UDDE1200A5ARD	UDDE1200B5ARD	12,00	12,00	11,28	26,00	36,00	83,00	3,00
–	UDDE1200A5ASA	–	12,00	12,00	11,28	26,00	36,00	83,00	–
–	UDDE1400A5ARA	–	14,00	14,00	13,15	26,00	42,00	84,00	0,50
–	–	UDDE1400B5ARB	14,00	14,00	13,15	26,00	42,00	84,00	1,00
–	UDDE1400A5ARC	–	14,00	14,00	13,15	26,00	42,00	84,00	2,00
–	UDDE1400A5ARD	–	14,00	14,00	13,15	26,00	42,00	84,00	3,00
–	UDDE1400A5ASA	–	14,00	14,00	13,15	26,00	42,00	84,00	–
UDDE1600E5AQE *	UDDE1600A5ARA	UDDE1600B5ARA	16,00	16,00	15,04	32,00	48,00	100,00	0,50
UDDE1600E5AQG *	UDDE1600A5ARB	UDDE1600B5ARB	16,00	16,00	15,04	32,00	48,00	100,00	1,00
UDDE1600E5AQK *	UDDE1600A5ARC	UDDE1600B5ARC	16,00	16,00	15,04	32,00	48,00	100,00	2,00

(continued)

(UDDE • 5-Flute with Neck • Metric — continued)





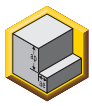


● first choice
○ alternate choice

KCSM15	KC643M	KC643M	D1	D	D3	Ap1 max	L3	L	Rε
UDDE1600E5AQM *	**UDDE1600A5ARD**	**UDDE1600B5ARD**	16,00	16,00	15,04	32,00	48,00	100,00	3,00
UDDE1600E5AQN *	**UDDE1600A5ARE**	**UDDE1600B5ARE**	16,00	16,00	15,04	32,00	48,00	100,00	4,00
UDDE1600E5AQP *	**UDDE1600A5ARP**	**UDDE1600B5ARP**	16,00	16,00	15,04	32,00	48,00	100,00	6,00
—	**UDDE1600A5ASA**	**—**	16,00	16,00	15,04	32,00	48,00	100,00	—
UDDE2000E5AQE *	**UDDE2000A5ARA**	**UDDE2000B5ARA**	20,00	20,00	18,80	38,00	60,00	115,00	0,50
UDDE2000E5AQG *	**UDDE2000A5ARB**	**UDDE2000B5ARB**	20,00	20,00	18,80	38,00	60,00	115,00	1,00
UDDE2000E5AQK *	**UDDE2000A5ARC**	**UDDE2000B5ARC**	20,00	20,00	18,80	38,00	60,00	115,00	2,00
UDDE2000E5AQM *	**UDDE2000A5ARD**	**UDDE2000B5ARD**	20,00	20,00	18,80	38,00	60,00	115,00	3,00
UDDE2000E5AQN *	**UDDE2000A5ARE**	**UDDE2000B5ARE**	20,00	20,00	18,80	38,00	60,00	115,00	4,00
UDDE2000E5AQP *	**UDDE2000A5ARP**	**UDDE2000B5ARP**	20,00	20,00	18,80	38,00	60,00	115,00	6,00
—	**UDDE2000A5ASA**	**—**	20,00	20,00	18,80	38,00	60,00	115,00	—
UDDE2500E5AQE *	**UDDE2500A5ARA**	**UDDE2500B5ARA**	25,00	25,00	23,50	45,00	75,00	135,00	0,50
UDDE2500E5AQG *	**UDDE2500A5ARB**	**UDDE2500B5ARB**	25,00	25,00	23,50	45,00	75,00	135,00	1,00
UDDE2500E5AQK *	**UDDE2500A5ARC**	**UDDE2500B5ARC**	25,00	25,00	23,50	45,00	75,00	135,00	2,00
UDDE2500E5AQM *	**UDDE2500A5ARD**	**UDDE2500B5ARD**	25,00	25,00	23,50	45,00	75,00	135,00	3,00
UDDE2500E5AQN *	**UDDE2500A5ARE**	**UDDE2500B5ARE**	25,00	25,00	23,50	45,00	75,00	135,00	4,00
UDDE2500E5AQP *	**UDDE2500A5ARP**	**UDDE2500B5ARP**	25,00	25,00	23,50	45,00	75,00	135,00	6,00
—	**UDDE2500A5ASA**	**—**	25,00	25,00	23,50	45,00	75,00	135,00	—

NOTE: For application data, see page P33.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

HARVI II • UCDE • Unequal Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			KC643M		KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.										
		A		B	Cutting Speed — vc m/min		Cutting Speed — vc m/min			D1 — Diameter									
		ap	ae	ap	min	max	min	max	mm	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	150	200	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	1,5 x D	0,5 x D	1 x D	150	200	150	200	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	140	190	140	190	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	1,5 x D	0,5 x D	1 x D	120	160	120	160	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	1,5 x D	0,5 x D	0,75 x D	90	150	90	150	fz	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	100	60	100	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	75	50	75	fz	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	115	90	115	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	80	60	80	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	70	60	70	fz	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	150	120	150	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	140	110	140	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	110	130	110	130	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	50	90	–	–	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	25	40	–	–	fz	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,3 x D	0,3 x D	25	40	–	–	fz	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D	50	60	–	–	fz	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	80	140	fz	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

HARVI II • UDDE • Unequal Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			KCSM15/ KC643M		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.									
		A		B	Cutting Speed — vc m/min			D1 — Diameter								
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	5	1,5 x D	0,5 x D	1 x D	60	100	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	75	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	140	fz	0,036	0,050	0,061	0,07	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	110	130	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	50	90	fz	0,036	0,050	0,061	0,07	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D	50	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on > 12mm diameter.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.
Slot milling applications — for longest reach (L3) tools, reduce ae by 30%.

HARVI™ II Long

High-Performance Solid Carbide End Mills

Primary Application

The HARVI II Long system is designed for machining titanium, steels, and stainless steels with excellent surface finishes at maximum Metal Removal Rates (MRR). The extended cutting length enables the HARVI II Long system to machine deep pockets with thin walls in semi-finishing and finishing operations. It also reduces the number of cuts when machining wing profiles for the aerospace industry.

- Up to 5 x D side milling finishing operations in titanium and stainless steels.
- Exceptionally straight walls.
- Universal KC643M™ grade for long tool life.

Features and Benefits

Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates, improving surface finish and tool life.
- 3 x D and 5 x D lengths for reduced number of cuts.
- Innovative core design increases stability for exceptionally straight walls.
- Improved feed rate in corner machining operations versus conventional cutters.

Tailored Grades

- Universal KC643M grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customisation

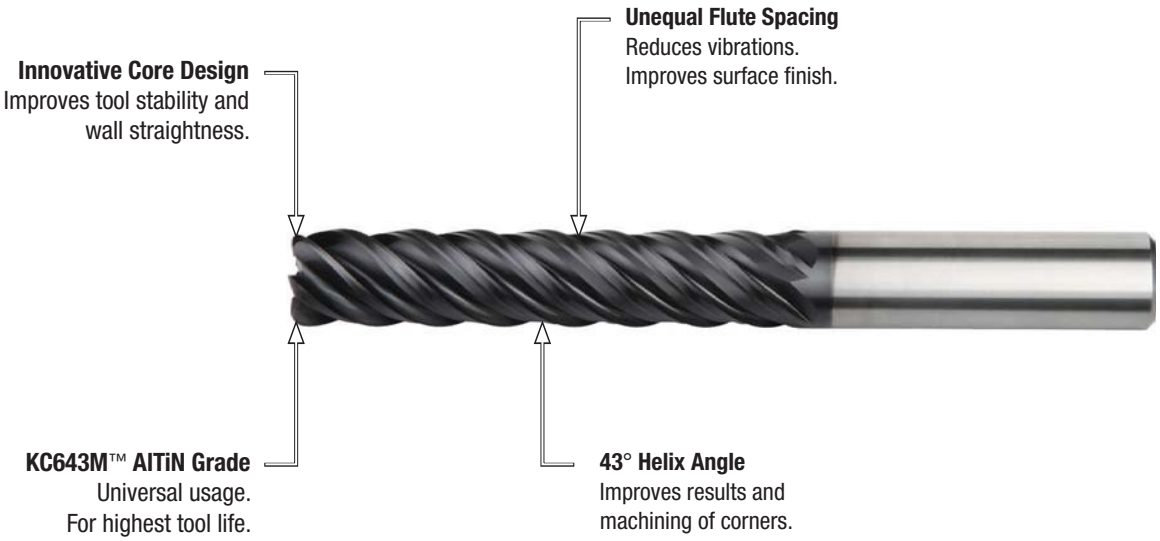
- Intermediate diameters available.
- Chip divider geometry available for reduced power consumption and improved chip formation in difficult-to-cut materials.
- Internal coolant axial, as well as radial, available.
- Various shank options and non-standard coatings available.

Extensive Standard Offering

- Diameter range 6–25mm.
- Various corner radii in stock.

3 x D and 5 x D lengths of cut without reduced feed rates when machining corners.

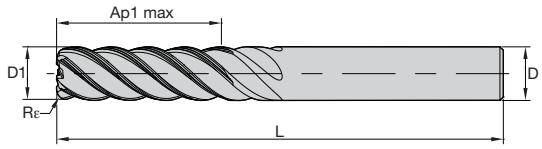




- For finishing and semi-finishing applications.
- Unequal flute spacing minimises chatter for smoother machining.
- Non-centre cutting.
- Kennametal standard dimensions.



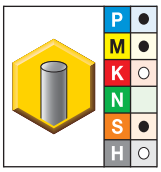




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014 / -0,028	≤3	+0 / -0,006
>3–6	-0,020 / -0,038	>3–6	+0 / -0,008
>6–10	-0,025 / -0,047	>6–10	+0 / -0,009
>10–18	-0,032 / -0,059	>10–18	+0 / -0,011
>18–30	-0,040 / -0,073	>18–30	+0 / -0,013

HARVI II • UGDE • 3 x D Lengths of Cut



● first choice
○ alternate choice

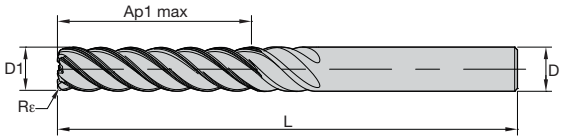
KC643M	D1	D	Ap1 max	L	Rε
UGDE0600A5ARA	6,00	6,00	18,00	63,00	0,20
UGDE0600A5ARB	6,00	6,00	18,00	63,00	0,50
UGDE0600A5ARC	6,00	6,00	18,00	63,00	1,00
UGDE0800A5ARA	8,00	8,00	24,00	67,00	0,20
UGDE0800A5ARB	8,00	8,00	24,00	67,00	0,50
UGDE0800A5ARC	8,00	8,00	24,00	67,00	1,00
UGDE1000A5ARA	10,00	10,00	30,00	76,00	0,50
UGDE1000A5ARB	10,00	10,00	30,00	76,00	1,00
UGDE1000A5ARC	10,00	10,00	30,00	76,00	2,00
UGDE1000A5ARD	10,00	10,00	30,00	76,00	2,50
UGDE1200A5ARA	12,00	12,00	36,00	100,00	0,50
UGDE1200A5ARB	12,00	12,00	36,00	100,00	1,00
UGDE1200A5ARC	12,00	12,00	36,00	100,00	2,00
UGDE1200A5ARD	12,00	12,00	36,00	100,00	2,50
UGDE1400A5ARD	14,00	14,00	42,00	100,00	3,00
UGDE1600A5ARA	16,00	16,00	48,00	110,00	1,00
UGDE1600A5ARB	16,00	16,00	48,00	110,00	2,00
UGDE1600A5ARC	16,00	16,00	48,00	110,00	2,50
UGDE1600A5ARD	16,00	16,00	48,00	110,00	3,00
UGDE1600A5ARE	16,00	16,00	48,00	110,00	4,00
UGDE1600A5ARP	16,00	16,00	48,00	110,00	6,00
UGDE2000A5ARA	20,00	20,00	60,00	125,00	1,00
UGDE2000A5ARB	20,00	20,00	60,00	125,00	2,00
UGDE2000A5ARC	20,00	20,00	60,00	125,00	2,50
UGDE2000A5ARD	20,00	20,00	60,00	125,00	3,00
UGDE2000A5ARE	20,00	20,00	60,00	125,00	4,00
UGDE2000A5ARP	20,00	20,00	60,00	125,00	6,00
UGDE2500A5ARA	25,00	25,00	75,00	150,00	1,00
UGDE2500A5ARB	25,00	25,00	75,00	150,00	2,00
UGDE2500A5ARC	25,00	25,00	75,00	150,00	2,50
UGDE2500A5ARD	25,00	25,00	75,00	150,00	3,00
UGDE2500A5ARE	25,00	25,00	75,00	150,00	4,00
UGDE2500A5ARP	25,00	25,00	75,00	150,00	6,00

NOTE: For application data, see page P38.

- For finishing and semi-finishing applications.
- Unequal flute spacing minimises chatter for smoother machining.
- Non-centre cutting.
- Kennametal standard dimensions.



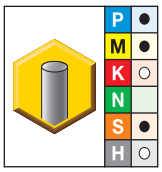




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014 / -0,028	≤3	+0 / -0,006
>3–6	-0,020 / -0,038	>3–6	+0 / -0,008
>6–10	-0,025 / -0,047	>6–10	+0 / -0,009
>10–18	-0,032 / -0,059	>10–18	+0 / -0,011
>18–30	-0,040 / -0,073	>18–30	+0 / -0,013

HARVI II • UGDE • 5 x D Lengths of Cut



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L	Rε
UGDE0600A5BRA	6,00	6,00	30,00	76,00	0,20
UGDE0600A5BRB	6,00	6,00	30,00	76,00	0,50
UGDE0600A5BRC	6,00	6,00	30,00	76,00	1,00
UGDE0800A5BRA	8,00	8,00	40,00	87,00	0,20
UGDE0800A5BRB	8,00	8,00	40,00	87,00	0,50
UGDE0800A5BRC	8,00	8,00	40,00	87,00	1,00
UGDE1000A5BRA	10,00	10,00	50,00	100,00	0,50
UGDE1000A5BRB	10,00	10,00	50,00	100,00	1,00
UGDE1000A5BRC	10,00	10,00	50,00	100,00	2,00
UGDE1000A5BRD	10,00	10,00	50,00	100,00	2,50
UGDE1200A5BRA	12,00	12,00	60,00	125,00	0,50
UGDE1200A5BRB	12,00	12,00	60,00	125,00	1,00
UGDE1200A5BRC	12,00	12,00	60,00	125,00	2,00
UGDE1200A5BRD	12,00	12,00	60,00	125,00	2,50
UGDE1400A5BRD	14,00	14,00	70,00	120,00	3,00
UGDE1600A5BRA	16,00	16,00	80,00	141,00	1,00
UGDE1600A5BRB	16,00	16,00	80,00	141,00	2,00
UGDE1600A5BRC	16,00	16,00	80,00	141,00	2,50
UGDE1600A5BRD	16,00	16,00	80,00	141,00	3,00
UGDE1600A5BRE	16,00	16,00	80,00	141,00	4,00
UGDE1600A5BRP	16,00	16,00	80,00	141,00	6,00
UGDE2000A5BRA	20,00	20,00	100,00	166,00	1,00
UGDE2000A5BRB	20,00	20,00	100,00	166,00	2,00
UGDE2000A5BRC	20,00	20,00	100,00	166,00	2,50
UGDE2000A5BRD	20,00	20,00	100,00	166,00	3,00
UGDE2000A5BRE	20,00	20,00	100,00	166,00	4,00
UGDE2000A5BRP	20,00	20,00	100,00	166,00	6,00
UGDE2500A5BRA	25,00	25,00	125,00	190,00	1,00
UGDE2500A5BRB	25,00	25,00	125,00	190,00	2,00
UGDE2500A5BRC *	25,00	25,00	125,00	190,00	2,50
UGDE2500A5BRD	25,00	25,00	125,00	190,00	3,00
UGDE2500A5BRE	25,00	25,00	125,00	190,00	4,00
UGDE2500A5BRP	25,00	25,00	125,00	190,00	6,00

NOTE: For application data, see page P39.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

HARVI™ II • UGDE • Unequal Flute Spacing • 3 x D Lengths of Cut



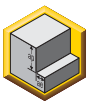


Material Group		Side Milling (A)		KC643M		Recommended feed per tooth (fz = mm/th) for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	20,0	25,0
P	1	Ap1 max	0,05 x D*	300	400	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	2	Ap1 max	0,05 x D*	280	380	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	3	Ap1 max	0,05 x D*	240	320	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	4	Ap1 max	0,05 x D*	180	300	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,088	0,098
	5	Ap1 max	0,05 x D*	120	200	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
	6	Ap1 max	0,05 x D*	100	150	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,065	0,071
M	1	Ap1 max	0,05 x D*	180	230	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	2	Ap1 max	0,05 x D*	120	160	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
	3	Ap1 max	0,05 x D*	120	140	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,065	0,071
K	1	Ap1 max	0,05 x D*	240	300	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	2	Ap1 max	0,05 x D*	220	260	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	3	Ap1 max	0,05 x D*	200	260	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
S	1	Ap1 max	0,05 x D*	100	180	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	2	Ap1 max	0,05 x D*	100	180	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	3	Ap1 max	0,05 x D*	50	80	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,054	0,061
	4	Ap1 max	0,05 x D*	100	120	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,074	0,084
H	1	Ap1 max	0,05 x D*	160	280	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,088	0,098

* For the above cutting data, do not exceed an overall ae of 0,8mm.

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centres, please adjust parameters accordingly on >12mm diameter.

HARVI™ II • UGDE • Unequal Flute Spacing • 5 x D Lengths of Cut





Material Group		Side Milling (A)		KC643M		Recommended feed per tooth (fz = mm/th) for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	20,0	25,0
P	1	Ap1 max	0,05 x D*	300	400	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	2	Ap1 max	0,05 x D*	280	380	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	3	Ap1 max	0,05 x D*	240	320	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	4	Ap1 max	0,05 x D*	180	300	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,088	0,098
	5	Ap1 max	0,05 x D*	120	200	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
	6	Ap1 max	0,05 x D*	100	150	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,065	0,071
M	1	Ap1 max	0,05 x D*	180	230	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	2	Ap1 max	0,05 x D*	120	160	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
	3	Ap1 max	0,05 x D*	120	140	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,065	0,071
K	1	Ap1 max	0,05 x D*	240	300	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	2	Ap1 max	0,05 x D*	220	260	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	3	Ap1 max	0,05 x D*	200	260	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
S	1	Ap1 max	0,05 x D*	100	180	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	2	Ap1 max	0,05 x D*	100	180	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	3	Ap1 max	0,05 x D*	50	80	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,054	0,061
	4	Ap1 max	0,05 x D*	100	120	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,074	0,084
H	1	Ap1 max	0,05 x D*	160	280	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,088	0,098

* For the above cutting data, do not exceed an overall ae of 0,8mm.

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centres, please adjust parameters accordingly on >12mm diameter.

HARVI™ II Trochoidal

High-Performance Solid Carbide End Mills

Primary Application

Kennametal trochoidal end mills are designed for high-feed applications up to 3 x D with low radial engagement and are tailored for CAM tool path generation software.

Designated for both roughing and finishing operations on open contours and deep cavities. Penetration of deep pockets bottoms of via helical interpolation with same tool reduces tool inventory and set-up time.

Features and Benefits

Advanced Technology

- Five unequally spaced flutes designed for chatter-free machining at highest feed rates.
- Front-end design optimised for helical operations.
- Patented flute and flute space for optimised chip control.

Tailored Grades

- KC643M™ grade optimised for steel, stainless, and high-temperature alloys.

Customisation

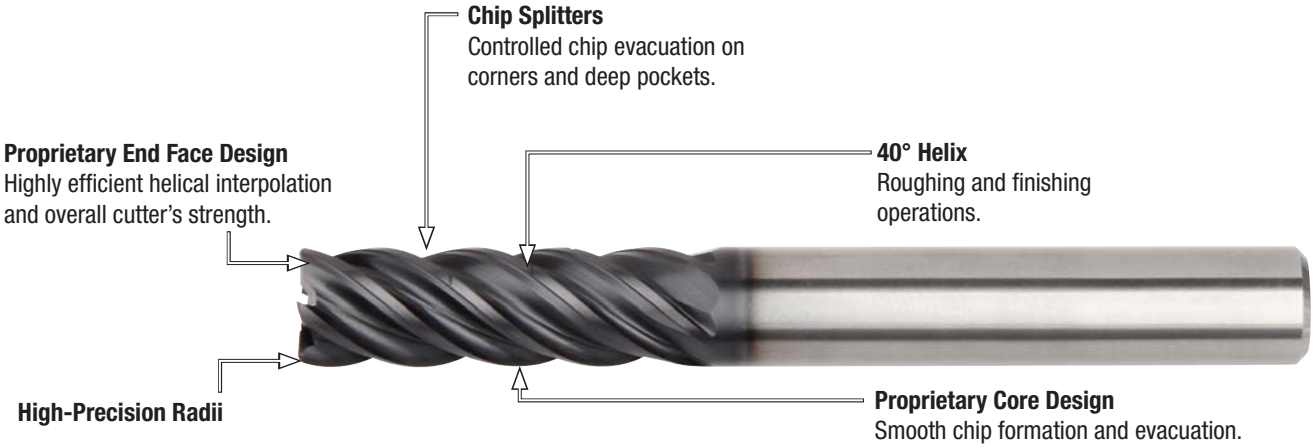
- Intermediate diameters available.
- Expanded length of tool, as well as increased length of cuts is possible.
- Different radii available.

Standard Offering

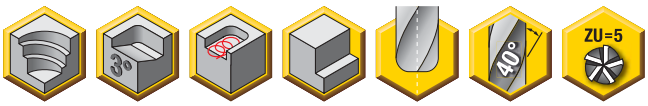
- Diameter ranges 8–25mm.

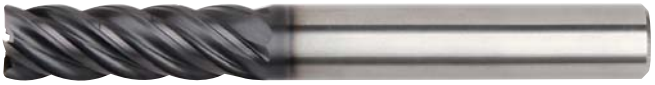
Designed for dynamic milling and trochoidal milling.

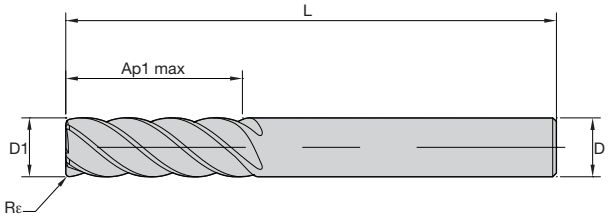




- Kennametal standard dimensions.
- Non-centre cutting.
- Roughing and finishing, cavities and open contour, requiring fewer setups.
- Unequally spaced fluted for chatter-free machining at highest feed rates.
- Optimised for trochoidal milling and helical operations.
- Patented flute and flute space for optimised chip control.



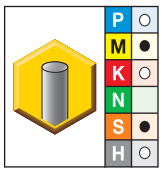




End Mill Tolerances

D1	tolerance	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

TCDE • Unequal Flute Spacing • With Chipsplitter



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L	Rε
TCDE0800A5CRE	8,00	8,00	24,00	67,00	0,50
TCDE1000A5CRE	10,00	10,00	30,00	80,00	0,50
TCDE1200A5CRF	12,00	12,00	36,00	100,00	0,75
TCDE1600A5CRG	16,00	16,00	48,00	110,00	1,00
TCDE2000A5CRG	20,00	20,00	60,00	125,00	1,00
TCDE2500A5CRG	25,00	25,00	75,00	150,00	1,00

NOTE: For application data, see pages P43–P44.

HARVI II Trochoidal • TCDE • Unequal Flute Spacing • ae 10% of D1

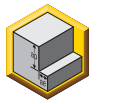
Material Group		Side Milling (A)		KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min		max	mm	8,0	10,0	12,0	16,0	20,0	25,0
P	0	Ap max	0,1 x D	150	–	440	fz	0,072	0,086	0,099	0,121	0,137	0,149
	1	Ap max	0,1 x D	150	–	440	fz	0,072	0,086	0,099	0,121	0,137	0,149
	2	Ap max	0,1 x D	140	–	418	fz	0,072	0,086	0,099	0,121	0,137	0,149
	3	Ap max	0,1 x D	120	–	352	fz	0,060	0,073	0,084	0,105	0,121	0,137
	4	Ap max	0,1 x D	90	–	330	fz	0,054	0,065	0,075	0,092	0,106	0,117
	5	Ap max	0,1 x D	60	–	220	fz	0,048	0,058	0,067	0,084	0,097	0,109
	6	Ap max	0,1 x D	50	–	165	fz	0,040	0,048	0,056	0,068	0,078	0,085
M	1	Ap max	0,1 x D	90	–	253	fz	0,060	0,073	0,084	0,105	0,121	0,137
	2	Ap max	0,1 x D	60	–	176	fz	0,048	0,058	0,067	0,084	0,097	0,109
	3	Ap max	0,1 x D	60	–	154	fz	0,040	0,048	0,056	0,068	0,078	0,085
K	1	Ap max	0,1 x D	120	–	330	fz	0,072	0,086	0,099	0,121	0,137	0,149
	2	Ap max	0,1 x D	110	–	308	fz	0,060	0,073	0,084	0,105	0,121	0,137
	3	Ap max	0,1 x D	110	–	286	fz	0,048	0,058	0,067	0,084	0,097	0,109
S	1	Ap max	0,1 x D	50	–	198	fz	0,060	0,073	0,084	0,105	0,121	0,137
	2	Ap max	0,1 x D	25	–	88	fz	0,032	0,038	0,045	0,056	0,065	0,074
	3	Ap max	0,1 x D	25	–	88	fz	0,032	0,038	0,045	0,056	0,065	0,074
	4	Ap max	0,1 x D	50	–	132	fz	0,044	0,053	0,062	0,077	0,089	0,100
H	1	Ap max	0,1 x D	80	–	308	fz	0,054	0,065	0,075	0,092	0,106	0,117
	2	Ap max	0,1 x D	70	–	264	fz	0,040	0,048	0,056	0,068	0,078	0,085

HARVI II Trochoidal • TCDE • Unequal Flute Spacing • ae 5% of D1

Material Group		Side Milling (A)		KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min		max	mm	8,0	10,0	12,0	16,0	20,0	25,0
P	0	Ap max	0,05 x D	150	–	540	fz	0,097	0,117	0,134	0,163	0,185	0,200
	1	Ap max	0,05 x D	150	–	540	fz	0,097	0,117	0,134	0,163	0,185	0,200
	2	Ap max	0,05 x D	140	–	513	fz	0,097	0,117	0,134	0,163	0,185	0,200
	3	Ap max	0,05 x D	120	–	432	fz	0,081	0,098	0,114	0,141	0,164	0,184
	4	Ap max	0,05 x D	90	–	405	fz	0,073	0,087	0,101	0,124	0,143	0,158
	5	Ap max	0,05 x D	60	–	270	fz	0,065	0,078	0,091	0,113	0,131	0,147
	6	Ap max	0,05 x D	50	–	202,5	fz	0,054	0,065	0,075	0,092	0,105	0,115
M	1	Ap max	0,05 x D	90	–	310,5	fz	0,081	0,098	0,114	0,141	0,164	0,184
	2	Ap max	0,05 x D	60	–	216	fz	0,065	0,078	0,091	0,113	0,131	0,147
	3	Ap max	0,05 x D	60	–	189	fz	0,054	0,065	0,075	0,092	0,105	0,115
K	1	Ap max	0,05 x D	120	–	405	fz	0,097	0,117	0,134	0,163	0,185	0,200
	2	Ap max	0,05 x D	110	–	378	fz	0,081	0,098	0,114	0,141	0,164	0,184
	3	Ap max	0,05 x D	110	–	351	fz	0,065	0,078	0,091	0,113	0,131	0,147
S	1	Ap max	0,05 x D	50	–	243	fz	0,081	0,098	0,114	0,141	0,164	0,184
	2	Ap max	0,05 x D	25	–	108	fz	0,043	0,052	0,060	0,075	0,087	0,099
	3	Ap max	0,05 x D	25	–	108	fz	0,043	0,052	0,060	0,075	0,087	0,099
	4	Ap max	0,05 x D	50	–	162	fz	0,060	0,072	0,084	0,104	0,120	0,135
H	1	Ap max	0,05 x D	80	–	378	fz	0,073	0,087	0,101	0,124	0,143	0,158
	2	Ap max	0,05 x D	70	–	324	fz	0,054	0,065	0,075	0,092	0,105	0,115

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centres, please adjust parameters accordingly on >12mm diameter.
For better surface finish, reduce feed per tooth.

HARVI II Trochoidal • TCDE • Unequal Flute Spacing • ae 2% of D1





Material Group		Side Milling (A)		KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min		max	mm	8,0	10,0	12,0	16,0	20,0	25,0
P	0	Ap max	0,02 x D	150	–	660	fz	0,140	0,168	0,194	0,236	0,267	0,290
	1	Ap max	0,02 x D	150	–	660	fz	0,140	0,168	0,194	0,236	0,267	0,290
	2	Ap max	0,02 x D	140	–	627	fz	0,140	0,168	0,194	0,236	0,267	0,290
	3	Ap max	0,02 x D	120	–	528	fz	0,117	0,142	0,164	0,204	0,236	0,266
	4	Ap max	0,02 x D	90	–	495	fz	0,105	0,126	0,146	0,180	0,206	0,228
	5	Ap max	0,02 x D	60	–	330	fz	0,094	0,113	0,131	0,163	0,189	0,213
	6	Ap max	0,02 x D	50	–	247,5	fz	0,079	0,095	0,109	0,133	0,152	0,166
M	1	Ap max	0,02 x D	90	–	379,5	fz	0,117	0,142	0,164	0,204	0,236	0,266
	2	Ap max	0,02 x D	60	–	264	fz	0,094	0,113	0,131	0,163	0,189	0,213
	3	Ap max	0,02 x D	60	–	231	fz	0,079	0,095	0,109	0,133	0,152	0,166
K	1	Ap max	0,02 x D	120	–	495	fz	0,140	0,168	0,194	0,236	0,267	0,290
	2	Ap max	0,02 x D	110	–	462	fz	0,117	0,142	0,164	0,204	0,236	0,266
	3	Ap max	0,02 x D	110	–	429	fz	0,094	0,113	0,131	0,163	0,189	0,213
S	1	Ap max	0,02 x D	50	–	297	fz	0,117	0,142	0,164	0,204	0,236	0,266
	2	Ap max	0,02 x D	25	–	132	fz	0,062	0,075	0,087	0,109	0,126	0,143
	3	Ap max	0,02 x D	25	–	132	fz	0,062	0,075	0,087	0,109	0,126	0,143
	4	Ap max	0,02 x D	50	–	198	fz	0,086	0,104	0,121	0,150	0,174	0,196
H	1	Ap max	0,02 x D	80	–	462	fz	0,105	0,126	0,146	0,180	0,206	0,228
	2	Ap max	0,02 x D	70	–	396	fz	0,079	0,095	0,109	0,133	0,152	0,166

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centres, please adjust parameters accordingly on >12mm diameter.
For better surface finish, reduce feed per tooth.

Dynamic Milling • Trochoidal Milling

The Concept

- Transfer the basic idea of controlling of chip thickness to dynamic processes.
- Dynamic adaption of feed in relation to ae and wrap angle through an intelligent CAM software.
- Using helix interpolation, D-lanes, and morphing cycles tailored to the workpiece shape and material.



The Benefits of Trochoidal Milling include:

For the tool:

- Better chip evacuation.
- Better usage of tool length.
- Higher cutting speed and feed per tooth possible.

For the machining process:

- Tremendously reduced chip load on the cutting edge.
- Reduced temperature during the machining process.
- Reduced cycle time and increased tool life.

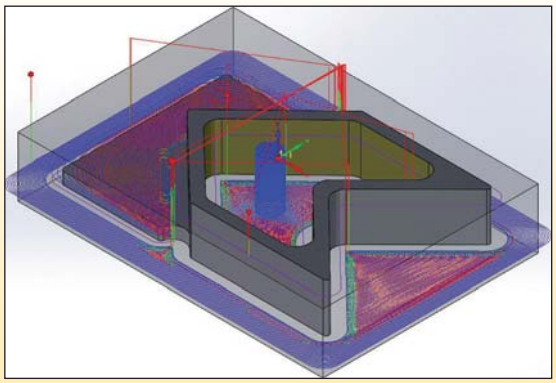
For the machining centre:

- Reduced torque and power requirements for the machine.
- Lower risk of spindle damage through torque fluctuation and reduced torque peaks caused by conventional milling processes.
- Addressing market shifts by utilising high RPM spindle machines previously dedicated for aluminium, and now for stainless steel, titanium, and other demanding applications.

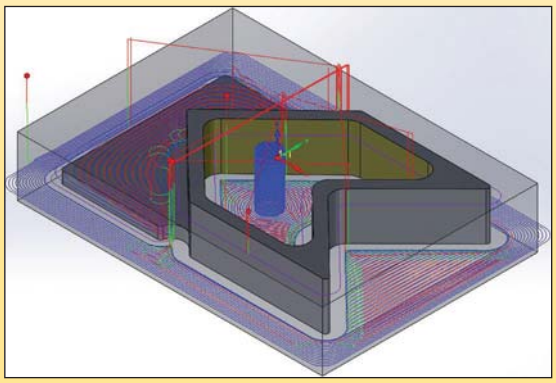
Requirements:

- Highly dynamic CNC machining centre.
- 3D model based CNC programming.
- CAD/CAM tool path optimisation software.
- Sophisticated end milling tool.
- Cutting data for trochoidal machining.

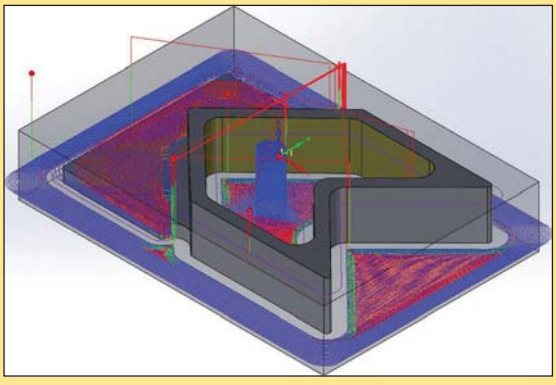
Tool path for high-alloy steel



Tool path for stainless steel



Tool path for titanium



HARVI™ III

High-Performance Solid Carbide End Mills

Primary Application

The HARVI III system takes high-performance profiling, semi-finishing, and finishing to the next level. These end mills are designed to provide maximum metal removal rates in titanium and stainless steel while achieving supreme surface conditions. A wide range of diameters and corner radii are available from stock as well as the Safe-Lock™ system by HAIMER® shanks.

- Outstanding metal removal rates increase productivity.
- Longest tool life due to eccentric relief grind and proprietary KCSM15™ Beyond™ grade.
- Increased process safety with Safe-Lock™ shanks.

Features and Benefits

Advanced Technology

- Six unequally spaced flutes for chatter-free machining at high feed rates.
- Lower cutting forces and pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core provides highest tool stability in roughing and finishing operations.
- Centre cutting design for higher flexibility as well as radial and axial finishing pass after roughing operation.

Tailored Grades

- KCSM15™ Beyond™ grade for exceptional tool life in titanium and stainless steels.

Customisation

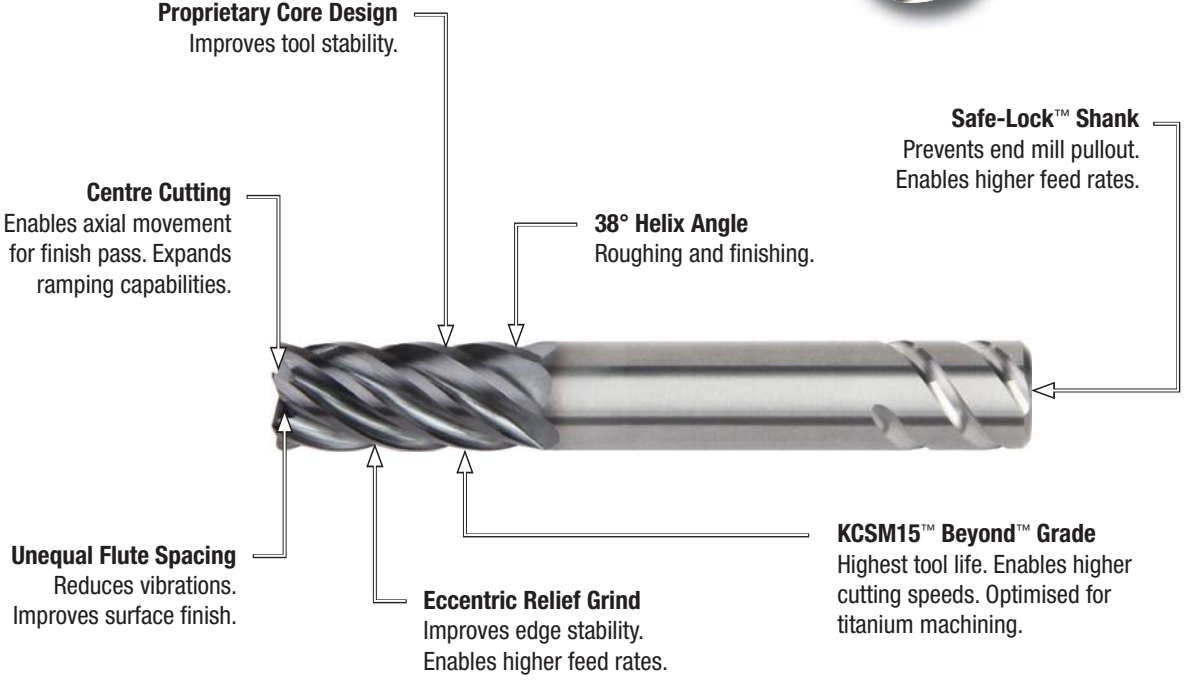
- Engineered solutions, including ball nose versions, are available upon request.

Extensive Standard Offering

- Diameter ranges 10–25mm.
- Necked, corner radii, and square-end offering.
- Round shank and Safe-Lock™ shank available.

Maximum metal removal rates in machining titanium and stainless steel with supreme surfaces.



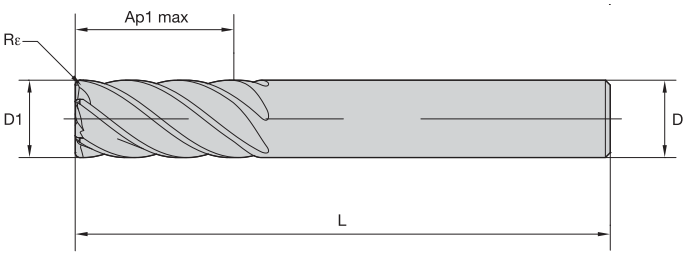


SAFE-λOCK®
by HAIMER®

- Kennametal standard dimensions.
- Centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





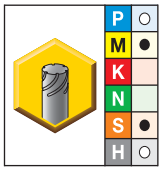


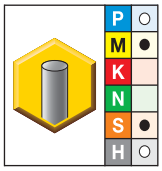
End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

UJDE • 6 Flute with Eccentric Relief Grind • Metric



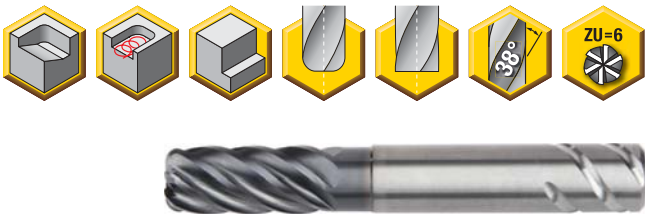


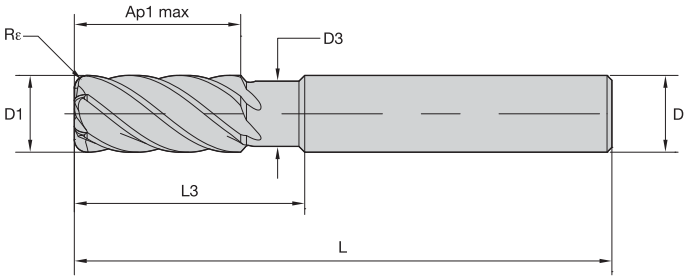
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
–	**UJDE1000A6ARE**	10,00	10,00	22,00	72,00	0,50
–	**UJDE1000A6AS**	10,00	10,00	22,00	72,00	–
UJDE1200E6ARF	**UJDE1200A6ARF**	12,00	12,00	26,00	83,00	0,75
–	**UJDE1200A6AS**	12,00	12,00	26,00	83,00	–
UJDE1400E6ARF	**UJDE1400A6ARF**	14,00	14,00	26,00	83,00	0,75
–	**UJDE1400A6AS**	14,00	14,00	26,00	83,00	–
UJDE1600E6ARF	**UJDE1600A6ARF**	16,00	16,00	32,00	92,00	0,75
–	**UJDE1600A6AS**	16,00	16,00	32,00	92,00	–
UJDE2000E6ARF	**UJDE2000A6ARF**	20,00	20,00	38,00	104,00	0,75
–	**UJDE2000A6AS**	20,00	20,00	38,00	104,00	–
UJDE2500E6ARF	**UJDE2500A6ARF**	25,00	25,00	45,00	121,00	0,75
–	**UJDE2500A6AS**	25,00	25,00	45,00	121,00	–

NOTE: For application data, see page P50.

- Kennametal standard dimensions.
- Centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



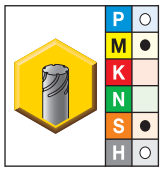


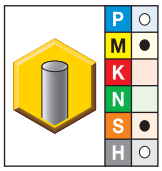
End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014 / -0,028	≤3	+0 / -0,006
>3–6	-0,020 / -0,038	>3–6	+0 / -0,008
>6–10	-0,025 / -0,047	>6–10	+0 / -0,009
>10–18	-0,032 / -0,059	>10–18	+0 / -0,011
>18–30	-0,040 / -0,073	>18–30	+0 / -0,013

beyond

UJDE • 6 Flute with Eccentric Relief Grind and Neck • Metric





● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	D3	Ap1 max	L3	L	Rε
–	UJDE1000A6AQE	10,00	10,00	9,40	22,00	30,00	76,00	0,50
–	UJDE1000A6AQG	10,00	10,00	9,40	22,00	30,00	76,00	1,00
–	UJDE1000A6AQK	10,00	10,00	9,40	22,00	30,00	76,00	2,00
–	UJDE1000A6AQM *	10,00	10,00	9,40	22,00	30,00	76,00	3,00
–	UJDE1000A6ANS	10,00	10,00	9,40	22,00	30,00	76,00	–
UJDE1200E6AQE	UJDE1200A6AQE	12,00	12,00	11,28	26,00	36,00	83,00	0,50
UJDE1200E6AQG	UJDE1200A6AQG	12,00	12,00	11,28	26,00	36,00	83,00	1,00
UJDE1200E6AQK	UJDE1200A6AQK	12,00	12,00	11,28	26,00	36,00	83,00	2,00
UJDE1200E6AQM	UJDE1200A6AQM	12,00	12,00	11,28	26,00	36,00	83,00	3,00
–	UJDE1200A6ANS	12,00	12,00	11,28	26,00	36,00	83,00	–
UJDE1600E6AQE	UJDE1600A6AQE	16,00	16,00	15,04	32,00	48,00	100,00	0,50
UJDE1600E6AQG	UJDE1600A6AQG	16,00	16,00	15,04	32,00	48,00	100,00	1,00
UJDE1600E6AQK	UJDE1600A6AQK	16,00	16,00	15,04	32,00	48,00	100,00	2,00
UJDE1600E6AQM	UJDE1600A6AQM	16,00	16,00	15,04	32,00	48,00	100,00	3,00
UJDE1600E6AQN	UJDE1600A6AQN	16,00	16,00	15,04	32,00	48,00	100,00	4,00
–	UJDE1600A6AQP	16,00	16,00	15,04	32,00	48,00	100,00	6,00
–	UJDE1600A6ANS	16,00	16,00	15,04	32,00	48,00	100,00	–
UJDE2000E6AQE	UJDE2000A6AQE	20,00	20,00	18,80	38,00	60,00	115,00	0,50
UJDE2000E6AQG	UJDE2000A6AQG	20,00	20,00	18,80	38,00	60,00	115,00	1,00
UJDE2000E6AQK	UJDE2000A6AQK	20,00	20,00	18,80	38,00	60,00	115,00	2,00
UJDE2000E6AQM	UJDE2000A6AQM	20,00	20,00	18,80	38,00	60,00	115,00	3,00
UJDE2000E6AQN	UJDE2000A6AQN	20,00	20,00	18,80	38,00	60,00	115,00	4,00
–	UJDE2000A6AQP	20,00	20,00	18,80	38,00	60,00	115,00	6,00
–	UJDE2000A6ANS	20,00	20,00	18,80	38,00	60,00	115,00	–
UJDE2500E6AQE *	UJDE2500A6AQE *	25,00	25,00	23,50	45,00	75,00	135,00	0,50
UJDE2500E6AQG *	UJDE2500A6AQG *	25,00	25,00	23,50	45,00	75,00	135,00	1,00
UJDE2500E6AQK *	UJDE2500A6AQK *	25,00	25,00	23,50	45,00	75,00	135,00	2,00
UJDE2500E6AQM *	UJDE2500A6AQM *	25,00	25,00	23,50	45,00	75,00	135,00	3,00
UJDE2500E6AQN *	UJDE2500A6AQN *	25,00	25,00	23,50	45,00	75,00	135,00	4,00
–	UJDE2500A6AQP	25,00	25,00	23,50	45,00	75,00	135,00	6,00

NOTE: For application data, see page P51.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

HARVI III • UJDE • Unequal Flute Spacing • Roughing

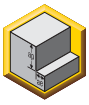




Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed – vc m/min			D1 – Diameter					
		ap	ae	min	max	mm	10,0	12,0	16,0	18,0	20,0	25,0
P	4	Ap1 max	0,4 x D	90	150	fz	0,054	0,062	0,077	0,083	0,088	0,098
	5	Ap1 max	0,4 x D	60	100	fz	0,048	0,056	0,070	0,076	0,081	0,091
M	1	Ap1 max	0,4 x D	90	115	fz	0,061	0,070	0,087	0,095	0,101	0,114
	2	Ap1 max	0,4 x D	60	80	fz	0,048	0,056	0,070	0,076	0,081	0,091
	3	Ap1 max	0,4 x D	60	70	fz	0,040	0,047	0,057	0,061	0,065	0,071
S	1	Ap1 max	0,4 x D	50	90	fz	0,061	0,070	0,087	0,095	0,101	0,114
	2	Ap1 max	0,4 x D	25	40	fz	0,032	0,037	0,046	0,050	0,054	0,061
	3	Ap1 max	0,4 x D	25	40	fz	0,032	0,037	0,046	0,050	0,054	0,061
	4	Ap1 max	0,4 x D	50	60	fz	0,045	0,052	0,064	0,069	0,074	0,084
H	1	Ap1 max	0,4 x D	80	140	fz	0,054	0,062	0,077	0,083	0,088	0,098

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

HARVI III • UJDE • Unequal Flute Spacing • Finishing





Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed – vc m/min			D1 – Diameter					
		ap	ae	min	max	mm	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	4	Ap1 max	0,06 x D	171	285	fz	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	5	Ap1 max	0,06 x D	114	190	fz	0,058	0,067	0,076	0,084	0,091	0,097	0,109
M	1	Ap1 max	0,06 x D	171	218	fz	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	2	Ap1 max	0,06 x D	114	152	fz	0,058	0,067	0,076	0,084	0,091	0,097	0,109
	3	Ap1 max	0,06 x D	114	133	fz	0,048	0,056	0,062	0,068	0,073	0,078	0,085
S	1	Ap1 max	0,06 x D	95	171	fz	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	2	Ap1 max	0,06 x D	47,5	76	fz	0,038	0,045	0,050	0,056	0,060	0,065	0,074
	3	Ap1 max	0,06 x D	47,5	76	fz	0,038	0,045	0,050	0,056	0,060	0,065	0,074
	4	Ap1 max	0,06 x D	95	152	fz	0,053	0,062	0,070	0,077	0,083	0,089	0,100
H	1	Ap1 max	0,06 x D	152	266	fz	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	2	Ap1 max	0,06 x D	133	228	fz	0,048	0,056	0,062	0,068	0,073	0,078	0,085

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

HARVI III • UJDE • Unequal Flute Spacing • Roughing • With Neck



Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	10,0	12,0	16,0	18,0	20,0	25,0
P	4	Ap max	0,4 x D	90	150	fz	0,054	0,062	0,077	0,083	0,088	0,098
	5	Ap max	0,4 x D	60	100	fz	0,048	0,056	0,070	0,076	0,081	0,091
M	1	Ap max	0,4 x D	90	115	fz	0,061	0,070	0,087	0,095	0,101	0,114
	2	Ap max	0,4 x D	60	80	fz	0,048	0,056	0,070	0,076	0,081	0,091
	3	Ap max	0,4 x D	60	70	fz	0,040	0,047	0,057	0,061	0,065	0,071
S	1	Ap max	0,4 x D	50	90	fz	0,061	0,070	0,087	0,095	0,101	0,114
	2	Ap max	0,4 x D	25	40	fz	0,032	0,037	0,046	0,050	0,054	0,061
	3	Ap max	0,4 x D	25	40	fz	0,032	0,037	0,046	0,050	0,054	0,061
	4	Ap max	0,4 x D	50	60	fz	0,045	0,052	0,064	0,069	0,074	0,084
H	1	Ap max	0,4 x D	80	140	fz	0,054	0,062	0,077	0,083	0,088	0,098

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

HARVI III • UJDE • Unequal Flute Spacing • Finishing • With Neck



Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	4	Ap max	0,06 x D	171	285	fz	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	5	Ap max	0,06 x D	114	190	fz	0,058	0,067	0,076	0,084	0,091	0,097	0,109
M	1	Ap max	0,06 x D	171	218,5	fz	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	2	Ap max	0,06 x D	114	152	fz	0,058	0,067	0,076	0,084	0,091	0,097	0,109
	3	Ap max	0,06 x D	114	133	fz	0,048	0,056	0,062	0,068	0,073	0,078	0,085
S	1	Ap max	0,06 x D	95	171	fz	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	2	Ap max	0,06 x D	47,5	76	fz	0,038	0,045	0,050	0,056	0,060	0,065	0,074
	3	Ap max	0,06 x D	47,5	76	fz	0,038	0,045	0,050	0,056	0,060	0,065	0,074
	4	Ap max	0,06 x D	95	114	fz	0,053	0,062	0,070	0,077	0,083	0,089	0,100
H	1	Ap max	0,06 x D	152	266	fz	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	2	Ap max	0,06 x D	133	228	fz	0,048	0,056	0,062	0,068	0,073	0,078	0,085

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

HARVI™ III Ball Nose

High-Performance Solid Carbide End Mills

Primary Application

HARVI III Ball Nose tooling takes high-performance profiling, semi-finishing, and finishing to the next level. Designed to provide maximum metal removal rates in titanium and stainless steel while achieving supreme surface conditions. A wide range of diameters and length variations are available from stock.

- Outstanding metal removal rates increase productivity.
- Highest tool life due to eccentric relief grind and proprietary KCSM15™ Beyond™ grade.

Features and Benefits

Advanced Technology

- Six unequally spaced flutes for chatter-free machining at high feed rates.
- Less cutting forces and pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core provides highest tool stability at roughing and finishing operations.

Tailored Grade

- KCSM15 Beyond grade for exceptional tool life in titanium and stainless steels.

Extensive Standard Offering

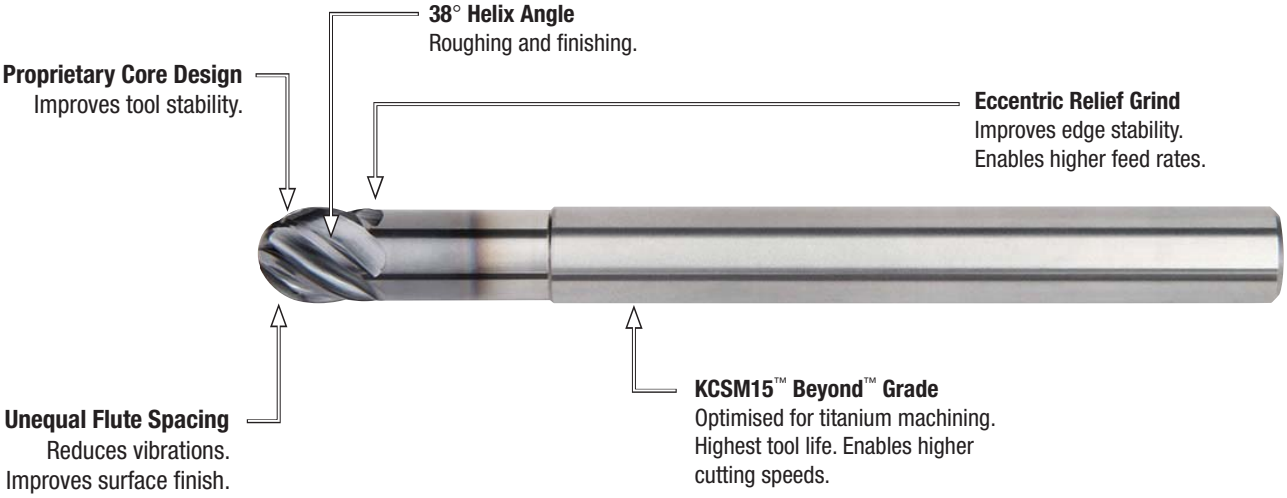
- Diameter ranges 10–20mm.
- Necked, round shank offering in two length variations.

Customisation

- Engineered solutions, including shank and non-standard length versions are available upon request.

3D profiling for highest productivity in titanium and stainless steel.

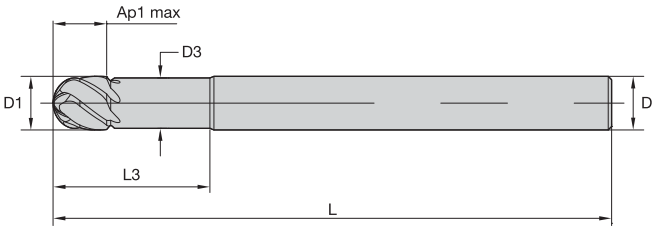




- Kennametal standard dimensions.
- Centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



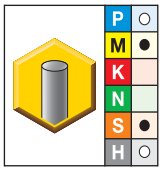




End Mill Tolerances

D1	tolerance	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

UJBE • 6-Flute Ball Nose with Eccentric Relief Grind • Metric



● first choice
○ alternate choice

KCSM15	D1	D	D3	Ap1 max	L3	L
UJBE1000A6AN	10,00	10,00	9,40	10,00	30,00	72,00
UJBE1000A6AL	10,00	10,00	9,40	10,00	30,00	121,50
UJBE1200A6AN	12,00	12,00	11,28	12,00	36,00	83,00
UJBE1200A6AL	12,00	12,00	11,28	12,00	36,00	125,00
UJBE1600A6AN	16,00	16,00	15,04	16,00	48,00	100,00
UJBE1600A6AL	16,00	16,00	15,04	16,00	48,00	150,00
UJBE2000A6AN	20,00	20,00	18,80	20,00	60,00	115,00
UJBE2000A6AL	20,00	20,00	18,80	20,00	60,00	150,00

NOTE: For application data, see pages P58–P59.

EADE Solid Ceramic End Mill



- Roughing nickel-based high-temperature alloys.
- Highest productivity and longest tool life.
- Outstanding reduction of machining time.
- Fewer tool changes due to higher tool life.
- Benefit from throw-away type of tooling.
- Minimum cutting speed of 400 m/min.

Offering

- 4-flute necked tools for slotting.
- 6-flute version for face and side milling.

KYS40

- Cutting speeds up to 1000 m/min increases Metal Removal Rates (MRR).

beyond™

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KENNAMETAL®

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HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Finish profile machining of keel for weapon attachment.
- Vertical machining centre.
- Titanium alloy beta (R56400).
- External emulsion.

SOLUTION

- HARVI III ball nose Ø 12,7mm with eccentric relief in KCSM15™.
- Six effective teeth.

CUTTING DATA

- vc 91 m/min
- fz 0,053 mm/z
- ap 30,5mm
- ae 0,6mm

RESULT

- Significantly increased tool life.
- Reduced machining time from 210 minutes to 90 minutes.
- Surface finish Ra 2,5 µm.

BENEFIT

- Predictable wear at main lands instead of cutting edge flaking with competitive tooling.
- Extended tool life of HARVI III eliminated a mid-part tool change.
- Improved surface finish compared to previous four-flute ball nose tools.

HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Rough profile yoke contour milling of bogey pitch trimmer.
- Lathe with driven tooling.
- 4340 low-alloy steel.
- External emulsion.

SOLUTION

- HARVI III ball nose Ø 20mm with eccentric relief in KCSM15.
- Six effective teeth.

CUTTING DATA

- vc 122 m/min
- fz 0,076 mm/z
- ap 43,2mm
- ae 2,5mm

RESULT

- Tool completed seven workpieces compared to five workpieces with existing tooling.
- Surface finish Ra 3,2 µm.

BENEFIT

- Reduced machining time from 88 minutes to 49 minutes.
- About 30% higher feed rate due to feed per tooth and six flutes rather than four flutes.

(continued)

(continued)



HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Hem stitch profile neck to flanged blend.
- Lathe with driven tooling.
- 4340 low alloy steel.
- External emulsion.

SOLUTION

- HARVI III ball nose Ø 12,7mm with eccentric relief in KCSM15™.
- Six effective teeth.

CUTTING DATA

- vc 107 m/min
- fz 0,064 mm/z
- ap 1,3mm
- ae 1,3mm

RESULT

- Increase in cutting speed from 46 m/mm to 107 m/min.
- Tool completed ten workpieces compared to six workpieces with existing tooling.

BENEFIT

- Reduced machining time to eight minutes compared to 29 minutes with competitive four-flute ball nose tool.
- 200% increase in Metal Removal Rates (MRR).

HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Finish interior walls and blend filet radius.
- Horizontal machining centre.
- 4340 low alloy steel.
- External emulsion.

SOLUTION

- HARVI III ball nose Ø 12,7mm with eccentric relief in KCSM15.
- Six effective teeth.

CUTTING DATA

- vc 107 m/min
- fz 0,064 mm/z
- ap 14mm
- ae 1,3mm

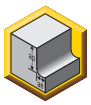
RESULT

- Tool completed six workpieces compared to two workpieces with existing solution.
- Surface finish Ra 2,75 µm.

BENEFIT

- Reduced machining time from 25 minutes to 10 minutes.
- Improved surface finish from Ra 3,93 µm to Ra 2,75 µm at accelerated feeds and speeds.
- Reduction in harmonics, noise level, and vibrations with HARVI III ball nose tooling.

HARVI III • UJBE • Ball Nose • Unequal Flute Spacing • Roughing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (fz = mm/th) for side milling (A).				
		A		Cutting Speed – vc m/min				D1 – Diameter			
		ap	ae	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	Ap max	0,4 x D	150	–	200	fz	0,072	0,083	0,101	0,114	0,124
	1	Ap max	0,4 x D	150	–	200	fz	0,072	0,083	0,101	0,114	0,124
	2	Ap max	0,4 x D	140	–	190	fz	0,072	0,083	0,101	0,114	0,124
	3	Ap max	0,4 x D	120	–	160	fz	0,061	0,070	0,087	0,101	0,114
	4	Ap max	0,4 x D	90	–	150	fz	0,054	0,062	0,077	0,088	0,098
	5	Ap max	0,4 x D	60	–	100	fz	0,048	0,056	0,070	0,081	0,091
	6	Ap max	0,4 x D	50	–	75	fz	0,040	0,047	0,057	0,065	0,071
M	1	Ap max	0,4 x D	90	–	115	fz	0,061	0,070	0,087	0,101	0,114
	2	Ap max	0,4 x D	60	–	80	fz	0,048	0,056	0,070	0,081	0,091
	3	Ap max	0,4 x D	60	–	70	fz	0,040	0,047	0,057	0,065	0,071
S	1	Ap max	0,4 x D	50	–	90	fz	0,061	0,070	0,087	0,101	0,114
	2	Ap max	0,4 x D	25	–	40	fz	0,032	0,037	0,046	0,054	0,061
	3	Ap max	0,4 x D	25	–	40	fz	0,032	0,037	0,046	0,054	0,061
	4	Ap max	0,4 x D	50	–	60	fz	0,045	0,052	0,064	0,074	0,084
H	1	Ap max	0,4 x D	80	–	140	fz	0,054	0,062	0,077	0,088	0,098

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

HARVI III • UJBE • Ball Nose • Unequal Flute Spacing • Finishing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (fz = mm/th) for side milling (A).				
		A		Cutting Speed — vc m/min				D1 — Diameter			
		ap	ae	min		max	mm	10,0	12,0	16,0	20,0	25,0
P	0	Ap max	0,06 x D	285	–	380	fz	0,086	0,099	0,121	0,137	0,149
	1	Ap max	0,06 x D	285	–	380	fz	0,086	0,099	0,121	0,137	0,149
	2	Ap max	0,06 x D	266	–	361	fz	0,086	0,099	0,121	0,137	0,149
	3	Ap max	0,06 x D	228	–	304	fz	0,073	0,084	0,105	0,121	0,137
	4	Ap max	0,06 x D	171	–	285	fz	0,065	0,075	0,092	0,106	0,117
	5	Ap max	0,06 x D	114	–	190	fz	0,058	0,067	0,084	0,097	0,109
	6	Ap max	0,06 x D	95	–	142,5	fz	0,048	0,056	0,068	0,078	0,085
M	1	Ap max	0,06 x D	171	–	218,5	fz	0,073	0,084	0,105	0,121	0,137
	2	Ap max	0,06 x D	114	–	152	fz	0,058	0,067	0,084	0,097	0,109
	3	Ap max	0,06 x D	114	–	133	fz	0,048	0,056	0,068	0,078	0,085
S	1	Ap max	0,06 x D	95	–	171	fz	0,073	0,084	0,105	0,121	0,137
	2	Ap max	0,06 x D	47,5	–	76	fz	0,038	0,045	0,056	0,065	0,074
	3	Ap max	0,06 x D	47,5	–	76	fz	0,038	0,045	0,056	0,065	0,074
	4	Ap max	0,06 x D	95	–	114	fz	0,053	0,062	0,077	0,089	0,100
H	1	Ap max	0,06 x D	152	–	266	fz	0,065	0,075	0,092	0,106	0,117

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

HARVI™ III Taper Ball Nose

High-Performance Solid Carbide End Mills

Primary Application

HARVI III taper ball nose addresses the demand from energy and aerospace turbine customers to increase output and solve capacity issues by significantly reducing of machining time in 5-axis machining.

- Up to 50% higher Metal Removal Rates (MRR) with same tool life or up to 50% higher tool life due to 6-flute geometry with unequal flute spacing.
- Different tapered front end for highest tool stability on a variety of long-reach applications.
- Proprietary KCSM15™ grade for high tool life.

Features and Benefits

Advanced Technology

- Six flutes in ball nose and taper section for highest metal removal rates.
- Unequally spaced flutes to minimise vibrations and provide high tool life and superior surface quality.

Tailored Grades

- KCSM15 Beyond™ grade for outstanding wear protection in stainless steels and high-temperature alloys.

Customisation

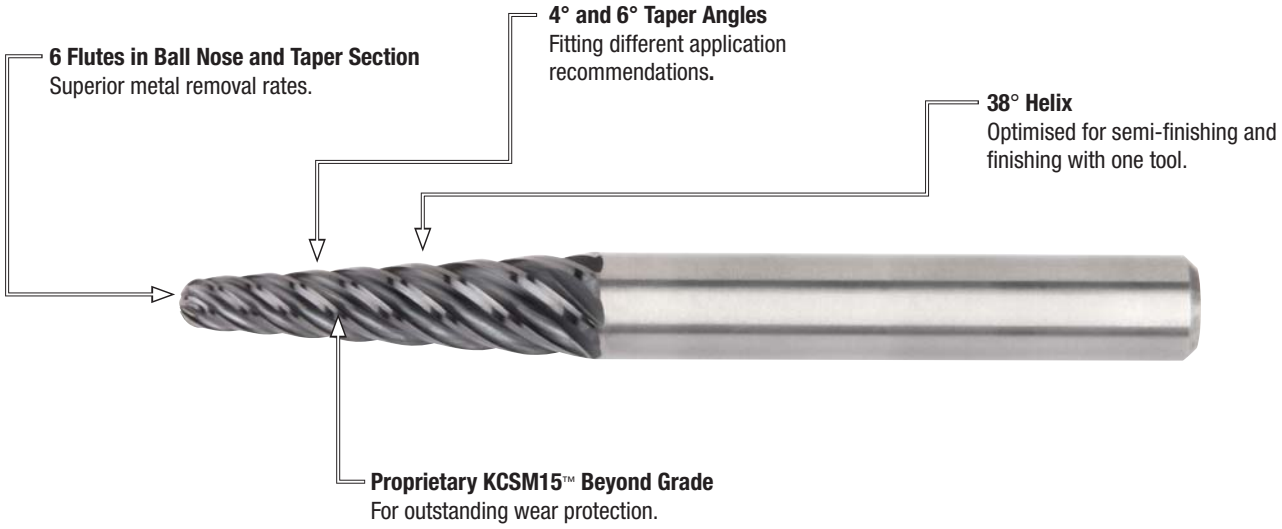
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.

Standard Offerings

- Diameter ranges 4–10mm

Designed for 5-axis machining in steel, stainless steel, nickel-based alloys, and titanium.

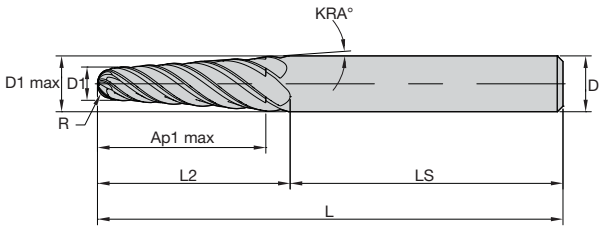




- Centre cutting.
- 6 flutes for highest material removal rates.
- Unequal flute spacing minimises chatter for smoother machining.
- 2 taper angle versions for optimised stability in long-reach operations.
- Single tool for both semi-finishing and finishing operations requiring fewer setups.
- Optimised geometry for stainless, nickel-based alloys, and titanium machining.



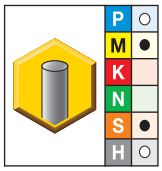




End Mill Tolerances

D1	tolerance	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

UJBE • 6-Flute Taper Ball Nose • Unequal Flute Spacing



● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L2	L	LS	R	KRA
UJBE0400A6CP	4,00	8,00	26,00	3 0,53	76,00	45,47	2,00	4.00
UJBE0400A6BP	4,00	10,00	25,00	30,44	89,00	58,56	2,00	6.00
UJBE0500A6CP	5,00	10,00	33,00	38,16	89,00	50,84	2,50	4.00
UJBE0500A6BP	5,00	12,00	29,00	35,67	100,00	64,33	2,50	6.00
UJBE0600A6BP	6,00	12,00	39,00	45,80	100,00	54,20	3,00	4.00
UJBE0600A6CP	6,00	16,00	42,00	50,42	110,00	59,59	3,00	6.00
UJBE0700A6BP	7,00	12,00	33,00	39,13	100,00	60,87	3,50	4.00
UJBE0700A6CP	7,00	16,00	38,00	46,13	110,00	63,87	3,50	6.00
UJBE0800A6CP	8,00	14,00	39,00	46,76	100,00	53,24	4,00	4.00
UJBE0800A6BP	8,00	16,00	33,00	41,85	110,00	68,15	4,00	6.00
UJBE1000A6BP	10,00	16,00	25,00	33,28	110,00	76,72	5,00	6.00
UJBE1000A6CP	10,00	16,00	39,00	47,73	110,00	62,27	5,00	4.00

NOTE: For application data, see pages P68–P69.

Superior Finishing

MaxiMet™

Designed to significantly reduce machining time in aluminium! The innovative geometry designs include a wiper facet for superior surface finish on aluminium parts. MaxiMet handles roughing and finishing cuts with one tool.

- Use only one tool for roughing and finishing operations.
- Slotting is effective up to full 1 x D axial depth; side milling is effective up to 0,5 x D radial, by 1,5 x D axial depth.
- Three-flute series uses unequal flute spacing for chatter-free performance.
- Effective in a full range of machine speeds.
- Multiple corner radii and extended neck configurations are available as standard.



Visit **kennametal.com** or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

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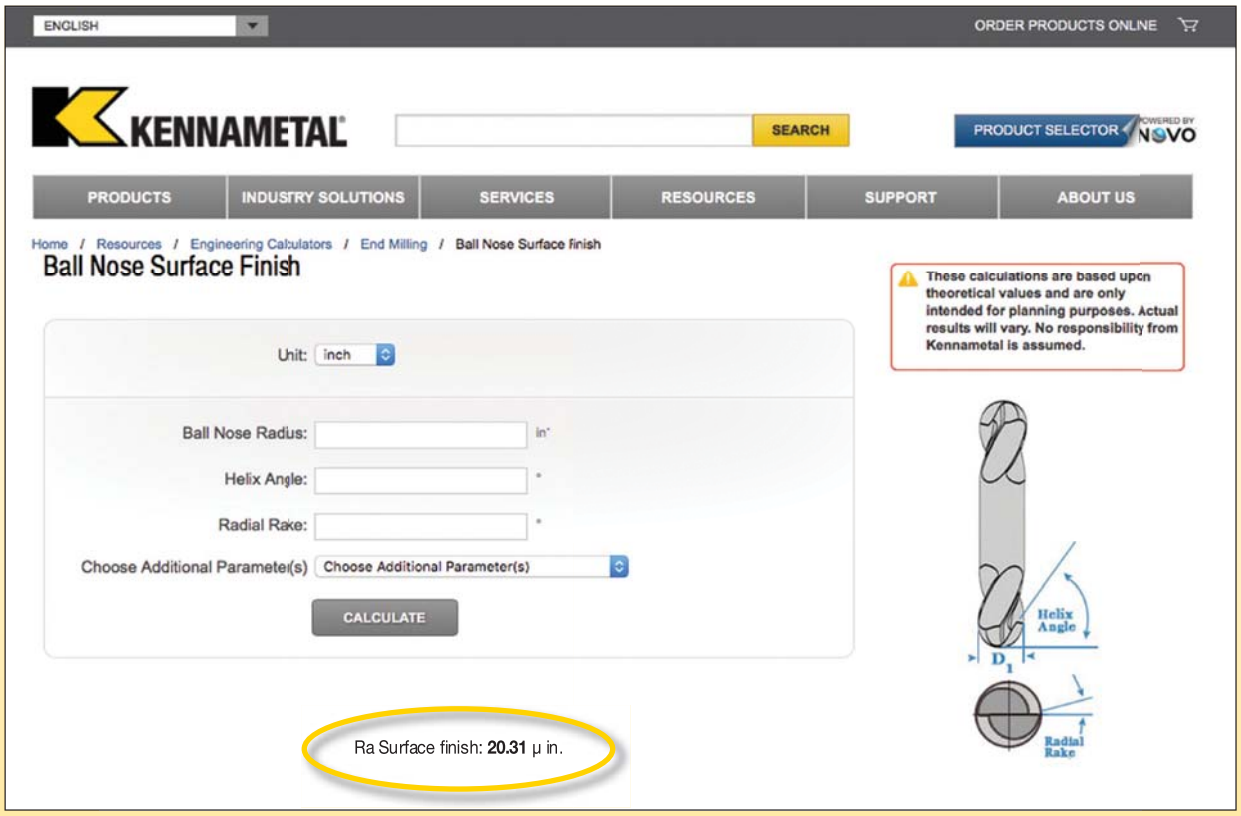
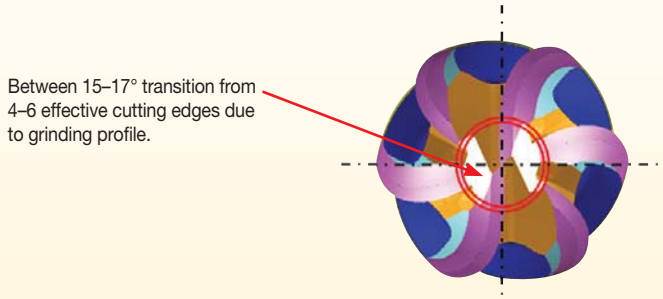
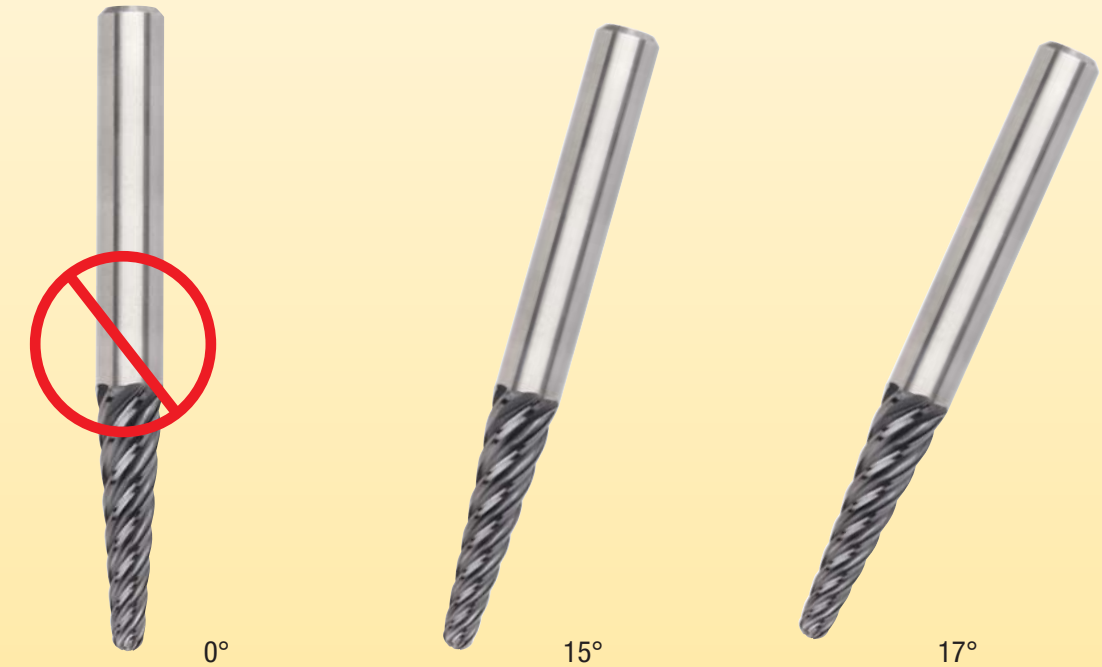


Use 5–10° for radial rake angle.

Make use of calculators such as:
kennametal.com/en/resources/calculators/
end-milling-calculators/ball-nose-surface-finish.html

Not all 6 cutting edges are reaching to the centre of the HARVI III taper ball nose end mill.
Therefore, certain machining angles will result in different numbers of effective cutting edges.





Avoid (centre cutting speed = 0)

<15° z = 2 effective cutting edges

>17° z = 6 effective cutting edges



HARVI™ III Taper Ball Nose UJBE

CHALLENGE

- Finishing contour milling with lightly interrupted cut.
- Blade machining for energy customer.
- X22 CrMoV12.
- External emulsion.

SOLUTION

- HARVI III taper ball nose UJBE, 6° taper angle, and KCSM15™ with 6 effective cutting edges, Ø 6mm.

CUTTING DATA

- vc 100 m/min
- fz 0,05mm/Z
- ap 2mm
- ae 0,6mm

RESULT

- 73% increased productivity.

BENEFIT

- Reduced cost per component as the tool life increased.
- New 6-flute geometry has given better surface finish compared to 4 flutes.
- Regrindable tool.

HARVI III Taper Ball Nose UJBE

CHALLENGE

- Finishing intersection and hub on blade airfoil.
- Blade machining for energy customer.
- X22CrMoV12-1.
- External emulsion.

SOLUTION

- HARVI III taper ball nose UJBE, 6° taper angle, and KCSM15 with 6 effective cutting edges, Ø 10mm.

CUTTING DATA

- vc 260 m/min
- fz 0,06mm/Z
- ap 0,6mm
- ae 0,6mm

RESULT

- 50% increase in feed.
- 28% increase in tool life.
- Improved surface finish and minimum wear on edges.

BENEFIT

- Reduced tooling cost.
- Reduction in cost per component.
- Good surface finish.
- Regrindable tool.

(continued)

(continued)



HARVI™ III Taper Ball Nose UJBE

CHALLENGE

- Finishing intersection and hub on blade airfoil.
- X22CrMoV12-1.
- External emulsion.

SOLUTION

- UJBE with KCSM15™.
- Ø 4mm with 8 effective cutting edges.

CUTTING DATA

- vc 140 m/min
- fz 0,015mm/Z
- ap 0,5mm
- ae 0,35mm

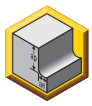
RESULT

- Substantial increase in Metal Removal Rates (MRR).

BENEFIT

- Improved surface quality.
- Regrindable tool to reduce tool cost.

HARVI III • UJBE • 6-Flute Taper Ball Nose • Unequal Flute Spacing • Semi-Finishing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		Cutting Speed — vc m/min				D1 — Diameter				
		ap	ae	min		max	mm	10,0	12,0	16,0	18,0	20,0	25,0
P	0	Ap max	0,4 x D	150	–	200	fz	0,072	0,083	0,101	0,108	0,114	0,124
	1	Ap max	0,4 x D	150	–	200	fz	0,072	0,083	0,101	0,108	0,114	0,124
	2	Ap max	0,4 x D	140	–	190	fz	0,072	0,083	0,101	0,108	0,114	0,124
	3	Ap max	0,4 x D	120	–	160	fz	0,061	0,070	0,087	0,095	0,101	0,114
	4	Ap max	0,4 x D	90	–	150	fz	0,054	0,062	0,077	0,083	0,088	0,098
	5	Ap max	0,4 x D	60	–	100	fz	0,048	0,056	0,070	0,076	0,081	0,091
M	1	Ap max	0,4 x D	90	–	115	fz	0,061	0,070	0,087	0,095	0,101	0,114
	2	Ap max	0,4 x D	60	–	80	fz	0,048	0,056	0,070	0,076	0,081	0,091
	3	Ap max	0,4 x D	60	–	70	fz	0,040	0,047	0,057	0,061	0,065	0,071
S	1	Ap max	0,4 x D	50	–	90	fz	0,061	0,070	0,087	0,095	0,101	0,114
	2	Ap max	0,4 x D	25	–	40	fz	0,032	0,037	0,046	0,050	0,054	0,061
	3	Ap max	0,4 x D	25	–	40	fz	0,032	0,037	0,046	0,050	0,054	0,061
	4	Ap max	0,4 x D	50	–	60	fz	0,045	0,052	0,064	0,069	0,074	0,084
H	1	Ap max	0,4 x D	80	–	140	fz	0,054	0,062	0,077	0,083	0,088	0,098

* For the above cutting data, do not exceed an overall ae of 0,8mm.

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centres, please adjust parameters accordingly on >12mm diameter.

UJBE • 6-Flute Taper Ball Nose • Unequal Flute Spacing • Finishing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		Cutting Speed — vc m/min				D1 — Diameter				
		ap	ae	min		max	mm	10,0	12,0	16,0	18,0	20,0	25,0
P	0	Ap max	0,06 x D	285	–	380	fz	0,086	0,099	0,121	0,130	0,137	0,149
	1	Ap max	0,06 x D	285	–	380	fz	0,086	0,099	0,121	0,130	0,137	0,149
	2	Ap max	0,06 x D	266	–	361	fz	0,086	0,099	0,121	0,130	0,137	0,149
	3	Ap max	0,06 x D	228	–	304	fz	0,073	0,084	0,105	0,113	0,121	0,137
	4	Ap max	0,06 x D	171	–	285	fz	0,065	0,075	0,092	0,099	0,106	0,117
	5	Ap max	0,06 x D	114	–	190	fz	0,058	0,067	0,084	0,091	0,097	0,109
M	1	Ap max	0,06 x D	171	–	218,5	fz	0,073	0,084	0,105	0,113	0,121	0,137
	2	Ap max	0,06 x D	114	–	152	fz	0,058	0,067	0,084	0,091	0,097	0,109
	3	Ap max	0,06 x D	114	–	133	fz	0,048	0,056	0,068	0,073	0,078	0,085
S	1	Ap max	0,06 x D	95	–	171	fz	0,073	0,084	0,105	0,113	0,121	0,137
	2	Ap max	0,06 x D	47,5	–	76	fz	0,038	0,045	0,056	0,060	0,065	0,074
	3	Ap max	0,06 x D	47,5	–	76	fz	0,038	0,045	0,056	0,060	0,065	0,074
	4	Ap max	0,06 x D	95	–	114	fz	0,053	0,062	0,077	0,083	0,089	0,100
H	1	Ap max	0,06 x D	152	–	266	fz	0,065	0,075	0,092	0,099	0,106	0,117

* For the above cutting data, do not exceed an overall ae of 0,8mm.

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centres, please adjust parameters accordingly on >12mm diameter.

XE/XER

High-Performance Solid Carbide End Mills

Primary Application

XE and XER radius end mills are specially developed and manufactured for stainless steel, titanium, and high-temperature alloys that are typically found in aerospace, defence, medical, oil, and gas end markets.

- Roughing and finishing with one tool.
- Highest Metal Removal Rates (MRR) optimise productivity.
- Tough and wear resistant substrate.
- Advanced nano composite PVD coating.

Features and Benefits

Advanced Technology

- Four flutes with unequal helix for chatter-free machining at high feed rates.
- Centre cutting for helical operations and pocketing.
- Front-end design and unequal helix for optimised chip control.

Tailored Grades

- SP4060 grade with tough and wear-resistant substrate, advanced nano-composite PVD coating for highest tool life.

Customisation

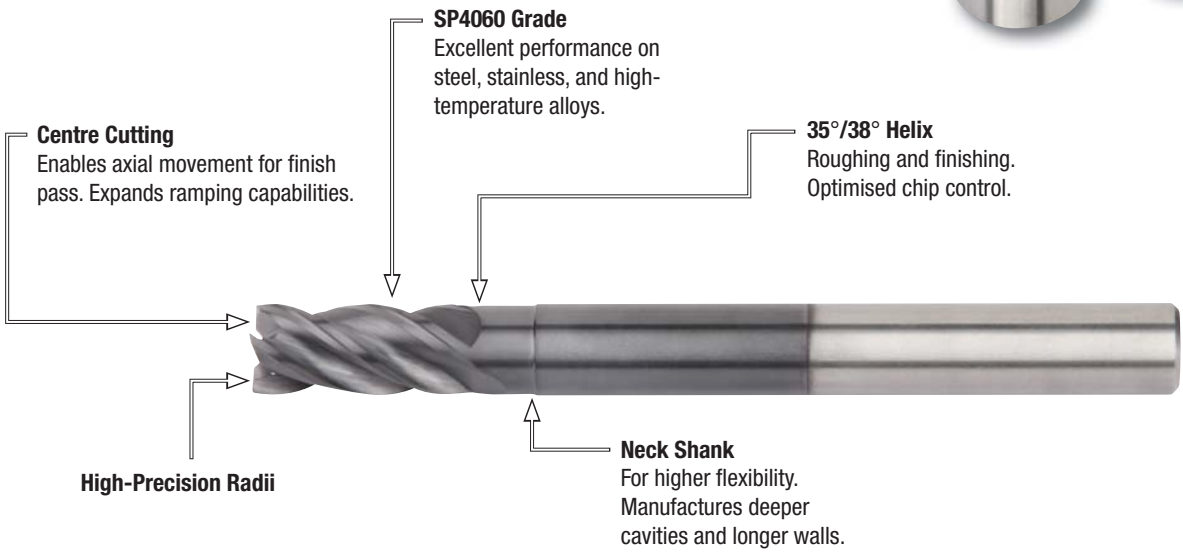
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.

Standard Offering

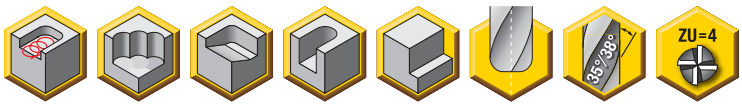
- Diameter ranges 2–20mm.

Designed for roughing and finishing with the highest Metal Removal Rates (MRR) in demanding materials.

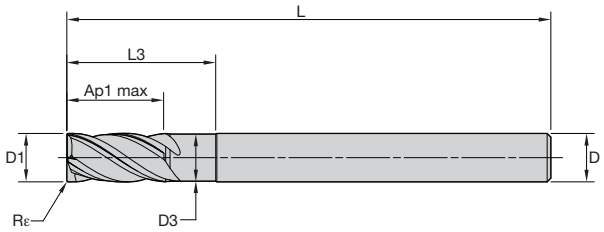




- Asymmetrical flute spacing and variable helix configuration minimises chatter and harmonics for smoother machining.
- Centre cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



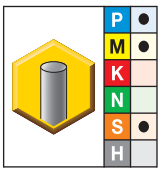




End Mill Tolerances

D1	tolerance h6/e8	D	tolerance h6
≤3	-0,006/-0,028	≤3	+0/-0,006
>3–6	-0,008/-0,068	>3–6	+0/-0,008
>6–10	-0,009/-0,047	>6–10	+0/-0,009
>10–18	-0,011/-0,059	>10–18	+0/-0,011
>18–30	-0,013/-0,073	>18–30	+0/-0,013
>30	-0,016/-0,089	>30	+0/-0,016

XE • 4 Flute • Metric

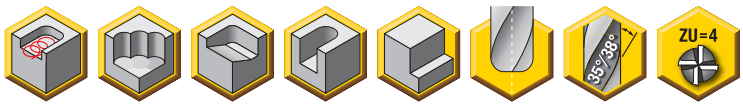


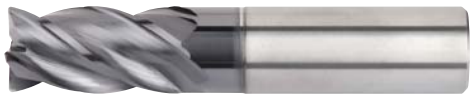
● first choice
○ alternate choice

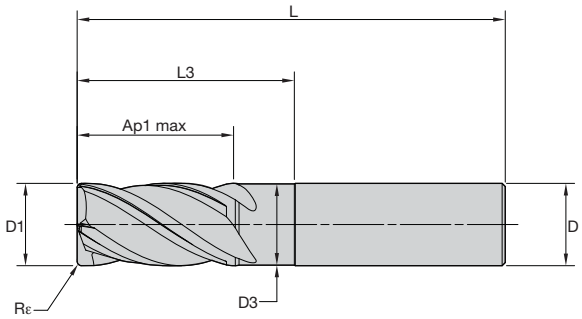
SP4060	D1	D	D3	Ap1 max	L	L3	Rε
XE020MTN4-C *	2,00	6,00	—	4,00	65,00	—	0,25
XE025MTN4-C *	2,50	6,00	—	5,00	65,00	—	0,25
XE030MTN4-C	3,00	6,00	—	6,00	65,00	—	0,25
XE040MTN4-C	4,00	6,00	—	8,00	65,00	—	0,25
XE050MTN4-C	5,00	6,00	—	10,00	75,00	—	0,25
XE060MN4-C	6,00	6,00	5,75	12,00	75,00	18,00	0,25
XE080MN4-C	8,00	8,00	7,75	16,00	75,00	24,00	0,25
XE100MN4-C	10,00	10,00	9,75	20,00	100,00	30,00	0,25
XE160MN4-C	16,00	16,00	15,75	32,00	115,00	48,00	0,25
XE200MN4-C *	20,00	20,00	19,75	40,00	120,00	60,00	0,25

NOTE: For application data, see page P74.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Asymmetrical flute spacing and variable helix configuration minimises chatter and harmonics for smoother machining.
- Centre cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



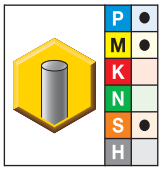




End Mill Tolerances

D1	tolerance h6/e8	D	tolerance h6
≤3	-0,006/-0,028	≤3	+0/-0,006
>3–6	-0,008/-0,068	>3–6	+0/-0,008
>6–10	-0,009/-0,047	>6–10	+0/-0,009
>10–18	-0,011/-0,059	>10–18	+0/-0,011
>18–30	-0,013/-0,073	>18–30	+0/-0,013
>30	-0,016/-0,089	>30	+0/-0,016

XER • 4 Flute • Metric



● first choice
○ alternate choice

SP4060	D1	D	D3	Ap1 max	L	L3	Rε
XER020NTN4-C *	2,00	6,00	—	7,00	57,00	—	0,25
XER030NTN4-C	3,00	6,00	—	8,00	57,00	—	0,25
XER040NTN4-C	4,00	6,00	—	11,00	57,00	—	0,25
XER040NTN4-E	4,00	6,00	—	11,00	57,00	—	0,50
XER050NTN4-E	5,00	6,00	—	13,00	57,00	—	0,50
XER060NN4-C	6,00	6,00	5,75	13,00	57,00	19,76	0,25
XER060NN4-E	6,00	6,00	5,75	13,00	57,00	19,76	0,50
XER060NN4-G	6,00	6,00	5,75	13,00	57,00	19,76	1,00
XER080NN4-C	8,00	8,00	7,75	19,00	63,00	25,76	0,25
XER080NN4-E	8,00	8,00	7,75	19,00	63,00	25,76	0,50
XER080NN4-G	8,00	8,00	7,75	19,00	63,00	25,76	1,00
XER100NN4-C	10,00	10,00	9,75	22,00	72,00	30,76	0,25
XER100NN4-E	10,00	10,00	9,75	22,00	72,00	30,76	0,50
XER100NN4-G	10,00	10,00	9,75	22,00	72,00	30,76	1,00
XER120NN4-C	12,00	12,00	11,75	26,00	83,00	36,76	0,25
XER120NN4-E *	12,00	12,00	11,75	26,00	83,00	36,76	0,50
XER120NN4-G	12,00	12,00	11,75	26,00	83,00	36,76	1,00
XER120NN4-J	12,00	12,00	11,75	26,00	83,00	36,76	1,50
XER120NN4-L	12,00	12,00	11,75	26,00	83,00	36,76	2,50
XER160NN4-C	16,00	16,00	15,75	32,00	92,00	43,00	0,25
XER160NN4-G	16,00	16,00	15,75	32,00	92,00	42,76	1,00
XER160NN4-J	16,00	16,00	15,75	32,00	92,00	42,76	1,50
XER160NN4-L	16,00	16,00	15,75	32,00	92,00	42,76	2,50
XER160NN4-M	16,00	16,00	15,75	32,00	92,00	42,76	3,00
XER160NN4-P	16,00	16,00	15,75	32,00	92,00	42,76	4,00
XER200NN4-G	20,00	20,00	19,75	38,00	104,00	52,76	1,00
XER200NN4-J	20,00	20,00	19,75	38,00	104,00	52,76	1,50
XER200NN4-M	20,00	20,00	19,75	38,00	104,00	52,76	3,00

NOTE: For application data, see page P74.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

XE/XER • Asymmetrical Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			SP4060			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.											
		A		B	Cutting Speed – vc m/min				D1 – Diameter										
		ap	ae	ap	min		max	mm	2,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	3	2,0 x D	0,5 x D	1 x D	120	–	160	fz	0,012	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	2,0 x D	0,5 x D	0,75 x D	90	–	150	fz	0,011	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	5	2,0 x D	0,5 x D	1 x D	60	–	100	fz	0,010	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	6	2,0 x D	0,5 x D	0,75 x D	50	–	75	fz	0,008	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
M	1	2,0 x D	0,5 x D	1 x D	90	–	115	fz	0,012	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	2,0 x D	0,5 x D	1 x D	60	–	80	fz	0,010	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	3	2,0 x D	0,5 x D	1 x D	60	–	70	fz	0,008	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
S	1	2,0 x D	0,5 x D	1 x D	50	–	90	fz	0,012	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	2,0 x D	0,5 x D	1 x D	25	–	40	fz	0,006	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	3	2,0 x D	0,5 x D	1 x D	25	–	40	fz	0,006	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	4	2,0 x D	0,5 x D	1 x D	50	–	60	fz	0,008	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**

High-Performance Solid Carbide Roughing End Mills

Primary Application

High-performance roughers can be applied in a wide range of workplace materials such as steels, stainless steels, cast irons, and in certain cases, hardened materials. Tailored roughing profiles reduce cutting forces to the necessary level or combine roughing and semi-finishing for fewer tool changes.

- High-performance universal tools for almost all cutting materials.
- Lower cutting forces and spindle power consumption.
- Centre cutting for plunging, ramping, profiling, high-feed slotting, and side milling.

Features and Benefits

Advanced Technology

- Up to full length of cut for:
  - Slotting
  - Side milling
  - Profiling
  - Semi-finishing
- Various roughing profiles available for the right balance between cutting forces, feed rates, and surface quality.
- Internal coolant for improved chip evacuation and extended tool life.

Tailored Grades

- From proprietary KCPM15™ Beyond™ grade for outstanding wear to uncoated tools suitable for a variety of workpiece materials.

Customisation

- Intermediate diameters available.
- Corner radii for near-shape roughing operations available.
- Various shank options, including the Safe-Lock™ system by HAIMER®, and non-standard coatings available.

Extensive Standard Offering

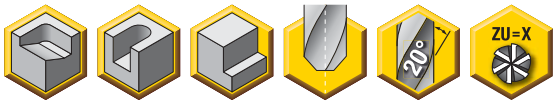
- Diameter ranges 4–25mm.
- Weldon® shank for maximum torque transmission.

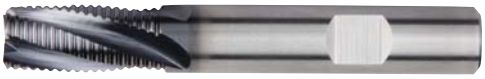
Highest metal removal rates — even on unstable machines or workpiece clamping.

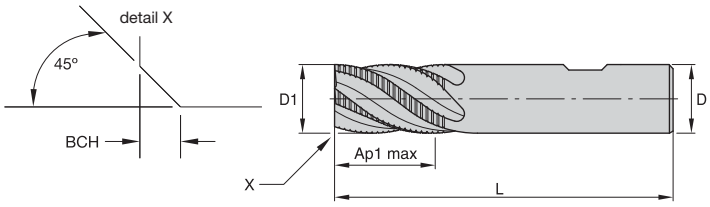




- Kennametal standard dimensions.
- Centre cutting.
- Cord profile.





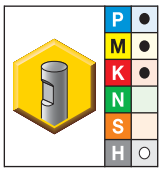


End Mill Tolerances

D1	tolerance d11	D	tolerance h6
≤ 3	-0,020/-0,080	≤ 3	+0/-0,006
> 3–6	-0,030/-0,105	> 3–6	+0/-0,008
> 6–10	-0,040/-0,130	> 6–10	+0/-0,009
> 10–18	-0,050/0,160	> 10–18	+0/-0,011
> 18–30	-0,065/-0,195	> 18–30	+0/-0,013

beyond

F3BH-F4BJ-F5BJ...WS-WM-WL-WX • Metric



● first choice
○ alternate choice

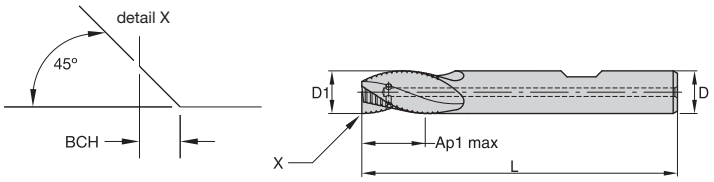
KCPM15	D1	D	Ap1 max	L	BCH	Z U
F3BH0400BWS20L110	4,00	6,00	11,00	55,00	0,30	3
F3BH0500BWS20L130	5,00	6,00	13,00	57,00	0,30	3
F3BH0600BWS20L080	6,00	6,00	8,00	54,00	0,30	3
F3BH0600BWS20L130	6,00	6,00	13,00	57,00	0,30	3
F3BH0800BWS20L110	8,00	8,00	11,00	58,00	0,30	3
F3BH0800BWM20L160	8,00	8,00	16,00	63,00	0,30	3
F4BJ1000BWM20L130	10,00	10,00	13,00	66,00	0,50	4
F4BJ1000BWM20L220	10,00	10,00	22,00	72,00	0,50	4
F4BJ1200BWM20L160	12,00	12,00	16,00	73,00	0,50	4
F4BJ1200BWL20L260	12,00	12,00	26,00	83,00	0,50	4
F4BJ1400BWL20L260	14,00	14,00	26,00	83,00	0,50	4
F4BJ1600BWL20L190	16,00	16,00	19,00	82,00	0,50	4
F4BJ1600BWL20L320	16,00	16,00	32,00	92,00	0,50	4
F4BJ2000BWL20L220	20,00	20,00	22,00	92,00	0,50	4
F4BJ2000BWX20L380	20,00	20,00	38,00	104,00	0,50	4
F5BJ2500BWX20L450	25,00	25,00	45,00	121,00	0,50	5

NOTE: For application data, see page P85.

- Kennametal standard dimensions.
- Centre cutting.
- Cord profile.
- Internal coolant for optimised chip removal and increased tool life.





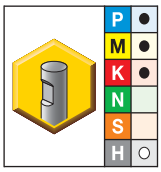


End Mill Tolerances

D1	tolerance d11	D	tolerance h6
≤ 3	-0,020 / -0,080	≤ 3	+0 / -0,006
> 3–6	-0,030 / -0,105	> 3–6	+0 / -0,008
> 6–10	-0,040 / -0,130	> 6–10	+0 / -0,009
> 10–18	-0,050 / -0,160	> 10–18	+0 / -0,011
> 18–30	-0,065 / -0,195	> 18–30	+0 / -0,013

beyond

F3BH-F4BJ...WS-WM-WL-WX • Internal Coolant • Metric

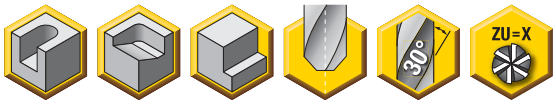


● first choice
○ alternate choice

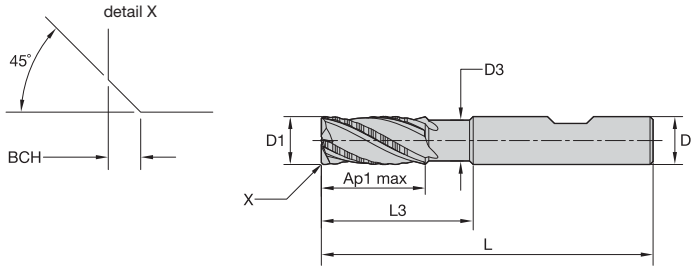
KCPM15	D1	D	Ap1 max	L	BCH	Z U
F3BH0800BWS20C110	8,00	8,00	11,00	58,00	0,30	3
F3BH0800BWM20C160	8,00	8,00	16,00	63,00	0,30	3
F4BJ1000BWM20C130	10,00	10,00	13,00	66,00	0,50	4
F4BJ1000BWM20C220	10,00	10,00	22,00	72,00	0,50	4
F4BJ1200BWM20C160	12,00	12,00	16,00	73,00	0,50	4
F4BJ1200BWL20C260	12,00	12,00	26,00	83,00	0,50	4
F4BJ1600BWL20C190	16,00	16,00	19,00	82,00	0,50	4
F4BJ1600BWL20C320	16,00	16,00	32,00	92,00	0,50	4
F4BJ2000BWL20C220	20,00	20,00	22,00	92,00	0,50	4
F4BJ2000BWX20C380	20,00	20,00	38,00	104,00	0,50	4

NOTE: For application data, see page P85.

- Kennametal standard dimensions.
- Centre cutting.
- Flat shallow profile.





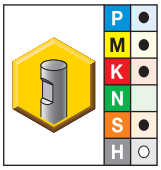


End Mill Tolerances

D1	tolerance d11	D	tolerance h6 + / -
≤ 3	-0,020/-0,080	≤ 3	0/0,006
> 3–6	-0,030/-0,105	> 3–6	0/0,008
> 6–10	-0,040/-0,130	> 6–10	0/0,009
> 10–18	-0,050/-0,160	> 10–18	0/0,011
> 18–30	-0,065/-0,195	> 18–30	0/0,013

beyond

RUDC.. • With Neck • Metric

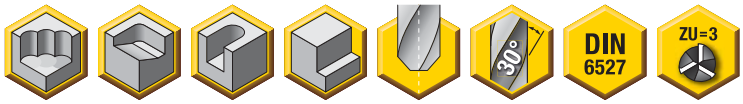


● first choice
○ alternate choice

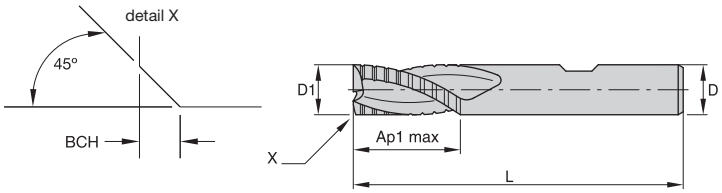
KCPM15	D1	D	D3	Ap1 max	L3	length L	BCH	Z U
RUDC0400B3BN	4,00	6,00	3,60	8,00	21,00	57,00	0,30	3
RUDC0500B3BN	5,00	6,00	4,60	13,00	21,00	57,00	0,30	3
RUDC0600B3BN	6,00	6,00	5,50	13,00	21,00	57,00	0,30	3
RUDC0800B3BN	8,00	8,00	7,50	16,00	27,00	63,00	0,30	3
RUDC1000B4BN	10,00	10,00	9,50	22,00	32,00	72,00	0,50	4
RUDC1200B4BN	12,00	12,00	11,00	26,00	38,00	83,00	0,50	4
RUDC1400B4BN	14,00	14,00	13,00	26,00	38,00	83,00	0,50	4
RUDC1600B4BN	16,00	16,00	15,00	32,00	44,00	92,00	0,50	4
RUDC1800B4BN	18,00	18,00	17,00	32,00	44,00	92,00	0,50	4
RUDC2000B4BN	20,00	20,00	19,00	38,00	54,00	104,00	0,50	4
RUDC2500B5BN	25,00	25,00	24,00	45,00	65,00	121,00	0,50	5

NOTE: For application data, see page P86.

- Centre cutting.
- Flat shallow profile.





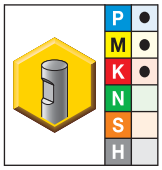


End Mill Tolerances

D1	tolerance h11	D	tolerance h6
≤3	+0/-0,060	≤3	+0/-0,006
>3–6	+0/-0,075	>3–6	+0/-0,008
>6–10	+0/-0,090	>6–10	+0/-0,009
>10–18	+0/-0,110	>10–18	+0/-0,011
>18–30	+0/-0,130	>18–30	+0/-0,013

beyond

F3BH...DL • DIN 6527 • Long • Metric

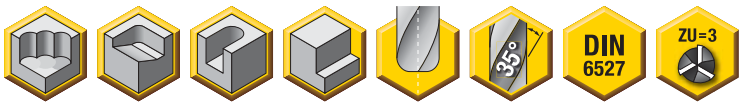


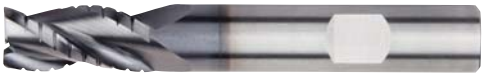
● first choice
○ alternate choice

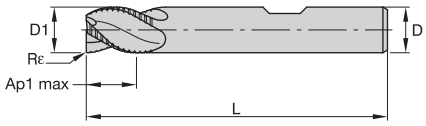
KCPM15	D1	D	Ap1 max	L	BCH
F3BH0400BDL30	4,00	6,00	8,00	57,00	0,10
F3BH0500BDL30	5,00	6,00	13,00	57,00	0,10
F3BH0600BDL30	6,00	6,00	10,00	57,00	0,10
F3BH0800BDL30	8,00	8,00	16,00	63,00	0,20
F3BH1000BDL30	10,00	10,00	19,00	72,00	0,30
F3BH1200BDL30	12,00	12,00	22,00	83,00	0,30
F3BH1600BDL30	16,00	16,00	26,00	92,00	0,40
F3BH2000BDL30	20,00	20,00	32,00	104,00	0,40
F3BH2500BDL30	25,00	25,00	45,00	121,00	0,40

NOTE: For application data, see page P86.

- Centre cutting.
- Chipbreaker profile.





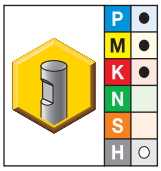


End Mill Tolerances

D1	tolerance d11	D	tolerance h6
≤ 3	-0,020/-0,080	≤ 3	+0/-0,006
> 3–6	-0,030/-0,105	> 3–6	+0/-0,008
> 6–10	-0,040/-0,130	> 6–10	+0/-0,009
> 10–18	-0,050/-0,160	> 10–18	+0/-0,011
> 18–30	-0,065/-0,195	> 18–30	+0/-0,013

beyond

F3BS...DK-DL • DIN 6527 • Short • Long • Metric

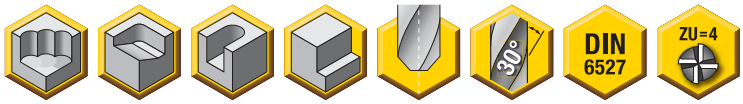


● first choice
○ alternate choice

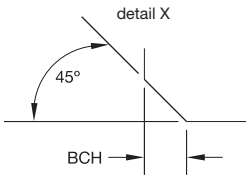
KCPM15	D1	D	Ap1 max	L	Rε
F3BS0600BDK35 *	6,00	6,00	7,00	57,00	0,45
F3BS0600BDL35	6,00	6,00	10,00	57,00	0,45
F3BS0800BDK35	8,00	8,00	9,00	58,00	0,45
F3BS0800BDL35	8,00	8,00	16,00	63,00	0,45
F3BS1000BDK35	10,00	10,00	11,00	66,00	0,45
F3BS1000BDL35	10,00	10,00	19,00	72,00	0,45
F3BS1200BDK35	12,00	12,00	12,00	73,00	0,45
F3BS1200BDL35	12,00	12,00	22,00	83,00	0,45
F3BS1400BDL35	14,00	14,00	22,00	83,00	0,45
F3BS1600BDK35	16,00	16,00	16,00	82,00	0,45
F3BS1600BDL35	16,00	16,00	32,00	92,00	0,45
F3BS2000BDK35	20,00	20,00	20,00	92,00	0,45
F3BS2000BDL35	20,00	20,00	38,00	104,00	0,45

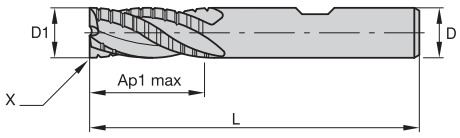
NOTE: For application data, see page P87.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Centre cutting.
- Chipbreaker profile.







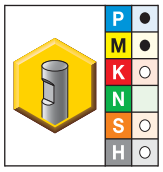


End Mill Tolerances

D1	tolerance h11	D	tolerance h6
≤ 3	+0/-0,060	≤ 3	+0/-0,006
> 3–6	+0/-0,075	> 3–6	+0/-0,008
> 6–10	+0/-0,090	> 6–10	+0/-0,009
> 10–18	+0/-0,110	> 10–18	+0/-0,011
> 18–30	+0/-0,130	> 18–30	+0/-0,013

beyond

F4BJ...DL • DIN 6527 • Long • Metric



● first choice
○ alternate choice

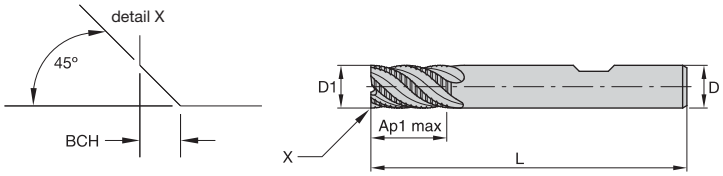
KCPM15	D1	D	Ap1 max	L	BCH
F4BJ0600BDL30	6,00	6,00	13,00	57,00	0,10
F4BJ0800BDL30	8,00	8,00	19,00	63,00	0,20
F4BJ1000BDL30	10,00	10,00	22,00	72,00	0,30
F4BJ1200BDL30	12,00	12,00	26,00	83,00	0,30
F4BJ1400BDL30	14,00	14,00	26,00	83,00	0,30
F4BJ1600BDL30	16,00	16,00	32,00	92,00	0,40
F4BJ1800BDL30	18,00	18,00	32,00	92,00	0,40
F4BJ2000BDL30	20,00	20,00	38,00	104,00	0,40

NOTE: For application data, see page P87.

- Centre cutting.
- Flat shallow profile.





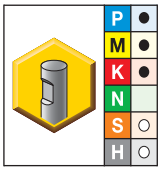


End Mill Tolerances

D1	tolerance h11	D	tolerance h6
≤ 3	+0/-0,060	≤ 3	+0/-0,006
> 3–6	+0/-0,075	> 3–6	+0/-0,008
> 6–10	+0/-0,090	> 6–10	+0/-0,009
> 10–18	+0/-0,110	> 10–18	+0/-0,011
> 18–30	+0/-0,130	> 18–30	+0/-0,013

beyond

F4BJ-F6BJ...DL • DIN 6527 • Long • Metric



● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L	BCH	Z U
F4BJ0600BDL45	6,00	6,00	13,00	57,00	0,10	4
F4BJ0800BDL45	8,00	8,00	19,00	63,00	0,20	4
F4BJ1000BDL45	10,00	10,00	22,00	72,00	0,30	4
F4BJ1200BDL45	12,00	12,00	26,00	83,00	0,30	4
F6BJ1600BDL45	16,00	16,00	32,00	92,00	0,40	6
F6BJ2000BDL45	20,00	20,00	38,00	104,00	0,40	6
F6BJ2500BDL45	25,00	25,00	45,00	121,00	0,40	6

NOTE: For application data, see page P88.

F3BH-F4BJ-F5BJ...WS-WM-WL-WX



Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.										
		A		B	Cutting Speed — vc m/min			D1 — Diameter									
		ap	ae	ap	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	120	160	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	90	150	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083
	5	1,5 x D	0,4 x D	0,75 x D	60	100	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
M	1	1,5 x D	0,4 x D	0,75 x D	90	115	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	2	1,5 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	3	1,5 x D	0,4 x D	0,75 x D	60	70	fz	0,014	0,017	0,021	0,029	0,034	0,040	0,044	0,048	0,052	0,055	0,060
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	110	140	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	1,5 x D	0,4 x D	1 x D	110	130	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
H	1	1,5 x D	0,3 x D	0,3 x D	80	140	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F3BH-F4BJ...WS-WM-WL-WX • Internal Coolant



Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.								
		A		B	Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	ap	min	max	mm	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	120	160	fz	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	90	150	fz	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083
	5	1,5 x D	0,4 x D	0,75 x D	60	100	fz	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
M	1	1,5 x D	0,4 x D	0,75 x D	90	115	fz	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	2	1,5 x D	0,4 x D	0,75 x D	60	80	fz	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	3	1,5 x D	0,4 x D	0,75 x D	60	70	fz	0,029	0,034	0,040	0,044	0,048	0,052	0,055	0,060
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	110	140	fz	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	1,5 x D	0,4 x D	1 x D	110	130	fz	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
H	1	1,5 x D	0,3 x D	0,3 x D	80	140	fz	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

RUDC.. • With Neck • Metric



Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.										
		A		B	Cutting Speed — vc m/min			D1 — Diameter									
		ap	ae	ap	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	120	160	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	90	150	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083
	5	1,5 x D	0,4 x D	0,75 x D	60	100	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
M	1	1,5 x D	0,4 x D	0,75 x D	90	115	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	2	1,5 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	3	1,5 x D	0,4 x D	0,75 x D	60	70	fz	0,014	0,017	0,021	0,029	0,034	0,040	0,044	0,048	0,052	0,055	0,060
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	110	140	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	1,5 x D	0,4 x D	1 x D	110	130	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
S	1	1,5 x D	0,4 x D	0,75 x D	50	90	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,011	0,014	0,017	0,022	0,027	0,032	0,036	0,039	0,043	0,046	0,052
H	1	1,5 x D	0,3 x D	0,3 x D	80	140	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

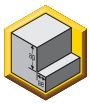
F3BH...DL • DIN 6527 • Long



Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.							
		A		B	Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min	max	mm	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	1 x D	0,4 x D	0,75 x D	150	200	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	2	1 x D	0,4 x D	0,75 x D	140	190	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	3	1 x D	0,4 x D	0,75 x D	120	160	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	4	1 x D	0,3 x D	0,3 x D	90	150	fz	0,021	0,033	0,045	0,054	0,062	0,077	0,088
	5	1 x D	0,4 x D	0,75 x D	60	100	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081
	6	1 x D	0,3 x D	0,3 x D	50	75	fz	0,016	0,025	0,034	0,040	0,047	0,057	0,065
M	1	1 x D	0,4 x D	0,75 x D	80	100	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	2	1 x D	0,4 x D	0,75 x D	60	80	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081
	3	1 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,025	0,034	0,040	0,047	0,057	0,065
K	1	1 x D	0,4 x D	0,75 x D	120	160	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	2	1 x D	0,4 x D	0,75 x D	110	140	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	3	1 x D	0,4 x D	0,75 x D	100	130	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F3BS...DK-DL • DIN 6527 • Short • Long • Metric





Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0
P	1	1 x D	0,4 x D	0,75 x D	150	200	fz	0,044	0,060	0,072	0,083	0,101	0,114
	2	1 x D	0,4 x D	0,75 x D	140	190	fz	0,044	0,060	0,072	0,083	0,101	0,114
	3	1 x D	0,4 x D	0,75 x D	120	160	fz	0,036	0,050	0,061	0,070	0,087	0,101
	4	1 x D	0,3 x D	0,3 x D	90	150	fz	0,033	0,045	0,054	0,062	0,077	0,088
	5	1 x D	0,4 x D	0,75 x D	60	100	fz	0,029	0,040	0,048	0,056	0,070	0,081
	6	1 x D	0,3 x D	0,3 x D	50	75	fz	0,025	0,034	0,040	0,047	0,057	0,065
M	1	1 x D	0,4 x D	0,75 x D	80	100	fz	0,036	0,050	0,061	0,070	0,087	0,101
	2	1 x D	0,4 x D	0,75 x D	60	80	fz	0,029	0,040	0,048	0,056	0,070	0,081
	3	1 x D	0,4 x D	0,75 x D	60	80	fz	0,025	0,034	0,040	0,047	0,057	0,065
K	1	1 x D	0,4 x D	0,75 x D	120	160	fz	0,044	0,060	0,072	0,083	0,101	0,114
	2	1 x D	0,4 x D	0,75 x D	110	140	fz	0,036	0,050	0,061	0,070	0,087	0,101
	3	1 x D	0,4 x D	0,75 x D	100	130	fz	0,029	0,040	0,048	0,056	0,070	0,081
H	1	1 x D	0,3 x D	0,3 x D	100	140	fz	0,033	0,045	0,054	0,062	0,077	0,088

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F4BJ...DL • DIN 6527 • Long





Material Group		Side Milling (A) and Slotting (B)			KCPM15		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.							
		A		B	Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0
P	3	0,8 x D	0,5 x D	0,75 x D	160	180	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	4	0,8 x D	0,4 x D	0,5 x D	140	160	fz	0,018	0,023	0,028	0,038	0,046	0,056	0,069	0,088
	5	0,8 x D	0,5 x D	0,75 x D	60	100	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
	6	0,8 x D	0,4 x D	0,5 x D	50	80	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065
M	1	0,8 x D	0,5 x D	0,75 x D	80	100	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	2	0,8 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
	3	0,8 x D	0,4 x D	0,75 x D	60	80	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065
K	1	0,8 x D	0,5 x D	0,75 x D	120	160	fz	0,024	0,031	0,037	0,051	0,061	0,075	0,091	0,114
	2	0,8 x D	0,5 x D	0,75 x D	110	140	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	3	0,8 x D	0,4 x D	0,75 x D	100	130	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
S	1	0,8 x D	0,4 x D	0,75 x D	90	115	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	2	0,8 x D	0,25 x D	0,3 x D	20	40	fz	0,011	0,014	0,017	0,022	0,027	0,033	0,042	0,054
	3	0,8 x D	0,4 x D	0,75 x D	50	80	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
	4	0,8 x D	0,3 x D	0,5 x D	45	65	fz	0,013	0,018	0,022	0,031	0,038	0,046	0,058	0,074
H	1	0,8 x D	0,5 x D	0,5 x D	120	140	fz	0,018	0,023	0,028	0,038	0,046	0,056	0,069	0,088
	2	0,8 x D	0,2 x D	0,3 x D	80	130	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065
	3	0,8 x D	0,15 x D	0,2 x D	70	100	fz	0,011	0,014	0,017	0,023	0,027	0,034	0,041	0,052

NOTE: Thoes guidelines may require possible variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For rougher tool with six flutes, use ap in slotting 60% of table value.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F4BJ-F6BJ...DL • DIN 6527 • Long • Metric



Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	3	1,0 x D	0,5 x D	0,75 x D	120	160	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	4	1,0 x D	0,3 x D	0,75 x D	90	150	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	5	1,0 x D	0,5 x D	0,75 x D	60	100	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	6	1,0 x D	0,3 x D	0,3 x D	50	75	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
M	1	1,0 x D	0,5 x D	0,75 x D	80	100	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1,0 x D	0,5 x D	0,75 x D	60	80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	3	1,0 x D	0,5 x D	0,75 x D	60	80	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
K	1	1,0 x D	0,5 x D	1 x D	120	160	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	2	1,0 x D	0,5 x D	1 x D	110	140	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	3	1,0 x D	0,5 x D	1 x D	100	130	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
S	1	1,0 x D	0,3 x D	0,75 x D	50	90	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1,0 x D	0,3 x D	0,75 x D	50	90	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	3	1,0 x D	0,3 x D	0,75 x D	20	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	4	1,0 x D	0,4 x D	0,75 x D	45	65	fz	0,026	0,037	0,045	0,052	0,064	0,074	0,084
H	1	1,0 x D	0,3 x D	0,3 x D	80	140	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	2	1,0 x D	0,2 x D	0,2 x D	70	120	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
	3	1,0 x D	0,2 x D	0,2 x D	60	90	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For rougher tool with 6 flutes, use Ap in slotting 60% of table value.

The Economical Milling Cutter Line

GOmill™

The GOmill line is specifically engineered to work on short length-of-cut applications in multiple workpiece materials, like soft and hard steels up to 48 HRC, stainless steels, high-temperature alloys, and cast iron. With the very short overall length and soft cutting geometries, the line is made to conform to the growing market of mill-turn machines.

What does this mean for you?

- Unequal flute spacing.
- AlTiN coating.
- Short overall tool length.
- Positive rake angle.
- Better surface finish and tool life.
- Universal usage on multiple workpiece materials.
- Higher cutting conditions, higher productivity, lower price due to less carbide.
- Lower power consumption.



Visit **kennametal.com** or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

kennametal.com

RSM II

Multi-Flute End Mills

Primary Application

RSM II offers the highest productivity in machining aerospace structural components in titanium and titanium alloys. These end mills are designed to utilise high-speed peel milling strategies with secure chip formation and evacuation in deep cavities. RSM II is available with the Safe-Lock™ system by HAIMER®.

- Excellent metal removal rates.
- Highest surface quality.
- Unmatched tool life and wear resistance using grade KC643M™.
- Highest process security.

Features and Benefits

Advanced Technology

- Maximum number of flutes for increased feed rates and less vibration tendency.
- Proprietary W-shaped flute form improves chip formation and reduces cutting forces.
- Unequal flute spacing increases tool life and surface quality.
- Proprietary AlTiN KC643M grade for increased tool life.

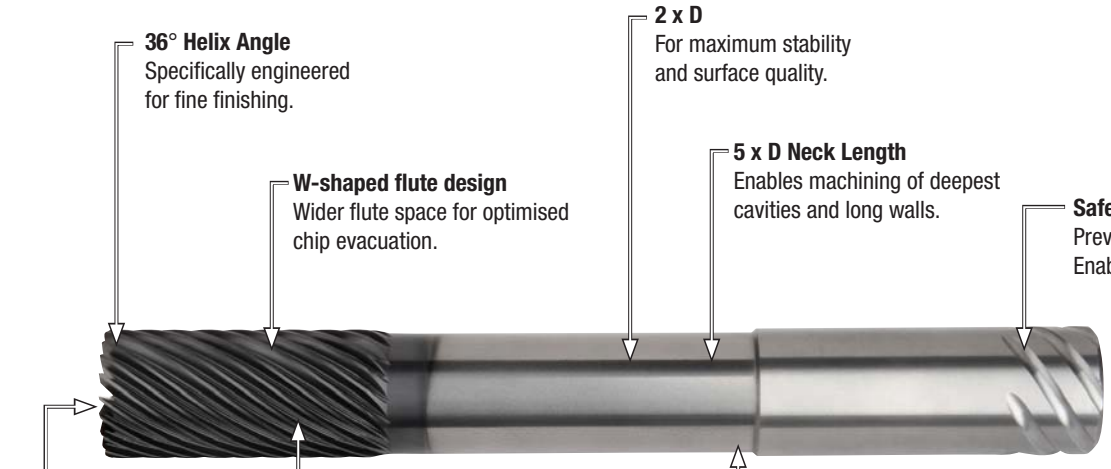
Customisation

- Custom overall length and length of cut.
- Different radii per diameter.
- Custom shank styles.
- Tapered versions available.
- Uncoated K600™ grade for milling critical-to-fly components.

Extensive Standard Offering

- Each diameter has an optimised number of flutes for constant edge-to-flute space ratio.
- Different radii per diameter.
- Safe-Lock™ and round shank.





36° Helix Angle
Specifically engineered for fine finishing.

W-shaped flute design
Wider flute space for optimised chip evacuation.

2 x D
For maximum stability and surface quality.

5 x D Neck Length
Enables machining of deepest cavities and long walls.

Safe-Lock™ Shank
Prevents end mill pullout. Enables higher feed rates.

SAFE-λOCK® by HAIMER®

Internal Coolant
Increases tool life and flushes out chips in deep cavities.

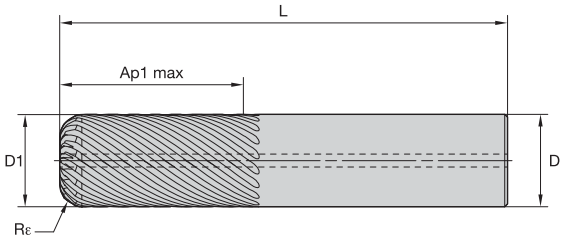
Eccentric Relief Grind
Improves edge stability and enables higher feed rates.

KC643M™ grade
Unmatched fine finishing and tool life results.

K600 Uncoated Grade
Addresses critical-to-fly applications for uncoated tools

- Kennametal standard dimensions.
- Non-centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.



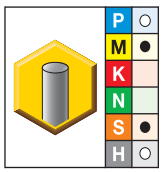




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

FSDE.. • Multi-Flute • Short • Metric

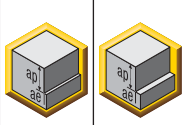


● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L	Rε	Z U
FSDE1000A9BCE	10,00	10,00	20,00	72,00	0,50	9
FSDE1000A9BCG	10,00	10,00	20,00	72,00	1,00	9
FSDE1200A9BCE	12,00	12,00	24,00	83,00	0,50	9
FSDE1200A9BCG	12,00	12,00	24,00	83,00	1,00	9
FSDE1200A9BCL	12,00	12,00	24,00	83,00	2,50	9
FSDE1200A9BCN	12,00	12,00	24,00	83,00	4,00	9
FSDE1600ABBCG	16,00	16,00	32,00	92,00	1,00	11
FSDE1600ABBCL	16,00	16,00	32,00	92,00	2,50	11
FSDE1600ABBCM	16,00	16,00	32,00	92,00	3,00	11
FSDE1600ABBCN	16,00	16,00	32,00	92,00	4,00	11
FSDE1600ABBCP	16,00	16,00	32,00	92,00	6,00	11
FSDE2000AFBCG	20,00	20,00	40,00	104,00	1,00	15
FSDE2000AFBCK	20,00	20,00	40,00	104,00	2,00	15
FSDE2000AFBCL	20,00	20,00	40,00	104,00	2,50	15
FSDE2000AFBCN	20,00	20,00	40,00	104,00	4,00	15
FSDE2000AFBCP	20,00	20,00	40,00	104,00	6,00	15
FSDE2500AJBCG	25,00	25,00	50,00	121,00	1,00	19
FSDE2500AJBCL	25,00	25,00	50,00	121,00	2,50	19
FSDE2500AJBCP	25,00	25,00	50,00	121,00	6,00	19

NOTE: For application data, please see page P93.

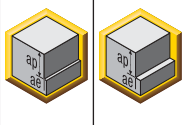
FSDE.. • Multi-Flute • Short • Metric • Roughing




Material Group		Side Milling (A)		KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	4	Ap max	0,8–1,2	270	–	450	fz	0,076	0,084	0,090	0,097	0,112	0,130	0,146
	5	Ap max	0,8–1,2	180	–	300	fz	0,068	0,075	0,081	0,087	0,101	0,119	0,137
M	1	Ap max	0,8–1,2	270	–	345	fz	0,084	0,093	0,101	0,109	0,127	0,149	0,171
	2	Ap max	0,8–1,2	180	–	240	fz	0,068	0,075	0,081	0,087	0,101	0,119	0,137
	3	Ap max	0,8–1,2	180	–	210	fz	0,057	0,063	0,068	0,072	0,083	0,096	0,107
S	1	Ap max	0,8–1,2	150	–	270	fz	0,084	0,093	0,101	0,109	0,127	0,149	0,171
	2	Ap max	0,8–1,2	150	–	270	fz	0,045	0,049	0,053	0,058	0,067	0,080	0,092
	3	Ap max	0,8–1,2	75	–	120	fz	0,045	0,049	0,053	0,058	0,067	0,080	0,092
	4	Ap max	0,8–1,2	150	–	180	fz	0,059	0,069	0,074	0,080	0,093	0,110	0,125
H	1	Ap max	0,8–1,2	240	–	420	fz	0,076	0,084	0,090	0,097	0,112	0,130	0,146
	2	Ap max	0,8–1,2	210	–	360	fz	0,057	0,063	0,068	0,072	0,083	0,096	0,107

NOTE: For better surface finish, reduce feed per tooth.

FSDE.. • Multi-Flute • Short • Finishing

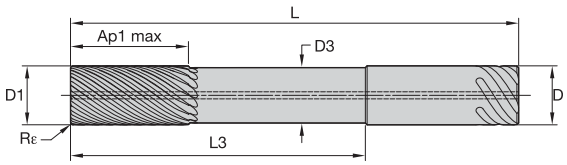



Material Group		Side Milling (A)		KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	4	Ap max	0,2–0,3	135	–	495	fz	0,101	0,111	0,120	0,129	0,149	0,163	0,166
	5	Ap max	0,2–0,3	90	–	330	fz	0,091	0,099	0,108	0,116	0,135	0,150	0,155
M	1	Ap max	0,2–0,3	135	–	380	fz	0,112	0,124	0,135	0,145	0,169	0,187	0,193
	2	Ap max	0,2–0,3	90	–	264	fz	0,091	0,099	0,108	0,116	0,135	0,150	0,155
	3	Ap max	0,2–0,3	90	–	231	fz	0,076	0,084	0,090	0,096	0,110	0,120	0,121
S	1	Ap max	0,2–0,3	75	–	297	fz	0,112	0,124	0,135	0,145	0,169	0,187	0,193
	2	Ap max	0,2–0,3	38	–	132	fz	0,060	0,066	0,071	0,077	0,090	0,100	0,104
	3	Ap max	0,2–0,3	38	–	132	fz	0,060	0,066	0,071	0,077	0,090	0,100	0,104
	4	Ap max	0,2–0,3	75	–	198	fz	0,079	0,092	0,099	0,107	0,124	0,138	0,142
H	1	Ap max	0,2–0,3	120	–	462	fz	0,101	0,111	0,120	0,129	0,149	0,163	0,166
	2	Ap max	0,2–0,3	105	–	396	fz	0,076	0,084	0,090	0,096	0,110	0,120	0,121

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

- Kennametal standard dimensions.
- Non-centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Reach optimised for machining deep cavities.



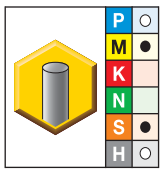


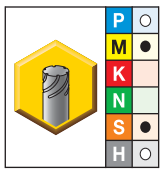


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

FSDE.. • Multi-Flute with Neck • Metric





● first choice
○ alternate choice

KC643M	KC643M	D1	D	D3	Ap1 max	L3	L	Rε	Z U
FSDE0600A7DYA	–	6,00	6,00	5,64	12,00	30,00	76,00	0,20	7
FSDE0600A7DYE	–	6,00	6,00	5,64	12,00	30,00	76,00	0,50	7
FSDE0800A7DYA	–	8,00	8,00	7,52	16,00	40,00	87,00	0,20	7
FSDE0800A7DYE	–	8,00	8,00	7,52	16,00	40,00	87,00	0,50	7
FSDE1000A9DYE	–	10,00	10,00	9,40	20,00	50,00	100,00	0,50	9
FSDE1000A9DYG	–	10,00	10,00	9,40	20,00	50,00	100,00	1,00	9
–	**FSDE1200E9DYE**	12,00	12,00	11,28	24,00	60,00	125,00	0,50	9
–	**FSDE1200E9DYG**	12,00	12,00	11,28	24,00	60,00	125,00	1,00	9
–	**FSDE1200E9DYL**	12,00	12,00	11,28	24,00	60,00	125,00	2,50	9
–	**FSDE1600EBDYG**	16,00	16,00	15,04	32,00	80,00	141,00	1,00	11
–	**FSDE1600EBDYL**	16,00	16,00	15,04	32,00	80,00	141,00	2,50	11
–	**FSDE1600EBDYM**	16,00	16,00	15,04	32,00	80,00	141,00	3,00	11
–	**FSDE1600EBDYP**	16,00	16,00	15,04	32,00	80,00	141,00	6,00	11
–	**FSDE2000EFDYG**	20,00	20,00	18,80	40,00	100,00	166,00	1,00	15
–	**FSDE2000EFDYK**	20,00	20,00	18,80	40,00	100,00	166,00	2,00	15
–	**FSDE2000EFDYL**	20,00	20,00	18,80	40,00	100,00	166,00	2,50	15
–	**FSDE2000EFDYP**	20,00	20,00	18,80	40,00	100,00	166,00	6,00	15
–	**FSDE2500EJDYG**	25,00	25,00	23,50	50,00	125,00	190,00	1,00	19
–	**FSDE2500EJDYL**	25,00	25,00	23,50	50,00	125,00	190,00	2,50	19
–	**FSDE2500EJDYP**	25,00	25,00	23,50	50,00	125,00	190,00	6,00	19

NOTE: For application data, please see page P95.

FSDE.. • Multi-Flute with Neck





Material Group		Side Milling (A)		KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A).							
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	4	Ap max	0,2–0,3	135	–	495	fz	0,101	0,111	0,120	0,129	0,149	0,163	0,166
	5	Ap max	0,2–0,3	90	–	330	fz	0,091	0,099	0,108	0,116	0,135	0,150	0,155
M	1	Ap max	0,2–0,3	135	–	380	fz	0,112	0,124	0,135	0,145	0,169	0,187	0,193
	2	Ap max	0,2–0,3	90	–	264	fz	0,091	0,099	0,108	0,116	0,135	0,150	0,155
	3	Ap max	0,2–0,3	90	–	231	fz	0,076	0,084	0,090	0,096	0,110	0,120	0,121
S	1	Ap max	0,2–0,3	75	–	297	fz	0,112	0,124	0,135	0,145	0,169	0,187	0,193
	2	Ap max	0,2–0,3	75	–	297	fz	0,112	0,124	0,135	0,145	0,169	0,187	0,193
	3	Ap max	0,2–0,3	37,5	–	132	fz	0,060	0,066	0,071	0,077	0,090	0,100	0,104
	4	Ap max	0,2–0,3	75	–	198	fz	0,079	0,092	0,099	0,107	0,124	0,138	0,142
H	1	Ap max	0,2–0,3	120	–	462	fz	0,101	0,111	0,120	0,129	0,149	0,163	0,166
	2	Ap max	0,2–0,3	105	–	396	fz	0,076	0,084	0,090	0,096	0,110	0,120	0,121

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.



FSDE 15-Flute End Mill

CHALLENGE

- Finishing contour milling on aerospace part with interrupted cut.
- Depth of cut: 40mm.
- Titanium alloy R56400.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M™.
- Ø 20mm with 15 effective cutting edges and 4mm radius.

CUTTING DATA

- vc 70 m/min
- fz 0,07 mm/Z
- ap 40mm
- ae 0,3mm

RESULT

- 3.75 times longer tool life compared to competitor solution.

BENEFIT

- Machining time reduction of 46%.
- Metal removal rate increase of 87%.

FSDE 11-Flute End Mill

CHALLENGE

- Finishing long channel on aerospace frame part.
- Depth of cut: 39mm.
- Titanium alloy.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M.
- Ø 15,875mm with 11 effective cutting edges and 0,762mm radius.

CUTTING DATA

- vc 130 m/min
- fz 0,05 mm/Z
- ap 39,37mm
- ae 0,03mm

RESULT

- 2.5 times higher feed rates compared to initial solution.

BENEFIT

- Machining time reduction of 60%.
- Metal removal rate increase of 150%.

(continued)

(continued)



FSDE 15-Flute End Mill

CHALLENGE

- Finishing external profile.
- Depth of cut: 20mm.
- Titanium alloy 6Al4V.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M™.
- Ø 20mm with 15 effective cutting edges and 4mm corner radius.

CUTTING DATA

- vc 150 m/min
- fz 0,06 mm/Z
- ap 20mm
- ae 0,6mm

RESULT

- 50% tool life increase.
- 3x cutting speed.
- Nearly 8x the feed rates.

BENEFIT

- Machining time reduction of 81% from 43.1–8.4 min vs competitor solution.
- Metal removal rate increase of 360% vs competitor solution.

FSDE 19-Flute End Mill

CHALLENGE

- Finishing external profile.
- Depth of cut: 20mm.
- Titanium alloy 6Al4V.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M.
- Ø 25mm with 19 effective cutting edges and 1mm corner radius.

CUTTING DATA

- vc 150 m/min
- fz 0,06 mm/Z
- ap 20mm
- ae 0,6mm

RESULT

- 50% tool life increase.
- 3x cutting speed.
- Nearly 8x the feed rates.

BENEFIT

- Machining time reduction of 81% from 43.1–8.3 min vs competitor solution.
- Metal removal rate increase of 366% vs competitor solution.

Materials to Cut	• Titanium and titanium alloys. • Nickel-based alloys. • Cobalt-based alloys. • Steels (P4–P5). • Stainless steels (M2–M3). • Hardened steels (H1).
Cutting Speed	• Refer to application data recommendation. • Highly dynamic machines recommended.
Feed Rate	• Refer to application data recommendation. • Highly dynamic machines recommended. • High-speed peel milling strategies require control of adequate feed rates.
Depth of Cut	• High-speed peel milling requires small depth of cut (approximately 5% of diameter) not exceeding 1mm.
Coolant	• Internal coolant for machining cavities. • External coolant for peripheral milling.
Adaptation	• Shrink Fit adaptation is preferred as alternate recommendation. • High-Performance Milling Chucks (HPMC) are applicable. • Collect chucks are not recommended due to high runout.
Roughing Application	• Not recommended.
Finishing Application	• Finishing and semi-finishing.
Milling Strategy	• Peel milling strategies are recommended. • Trochoidal milling is not recommended for this tool.
Applications	• Shoulder milling. • Shoulder milling and fine finishing. • Peel milling and HPC techniques. • Non-centre cutting. • No ramping and helical interpolation.
Corner Machining	• Pre-mill corner pocket to leave appropriate depth-of-cut for finishing application. • Use RSM with depth-of-cut at approximately 5% of diameter and below 1mm. • RSM II tool radius shall be smaller than final corner radius.
Engineered Solutions	• Available upon request.
Reconditioning Service	• Available with standard Kennametal reconditioning procedures. • Check services under Kennametal website for detailed information.

End Mills for High-Feed Milling

KenFeed™

Specifically engineered to machine hardened steel up to 65 HRC at extreme speeds and feeds.

FEATURES AND BENEFITS

- Unique tool with new 6-flute style for high productivity.
- Necked shanks provide extended reach in deep cavities.
- High-feed rates up to 0,6mm per tooth on a 20mm tool.
- Machine hardened materials at 2–3x the metal removal rate of competitive end mills.
- Wide range of cutting diameters: down to 6mm for small and medium pocket work.
- Innovative new geometry maximises metal removal rates.
- High metal removal rates lower manufacturing costs.



Visit **kennametal.com** or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

kennametal.com

High-Performance Solid Carbide Finishing End Mills

Primary Application

High-performance finishing end mills can be used for a wide range of workpiece materials such as steel, stainless steel, cast titanium, high-temp alloys, and in certain cases, hard materials.

- High-performance tools for excellent surface quality and accuracy.
- Reduce harmonics for chatter-free machining.
- Different front and flute styles for a wide range of applications like open contour, contour milling, and pocketing, and milling long and thin walls.

Features and Benefits

Advanced Technology

- Various styles available to choose from for the right application and workpiece material.
- Designated platforms for aerospace, transportation, and general engineering requirements.
- Selective styles for machining up to 3 x D.

Tailored Grades

- Wide range of grades from uncoated to proprietary Beyond™ grades to cover a wide range of requirements.

Highest metal removal rates and surface finish.



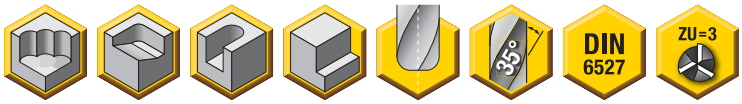
Customisation

- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.
- Different radii available.

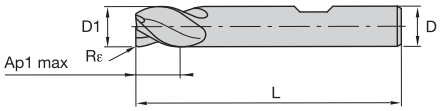
Standard Offering

- Diameter range 3–25mm.

• Centre cutting.





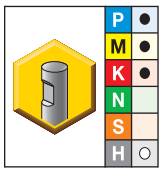


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

F3AS...DK

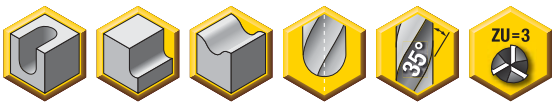


● first choice
○ alternate choice

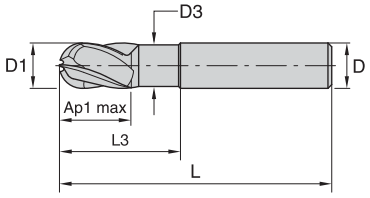
KCPM15	D1	D	Ap1 max	L	Rε
F3AS0300BDK35	3,00	6,00	4,00	50,00	0,25
F3AS0400BDK35	4,00	6,00	5,00	54,00	0,25
F3AS0500BDK35 *	5,00	6,00	6,00	54,00	0,25
F3AS0600BDK35	6,00	6,00	7,00	54,00	0,45
F3AS0800BDK35	8,00	8,00	9,00	58,00	0,45
F3AS1000BDK35	10,00	10,00	11,00	66,00	0,45
F3AS1200BDK35	12,00	12,00	12,00	73,00	0,45
F3AS1400BDK35	14,00	14,00	14,00	75,00	0,45
F3AS1600BDK35	16,00	16,00	16,00	82,00	0,45
F3AS2000BDK35	20,00	20,00	20,00	92,00	0,45

NOTE: For application data, see page P106.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Centre cutting.





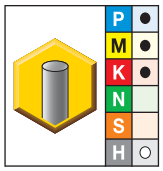


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
All	+0/-0,03	≤3	+0/-0,006
		>3–6	+0/-0,008
		>6–10	+0/-0,009
		>10–18	+0/-0,011
		>18–30	+0/-0,013

beyond

F3AW...WL-WX • Extended Neck



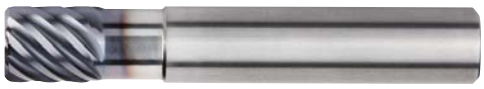
● first choice
○ alternate choice

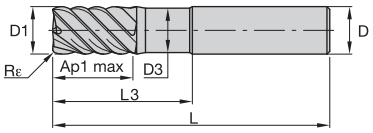
KCPM15	D1	D	D3	Ap1 max	L3	L
F3AW0600AWL35E120	6,00	6,00	5,80	6,00	12,00	76,00
F3AW0800AWL35E160	8,00	8,00	7,80	8,00	16,00	100,00
F3AW1000AWX35E200	10,00	10,00	9,50	10,00	20,00	121,50
F3AW1200AWX35E240 *	12,00	12,00	11,50	12,00	24,00	125,00
F3AW1600AWX35E320 *	16,00	16,00	15,00	16,00	32,00	150,00

NOTE: For application data, see page P106.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Centre cutting.





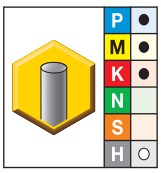


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

F8AJ-F10AJ...DK • Extended Neck



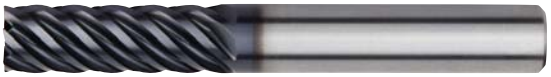
● first choice
○ alternate choice

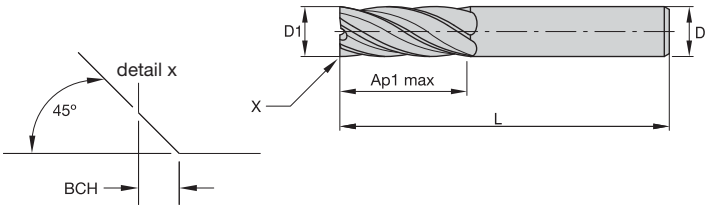
KCPM15	D1	D	D3	Ap1 max	L3	L	Rε	Z U
F8AJ0800ADK45E160	8,00	8,00	7,00	8,00	16,00	58,00	1,00	8
F8AJ1000ADK45E200	10,00	10,00	9,00	10,00	20,00	66,00	1,00	8
F8AJ1200ADK45E240	12,00	12,00	11,00	12,00	24,00	73,00	1,00	8
F10AJ1600ADK45E320	16,00	16,00	15,00	16,00	32,00	82,00	1,00	10
F10AJ2000ADK45E400	20,00	20,00	19,00	20,00	40,00	92,00	1,00	10

NOTE: For application data, see page P107.

- Non-centre cutting.





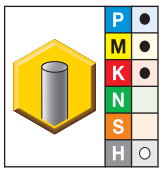


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

F6AJ-F8AJ...DL • Multiflute • Long • Extra Long



● first choice
○ alternate choice

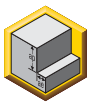
KCPM15	D1	D	Ap1 max	L	BCH	Z U
F6AJ0600ADL45	6,00	6,00	13,00	57,00	0,10	6
F6AJ0600AWM45	6,00	6,00	18,00	62,00	0,10	6
F6AJ0800ADL45	8,00	8,00	19,00	63,00	0,20	6
F6AJ0800AWM45	8,00	8,00	24,00	68,00	0,20	6
F6AJ1000ADL45	10,00	10,00	22,00	72,00	0,30	6
F6AJ1000AWL45	10,00	10,00	30,00	80,00	0,30	6
F6AJ1200ADL45	12,00	12,00	26,00	83,00	0,30	6
F6AJ1200AWL45	12,00	12,00	36,00	93,00	0,30	6
F6AJ1400ADL45	14,00	14,00	26,00	83,00	0,30	6
F6AJ1600ADL45	16,00	16,00	32,00	92,00	0,40	6
F6AJ1600AWX45	16,00	16,00	48,00	108,00	0,40	6
F8AJ2000AWX45	20,00	20,00	60,00	126,00	0,40	8
F8AJ2500AWX45	25,00	25,00	75,00	150,00	0,40	8

NOTE: For application data, see page P107.

Corner Chamfer (Chamfer height)

D1	BCH	Tolerance
2–6.75	0,10	-0,05
6.76–9.7	0,20	-0,10
9.71–15.7	0,30	-0,10
15.71–25	0,40	-0,20

F3AS...DK

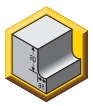




Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KCPM15 Cutting Speed — vc m/min min	max	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. mm	D1 — Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	0,75 x D	0,4 x D	0,5 x D	150	200	fz	0,021	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	2	0,75 x D	0,4 x D	0,5 x D	140	190	fz	0,021	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	3	0,75 x D	0,4 x D	0,5 x D	120	160	fz	0,018	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	4	0,75 x D	0,4 x D	0,3 x D	90	150	fz	0,016	0,021	0,033	0,045	0,054	0,062	0,077	0,088
	5	0,75 x D	0,4 x D	0,5 x D	60	100	fz	0,014	0,019	0,029	0,040	0,048	0,056	0,070	0,081
	6	0,75 x D	0,4 x D	0,3 x D	50	75	fz	0,012	0,016	0,025	0,034	0,040	0,047	0,057	0,065
M	1	0,75 x D	0,4 x D	0,5 x D	80	100	fz	0,018	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	2	0,75 x D	0,4 x D	0,5 x D	60	80	fz	0,014	0,019	0,029	0,040	0,048	0,056	0,070	0,081
	3	0,75 x D	0,4 x D	0,5 x D	60	80	fz	0,012	0,016	0,025	0,034	0,040	0,047	0,057	0,065
K	1	0,75 x D	0,4 x D	0,5 x D	120	160	fz	0,021	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	2	0,75 x D	0,4 x D	0,5 x D	110	140	fz	0,018	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	3	0,75 x D	0,4 x D	0,5 x D	100	130	fz	0,014	0,019	0,029	0,040	0,048	0,056	0,070	0,081
H	1	0,75 x D	0,4 x D	0,3 x D	100	140	fz	0,016	0,021	0,033	0,045	0,054	0,062	0,077	0,088

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F3AW...WL-WX • Extended Neck

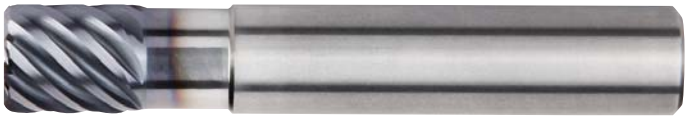




Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KCPM15 Cutting Speed — vc m/min min	max	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. mm	D1 — Diameter 3,0	5,0	6,0	8,0	10,0	12,0	16,0
P	1	1 x D	0,5 x D	1 x D	150	200	fz	0,022	0,036	0,044	0,060	0,072	0,083	0,101
	2	1 x D	0,5 x D	1 x D	140	190	fz	0,022	0,036	0,044	0,060	0,072	0,083	0,101
	3	1 x D	0,5 x D	1 x D	120	160	fz	0,018	0,030	0,036	0,050	0,061	0,070	0,087
	4	1 x D	0,5 x D	1 x D	90	150	fz	0,016	0,027	0,033	0,045	0,054	0,062	0,077
	5	1 x D	0,5 x D	1 x D	60	100	fz	0,015	0,024	0,029	0,040	0,048	0,056	0,070
	6	1 x D	0,5 x D	1 x D	50	75	fz	0,012	0,020	0,025	0,034	0,040	0,047	0,057
M	1	1 x D	0,5 x D	1 x D	80	100	fz	0,018	0,030	0,036	0,050	0,061	0,070	0,087
	2	1 x D	0,5 x D	1 x D	60	80	fz	0,015	0,024	0,029	0,040	0,048	0,056	0,070
	3	1 x D	0,5 x D	1 x D	60	80	fz	0,012	0,020	0,025	0,034	0,040	0,047	0,057
K	1	1 x D	0,5 x D	1 x D	120	160	fz	0,022	0,036	0,044	0,060	0,072	0,083	0,101
	2	1 x D	0,5 x D	1 x D	110	140	fz	0,018	0,030	0,036	0,050	0,061	0,070	0,087
	3	1 x D	0,5 x D	1 x D	100	130	fz	0,015	0,024	0,029	0,040	0,048	0,056	0,070
H	1	1 x D	0,5 x D	1 x D	100	140	fz	0,016	0,027	0,033	0,045	0,054	0,062	0,077

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

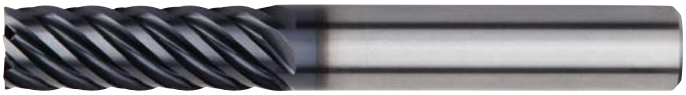
F8AJ-F10AJ...DK • Extended Neck



Material Group		Side Milling (A)		KCPM15		Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap max	0,05 x D	150	200	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap max	0,05 x D	150	200	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap max	0,05 x D	140	190	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap max	0,05 x D	120	160	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap max	0,05 x D	90	150	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	5	Ap max	0,05 x D	60	100	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	6	Ap max	0,04 x D	50	75	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
M	1	Ap max	0,05 x D	90	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap max	0,05 x D	60	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	3	Ap max	0,05 x D	60	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
K	1	Ap max	0,05 x D	120	150	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap max	0,05 x D	110	140	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	3	Ap max	0,05 x D	110	130	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
H	1	Ap max	0,04 x D	80	140	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For better surface finish, reduce feed per tooth.

F6AJ-F8AJ...DL • Multi-flute • Long • Extra Long



Material Group		Side Milling (A)		KCPM15		Feed per Tooth — fz information is for side milling (A).									
		A		Cutting Speed — vc m/min			D1 — Diameter								
		ap	ae	min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	Ap max	0,05 x D	150	200	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	Ap max	0,05 x D	150	200	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	Ap max	0,05 x D	140	190	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	Ap max	0,05 x D	120	160	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	Ap max	0,05 x D	90	150	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	Ap max	0,05 x D	60	100	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	Ap max	0,04 x D	50	75	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
M	1	Ap max	0,05 x D	90	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap max	0,05 x D	60	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	Ap max	0,05 x D	60	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	Ap max	0,05 x D	120	150	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	Ap max	0,05 x D	110	140	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	Ap max	0,05 x D	110	130	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
H	1	Ap max	0,04 x D	80	140	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For better surface finish, reduce feed per tooth.

MaxiMet™

Primary Application

The MaxiMet system provides extraordinary metal removal rates and combines roughing and finishing operations with any aluminium plunging, slotting, and profiling application. Its proprietary flute geometry is designed for high stiffness and improved chip evacuation, and generates exceptional wall to floor perpendicularity in thin-wall applications. To ensure a superior floor surface finish, the MaxiMet front geometry is equipped with a wiper facet grind.

- Use only one tool for roughing and finishing operations.
- Slotting depths up to 1 x D as well as side milling up to 0.5 x D radial and 1.5 x D axial engagement.
- Unequal flute spacing for chatter-free performance with the 3-flute series.
- Multiple corner radii and extended neck configurations available as standard.

Features and Benefits

Advanced Technology

- Increase output with fewer tool changes and increased metal removal rates.
- No specific tools for roughing and finishing necessary.
- Fewer passes due to 1 x D slotting capability.
- Perfect for MQL (minimum quantity lubrication) methods.

Tailored Grades

- K600 uncoated grade for longest tool life in aluminium and other non-ferrous materials.

Customisation

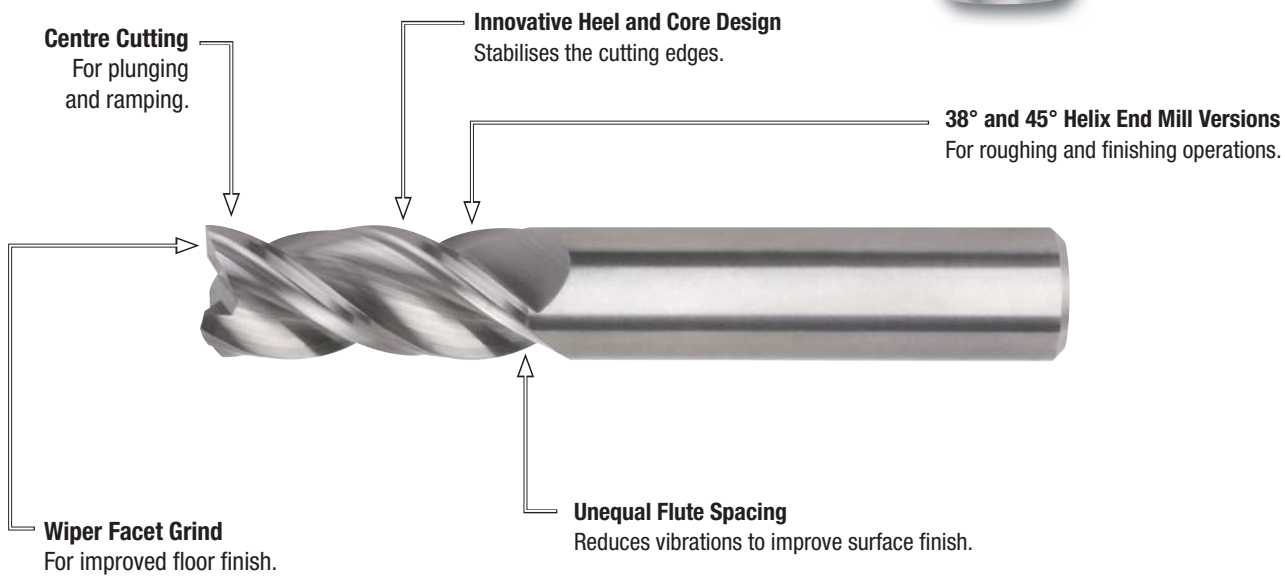
- Intermediate diameters available.
- Custom solutions available for machining titanium and other high-temperature alloys.
- Internal coolant axial and radial available.
- Various shank options and non-standard coatings available.

Extensive Standard Offering

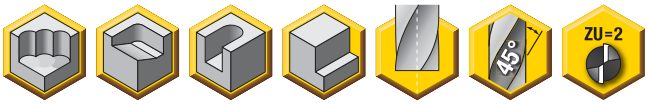
- Diameter ranges 1,5 to 25mm.
- Extended neck for long-reach applications and radii and sharp corner configurations.

Solid carbide end mills for high metal removal rates and superior surface finishes in aluminium.

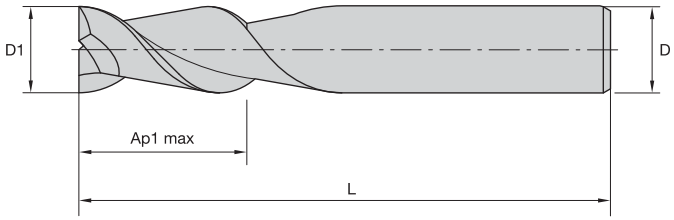




- Kennametal standard dimensions.
- Centre cutting.
- Effective in thin wall applications.
- Wiper facet, special end gash, and flute geometry provide better surface finishes.
- Unique geometry delivers maximum metal removal rates.



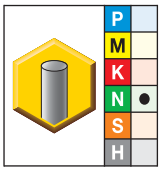




End Mill Tolerances

D1	D1 tolerance	D tolerance
<6mm	DIN e8	DIN h6
>6mm	DIN h6	DIN h6

ABDF • Wiper Facet

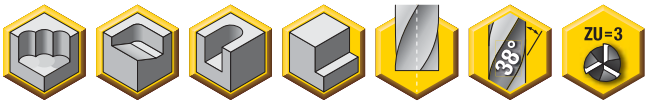


● first choice
○ alternate choice

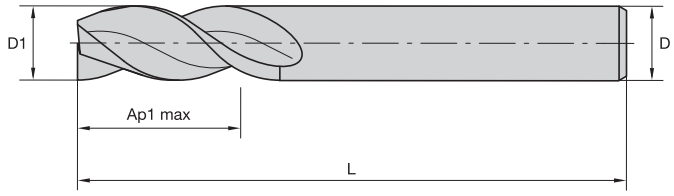
K600	D1	D	Ap1 max	L
ABDF0150A2AS	1,50	3,00	6,00	38,00
ABDF0200A2AS	2,00	3,00	8,00	38,00
ABDF0250A2AS	2,50	3,00	9,00	38,00
ABDF0300A2AS	3,00	3,00	12,00	38,00
ABDF0400A2AS	4,00	4,00	12,00	50,00
ABDF0500A2AS	5,00	6,00	14,00	50,00
ABDF0600A2AS	6,00	6,00	16,00	50,00
ABDF0800A2AS	8,00	8,00	20,00	63,00
ABDF1000A2AS	10,00	10,00	22,00	76,00
ABDF1200A2AS	12,00	12,00	25,00	76,00
ABDF1400A2AS	14,00	14,00	32,00	83,00
ABDF1600A2AS	16,00	16,00	32,00	89,00
ABDF1800A2AS	18,00	18,00	38,00	100,00
ABDF2000A2AS	20,00	20,00	38,00	104,00

NOTE: For application data, see page P114.

- Kennametal standard dimensions.
- Centre cutting.
- Effective in thin wall applications.
- Wiper facet, special end gash, and flute geometry provide better surface finishes.
- Unique geometry delivers maximum metal removal rates.



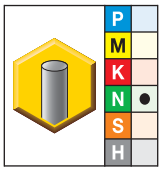




End Mill Tolerances

D1	D1 tolerance	D tolerance
<6mm	DIN e8	DIN h6
>6mm	DIN h6	DIN h6

ABDE • Wiper Facet

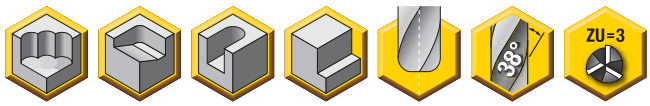


● first choice
○ alternate choice

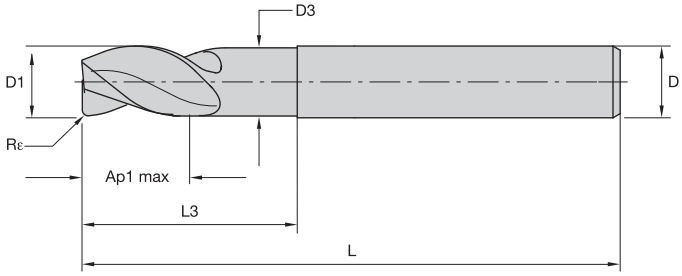
K600	D1	D	Ap1 max	L
ABDE0300A3AS	3,00	3,00	12,00	38,00
ABDE0400A3AS	4,00	4,00	12,00	50,00
ABDE0500A3AS	5,00	5,00	14,00	50,00
ABDE0600A3AS	6,00	6,00	16,00	50,00
ABDE0800A3AS	8,00	8,00	20,00	63,00
ABDE1000A3AS	10,00	10,00	22,00	76,00
ABDE1200A3AS	12,00	12,00	25,00	76,00
ABDE1400A3AS	14,00	14,00	32,00	83,00
ABDE1600A3AS	16,00	16,00	32,00	89,00
ABDE1800A3AS	18,00	18,00	38,00	100,00
ABDE2000A3AS	20,00	20,00	38,00	104,00

NOTE: For application data, see page P114.

- Kennametal standard dimensions.
- Centre cutting.
- Effective in thin wall applications.
- Wiper facet, special end gash, and flute geometry provide better surface finishes.
- Unique geometry delivers maximum metal removal rates.



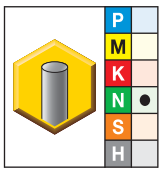




End Mill Tolerances

D1	D1 tolerance	D tolerance
<6mm	DIN e8	DIN h6
>6mm	DIN h6	DIN h6

ABDE • Wiper Facet • Extended Neck

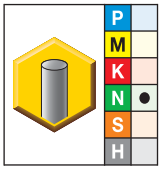


● first choice
○ alternate choice

K600	D1	D	D3	Ap1 max	L3	L	Rε
ABDE0600A3ARA	6,00	6,00	5,40	9,00	18,00	63,00	0,20
ABDE0600A3ARB	6,00	6,00	5,40	9,00	18,00	63,00	0,50
ABDE0600A3ARC	6,00	6,00	5,40	9,00	18,00	63,00	1,00
ABDE0800A3ARA	8,00	8,00	7,20	12,00	24,00	76,00	0,20
ABDE0800A3ARB	8,00	8,00	7,20	12,00	24,00	76,00	0,50
ABDE0800A3ARC	8,00	8,00	7,20	12,00	24,00	76,00	1,00
ABDE1000A3ARA	10,00	10,00	9,00	15,00	30,00	89,00	0,20
ABDE1000A3ARB	10,00	10,00	9,00	15,00	30,00	89,00	0,50
ABDE1000A3ARG	10,00	10,00	9,50	15,00	30,00	76,00	1,00
ABDE1000A3ARC	10,00	10,00	9,00	15,00	30,00	89,00	1,50
ABDE1000A3ARK	10,00	10,00	9,50	15,00	30,00	76,00	2,00
ABDE1000A3ARN	10,00	10,00	9,50	15,00	30,00	76,00	4,00
ABDE1200A3ARA	12,00	12,00	10,80	18,00	36,00	100,00	0,20
ABDE1200A3ARB	12,00	12,00	10,80	18,00	36,00	100,00	0,50
ABDE1200A3ARG	12,00	12,00	11,50	18,00	36,00	83,00	1,00
ABDE1200A3ARC	12,00	12,00	10,80	18,00	36,00	100,00	1,50
ABDE1200A3ARK	12,00	12,00	11,50	18,00	36,00	83,00	2,00
ABDE1200A3ARL	12,00	12,00	11,50	18,00	36,00	100,00	2,50
ABDE1200A3ARM	12,00	12,00	11,50	18,00	36,00	83,00	3,00
ABDE1200A3ARN	12,00	12,00	11,50	18,00	36,00	83,00	4,00
ABDE1600A3ARA	16,00	16,00	14,40	24,00	48,00	110,00	0,20
ABDE1600A3ARB	16,00	16,00	14,40	24,00	48,00	110,00	0,50
ABDE1600A3ARC	16,00	16,00	14,40	24,00	48,00	110,00	1,00
ABDE1600A3ARD	16,00	16,00	14,40	24,00	48,00	110,00	2,00

(continued)

(ABDE • Wiper Facet • Extended Neck — continued)

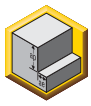


● first choice
○ alternate choice

K600	D1	D	D3	Ap1 max	L3	L	Rε
ABDE1600A3ARL	16,00	16,00	15,00	24,00	48,00	110,00	2,50
ABDE1600A3ARM	16,00	16,00	15,00	24,00	48,00	100,00	3,00
ABDE1600A3ARN	16,00	16,00	15,00	24,00	48,00	100,00	4,00
ABDE2000A3ARA	20,00	20,00	18,80	30,00	60,00	125,00	0,20
ABDE2000A3ARB	20,00	20,00	18,80	30,00	60,00	125,00	0,50
ABDE2000A3ARG *	20,00	20,00	19,00	30,00	60,00	115,00	1,00
ABDE2000A3ARC	20,00	20,00	18,80	30,00	60,00	125,00	1,50
ABDE2000A3ARK	20,00	20,00	19,00	30,00	60,00	115,00	2,00
ABDE2000A3ARM	20,00	20,00	19,00	30,00	60,00	115,00	3,00
ABDE2000A3ARD	20,00	20,00	18,80	30,00	60,00	125,00	4,00
ABDE2500A3ARE	25,00	25,00	24,00	37,50	75,00	135,00	0,50
ABDE2500A3ARG *	25,00	25,00	24,00	37,50	75,00	135,00	1,00
ABDE2500A3ARK *	25,00	25,00	24,00	37,50	75,00	135,00	2,00
ABDE2500A3ARM *	25,00	25,00	24,00	37,50	75,00	135,00	3,00
ABDE2500A3ARN *	25,00	25,00	24,00	37,50	75,00	135,00	4,00

NOTE: For application data, see page P114.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

ABDE... • ABDF...

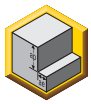




Material Group		Side Milling (A) and Slotting (B)			K600		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.									
		A		B	Cutting Speed — vc m/min			D1 — Diameter								
		ap	ae	ap	min	max	mm	1,5	2,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,014	0,018	0,036	0,054	0,072	0,090	0,108	0,144	0,180
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,012	0,016	0,032	0,049	0,065	0,081	0,097	0,130	0,162
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,009	0,013	0,025	0,038	0,050	0,063	0,076	0,101	0,126
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,009	0,013	0,025	0,038	0,050	0,063	0,076	0,101	0,126
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,012	0,016	0,032	0,049	0,065	0,081	0,097	0,130	0,162

NOTE: Those guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.
For cutting aluminium with high silicon, TiCN coating is recommended.
Ap for milling machine with ceramic bearings spindle, multiply by 0,5.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For tools with reach >3 x D, reduce fz by 20%
For tools with reach >5 x D, reduce fz by 30%.
For tools with reach >10 x D, reduce vc and fz by 30%.

ABDE... • Extended Neck





Material Group		Side Milling (A) and Slotting (B)			K600		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0
N	1	1 x D	0,5 x D	1,0 x D	500	2000	fz	0,060	0,080	0,100	0,120	0,160	0,200
	2	1 x D	0,5 x D	1,0 x D	500	1500	fz	0,054	0,072	0,090	0,108	0,144	0,180
	3	1 x D	0,5 x D	1,0 x D	500	1500	fz	0,042	0,056	0,070	0,084	0,112	0,140
	4	1 x D	0,5 x D	1,0 x D	400	750	fz	0,042	0,056	0,070	0,084	0,112	0,140
	5	1 x D	0,5 x D	1,0 x D	250	1000	fz	0,054	0,072	0,090	0,108	0,144	0,180

NOTE: Those guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.
For cutting aluminium with high silicon, TiCN coating is recommended.
Ap for milling machine with ceramic bearings spindle, multiply by 0,5.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For tools with reach >3 x D, reduce fz by 20%
For tools with reach >5 x D, reduce fz by 30%.
For tools with reach >10 x D, reduce vc and fz by 30%.

DUO-λOCK®

Replaceable head system

- High accuracy and repeatability.
- Maximum stability and productivity.
- Solid carbide performance.



DUO-λOCK®
by HAIMER® and Kennametal

Offering

- HARVI™ I, II, and III.
- Roughers and finishers.
- Aluminium and high-feed cutters.
- Corner rounding and chamfering tools.

Advanced Technology

- Up to 1 x D full slotting.
- 1,5 x D side milling up to 50% radial engagement.
- Extensive straight shanks, conical shanks, and integral adaptors.
- Proprietary HARVI geometries enable roughing and finishing with one tool.

Visit **kennametal.com** or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

kennametal.com

High-Performance Aluminium Solid Carbide End Mills

Primary Application

High-performance aluminium end mills from Kennametal provide the highest Metal Removal Rates (MRR) and high-quality surfaces while reducing machining time. The centre-cutting design enables plunging, slotting, and profiling applications in any type of aluminium workpiece materials. Designed to deliver exceptional chip evacuation and generate the highest floor-to-wall straightness. The portfolio offers many styles to choose from.

- Tools combine roughing and finishing operations beside pure rougher with cord profile.
- Capable of full slot depths up to 1 x D and side milling up to 0.5 x D radially at 1.5 x D axially.
- Multiple corner radii and extended neck configurations available as standard.

Features and Benefits

Advanced Technology

- No specific tools for roughing and finishing necessary.
- Fewer passes due to 1 x D slotting capability.
- Best suited for MQL (minimum quantity lubrication) applications.

Tailored Grades

- K600 uncoated grade for highest tool life in aluminium and other non-ferrous materials.

Customisation

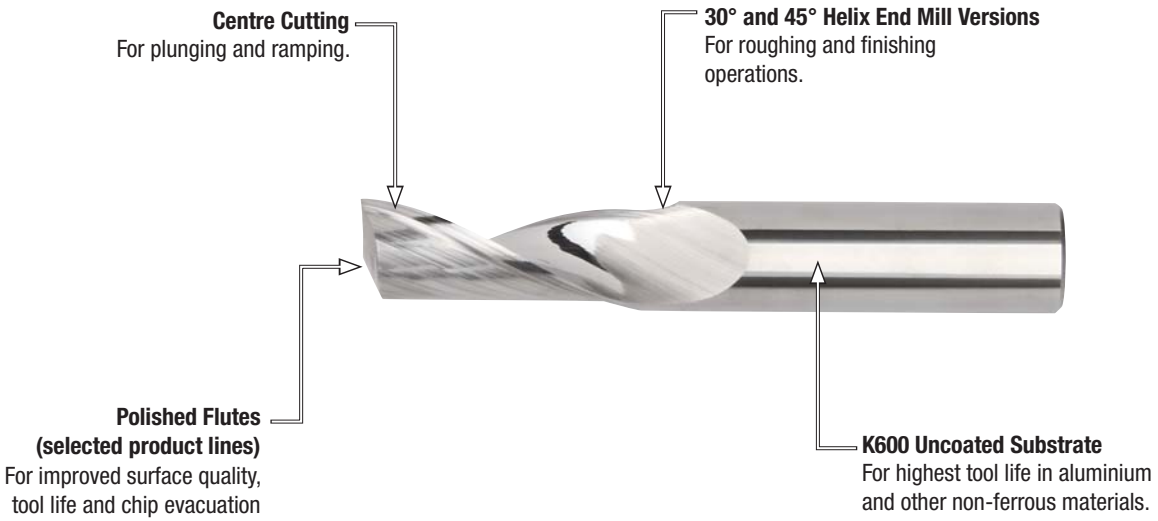
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.
- Internal coolant axial and radial available.
- Various shank options and non-standard coatings available.
- TiB_2 grade KC651M available as custom solution.

Extensive Standard Offering

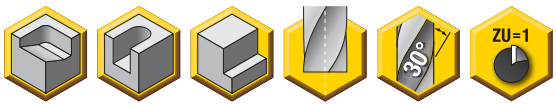
- Diameter ranges 2–25mm.
- Extended neck for long-reach applications as well as radii and sharp corner configurations.

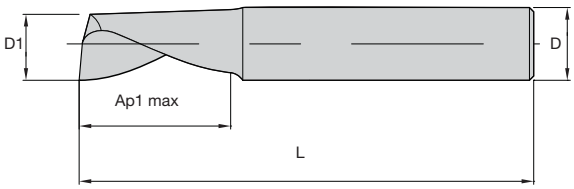
Extended neck for long-reach applications as well as radii and sharp corner configurations.





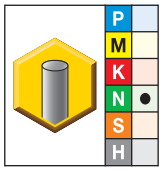
- Kennametal standard dimensions
- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.







F1AA...WS—WM • Metric



● first choice
○ alternate choice

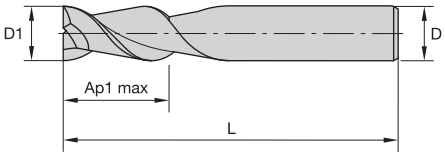
K600	D1	D	Ap1 max	L
F1AA0200AWS30	2,00	2,00	10,00	40,00
F1AA0300AWS30	3,00	3,00	10,00	40,00
F1AA0400AWS30	4,00	4,00	14,00	50,00
F1AA0500AWS30	5,00	5,00	16,00	60,00
F1AA0600AWS30	6,00	6,00	20,00	60,00
F1AA0800AWM30	8,00	8,00	25,00	75,00
F1AA1000AWM30	10,00	10,00	25,00	75,00
F1AA1200AWM30	12,00	12,00	25,00	75,00

NOTE: For application data, see page P126.

- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



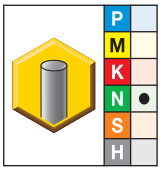




End Mill Tolerances

D1	D1 tolerance	D tolerance
<6mm	DIN e8	DIN h6
>6mm	DIN h6	DIN h6

F2AA...ADL45...



● first choice
○ alternate choice

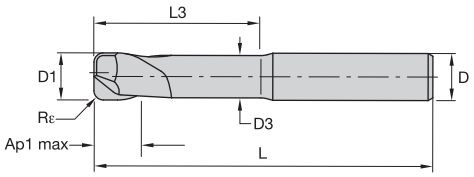
K600	D1	D	Ap1 max	L
F2AA0400ADL45	4,00	6,00	8,00	57,00
F2AA0500ADL45	5,00	6,00	10,00	57,00
F2AA0600ADL45	6,00	6,00	10,00	57,00
F2AA0800ADL45	8,00	8,00	16,00	63,00
F2AA1000ADL45	10,00	10,00	19,00	72,00
F2AA1200ADL45	12,00	12,00	22,00	83,00
F2AA1400ADL45	14,00	14,00	22,00	83,00
F2AA1600ADL45	16,00	16,00	26,00	92,00
F2AA1800ADL45	18,00	18,00	26,00	92,00
F2AA2000ADL45	20,00	20,00	32,00	104,00

NOTE: For application data, see page P126.

- Kennametal standard dimensions.
- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



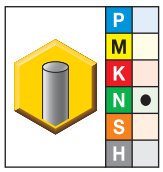




End Mill Tolerances

D1	D1 tolerance	D tolerance
<6mm	DIN e8	DIN h6
>6mm	DIN h6	DIN h6

F2AA...WM-WL-WX • Extended Neck

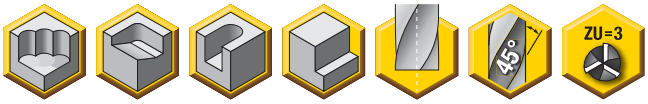


● first choice
○ alternate choice

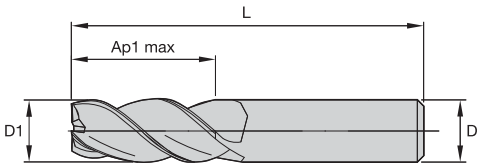
K600	D1	D	D3	Ap1 max	L3	L	Rε
F2AA0600AWM45R050	6,00	6,00	5,80	9,00	18,00	63,00	0,50
F2AA0600AWM45R100	6,00	6,00	5,80	9,00	18,00	63,00	1,00
F2AA0800AWM45R050	8,00	8,00	7,80	12,00	24,00	68,00	0,50
F2AA0800AWM45R100	8,00	8,00	7,80	12,00	24,00	68,00	1,00
F2AA1000AWL45R050	10,00	10,00	9,50	15,00	30,00	76,00	0,50
F2AA1000AWL45R100	10,00	10,00	9,50	15,00	30,00	76,00	1,00
F2AA1000AWL45R200	10,00	10,00	9,50	15,00	30,00	76,00	2,00
F2AA1000AWL45R300	10,00	10,00	9,50	15,00	30,00	76,00	3,00
F2AA1000AWL45R400	10,00	10,00	9,50	15,00	30,00	76,00	4,00
F2AA1200AWL45R050	12,00	12,00	11,50	18,00	36,00	84,00	0,50
F2AA1200AWL45R100	12,00	12,00	11,50	18,00	36,00	84,00	1,00
F2AA1200AWL45R200	12,00	12,00	11,50	18,00	36,00	84,00	2,00
F2AA1200AWL45R250	12,00	12,00	11,50	18,00	36,00	84,00	2,50
F2AA1200AWL45R300	12,00	12,00	11,50	18,00	36,00	84,00	3,00
F2AA1200AWL45R400	12,00	12,00	11,50	18,00	36,00	84,00	4,00
F2AA1600AWX45R050	16,00	16,00	15,00	24,00	48,00	100,00	0,50
F2AA1600AWX45R100	16,00	16,00	15,00	24,00	48,00	100,00	1,00
F2AA1600AWX45R200	16,00	16,00	15,00	24,00	48,00	100,00	2,00
F2AA1600AWX45R250	16,00	16,00	15,00	24,00	48,00	100,00	2,50
F2AA1600AWX45R300	16,00	16,00	15,00	24,00	48,00	100,00	3,00
F2AA1600AWX45R400	16,00	16,00	15,00	24,00	48,00	100,00	4,00
F2AA2000AWX45R050	20,00	20,00	19,00	30,00	60,00	115,00	0,50
F2AA2000AWX45R100	20,00	20,00	19,00	30,00	60,00	115,00	1,00
F2AA2000AWX45R200	20,00	20,00	19,00	30,00	60,00	115,00	2,00
F2AA2000AWX45R300	20,00	20,00	19,00	30,00	60,00	115,00	3,00
F2AA2000AWX45R400	20,00	20,00	19,00	30,00	60,00	115,00	4,00
F2AA2500AWX45R050	25,00	25,00	24,00	37,50	75,00	135,00	0,50
F2AA2500AWX45R100	25,00	25,00	24,00	37,50	75,00	135,00	1,00
F2AA2500AWX45R200 *	25,00	25,00	24,00	37,50	75,00	135,00	2,00
F2AA2500AWX45R300	25,00	25,00	24,00	37,50	75,00	135,00	3,00
F2AA2500AWX45R400	25,00	25,00	24,00	37,50	75,00	135,00	4,00

NOTE: For application data, see page P126.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



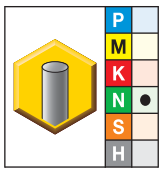




End Mill Tolerances

D1	D1 tolerance	D tolerance
<6mm	DIN e8	DIN h6
>6mm	DIN h6	DIN h6

F3AA...AWS/L45...

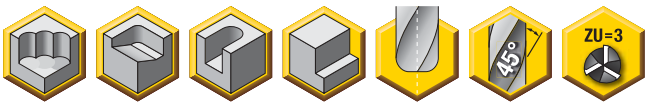


● first choice
○ alternate choice

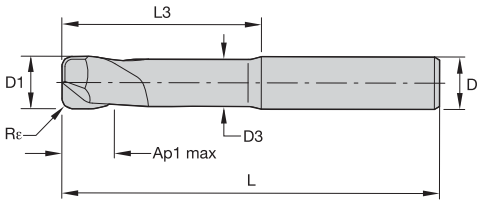
K600	D1	D	Ap1 max	L
F3AA0300AWS45	3,00	3,00	12,00	38,00
F3AA0400AWS45	4,00	4,00	12,00	50,00
F3AA0500AWS45	5,00	6,00	14,00	50,00
F3AA0600AWS45	6,00	6,00	16,00	50,00
F3AA0800AWM45	8,00	8,00	20,00	63,00
F3AA1000AWL45	10,00	10,00	22,00	76,00
F3AA1200AWL45	12,00	12,00	25,00	76,00
F3AA1400AWL45	14,00	14,00	32,00	83,00
F3AA1600AWL45	16,00	16,00	32,00	89,00
F3AA1800AWL45	18,00	18,00	38,00	100,00
F3AA2000AWX45	20,00	20,00	38,00	104,00

NOTE: For application data, see page P126.

- Kennametal standard dimension.
- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



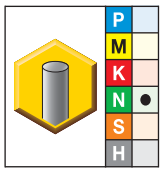




End Mill Tolerances

D1	D1 tolerance	D tolerance
<6mm	DIN e8	DIN h6
>6mm	DIN h6	DIN h6

F3AA...WS-WM-WL-WX • Extended Neck

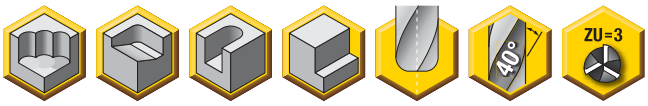


● first choice
○ alternate choice

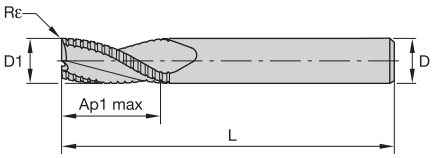
K600	D1	D	D3	Ap1 max	L3	L	Rε
F3AA0600AWM45R050	6,00	6,00	5,80	9,00	18,00	63,00	0,50
F3AA0600AWM45R100	6,00	6,00	5,80	9,00	18,00	63,00	1,00
F3AA0800AWM45R050	8,00	8,00	7,80	12,00	24,00	68,00	0,50
F3AA0800AWM45R100	8,00	8,00	7,80	12,00	24,00	68,00	1,00
F3AA1000AWL45R050	10,00	10,00	9,50	15,00	30,00	76,00	0,50
F3AA1000AWL45R100	10,00	10,00	9,50	15,00	30,00	76,00	1,00
F3AA1000AWL45R200	10,00	10,00	9,50	15,00	30,00	76,00	2,00
F3AA1000AWL45R300	10,00	10,00	9,50	15,00	30,00	76,00	3,00
F3AA1000AWL45R400	10,00	10,00	9,50	15,00	30,00	76,00	4,00
F3AA1200AWL45R050	12,00	12,00	11,50	18,00	36,00	84,00	0,50
F3AA1200AWL45R100	12,00	12,00	11,50	18,00	36,00	83,00	1,00
F3AA1200AWL45R200	12,00	12,00	11,50	18,00	36,00	83,00	2,00
F3AA1200AWL45R300	12,00	12,00	11,50	18,00	36,00	83,00	3,00
F3AA1200AWL45R400	12,00	12,00	11,50	18,00	36,00	83,00	4,00
F3AA1600AWX45R050	16,00	16,00	15,00	24,00	48,00	100,00	0,50
F3AA1600AWX45R100	16,00	16,00	15,00	24,00	48,00	100,00	1,00
F3AA1600AWX45R200	16,00	16,00	15,00	24,00	48,00	100,00	2,00
F3AA1600AWX45R300	16,00	16,00	15,00	24,00	48,00	100,00	3,00
F3AA1600AWX45R400	16,00	16,00	15,00	24,00	48,00	100,00	4,00
F3AA2000AWX45R050	20,00	20,00	19,00	30,00	60,00	115,00	0,50
F3AA2000AWX45R100	20,00	20,00	19,00	30,00	60,00	115,00	1,00
F3AA2000AWX45R200	20,00	20,00	19,00	30,00	60,00	115,00	2,00
F3AA2000AWX45R300	20,00	20,00	19,00	30,00	60,00	115,00	3,00
F3AA2000AWX45R400	20,00	20,00	19,00	30,00	60,00	115,00	4,00
F3AA2500AWX45R050	25,00	25,00	24,00	37,50	75,00	135,00	0,50
F3AA2500AWX45R100	25,00	25,00	24,00	37,50	75,00	135,00	1,00
F3AA2500AWX45R200	25,00	25,00	24,00	37,50	75,00	135,00	2,00
F3AA2500AWX45R300	25,00	25,00	24,00	37,50	75,00	135,00	3,00
F3AA2500AWX45R400 *	25,00	25,00	24,00	37,50	75,00	135,00	4,00

NOTE: For application data, see page P127.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Aluminium profile.
- Kennametal standard dimensions.
- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



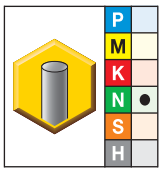




End Mill Tolerances

D1	tolerance d11	D	tolerance h6
≤3	-0,020/-0,080	≤3	+0/-0,006
>3–6	-0,030/-0,105	>3–6	+0/-0,008
>6–10	-0,040/-0,130	>6–10	+0/-0,009
>10–18	-0,050/-0,160	>10–18	+0/-0,011
>18–30	-0,065/-0,195	>18–30	+0/-0,013

F3BA...WS-WM-WL-WX

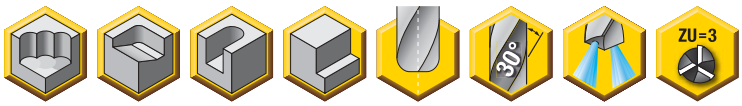


● first choice
○ alternate choice

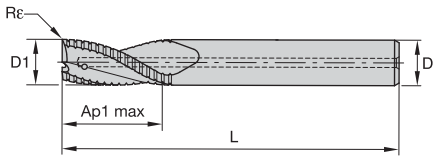
K600	D1	D	Ap1 max	L	Rε
F3BA0600BWS40	6,00	6,00	13,00	57,00	0,25
F3BA0800BWM40	8,00	8,00	16,00	63,00	0,25
F3BA1000BWM40	10,00	10,00	22,00	72,00	0,50
F3BA1200BWL40	12,00	12,00	26,00	83,00	0,50
F3BA1600BWL40	16,00	16,00	32,00	92,00	1,00
F3BA2000BWX40	20,00	20,00	38,00	104,00	1,00
F3BA2500BWX40	25,00	25,00	45,00	121,00	1,50

NOTE: For application data, see page P127.

- Aluminium profile.
- Kennametal standard dimensions.
- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



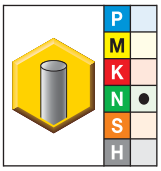




End Mill Tolerances

D1	tolerance d11	D	tolerance h6
≤3	-0,020/-0,080	≤3	+0/-0,006
>3–6	-0,030/-0,105	>3–6	+0/-0,008
>6–10	-0,040/-0,130	>6–10	+0/-0,009
>10–18	-0,050/-0,160	>10–18	+0/-0,011
>18–30	-0,065/-0,195	>18–30	+0/-0,013

F3BA..BWM/L/X40C...

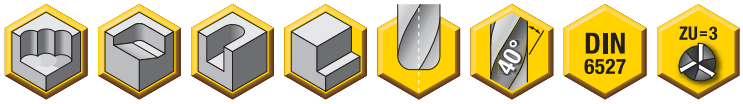


● first choice
○ alternate choice

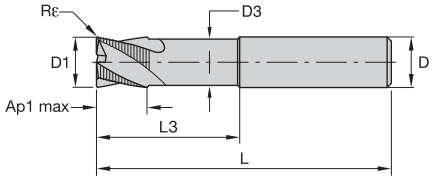
K600	D1	D	Ap1 max	L	Rε
F3BA0800BWM40C160	8,00	8,00	16,00	63,00	0,25
F3BA1000BWM40C220	10,00	10,00	22,00	72,00	0,50
F3BA1200BWL40C260	12,00	12,00	26,00	83,00	0,50
F3BA1600BWL40C320	16,00	16,00	32,00	92,00	1,00
F3BA2000BWX40C380	20,00	20,00	38,00	104,00	1,00
F3BA2500BWX40C450	25,00	25,00	45,00	121,00	1,50

NOTE: For application data, see page P127.

- Aluminium profile.
- Centre cutting.
- Standard items listed. Additional styles and coatings made-to-order.



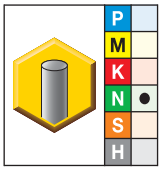




End Mill Tolerances

D1	tolerance d11	D	tolerance h6
≤3	-0,020/-0,080	≤3	+0/-0,006
>3–6	-0,030/-0,105	>3–6	+0/-0,008
>6–10	-0,040/-0,130	>6–10	+0/-0,009
>10–18	-0,050/-0,160	>10–18	+0/-0,011
>18–30	-0,065/-0,195	>18–30	+0/-0,013

F3BA...DL...



● first choice
○ alternate choice

K600	D1	D	D3	Ap1 max	L3	L	Rε
F3BA0600ADL40E180	6,00	6,00	5,00	8,00	18,00	57,00	0,25
F3BA0800ADL40E240	8,00	8,00	7,00	10,00	24,00	63,00	0,25
F3BA1000ADL40E300	10,00	10,00	9,00	12,00	30,00	72,00	0,25
F3BA1200ADL40E360	12,00	12,00	11,00	15,00	36,00	83,00	0,25
F3BA1600ADL40E480	16,00	16,00	15,00	20,00	48,00	92,00	1,00
F3BA2000ADL40E600	20,00	20,00	19,00	24,00	60,00	104,00	1,00

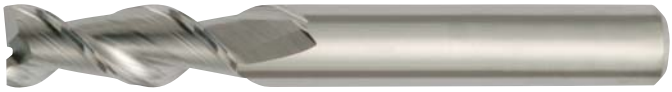
NOTE: For application data, see page P127.

F1AA...WS—WM



Material Group		Side Milling (A) and Slotting (B) A ap	Side Milling (A) and Slotting (B) A ae	Side Milling (A) and Slotting (B) B ap	K600 Cutting Speed — vc m/min min	K600 Cutting Speed — vc m/min max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
N	1	1,2 x D	0,5 x D	1,0 x D	500	2000	fz	0,014	0,021	0,028	0,035	0,042	0,056	0,070	0,084
	2	1,2 x D	0,5 x D	1,0 x D	500	1500	fz	0,013	0,019	0,025	0,032	0,038	0,050	0,063	0,076
	3	1,2 x D	0,5 x D	1,0 x D	500	1500	fz	0,010	0,015	0,020	0,025	0,029	0,039	0,049	0,059
	4	1,2 x D	0,5 x D	1,0 x D	400	750	fz	0,010	0,015	0,020	0,025	0,029	0,039	0,049	0,059
	5	1,2 x D	0,5 x D	1,0 x D	250	1000	fz	0,013	0,019	0,025	0,032	0,038	0,050	0,063	0,076

F2AA...ADL45...



Material Group		Side Milling (A) and Slotting (B) A ap	Side Milling (A) and Slotting (B) A ae	Side Milling (A) and Slotting (B) B ap	K600 Cutting Speed — vc m/min min	K600 Cutting Speed — vc m/min max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 4,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,036	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,032	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,025	0,038	0,050	0,063	0,076	0,088	0,101	0,113	0,126
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,025	0,038	0,050	0,063	0,076	0,088	0,101	0,113	0,126
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,032	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162

F2AA...WS-WM-WL-WX



Material Group		Side Milling (A) and Slotting (B) A ap	Side Milling (A) and Slotting (B) A ae	Side Milling (A) and Slotting (B) B ap	K600 Cutting Speed — vc m/min min	K600 Cutting Speed — vc m/min max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 6,0	8,0	10,0	12,0	16,0	18,0	20,0	25,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,054	0,072	0,090	0,108	0,144	0,162	0,180	0,225
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,049	0,065	0,081	0,097	0,130	0,146	0,162	0,203
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,038	0,050	0,063	0,076	0,101	0,113	0,126	0,158
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,038	0,050	0,063	0,076	0,101	0,113	0,126	0,158
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,049	0,065	0,081	0,097	0,130	0,146	0,162	0,203

F3AA...WS-WM-WL-WX



Material Group		Side Milling (A) and Slotting (B) A ap	Side Milling (A) and Slotting (B) A ae	Side Milling (A) and Slotting (B) B ap	K600 Cutting Speed — vc m/min min	K600 Cutting Speed — vc m/min max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,027	0,036	0,054	0,072	0,090	0,108	0,144	0,180
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,024	0,032	0,049	0,065	0,081	0,097	0,130	0,162
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,019	0,025	0,038	0,050	0,063	0,076	0,101	0,126
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,019	0,025	0,038	0,050	0,063	0,076	0,101	0,126
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,024	0,032	0,049	0,065	0,081	0,097	0,130	0,162

NOTE: Those guidelines may require variations to achieve optimum results.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For cutting aluminium with high silicon, TiCN coating is recommended.
Ap for spindle with ceramic bearings multiply by 0,5.
For better surface finish, reduce feed per tooth.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.
Slot milling applications — for longest reach (L3) tools, reduce ae by 30%.

F3AA...WS-WM-WL-WX • Extended Neck



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	K600 Cutting Speed — vc m/min min	max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 6,0	8,0	10,0	12,0	16,0	18,0	20,0	25,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,054	0,072	0,090	0,108	0,144	0,162	0,180	0,225
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,049	0,065	0,081	0,097	0,130	0,146	0,162	0,203
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,038	0,050	0,063	0,076	0,101	0,113	0,126	0,158
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,038	0,050	0,063	0,076	0,101	0,113	0,126	0,158
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,049	0,065	0,081	0,097	0,130	0,146	0,162	0,203

F3BA...BWS/M/L/X40...



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	K600 Cutting Speed — vc m/min min	max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 6,0	8,0	10,0	12,0	16,0	18,0	20,0	25,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,072	0,096	0,120	0,144	0,192	0,216	0,240	0,300
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,065	0,086	0,108	0,130	0,173	0,194	0,216	0,270
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,050	0,067	0,084	0,101	0,134	0,151	0,168	0,210
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,050	0,067	0,084	0,101	0,134	0,151	0,168	0,210
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,065	0,086	0,108	0,130	0,173	0,194	0,216	0,270

F3BA..BWM/L/X40C...



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	K600 Cutting Speed — vc m/min min	max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 6,0	8,0	10,0	12,0	16,0	18,0	20,0	25,0
N	1	1,5 x D	0,5 x D	1,25 x D	500	2000	fz	0,072	0,096	0,120	0,144	0,192	0,216	0,240	0,300
	2	1,5 x D	0,5 x D	1,25 x D	500	1500	fz	0,065	0,086	0,108	0,130	0,173	0,194	0,216	0,270
	3	1,5 x D	0,5 x D	1,25 x D	500	1500	fz	0,050	0,067	0,084	0,101	0,134	0,151	0,168	0,210
	4	1,5 x D	0,5 x D	1,25 x D	400	750	fz	0,050	0,067	0,084	0,101	0,134	0,151	0,168	0,210
	5	1,5 x D	0,5 x D	1,25 x D	250	1000	fz	0,065	0,086	0,108	0,130	0,173	0,194	0,216	0,270

F3BA...DL4...



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	K600 Cutting Speed — vc m/min min	max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 6,0	8,0	10,0	12,0	16,0	18,0	20,0
N	1	1,0 x D	0,5 x D	1,0 x D	500	2000	fz	0,078	0,104	0,130	0,156	0,208	0,234	0,260
	2	1,0 x D	0,5 x D	1,0 x D	500	1500	fz	0,070	0,094	0,117	0,140	0,187	0,211	0,234
	3	1,0 x D	0,5 x D	1,0 x D	500	1500	fz	0,055	0,073	0,091	0,109	0,146	0,164	0,182
	4	1,0 x D	0,5 x D	1,0 x D	400	750	fz	0,055	0,073	0,091	0,109	0,146	0,164	0,182
	5	1,0 x D	0,5 x D	1,0 x D	250	1000	fz	0,070	0,094	0,117	0,140	0,187	0,211	0,234

NOTE: Those guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.
For cutting aluminium with high silicon, TiCN coating is recommended.
Ap for milling machine with ceramic bearings spindle, multiply by 0,5.
For better surface finish, reduce feed per tooth.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.
Slot milling applications — for longest reach (L3) tools, reduce ae by 30%.

CFRP KCN05™ Beyond™ Grade

Solid Carbide Routers

Primary Application

KCN05 solid carbide router products provide excellent tool life and produce smooth finishes with improved edge quality when machining difficult CFRP (carbon-fibre reinforced polymer) and non-ferrous components. The unique geometries are free cutting, reduce heat generation, and provide high-quality machined surfaces.

- Designed to avoid delamination and bur formation.
- Excellent tool life due to KCN05 diamond film coating.

Features and Benefits

Advanced Technology

- Compression-style routers for trimming designed to provide high feed rates and quality edges on both sides of the material. Up-cut/down-cut geometry promotes stable cutting conditions.
- Down-cut style routers intended for surface work. Excellent ramping capabilities eliminate surface delamination machining pockets.
- Bur style for highest material removal rates and superior surface quality. Designed for trimming fibreglass and CFRP, and for slotting and profiling.

Tailored Grades

- KCN05 diamond coating uses a proprietary substrate to optimise coating adhesion and improve tool life.

Customisation

- Intermediate diameters available.
- Compression routers with six and eight flutes available for special wire CFRP.
- Bur-style routers with end cutting, drill-point cutting, and non-end cutting point styles available on request.

Extensive Standard Offering

- Diameters 6, 10, and 12mm.
- Different length versions.
- KCN05 routers.



Up-Cut/Down-Cut Geometry
Prevents delamination because cutting forces are directed inside the workpiece.

KCN05™ Diamond Coating
For excellent tool life and smooth finishes with improved edge quality.

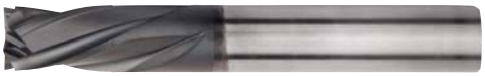


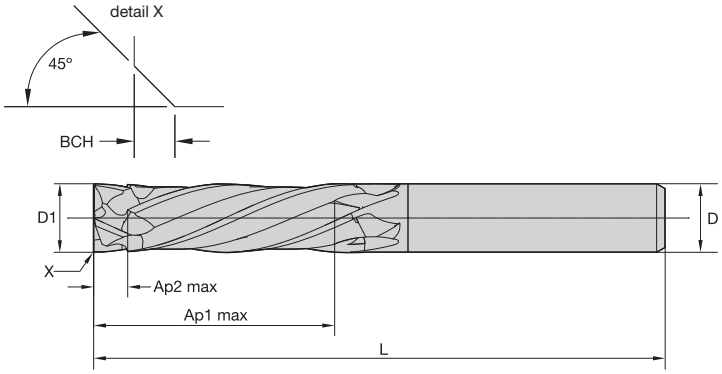
Highest Number of Cutting Edges
For excellent temperature control and highest metal removal rates.

Extended Length of Cut Version
Enables machining in different levels for multiplying tool life of same tool.

- Aerospace composites and fibreglass.
- Through-hole capability.
- Kennametal standard dimensions.
- Internal air coolant for ZU = 4.





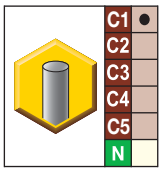


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+0/-0,05	≤3	+0/-0,006
		>3–6	+0/-0,008
		>6–10	+0/-0,009
		>10–18	+0/-0,011
		>18–24	+0/-0,013

beyond

Compression-Style Router • CCNC • Metric



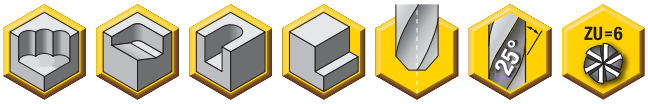
● first choice
○ alternate choice

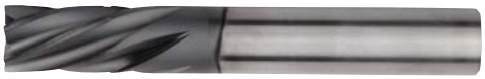
KCN05	D1	D	Ap1 max	Ap2 max	L	Z U	BCH
CCNC0600A3AH	6,00	6,00	18,01	3,18	63,00	3	0,13
CCNC0600A3BH	6,00	6,00	35,99	3,18	100,00	3	0,13
CCNC1000A4AH	10,00	10,00	18,01	3,18	83,00	4	0,13
CCNC1000A4BH	10,00	10,00	35,99	3,18	100,00	4	0,13
CCNC1200A4AH	12,00	12,00	18,01	3,18	83,00	4	0,13
CCNC1200A4BH	12,00	12,00	35,99	3,18	100,00	4	0,13

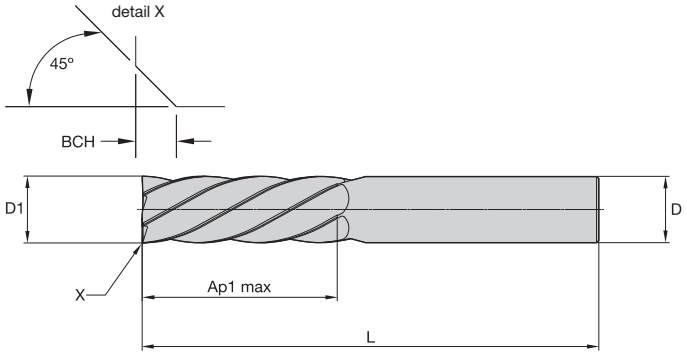
NOTE: For application data, see page P133.

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminium
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminium/Titanium

- Aerospace composites and fibreglass.
- Kennametal standard dimensions.





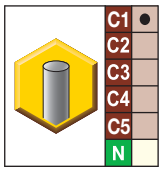


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+0/-0,05	≤3	+0/-0,006
		>3–6	+0/-0,008
		>6–10	+0/-0,009
		>10–18	+0/-0,011
		>18–24	+0/-0,013

beyond

Down-Cut Router • CDDC



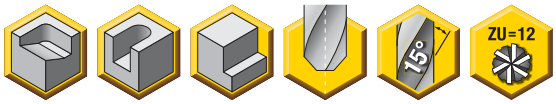
● first choice
○ alternate choice

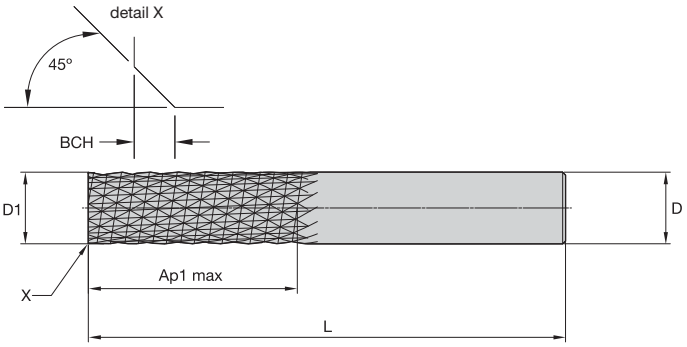
KCN05	D1	D	Ap1 max	L	BCH
CDDC0600A6AH	6,00	6,00	18,00	63,00	0,25
CDDC0600A6BH	6,00	6,00	36,00	100,00	0,25
CDDC1000A6AH	10,00	10,00	18,00	83,00	0,25
CDDC1000A6BH	10,00	10,00	36,00	100,00	0,25
CDDC1200A6AH	12,00	12,00	18,00	83,00	0,25
CDDC1200A6BH	12,00	12,00	36,00	100,00	0,25

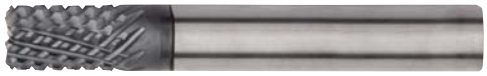
NOTE: For application data, see page P133.

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminium
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminium/Titanium

- Kennametal standard dimensions.
- Aerospace composites and fibreglass.





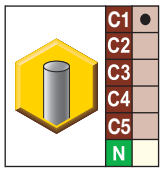


beyond

Bur-Style Router • CBDB

End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+0/-0,05	≤3	+0/-0,006
		>3–6	+0/-0,008
		>6–10	+0/-0,009
		>10–18	+0/-0,011
		>18–24	+0/-0,013



● first choice
○ alternate choice

KCN05	D1	D	Ap1 max	L	Z U	BCH
CBDB0600AXAS	6,00	6,00	18,00	63,00	12	0,51
CBDB0600AXBS	6,00	6,00	36,00	100,00	12	0,51
CBDB1000AXAS	10,00	10,00	18,00	83,00	12	0,89
CBDB1000AXBS	10,00	10,00	36,00	100,00	12	0,89
CBDB1200AXAS	12,00	12,00	18,00	83,00	12	1,14
CBDB1200AXBS	12,00	12,00	36,00	100,00	12	1,14

NOTE: 12 RHS/RHC flutes. 10 LHS/RHC flutes, 6 end teeth.
For application data, see page P133.
Additional point styles are available upon request:

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminium
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminium/Titanium

Additional point styles are available upon request:



End Mill End Cutting

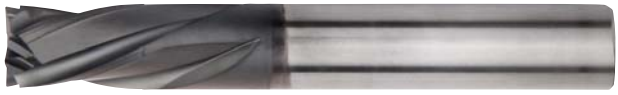


Drill-Point Cutting



Non-End Cutting

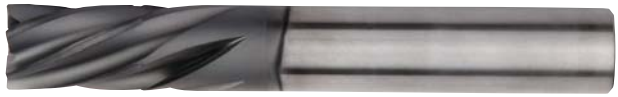
Compression-Style Router • CCNC • Metric



Material Group		Side Milling (A)		beyond KCN05			Feed per Tooth — fz information is for side milling (A).		
		A		Cutting Speed — vc m/min			D1 — Diameter		
		ap	ae	min	max	mm	6,0	10,0	12,0
C	1	Ap1 max	0,5 x D	100	150	fz	0,018	0,030	0,036

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

Down-Cut Router • CDDC • Metric



Material Group		Side Milling (A)		beyond KCN05			Feed per Tooth — fz information is for side milling (A).		
		A		Cutting Speed — vc m/min			D1 — Diameter		
		ap	ae	min	max	mm	6,0	10,0	12,0
C	1	Ap1 max	1 x D	100	150	fz	0,018	0,030	0,036

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

Bur-Style Router • CBDB • Metric



Material Group		Side Milling (A) and Slotting (B)			beyond KCN05		Feed per Revolution — fz information is for side milling (A). For slotting (B), reduce fz by 20%.			
		A		B	Cutting Speed — vc m/min			D1 — Diameter		
		ap	ae	ap	min	max	mm	6,0	10,0	12,0
C	1	Ap1 max	0,2 x D	1 x D	100	150	fz	0,15	0,25	0,30

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

KenFeed™

Primary Application

The numerous effective cutting edges of KenFeed end mills make them the right choice for machining heat-treated steels up to 67 HRc. The KenFeed system combines roughing and semi-finishing into one tool by taking very shallow-depth cuts at extremely high feed rates to maximise metal removal. The 3 x D neck and extended-reach design is perfectly suited for pocketing using 3D machining techniques, such as ramping and helical interpolation. During face milling, the proprietary front end geometry of the KenFeed system is entirely in contact with the workpiece, providing up to 55% engagement compared to regular ball nose-type tooling that provides only 5–10%.

- Unique tool with new 6-flute style for high productivity.
- Innovative new geometry maximises metal removal rates.
- High metal removal rates help to reduce manufacturing costs.

Features and Benefits

Advanced Technology

- Provides the benefits of indexable-style high-feed milling starting at 6mm.
- One tool for roughing and semi-finishing operations.
- Increases output by performing 3D machining, helical ramping, circular interpolation, face milling, and pocketing.
- Use in hardened materials from 40 to 67 HRC with two dedicated geometry variants.

Tailored Grades

- KC639 AlTiN-coated grade for longest tool life in hardened steels from 40 to 67 HRC.

Customisation

- Intermediate diameters available.
- Custom solutions available for machining titanium and other high-temperature alloys.
- Internal coolant axial and radial available.
- Various shank options and non-standard coatings available.

Extensive Standard Offering

- Diameter ranges 6–20mm.
- Extended neck for long-reach applications.

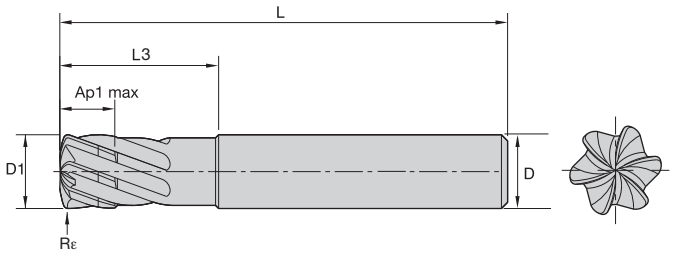
End mills for high-feed milling of medium and hard steels.





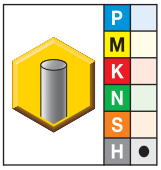
- Kennametal standard dimensions.
- Non-centre cutting.
- High feed.







KenFeed • KHDA

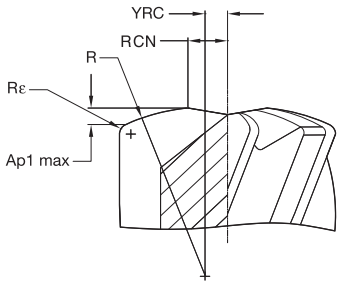


● first choice
○ alternate choice

KC639M	D1	D	D3	Ap1 max	L3	L	Rε
KHDA0600A6ANA	6,00	6,00	5,00	0,20	18,00	63,00	0,38
KHDA0800A6ANA	8,00	8,00	7,00	0,27	24,00	76,00	0,50
KHDA1000A6ANA	10,00	10,00	9,00	0,33	30,00	89,00	0,63
KHDA1200A6ANA	12,00	12,00	11,00	0,40	36,00	100,00	0,75
KHDA1600A6ANA	16,00	16,00	15,00	0,54	48,00	110,00	1,00
KHDA2000A6ANA	20,00	20,00	19,00	0,67	60,00	125,00	1,25

NOTE: For application data, see page P138.

D1	D1 tolerance	D tolerance
All	DIN e8	DIN h6



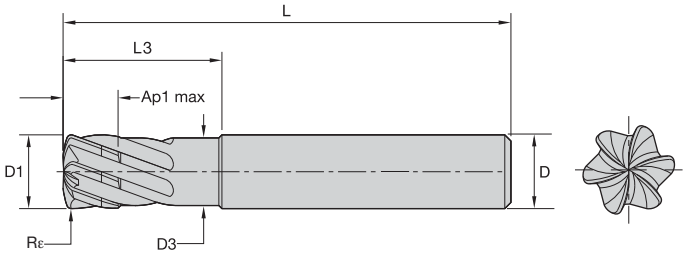
Programming Data

geometrical parameters							ramping guide for circular and linear ramping						
							circular interpolation		linear ramping				
							optimal range of circle diameter for a single pass		calculated length per ramp angle				
catalogue number	D1	Ap1 max	R	Rε	YRC	RCN	smallest	largest	1°	2°	3°	4°	5°
KHDA0600A6ANA	6	0,20	9	0,375	0,75	1,26	8,52	12,00	32,99	16,49	10,99	8,23	6,58
KHDA0800A6ANA	8	0,27	12	0,500	1,00	1,68	11,36	16,00	43,98	21,99	14,65	10,98	8,78
KHDA1000A6ANA	10	0,33	15	0,625	1,25	2,10	14,20	20,00	54,98	27,48	18,31	13,72	10,97
KHDA1200A6ANA	12	0,40	18	0,750	1,50	2,52	17,04	24,00	65,98	32,98	21,97	16,47	13,16
KHDA1600A6ANA	16	0,54	24	1,000	2,00	3,36	22,72	32,00	87,97	43,97	29,30	21,96	17,55
KHDA2000A6ANA	20	0,67	30	1,250	2,50	4,20	28,40	40,00	109,96	54,96	36,62	27,45	21,94
recommended percentage of programmed feed rate to use while ramping									100%	70%	50%	30%	10%

NOTE: YRC = distance from centre line to the crown of the R radius.
RCN = distance from centreline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
R = the head radius size.
Rε = the shoulder radius or radius at the corner of the cutter.

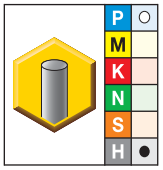
- High feed.
- Kennametal standard dimensions.
- Non-centre cutting.







KenFeed • KMDA



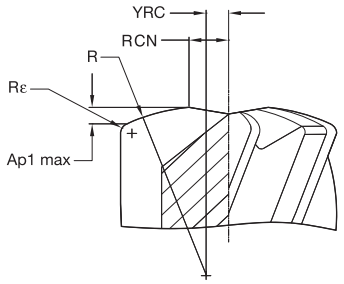
● first choice
○ alternate choice

KC639M	D1	D	D3	Ap1 max	L3	L	Rε
KMDA0600A6ANA	6,00	6,00	5,00	0,32	18,00	63,00	0,38
KMDA0800A6ANA	8,00	8,00	7,00	0,42	24,00	76,00	0,50
KMDA1000A6ANA	10,00	10,00	9,00	0,53	30,00	89,00	0,63
KMDA1200A6ANA	12,00	12,00	11,00	0,63	36,00	100,00	0,75
KMDA1600A6ANA	16,00	16,00	15,00	0,84	48,00	110,00	1,00
KMDA2000A6ANA	20,00	20,00	19,00	1,05	60,00	125,00	1,25

NOTE: For application data, see page P138.

End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013



Programming Data

geometrical parameters							ramping guide for circular and linear ramping						
							circular interpolation		linear ramping				
							optimal range of circle diameter for a single pass		calculated length per ramp angle				
catalogue number	D1	Ap1 max	R	Rε	YRC	RCN	smallest	largest	1°	2°	3°	4°	5°
KMDA0600A6ANA	6	0,32	6	0,375	0,75	1,32	8,64	12,00	35,58	17,79	11,85	8,88	7,10
KMDA0800A6ANA	8	0,42	8	0,500	1,00	1,76	11,52	16,00	47,44	23,71	15,80	11,84	9,47
KMDA1000A6ANA	10	0,53	10	0,625	1,25	2,20	14,40	20,00	59,30	29,64	19,75	14,80	11,83
KMDA1200A6ANA	12	0,63	12	0,750	1,50	2,64	17,28	24,00	71,17	35,57	23,70	17,76	14,20
KMDA1600A6ANA	16	0,84	16	1,000	2,00	3,52	23,04	32,00	94,89	47,43	31,60	23,69	18,93
KMDA2000A6ANA	20	1,05	20	1,250	2,50	4,40	28,80	40,00	118,61	59,29	39,50	29,61	23,66
recommended degree of programmed feed rate to use while ramping									100%	70%	50%	30%	10%

NOTE: YRC = distance from centre line to the crown of the R radius.
RCN = distance from centreline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
R = the head radius size.
Rε = the shoulder radius or radius at the corner of the cutter.

KenFeed • KHDA





Material Group		Profiling		KC639M		Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0
H	2	0,03 x D	0,55 x D	100	120	fz	0,200	0,300	0,300	0,400	0,500	0,600
	3	0,03 x D	0,55 x D	80	100	fz	0,200	0,300	0,300	0,400	0,500	0,600
	4	0,03 x D	0,55 x D	50	70	fz	0,150	0,200	0,250	0,300	0,400	0,500

NOTE: These guidelines may require possible variations to achieve optimum results.

KenFeed • KMDA





Material Group		Profiling		KC639M		Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0
P	4	0,05 x D	0,55 x D	160	180	fz	0,300	0,500	0,500	0,500	0,600	0,700
H	1	0,05 x D	0,55 x D	140	160	fz	0,300	0,500	0,500	0,500	0,600	0,700
	2	0,05 x D	0,55 x D	100	120	fz	0,200	0,300	0,300	0,400	0,500	0,600

NOTE: These guidelines may require possible variations to achieve optimum results.

GOmill™ GP

General Purpose End Mill Series

- Flexible — plunging, slotting, and profiling.
- Complete — wide range of diameters and lengths.
- Adaptive — wide range of applications and workpiece materials.
- Economical — excellent cost-benefit ratio.



Offering

- 2-flute version for unstable conditions.
- 3-flute version as alternative to 2 and 4 flutes.
- 4-flute version for high metal removal rates.

Advanced Technology

- Roughing and finishing with one tool.
- Eccentric relief increases edge stability.

Visit **kennametal.com** or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

kennametal.com

High-Performance Hard-Machining Solid Carbide End Mills

Primary Application

These end mills from Kennametal for hard machining are engineered to machine hardened steels up to 67 HRC at extreme speeds and feeds. Designed with special coatings, substrates, and geometries to extend tool life in any application that requires machining of hardened workpiece materials.

- Capable of machining hardened steels more than 60 HRC.
- Unique design enables higher feeds and speeds to increase Metal Removal Rates (MRR).
- Sophisticated coatings for maximum wear resistance.

Features and Benefits

Advanced Technology

- Negative geometry for increased edge strength.
- Reinforced core for better rigidity.
- High helix for better surface finishes.

Tailored Grades

- Universal grade KC633M™.
- KC637M hard machining dedicated TiAlN coated wear-resistant substrate for highest tool life at materials above 48 HRC.

Customisation

- Intermediate diameters available.
- Expanded length of tool, as well as increased length of cut possible.
- Various shank options and non-standard coatings available.
- AlTiN grade KC643M™ available as custom solution.

Extensive Standard Offering

- Diameter ranges 2–25mm.
- Extended neck for long-reach applications and radii and sharp corner configurations.
- Toroidal, tapered ball nose as well as undercutting end mills (Spherical Lollipop-Style).

Sophisticated coatings for maximum wear resistance.



Parabolic Core Design
Proprietary technology stabilises end mill to avoid deflection in longer length of cut.

Various Helix End Mill Versions
Dedicated application-specific design.

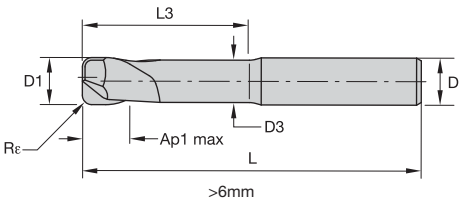


KC637M and KC633M™ TiAlN-Coated Substrate.
For longest tool life in challenging applications.

- Kennametal standard dimensions.
- Centre cutting.



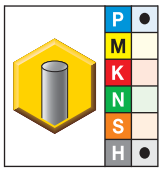




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F2AT...WM-WL-WX • Toroidal End • Long Reach



● first choice
○ alternate choice

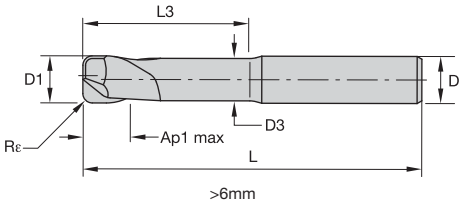
KC637M	D1	D	D3	Ap1 max	L3	L	Rε
F2AT0200AWM20R003	2,00	6,00	1,70	2,00	17,50	70,00	0,30
F2AT0200AWM20R005	2,00	6,00	1,70	2,00	17,50	70,00	0,50
F2AT0300AWM20R005	3,00	6,00	2,50	3,00	18,50	70,00	0,50
F2AT0300AWM20R010	3,00	6,00	2,50	3,00	18,50	70,00	1,00
F2AT0400AWL20R005	4,00	6,00	3,50	4,00	19,50	80,00	0,50
F2AT0400AWL20R010	4,00	6,00	3,50	4,00	19,50	80,00	1,00
F2AT0500AWL20R005	5,00	6,00	4,50	5,00	44,00	80,00	0,50
F2AT0500AWL20R010	5,00	6,00	4,50	5,00	44,00	80,00	1,00
F2AT0600AWL20R005	6,00	6,00	5,50	6,00	44,00	80,00	0,50
F2AT0600AWL20R010	6,00	6,00	5,50	6,00	44,00	80,00	1,00
F2AT0800AWL20R010	8,00	8,00	7,00	8,00	54,00	90,00	1,00
F2AT0800AWL20R020	8,00	8,00	7,00	8,00	54,00	90,00	2,00
F2AT1000AWL20R010	10,00	10,00	9,00	10,00	60,00	100,00	1,00
F2AT1000AWL20R020	10,00	10,00	9,00	10,00	60,00	100,00	2,00
F2AT1000AWL20R030	10,00	10,00	9,00	10,00	60,00	100,00	3,00
F2AT1200AWX20R005	12,00	12,00	11,00	12,00	65,00	110,00	0,50
F2AT1200AWX20R010	12,00	12,00	11,00	12,00	65,00	110,00	1,00
F2AT1200AWX20R030	12,00	12,00	11,00	12,00	65,00	110,00	3,00

NOTE: For application data, see page P152.

- Kennametal standard dimensions.
- Centre cutting.



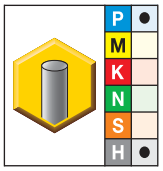




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F4AT...WS-WM-WL-WX • Toroidal End • Long Reach



● first choice
○ alternate choice

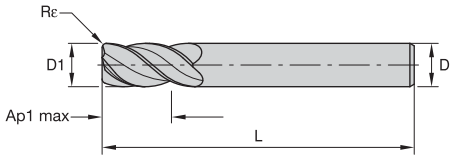
KC637M	D1	D	D3	Ap1 max	L3	L	Rε
F4AT0400AWS20R005	4,00	6,00	3,80	2,00	10,00	45,00	0,50
F4AT0400AWS20R010	4,00	6,00	3,80	2,00	10,00	45,00	1,00
F4AT0500AWS20R005	5,00	6,00	4,80	2,50	12,00	50,00	0,50
F4AT0500AWS20R010	5,00	6,00	4,80	2,50	12,00	50,00	1,00
F4AT0600AWS20R005	6,00	6,00	5,80	3,00	12,00	50,00	0,50
F4AT0600AWL20R005	6,00	6,00	5,80	6,00	42,00	80,00	0,50
F4AT0600AWL20R010	6,00	6,00	5,80	6,00	42,00	80,00	1,00
F4AT0800AWM20R010	8,00	8,00	7,80	4,00	20,00	60,00	1,00
F4AT0800AWM20R020	8,00	8,00	7,80	4,00	20,00	60,00	2,00
F4AT0800AWL20R005	8,00	8,00	7,80	8,00	52,00	90,00	0,50
F4AT0800AWL20R010	8,00	8,00	7,80	8,00	52,00	90,00	1,00
F4AT0800AWL20R020	8,00	8,00	7,80	8,00	52,00	90,00	2,00
F4AT1000AWM20R005	10,00	10,00	9,80	5,00	24,00	70,00	0,50
F4AT1000AWM20R025	10,00	10,00	9,80	5,00	24,00	70,00	2,50
F4AT1000AWL20R005	10,00	10,00	9,70	10,00	58,00	100,00	0,50
F4AT1000AWL20R010	10,00	10,00	9,70	10,00	58,00	100,00	1,00
F4AT1000AWL20R020	10,00	10,00	9,70	10,00	58,00	100,00	2,00
F4AT1000AWL20R025	10,00	10,00	9,70	10,00	58,00	100,00	2,50
F4AT1200AWL20R015	12,00	12,00	11,80	6,00	24,00	75,00	1,50
F4AT1200AWL20R030	12,00	12,00	11,80	6,00	24,00	75,00	3,00
F4AT1200AWX20R010	12,00	12,00	11,70	12,00	62,00	110,00	1,00
F4AT1200AWX20R015	12,00	12,00	11,70	12,00	62,00	110,00	1,50
F4AT1200AWX20R030	12,00	12,00	11,70	12,00	62,00	110,00	3,00

NOTE: For application data, see page P152.

- Kennametal standard dimensions.
- Centre cutting.



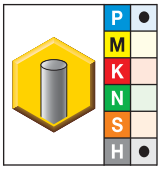




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F4AJ-F5AJ...WS-WM-WL-WX • Long



● first choice
○ alternate choice

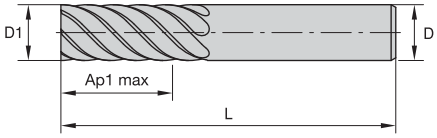
KC633M	D1	D	Ap1 max	L	Rε	Z U
F4AJ0600AWS50R025	6,00	6,00	9,00	50,00	0,25	4
F4AJ0600AWS50R050	6,00	6,00	9,00	50,00	0,50	4
F4AJ0800AWM50R050	8,00	8,00	12,00	63,00	0,50	4
F4AJ0800AWM50R100	8,00	8,00	12,00	63,00	1,00	4
F4AJ1000AWL50R050	10,00	10,00	15,00	76,00	0,50	4
F4AJ1000AWL50R100	10,00	10,00	15,00	76,00	1,00	4
F4AJ1200AWL50R050	12,00	12,00	18,00	76,00	0,50	4
F4AJ1200AWL50R150	12,00	12,00	18,00	76,00	1,50	4
F4AJ1600AWL50R050	16,00	16,00	24,00	89,00	0,50	4
F4AJ1600AWL50R150	16,00	16,00	24,00	89,00	1,50	4
F4AJ2000AWX50R050	20,00	20,00	30,00	104,00	0,50	4
F4AJ2000AWX50R200	20,00	20,00	30,00	104,00	2,00	4

NOTE: For application data, see page P152.

- Kennametal standard dimensions.
- Centre cutting.



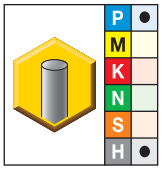




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F4AJ-F5AJ-F6AJ...WS-WL-WX • Extra Long



● first choice
○ alternate choice

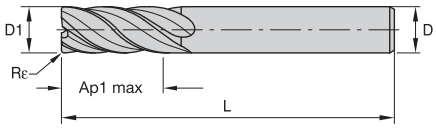
KC633M	D1	D	Ap1 max	L	Z U
F4AJ0600AWS50L090	6,00	6,00	9,00	50,00	4
F4AJ0800AWM50L120	8,00	8,00	12,00	63,00	4
F4AJ1000AWM50L150	10,00	10,00	15,00	76,00	4
F4AJ1600AWL50L240	16,00	16,00	24,00	89,00	4
F4AJ2000AWL50L300	20,00	20,00	30,00	104,00	4
F5AJ2500AWX50L380	25,00	25,00	38,00	121,00	5

NOTE: For application data, see page P153.

- Kennametal standard dimensions.
- Centre cutting.



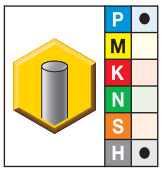




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F6AV-F8AV...DL • DIN 6527 • Long • Extra Long

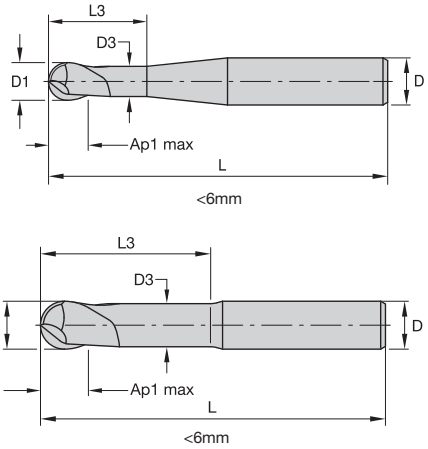


● first choice
○ alternate choice

KC637M	D1	D	Ap1 max	L	Rε	Z U
F6AV0600ADL45	6,00	6,00	13,00	57,00	0,50	6
F6AV0600AWM45	6,00	6,00	18,00	62,00	0,50	6
F6AV0800ADL45	8,00	8,00	19,00	63,00	0,50	6
F6AV0800AWM45	8,00	8,00	24,00	68,00	0,50	6
F6AV1000ADL45	10,00	10,00	22,00	72,00	0,50	6
F6AV1000AWL45	10,00	10,00	30,00	80,00	0,50	6
F6AV1200ADL45	12,00	12,00	26,00	83,00	1,00	6
F6AV1200AWL45	12,00	12,00	36,00	93,00	1,00	6
F6AV1600ADL45	16,00	16,00	32,00	92,00	1,00	6
F6AV1600AWX45	16,00	16,00	48,00	108,00	1,00	6
F8AV2000ADL45	20,00	20,00	38,00	104,00	1,00	8
F8AV2000AWX45	20,00	20,00	60,00	126,00	1,00	8
F8AV2500ADL45	25,00	25,00	45,00	121,00	1,50	8
F8AV2500AWX45	25,00	25,00	75,00	150,00	1,50	8

NOTE: For application data, see page P153.

- Kennametal standard dimensions.
- Centre cutting.

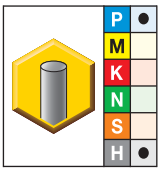




End Mill Tolerances

D1	tolerance h10	D	tolerance h6
≤3	+0/-0,040	≤3	+0-/0,006
>3–6	+0/-0,048	>3–6	+0/-0,008
>6–10	+0/-0,058	>6–10	+0/-0,009
>10–18	+0/-0,070	>10–18	+0/-0,011
>18–30	+0/-0,084	>18–30	+0/-0,013

F2AL...WL-WM-WX • Ball Nose • Extended Neck



● first choice
○ alternate choice

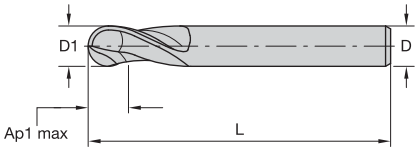
KC637M	D1	D	D3	Ap1 max	L3	L
F2AL0200AWM20	2,00	6,00	1,70	2,00	17,50	70,00
F2AL0300AWM20	3,00	6,00	2,50	3,00	18,50	70,00
F2AL0400AWL20	4,00	6,00	3,50	4,00	19,50	80,00
F2AL0500AWL20	5,00	6,00	4,50	5,00	44,00	80,00
F2AL0600AWL20	6,00	6,00	5,50	6,00	44,00	80,00
F2AL0800AWL20	8,00	8,00	7,00	8,00	54,00	90,00
F2AL1000AWL20	10,00	10,00	9,00	10,00	60,00	100,00
F2AL1200AWX20	12,00	12,00	11,70	12,00	65,00	110,00

NOTE: For application data, see page P154.

- Kennametal standard dimensions.
- Centre cutting.



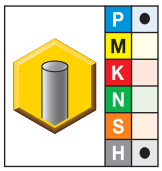




End Mill Tolerances

D1	tolerance h10	D	tolerance h6
≤3	+0/-0,040	≤3	+0/-0,006
>3–6	+0/-0,048	>3–6	+0/-0,008
>6–10	+0/-0,058	>6–10	+0/-0,009
>10–18	+0/-0,070	>10–18	+0/-0,011
>18–30	+0/-0,084	>18–30	+0/-0,013

F2AL...WL-WM • Ball Nose



● first choice
○ alternate choice

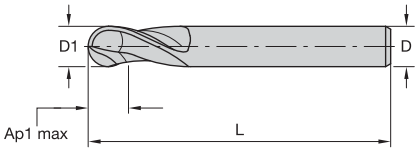
KC637M	D1	D	Ap1 max	L
F2AL0100AWL30	1,00	4,00	1,00	40,00
F2AL0150AWL30	1,50	4,00	1,50	40,00
F2AL0200AWL30	2,00	6,00	2,00	45,00
F2AL0300AWL30	3,00	6,00	3,00	45,00
F2AL0400AWL30	4,00	6,00	4,00	45,00
F2AL0500AWL30	5,00	6,00	5,00	50,00
F2AL0600AWL30	6,00	6,00	6,00	50,00
F2AL0800AWL30	8,00	8,00	8,00	60,00
F2AL1000AWM30	10,00	10,00	10,00	70,00
F2AL1200AWM30	12,00	12,00	12,00	75,00
F2AL1600AWM30	16,00	16,00	16,00	80,00

NOTE: For application data, see page P155.

- Kennametal standard dimensions.
- Centre cutting.



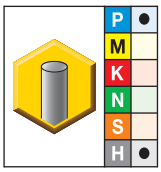




End Mill Tolerances

D1	tolerance h10	D	tolerance h6
≤3	+0/-0,040	≤3	+0/-0,006
>3–6	+0/-0,048	>3–6	+0/-0,008
>6–10	+0/-0,058	>6–10	+0/-0,009
>10–18	+0/-0,070	>10–18	+0/-0,011
>18–30	+0/-0,084	>18–30	+0/-0,013

F2AL...WL-WM-WX • Ball Nose • Long



● first choice
○ alternate choice

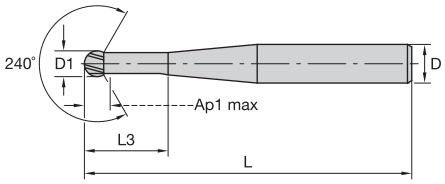
KC637M	D1	D	Ap1 max	L
F2AL0600AWM30	6,00	6,00	6,00	80,00
F2AL0800AWM30	8,00	8,00	8,00	90,00
F2AL1000AWL30	10,00	10,00	10,00	100,00
F2AL1200AWX30	12,00	12,00	12,00	110,00
F2AL1600AWX30	16,00	16,00	16,00	140,00

NOTE: For application data, see page P156.

- Kennametal standard dimensions.
- Centre cutting.



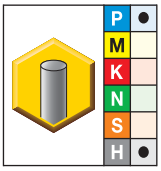




End Mill Tolerances

D1	tolerance h10	D	tolerance h6
≤3	+0/-0,040	≤3	+0/-0,006
>3–6	+0/-0,048	>3–6	+0/-0,008
>6–10	+0/-0,058	>6–10	+0/-0,009
>10–18	+0/-0,070	>10–18	+0/-0,011
>18–30	+0/-0,084	>18–30	+0/-0,013

F2AB...WL-WM-WX • Ball Nose • Extended Neck



● first choice
○ alternate choice

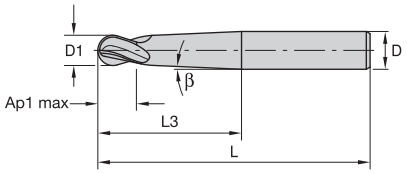
KC637M	D1	D	Ap1 max	L3	L
F2AB0200AWM30	2,00	6,00	1,00	17,00	70,00
F2AB0300AWM30	3,00	6,00	1,50	18,00	70,00
F2AB0400AWL30	4,00	6,00	2,00	19,00	80,00
F2AB0500AWL30	5,00	6,00	2,50	42,00	80,00
F2AB0600AWL30	6,00	6,00	3,00	42,00	80,00
F2AB1000AWL30	10,00	10,00	5,00	58,00	100,00
F2AB1200AWX30	12,00	12,00	6,00	63,00	110,00

NOTE: For application data, see page P157.

- Kennametal standard dimensions.
- Centre cutting.



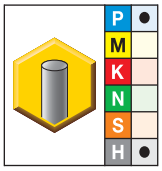




End Mill Tolerances

D1	tolerance h8	D	tolerance h6
≤3	+0/-0,014	≤3	+0/-0,006
>3–6	+0/-0,018	>3–6	+0/-0,008
>6–10	+0/-0,022	>6–10	+0/-0,009
>10–18	+0/-0,027	>10–18	+0/-0,011
>18–30	+0/-0,033	>18–30	+0/-0,013

F4AL...WL-WM-WX • Ball Nose • Tapered Neck



● first choice
○ alternate choice

KC637M	D1	D	Ap1 max	L3	L	β
F4AL0300AWM30L040	3,00	6,00	4,00	4,00	75,00	2.85
F4AL0300AWL30L040	3,00	6,00	4,00	4,00	100,00	1.65
F4AL0400AWM30L050	4,00	6,00	5,00	5,00	75,00	2.67
F4AL0400AWL30L050	4,00	6,00	5,00	5,00	100,00	1.18
F4AL0500AWM30L060	5,00	6,00	6,00	6,00	75,00	1.33
F4AL0500AWL30L060	5,00	8,00	6,00	6,00	100,00	1.75
F4AL0600AWM30L080	6,00	8,00	8,00	8,00	75,00	2.38
F4AL0600AWL30L080	6,00	10,00	8,00	8,00	100,00	2.52
F4AL0800AWL30L120	8,00	10,00	12,00	12,00	100,00	1.52
F4AL0800AWX30L120	8,00	12,00	12,00	12,00	150,00	1.40
F4AL1000AWL30L150	10,00	12,00	15,00	15,00	100,00	1.83
F4AL1000AWX30L150	10,00	12,00	15,00	15,00	150,00	0.80

NOTE: For application data, see page P158.

F2AT...WM-WL-WX • Toroidal End • Long Reach



Material Group		Side Milling (A) and Slotting (B)			KC637M		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.								
		A		B	Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	ap	min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	3	0,5 x D	0,4 x D	0,3 x D	120	160	fz	0,011	0,017	0,026	0,033	0,040	0,055	0,067	0,077
	4	0,5 x D	0,4 x D	0,3 x D	90	150	fz	0,010	0,016	0,024	0,030	0,036	0,049	0,059	0,069
H	1	0,5 x D	0,4 x D	0,3 x D	80	140	fz	0,010	0,016	0,024	0,030	0,036	0,049	0,059	0,069
	2	0,5 x D	0,3 x D	0,2 x D	60	80	fz	0,012	0,016	0,018	0,022	0,027	0,037	0,044	0,051
	3	0,5 x D	0,15 x D	0,15 x D	50	70	fz	0,009	0,013	0,014	0,018	0,021	0,029	0,035	0,041
	4	0,5 x D	0,1 x D	0,1 x D	40	60	fz	0,006	0,008	0,009	0,012	0,014	0,019	0,023	0,027

NOTE: These guidelines may require possible variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F4AT...WS-WM-WL-WX • Toroidal End • Long Reach



Material Group		Side Milling (A) and Slotting (B)			KC637M		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	ap	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0
P	3	0,5 x D	0,4 x D	0,3 x D	120	160	fz	0,026	0,033	0,040	0,055	0,067	0,077
	4	0,5 x D	0,4 x D	0,3 x D	90	150	fz	0,024	0,030	0,036	0,049	0,059	0,069
H	1	0,5 x D	0,4 x D	0,3 x D	80	140	fz	0,024	0,030	0,036	0,049	0,059	0,069
	2	0,5 x D	0,3 x D	0,2 x D	60	80	fz	0,018	0,022	0,027	0,037	0,044	0,051
	3	0,5 x D	0,15 x D	0,15 x D	50	70	fz	0,014	0,018	0,021	0,029	0,035	0,041
	4	0,5 x D	0,1 x D	0,1 x D	40	60	fz	0,009	0,012	0,014	0,019	0,023	0,027

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

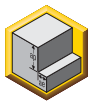
F4AJ-F5AJ...WS-WM-WL-WX • Long



Material Group		Side Milling (A) and Slotting (B)			KC633M		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.								
		A		B	Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	ap	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	3	1 x D	0,4 x D	1 x D	160	180	fz	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111	0,125
	4	1 x D	0,4 x D	0,75 x D	140	160	fz	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107
H	1	1 x D	0,4 x D	0,75 x D	120	140	fz	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107
	2	1 x D	0,3 x D	0,5 x D	80	130	fz	0,018	0,022	0,027	0,037	0,044	0,051	0,063	0,071	0,078
	3	1 x D	0,15 x D	0,3 x D	70	100	fz	0,014	0,018	0,021	0,029	0,035	0,041	0,051	0,059	0,067
	4	1 x D	0,1 x D	0,15 x D	50	70	fz	0,009	0,012	0,014	0,019	0,023	0,027	0,034	0,039	0,044

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F4AJ-F5AJ-F6AJ...WS-WL-WX • Extra Long

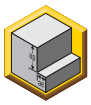




Material Group		Side Milling (A) and Slotting (B)			KC633M		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.							
		A		B	Cutting Speed — vc m/min		D1 — Diameter							
		ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	3	1 x D	0,4 x D	1 x D	160	180	fz	0,040	0,055	0,067	0,077	0,096	0,111	0,125
	4	1 x D	0,4 x D	0,75 x D	140	160	fz	0,036	0,049	0,059	0,069	0,084	0,097	0,107
H	1	1 x D	0,4 x D	0,75 x D	120	140	fz	0,036	0,049	0,059	0,069	0,084	0,097	0,107
	2	1 x D	0,3 x D	0,5 x D	80	130	fz	0,027	0,037	0,044	0,051	0,063	0,071	0,078
	3	1 x D	0,15 x D	0,3 x D	70	100	fz	0,021	0,029	0,035	0,041	0,051	0,059	0,067
	4	1 x D	0,1 x D	0,15 x D	50	70	fz	0,014	0,019	0,023	0,027	0,034	0,039	0,044

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F6AV/F8AV..DL/WM/WX




Material Group		Side Milling (A)		KC637M		Feed per Tooth — fz information is for side milling (A).							
		A		Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	3	Ap max	0,1 x D	120	160	fz	0,040	0,055	0,067	0,077	0,096	0,111	0,125
	4	Ap max	0,1 x D	90	150	fz	0,036	0,049	0,059	0,069	0,084	0,097	0,107
H	1	Ap max	0,1 x D	80	140	fz	0,036	0,049	0,059	0,069	0,084	0,097	0,107
	2	Ap max	0,1 x D	70	120	fz	0,027	0,037	0,044	0,051	0,063	0,071	0,078
	3	Ap max	0,1 x D	60	90	fz	0,021	0,029	0,035	0,041	0,051	0,059	0,067
	4	Ap max	0,05 x D	50	70	fz	0,014	0,019	0,023	0,027	0,034	0,039	0,044

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F2AL...WL-WM-WX • Ball Nose • Extended Neck





Material Group		Profiling		KC637M		Roughing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	3	0,2 x D	0,1 x D	208	234	fz	0,015	0,023	0,031	0,040	0,049	0,067	0,081	0,094
	4	0,2 x D	0,1 x D	182	208	fz	0,014	0,021	0,029	0,036	0,044	0,060	0,073	0,084
H	1	0,15 x D	0,1 x D	140	196	fz	0,021	0,032	0,043	0,054	0,066	0,090	0,109	0,125
	2	0,1 x D	0,075 x D	119	204	fz	0,024	0,036	0,048	0,061	0,074	0,101	0,121	0,140
	3	0,05 x D	0,05 x D	138	207	fz	0,027	0,041	0,055	0,069	0,084	0,114	0,138	0,161
	4	0,05 x D	0,05 x D	115	161	fz	0,018	0,027	0,037	0,046	0,056	0,076	0,092	0,107





Material Group		Profiling		KC637M		Semi-Finishing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	3	0,1 x D	0,05 x D	272	306	fz	0,034	0,052	0,070	0,089	0,109	0,150	0,182	0,211
	4	0,1 x D	0,05 x D	238	272	fz	0,031	0,048	0,064	0,081	0,099	0,134	0,162	0,187
H	1	0,07 x D	0,1 x D	200	280	fz	0,039	0,060	0,080	0,102	0,123	0,168	0,203	0,234
	2	0,05 x D	0,04 x D	161	276	fz	0,034	0,052	0,070	0,088	0,107	0,145	0,174	0,201
	3	0,03 x D	0,03 x D	174	261	fz	0,031	0,047	0,063	0,079	0,096	0,130	0,158	0,183
	4	0,03 x D	0,03 x D	145	203	fz	0,021	0,031	0,042	0,053	0,064	0,087	0,105	0,122





Material Group		Profiling		KC637M		Finishing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	3	0,04 x D	0,04 x D	416	468	fz	0,052	0,080	0,108	0,137	0,168	0,231	0,279	0,324
	4	0,04 x D	0,04 x D	364	416	fz	0,048	0,073	0,099	0,125	0,152	0,207	0,249	0,288
H	1	0,03 x D	0,03 x D	290	406	fz	0,052	0,078	0,106	0,134	0,162	0,221	0,266	0,308
	2	0,03 x D	0,03 x D	203	348	fz	0,039	0,059	0,080	0,101	0,122	0,166	0,199	0,230
	3	0,02 x D	0,02 x D	216	324	fz	0,033	0,050	0,067	0,084	0,102	0,139	0,168	0,196
	4	0,02 x D	0,02 x D	180	252	fz	0,022	0,033	0,045	0,056	0,068	0,093	0,112	0,130

F2AL...WL-WM • Ball Nose

Material Group		Profiling		KC637M		Roughing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	1,0	2,0	4,0	6,0	8,0	10,0	12,0	16,0
P	3	0,2 x D	0,1 x D	208	234	fz	0,007	0,015	0,031	0,049	0,067	0,081	0,094	0,117
	4	0,2 x D	0,1 x D	182	208	fz	0,007	0,014	0,029	0,044	0,060	0,073	0,084	0,103
H	1	0,15 x D	0,1 x D	140	196	fz	0,010	0,021	0,043	0,066	0,090	0,109	0,125	0,154
	2	0,1 x D	0,075 x D	119	204	fz	0,012	0,024	0,048	0,074	0,101	0,121	0,140	0,171
	3	0,05 x D	0,05 x D	138	207	fz	0,013	0,027	0,055	0,084	0,114	0,138	0,161	0,200
	4	0,05 x D	0,05 x D	115	161	fz	0,009	0,018	0,037	0,056	0,076	0,092	0,107	0,133

Material Group		Profiling		KC637M		Semi-Finishing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	1,0	2,0	4,0	6,0	8,0	10,0	12,0	16,0
P	3	0,1 x D	0,05 x D	272	306	fz	0,017	0,034	0,070	0,109	0,150	0,182	0,211	0,262
	4	0,1 x D	0,05 x D	238	272	fz	0,016	0,031	0,064	0,099	0,134	0,162	0,187	0,230
H	1	0,07 x D	0,1 x D	200	280	fz	0,019	0,039	0,080	0,123	0,168	0,203	0,234	0,288
	2	0,05 x D	0,04 x D	161	276	fz	0,017	0,034	0,070	0,107	0,145	0,174	0,201	0,246
	3	0,03 x D	0,03 x D	174	261	fz	0,015	0,031	0,063	0,096	0,130	0,158	0,183	0,229
	4	0,03 x D	0,03 x D	145	203	fz	0,010	0,021	0,042	0,064	0,087	0,105	0,122	0,151

Material Group		Profiling		KC637M		Finishing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	1,0	2,0	4,0	6,0	8,0	10,0	12,0	16,0
P	3	0,04 x D	0,04 x D	416	468	fz	0,026	0,052	0,108	0,168	0,231	0,279	0,324	0,403
	4	0,04 x D	0,04 x D	364	416	fz	0,024	0,048	0,099	0,152	0,207	0,249	0,288	0,355
H	1	0,03 x D	0,03 x D	290	406	fz	0,025	0,052	0,106	0,162	0,221	0,266	0,308	0,379
	2	0,03 x D	0,03 x D	203	348	fz	0,019	0,039	0,080	0,122	0,166	0,199	0,230	0,281
	3	0,02 x D	0,02 x D	216	324	fz	0,016	0,033	0,067	0,102	0,139	0,168	0,196	0,244
	4	0,02 x D	0,02 x D	180	252	fz	0,011	0,022	0,045	0,068	0,093	0,112	0,130	0,162

F2AL...WL-WM-WX • Ball Nose • Long





Material Group		Profiling		KC637M		Finishing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	1,0	2,0	4,0	6,0	8,0	10,0	12,0	16,0
P	3	0,04 x D	0,04 x D	416	468	fz	0,026	0,052	0,108	0,168	0,231	0,279	0,324	0,403
	4	0,04 x D	0,04 x D	364	416	fz	0,024	0,048	0,099	0,152	0,207	0,249	0,288	0,355
H	1	0,03 x D	0,03 x D	290	406	fz	0,025	0,052	0,106	0,162	0,221	0,266	0,308	0,379
	2	0,03 x D	0,03 x D	203	348	fz	0,019	0,039	0,080	0,122	0,166	0,199	0,230	0,281
	3	0,02 x D	0,02 x D	216	324	fz	0,016	0,033	0,067	0,102	0,139	0,168	0,196	0,244
	4	0,02 x D	0,02 x D	180	252	fz	0,011	0,022	0,045	0,068	0,093	0,112	0,130	0,162





Material Group		Profiling		KC637M		Semi-Finishing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	1,0	2,0	4,0	6,0	8,0	10,0	12,0	16,0
P	3	0,1 x D	0,05 x D	272	306	fz	0,017	0,034	0,070	0,109	0,150	0,182	0,211	0,262
	4	0,1 x D	0,05 x D	238	272	fz	0,016	0,031	0,064	0,099	0,134	0,162	0,187	0,230
	1	0,07 x D	0,1 x D	200	280	fz	0,019	0,039	0,080	0,123	0,168	0,203	0,234	0,288
H	2	0,05 x D	0,04 x D	161	276	fz	0,017	0,034	0,070	0,107	0,145	0,174	0,201	0,246
	3	0,03 x D	0,03 x D	174	261	fz	0,015	0,031	0,063	0,096	0,130	0,158	0,183	0,229
	4	0,03 x D	0,03 x D	145	203	fz	0,010	0,021	0,042	0,064	0,087	0,105	0,122	0,151





Material Group		Profiling		KC637M		Roughing — Feed per Tooth — fz information is for side milling (A).								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	1,0	2,0	4,0	6,0	8,0	10,0	12,0	16,0
P	3	0,2 x D	0,1 x D	208	234	fz	0,007	0,015	0,031	0,049	0,067	0,081	0,094	0,117
	4	0,2 x D	0,1 x D	182	208	fz	0,007	0,014	0,029	0,044	0,060	0,073	0,084	0,103
H	1	0,15 x D	0,1 x D	140	196	fz	0,010	0,021	0,043	0,066	0,090	0,109	0,125	0,154
	2	0,1 x D	0,075 x D	119	204	fz	0,012	0,024	0,048	0,074	0,101	0,121	0,140	0,171
	3	0,05 x D	0,05 x D	138	207	fz	0,013	0,027	0,055	0,084	0,114	0,138	0,161	0,200
	4	0,05 x D	0,05 x D	115	161	fz	0,009	0,018	0,037	0,056	0,076	0,092	0,107	0,133

F2AB...WL-WM-WX • Ball Nose • Extended Neck





Material Group		Profiling		KC637M		Roughing — Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	2,0	4,0	6,0	8,0	10,0	12,0
P	3	0,2 x D	0,1 x D	208	234	fz	0,015	0,031	0,049	0,067	0,081	0,094
	4	0,2 x D	0,1 x D	182	208	fz	0,014	0,029	0,044	0,060	0,073	0,084
H	1	0,15 x D	0,1 x D	140	196	fz	0,021	0,043	0,066	0,090	0,109	0,125
	2	0,1 x D	0,075 x D	119	204	fz	0,024	0,048	0,074	0,101	0,121	0,140
	3	0,05 x D	0,05 x D	138	207	fz	0,027	0,055	0,084	0,114	0,138	0,161
	4	0,05 x D	0,05 x D	115	161	fz	0,018	0,037	0,056	0,076	0,092	0,107





Material Group		Profiling		KC637M		Semi-Finishing — Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	2,0	4,0	6,0	8,0	10,0	12,0
P	3	0,1 x D	0,05 x D	272	306	fz	0,034	0,070	0,109	0,150	0,182	0,211
	4	0,1 x D	0,05 x D	238	272	fz	0,031	0,064	0,099	0,134	0,162	0,187
H	1	0,07 x D	0,1 x D	200	280	fz	0,039	0,080	0,123	0,168	0,203	0,234
	2	0,05 x D	0,04 x D	161	276	fz	0,034	0,070	0,107	0,145	0,174	0,201
	3	0,03 x D	0,03 x D	174	261	fz	0,031	0,063	0,096	0,130	0,158	0,183
	4	0,03 x D	0,03 x D	145	203	fz	0,021	0,042	0,064	0,087	0,105	0,122





Material Group		Profiling		KC637M		Finishing — Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	2,0	4,0	6,0	8,0	10,0	12,0
P	3	0,04 x D	0,04 x D	416	468	fz	0,052	0,108	0,168	0,231	0,279	0,324
	4	0,04 x D	0,04 x D	364	416	fz	0,048	0,099	0,152	0,207	0,249	0,288
H	1	0,03 x D	0,03 x D	290	406	fz	0,052	0,106	0,162	0,221	0,266	0,308
	2	0,03 x D	0,03 x D	203	348	fz	0,039	0,080	0,122	0,166	0,199	0,230
	3	0,02 x D	0,02 x D	216	324	fz	0,033	0,067	0,102	0,139	0,168	0,196
	4	0,02 x D	0,02 x D	180	252	fz	0,022	0,045	0,068	0,093	0,112	0,130

F4AL...WL-WM-WX • Ball Nose • Tapered Neck





Material Group		Profiling		KC637M		Roughing — Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0
P	3	0,2 x D	0,1 x D	208	234	fz	0,023	0,031	0,040	0,049	0,067	0,081
	4	0,2 x D	0,1 x D	182	208	fz	0,021	0,029	0,036	0,044	0,060	0,073
H	1	0,15 x D	0,1 x D	140	196	fz	0,032	0,043	0,054	0,066	0,090	0,109
	2	0,1 x D	0,075 x D	119	204	fz	0,036	0,048	0,061	0,074	0,101	0,121
	3	0,05 x D	0,05 x D	138	207	fz	0,041	0,055	0,069	0,084	0,114	0,138
	4	0,05 x D	0,05 x D	115	161	fz	0,027	0,037	0,046	0,056	0,076	0,092





Material Group		Profiling		KC637M		Semi-Finishing — Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0
P	3	0,1 x D	0,05 x D	272	306	fz	0,052	0,070	0,089	0,109	0,150	0,182
	4	0,1 x D	0,05 x D	238	272	fz	0,048	0,064	0,081	0,099	0,134	0,162
H	1	0,07 x D	0,1 x D	200	280	fz	0,060	0,080	0,102	0,123	0,168	0,203
	2	0,05 x D	0,04 x D	161	276	fz	0,052	0,070	0,088	0,107	0,145	0,174
	3	0,03 x D	0,03 x D	174	261	fz	0,047	0,063	0,079	0,096	0,130	0,158
	4	0,03 x D	0,03 x D	145	203	fz	0,031	0,042	0,053	0,064	0,087	0,105





Material Group		Profiling		KC637M		Finishing — Feed per Tooth — fz information is for side milling (A).						
		A		Cutting Speed — vc m/min			D1 — Diameter					
		ap	ae	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0
P	3	0,04 x D	0,04 x D	416	468	fz	0,080	0,108	0,137	0,168	0,231	0,279
	4	0,04 x D	0,04 x D	364	416	fz	0,073	0,099	0,125	0,152	0,207	0,249
H	1	0,03 x D	0,03 x D	290	406	fz	0,078	0,106	0,134	0,162	0,221	0,266
	2	0,03 x D	0,03 x D	203	348	fz	0,059	0,080	0,101	0,122	0,166	0,199
	3	0,02 x D	0,02 x D	216	324	fz	0,050	0,067	0,084	0,102	0,139	0,168
	4	0,02 x D	0,02 x D	180	252	fz	0,033	0,045	0,056	0,068	0,093	0,112



Carbide Recycling

Help preserve and protect our planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Programme.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly. Kennametal accepts any coated or non-coated carbide items, including inserts, drills, reamers, and taps.

By using the Kennametal Carbide Recycling Programme, you will receive:

- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

Programme is not currently available in all geographical areas.
For more information, please visit **kennametal.com/carbiderecycling**.

KENNAMETAL®

kennametal.com

High-Performance Micro-Machining End Mills

Primary Application

The full portfolio of industry standard micro-machining end mills from Kennametal consists of extended reach, necked, square end, and ball nose cutters. Engineered to machine steels and hardened steels up to 67 HRC, they provide the highest accuracy and longest tool life.

- End mills from cutting diameter D = 0,3mm.
- Short and long length of cut variations.
- Capable of machining steels and hardened steels up to more than 60 HRC.
- Sophisticated coatings for maximum wear resistance.

Features and Benefits

Advanced Technology

- Negative geometry for increased edge strength.
- Reinforced core for better rigidity.
- High helix for better surface finishes.

Tailored Grades

- TiAlN coated KC635M™ for additional wear resistance especially used at dry machining.
- KC637M™ hard machining dedicated TiAlN coated, wear resistant substrate for highest tool life in materials above 48 HRC.

Customisation

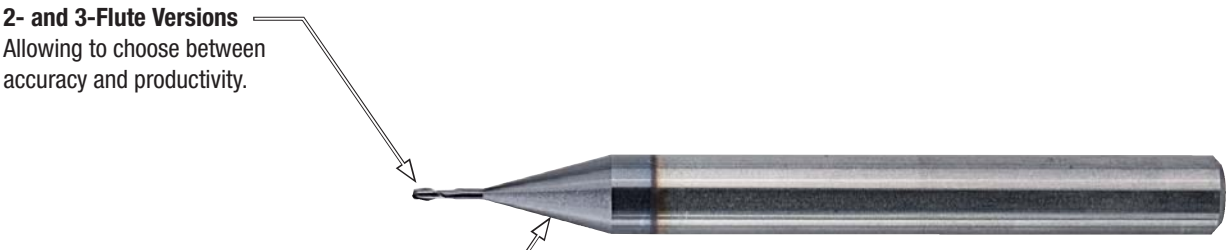
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.
- Various shank options and non-standard coatings available.
- AlTiN grade KC643M™ available as custom solution.

Extensive Standard Offering

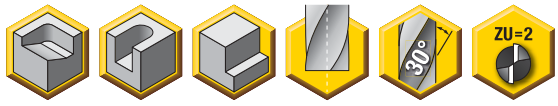
- Diameter ranges 0,3–6mm.
- Ball nose and square end offering.
- Extended tapered neck for long-reach applications.

Extended tapered neck for long-reach applications.

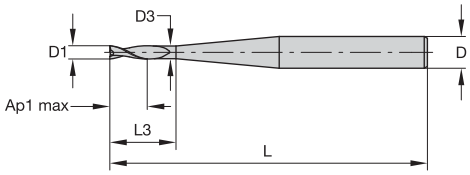




- Kennametal standard dimensions.
- Centre cutting.



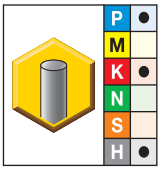




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F2AH...WS-WM • Extended Neck • Long

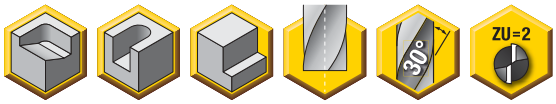


● first choice
○ alternate choice

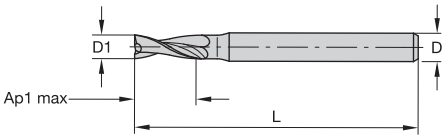
KC637M	D1	D	D3	Ap1 max	L3	L
F2AH0030AWS30L040	0,30	6,00	—	0,40	0,50	50,00
F2AH0050AWS30L070	0,50	6,00	0,45	0,70	1,50	50,00
F2AH0080AWM30L120	0,80	6,00	0,75	1,20	4,00	60,00
F2AH0100AWM30L150	1,00	6,00	0,95	1,50	5,00	60,00
F2AH0100AWS30L150	1,00	6,00	0,95	1,50	2,50	50,00
F2AH0150AWM30L230	1,50	6,00	1,45	2,30	7,50	60,00
F2AH0150AWS30L230	1,50	6,00	1,45	2,30	3,80	50,00
F2AH0160AWM30L240	1,60	6,00	1,55	2,40	8,00	60,00
F2AH0160AWS30L240	1,60	6,00	1,55	2,40	4,00	50,00
F2AH0180AWM30L270	1,80	6,00	1,75	2,70	9,00	60,00
F2AH0180AWS30L270	1,80	6,00	1,75	2,70	4,50	50,00
F2AH0200AWM30L300	2,00	6,00	1,95	3,00	10,00	60,00
F2AH0200AWS30L300	2,00	6,00	1,95	3,00	5,00	50,00
F2AH0250AWM30L370	2,50	6,00	2,40	3,70	12,50	60,00
F2AH0250AWS30L370	2,50	6,00	2,40	3,70	5,00	50,00

NOTE: For application data, see page P168.

- Kennametal standard dimensions.
- Centre cutting.



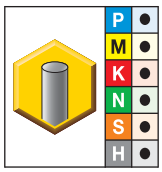




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F2AH...WS • Short

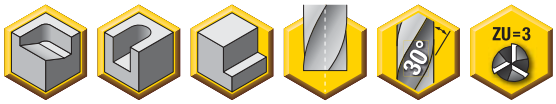


● first choice
○ alternate choice

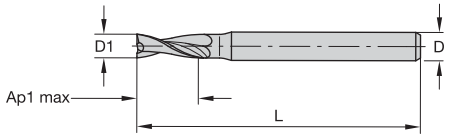
KC637M	D1	D	D3	Ap1 max	L3	L
F2AH0030AWS30L040	0,30	6,00	—	0,40	0,50	50,00
F2AH0050AWS30L070	0,50	6,00	0,45	0,70	1,50	50,00
F2AH0080AWM30L120	0,80	6,00	0,75	1,20	4,00	60,00
F2AH0100AWM30L150	1,00	6,00	0,95	1,50	5,00	60,00
F2AH0100AWS30L150	1,00	6,00	0,95	1,50	2,50	50,00
F2AH0150AWM30L230	1,50	6,00	1,45	2,30	7,50	60,00
F2AH0150AWS30L230	1,50	6,00	1,45	2,30	3,80	50,00
F2AH0160AWM30L240	1,60	6,00	1,55	2,40	8,00	60,00
F2AH0160AWS30L240	1,60	6,00	1,55	2,40	4,00	50,00
F2AH0180AWM30L270	1,80	6,00	1,75	2,70	9,00	60,00
F2AH0180AWS30L270	1,80	6,00	1,75	2,70	4,50	50,00
F2AH0200AWM30L300	2,00	6,00	1,95	3,00	10,00	60,00
F2AH0200AWS30L300	2,00	6,00	1,95	3,00	5,00	50,00
F2AH0250AWM30L370	2,50	6,00	2,40	3,70	12,50	60,00
F2AH0250AWS30L370	2,50	6,00	2,40	3,70	5,00	50,00

NOTE: For application data, see page P168.

- Kennametal standard dimensions.
- Centre cutting.



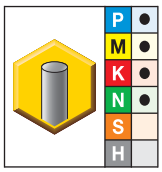




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F3AH...WS • Short



● first choice
○ alternate choice

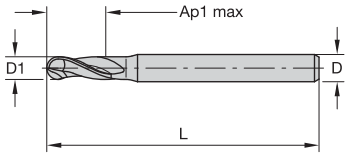
KC635M	D1	D	Ap1 max	L
F3AH0050AWS30	0,50	3,00	1,50	38,00
F3AH0060AWS30	0,60	3,00	1,50	38,00
F3AH0080AWS30	0,80	3,00	1,50	38,00
F3AH0100AWS30	1,00	3,00	2,00	38,00
F3AH0120AWS30	1,20	3,00	2,00	38,00
F3AH0150AWS30	1,50	3,00	2,00	38,00
F3AH0200AWS30	2,00	3,00	8,00	38,00
F3AH0250AWS30	2,50	3,00	9,00	38,00
F3AH0300AWS30	3,00	3,00	12,00	38,00

NOTE: For application data, see page P169.

- Kennametal standard dimensions.
- Centre cutting.



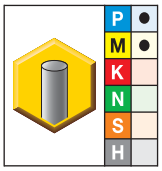




End Mill Tolerances

D1	tolerance h8	D	tolerance h6
≤3	+0/-0,014	≤3	+0/-0,006
>3–6	+0/-0,018	>3–6	+0/-0,008
>6–10	+0/-0,022	>6–10	+0/-0,009
>10–18	+0/-0,027	>10–18	+0/-0,011
>18–30	+0/-0,033	>18–30	+0/-0,013

F2AL...WS • Short



● first choice
○ alternate choice

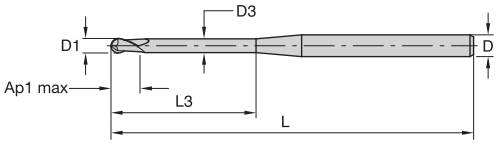
KC637M	D1	D	Ap1 max	L
F2AL0050AWS30	0,50	3,00	1,50	38,00
F2AL0100AWS30	1,00	3,00	2,00	38,00
F2AL0150AWS30	1,50	3,00	2,50	38,00
F2AL0200AWS30	2,00	3,00	3,00	38,00
F2AL0250AWS30	2,50	3,00	4,00	38,00
F2AL0300AWS30	3,00	3,00	5,00	38,00

NOTE: For application data, see page P170.

- Kennametal standard dimensions.
- Centre cutting.



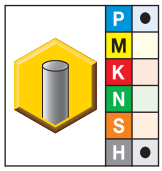




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F2AL...WS • Extended Neck



● first choice
○ alternate choice

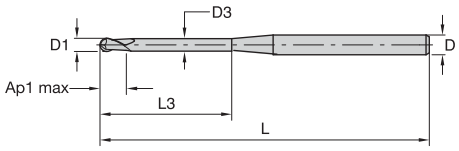
KC637M	D1	D	D3	Ap1 max	L3	L
F2AL0050AWS30L050	0,50	6,00	0,45	0,50	1,50	50,00
F2AL0060AWS30L060	0,60	6,00	0,55	0,60	1,80	50,00
F2AL0080AWS30L080	0,80	6,00	0,75	0,80	2,40	50,00
F2AL0100AWS30L100	1,00	6,00	0,95	1,00	2,50	50,00
F2AL0120AWS30L120	1,20	6,00	1,15	1,20	3,00	50,00
F2AL0150AWS30L150	1,50	6,00	1,45	1,50	3,80	50,00
F2AL0160AWS30L160	1,60	6,00	1,55	1,60	4,00	50,00
F2AL0180AWS30L180	1,80	6,00	1,75	1,80	4,50	50,00
F2AL0200AWS30L200	2,00	6,00	1,95	2,00	5,00	50,00
F2AL0250AWS30L250	2,50	6,00	2,40	2,50	5,00	50,00
F2AL0300AWS30L300	3,00	6,00	2,85	3,00	6,00	50,00
F2AL0400AWS30L400	4,00	6,00	3,85	4,00	6,00	50,00
F2AL0600AWS30L600	6,00	6,00	5,85	6,00	9,00	50,00

NOTE: For application data, see page P171.

- Kennametal standard dimensions.
- Centre cutting.



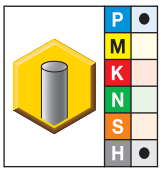




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F2AL...WM • Extended Neck • Long

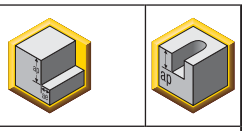


● first choice
○ alternate choice

KC637M	D1	D	D3	Ap1 max	L3	L
F2AL0100AWM30E060	1,00	4,00	0,95	1,60	6,00	65,00
F2AL0100AWM30E100	1,00	4,00	0,95	1,60	10,00	65,00
F2AL0100AWM30E160	1,00	4,00	0,95	1,60	16,00	65,00
F2AL0150AWM30E160	1,50	4,00	1,44	2,40	16,00	65,00
F2AL0200AWM30E0200	2,00	4,00	1,94	3,20	20,00	65,00
F2AL0200AWM30E100	2,00	4,00	1,94	3,20	10,00	65,00
F2AL0200AWM30E160	2,00	4,00	1,94	3,20	16,00	65,00
F2AL0400AWM30E060	4,00	6,00	3,92	6,00	6,00	70,00
F2AL0400AWM30E160	4,00	6,00	3,92	6,00	16,00	70,00

NOTE: For application data, see page P172.

F2AH...AWS/M30L...AWM • Extended Neck

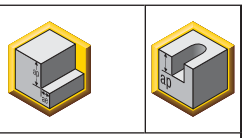




Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC637M Cutting Speed — vc m/min min		max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 0,4	0,5	0,6	0,8	1,0	1,5	2,0	2,5
P	2	1,25 x D	0,25 x D	0,75 x D	140	–	190	fz	0,003	0,003	0,004	0,005	0,007	0,010	0,014	0,017
	3	1,25 x D	0,25 x D	0,75 x D	120	–	160	fz	0,002	0,003	0,003	0,004	0,006	0,008	0,011	0,014
	4	1,25 x D	0,25 x D	0,5 x D	90	–	150	fz	0,002	0,003	0,003	0,004	0,005	0,008	0,010	0,013
	5	1,25 x D	0,25 x D	0,5 x D	60	–	100	fz	0,002	0,002	0,003	0,004	0,005	0,007	0,009	0,012
K	1	1,25 x D	0,25 x D	0,75 x D	120	–	150	fz	0,003	0,003	0,004	0,005	0,007	0,010	0,014	0,017
	2	1,25 x D	0,25 x D	0,5 x D	110	–	140	fz	0,002	0,003	0,003	0,004	0,006	0,008	0,011	0,014
H	1	1,25 x D	0,25 x D	0,5 x D	80	–	140	fz	0,002	0,003	0,003	0,004	0,005	0,008	0,010	0,013
	2	1,25 x D	0,25 x D	0,3 x D	70	–	120	fz	0,002	0,002	0,002	0,003	0,004	0,006	0,008	0,010
	3	1,25 x D	0,25 x D	0,25 x D	60	–	90	fz	0,001	0,002	0,002	0,002	0,003	0,005	0,006	0,008

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For tools with reach >3 x D, reduce fz by 20%.
For tools with reach >5 x D, reduce fz by 30%.
For tools with reach >10 x D, reduce vc and fz by 20–30%.

F2AH...AWS30 • Short





Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC637M Cutting Speed — vc m/min min		max	mm	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 0,4	0,5	0,6	0,8	1,0	1,2	1,5	1,8	2,0	2,5
P	0	1 x D	0,1 x D	0,25 x D	150	–	200	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019
	1	1 x D	0,1 x D	0,25 x D	150	–	200	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019
	2	1 x D	0,1 x D	0,25 x D	140	–	190	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019
	3	1 x D	0,1 x D	0,25 x D	120	–	160	fz	0,002	0,003	0,004	0,005	0,006	0,007	0,009	0,011	0,012	0,016
	4	1 x D	0,1 x D	0,25 x D	90	–	150	fz	0,002	0,003	0,003	0,005	0,006	0,007	0,009	0,010	0,012	0,014
	5	1 x D	0,1 x D	0,25 x D	60	–	100	fz	0,002	0,003	0,003	0,004	0,005	0,006	0,008	0,009	0,010	0,013
M	1	1 x D	0,1 x D	0,25 x D	90	–	115	fz	0,002	0,003	0,004	0,005	0,006	0,007	0,009	0,011	0,012	0,016
	2	1 x D	0,1 x D	0,25 x D	60	–	80	fz	0,002	0,003	0,003	0,004	0,005	0,006	0,008	0,009	0,010	0,013
K	1	1 x D	0,1 x D	0,25 x D	120	–	150	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019
	2	1 x D	0,1 x D	0,25 x D	110	–	140	fz	0,002	0,003	0,004	0,005	0,006	0,007	0,009	0,011	0,012	0,016
N	1	1 x D	0,1 x D	0,25 x D	500	–	2000	fz	0,004	0,006	0,007	0,009	0,011	0,013	0,017	0,020	0,022	0,028
	2	1 x D	0,1 x D	0,25 x D	500	–	1500	fz	0,004	0,005	0,006	0,008	0,010	0,012	0,015	0,018	0,020	0,025
	3	1 x D	0,1 x D	0,25 x D	500	–	1500	fz	0,003	0,004	0,005	0,006	0,008	0,009	0,012	0,014	0,015	0,019
	5	1 x D	0,1 x D	0,25 x D	250	–	1000	fz	0,004	0,005	0,006	0,008	0,010	0,012	0,015	0,018	0,020	0,025
S	1	1 x D	0,1 x D	0,25 x D	50	–	90	fz	0,002	0,003	0,004	0,005	0,006	0,007	0,009	0,011	0,012	0,016
	2	1 x D	0,1 x D	0,25 x D	25	–	40	fz	0,001	0,002	0,002	0,003	0,003	0,004	0,005	0,006	0,007	0,009
	3	1 x D	0,1 x D	0,25 x D	25	–	40	fz	0,001	0,002	0,002	0,003	0,003	0,004	0,005	0,006	0,007	0,009
	4	1 x D	0,1 x D	0,25 x D	50	–	60	fz	0,001	0,002	0,002	0,003	0,004	0,005	0,006	0,007	0,008	0,010
H	1	1 x D	0,1 x D	0,25 x D	80	–	140	fz	0,002	0,003	0,003	0,005	0,006	0,007	0,009	0,010	0,012	0,014

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

F3AH...AWS30... AWM • Short



Material Group		Side Milling (A) and Slotting (B)			KC635M		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.										
		A		B	Cutting Speed — vc m/min			D1 — Diameter									
		ap	ae	ap	min	max	mm	0,4	0,5	0,6	0,8	1,0	1,2	1,5	1,8	2,0	2,5	3,0
P	0	1 x D	0,1 x D	0,25 x D	150	200	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019	0,023
	1	1 x D	0,1 x D	0,25 x D	150	200	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019	0,023
	2	1 x D	0,1 x D	0,25 x D	140	190	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019	0,023
	3	1 x D	0,1 x D	0,25 x D	120	160	fz	0,002	0,003	0,004	0,005	0,006	0,007	0,009	0,011	0,012	0,016	0,019
	4	1 x D	0,1 x D	0,25 x D	90	150	fz	0,002	0,003	0,003	0,005	0,006	0,007	0,009	0,010	0,012	0,014	0,017
M	1	1 x D	0,1 x D	0,25 x D	90	115	fz	0,002	0,003	0,004	0,005	0,006	0,007	0,009	0,011	0,012	0,016	0,019
	2	1 x D	0,1 x D	0,25 x D	60	80	fz	0,002	0,003	0,003	0,004	0,005	0,006	0,008	0,009	0,010	0,013	0,016
K	1	1 x D	0,1 x D	0,25 x D	120	150	fz	0,003	0,004	0,004	0,006	0,007	0,009	0,011	0,014	0,015	0,019	0,023
	2	1 x D	0,1 x D	0,25 x D	110	140	fz	0,002	0,003	0,004	0,005	0,006	0,007	0,009	0,011	0,012	0,016	0,019
N	1	1 x D	0,1 x D	0,25 x D	500	2000	fz	0,004	0,006	0,007	0,009	0,011	0,013	0,017	0,020	0,022	0,028	0,033
	2	1 x D	0,1 x D	0,25 x D	500	1500	fz	0,004	0,005	0,006	0,008	0,010	0,012	0,015	0,018	0,020	0,025	0,030
	5	1 x D	0,1 x D	0,25 x D	250	1000	fz	0,004	0,005	0,006	0,008	0,010	0,012	0,015	0,018	0,020	0,025	0,030

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

F2AL...AWS30 • Short



Material Group		Profiling		KC637M		Feed per Tooth — Roughing								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0
P	3	0,2 x D	0,1 x D	208	234	fz	0,0037	0,0044	0,0059	0,0075	0,0113	0,0152	0,0192	0,0232
	4	0,2 x D	0,1 x D	182	208	fz	0,0035	0,0042	0,0056	0,0070	0,0105	0,0141	0,0177	0,0213
H	1	0,15 x D	0,1 x D	140	196	fz	0,0052	0,0062	0,0083	0,0104	0,0157	0,0211	0,0265	0,0319
	2	0,1 x D	0,075 x D	119	204	fz	0,0059	0,0070	0,0094	0,0118	0,0178	0,0238	0,0299	0,0360
	3	0,05 x D	0,05 x D	138	207	fz	0,0066	0,0080	0,0106	0,0133	0,0201	0,0269	0,0338	0,0408
	4	0,05 x D	0,05 x D	115	161	fz	0,0044	0,0053	0,0071	0,0089	0,0134	0,0179	0,0226	0,0272



Material Group		Profiling		KC637M		Feed per Tooth — Semi-Finishing								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0
P	3	0,1 x D	0,05 x D	272	306	fz	0,0083	0,0099	0,0133	0,0167	0,0253	0,0339	0,0428	0,0518
	4	0,1 x D	0,05 x D	238	272	fz	0,0077	0,0093	0,0124	0,0155	0,0235	0,0314	0,0396	0,0477
H	1	0,07 x D	0,1 x D	200	280	fz	0,0097	0,0116	0,0155	0,0194	0,0294	0,0393	0,0495	0,0596
	2	0,05 x D	0,04 x D	161	276	fz	0,0084	0,0101	0,0135	0,0169	0,0255	0,0342	0,0430	0,0518
	3	0,03 x D	0,03 x D	174	261	fz	0,0076	0,0091	0,0122	0,0152	0,0230	0,0308	0,0387	0,0466
	4	0,03 x D	0,03 x D	145	203	fz	0,0051	0,0061	0,0081	0,0102	0,0153	0,0205	0,0258	0,0311



Material Group		Profiling		KC637M		Feed per Tooth — Finishing								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0
P	3	0,04 x D	0,04 x D	416	468	fz	0,0127	0,0153	0,0204	0,0256	0,0389	0,0522	0,0659	0,0796
	4	0,04 x D	0,04 x D	364	416	fz	0,0119	0,0143	0,0191	0,0239	0,0361	0,0484	0,0609	0,0734
H	1	0,03 x D	0,03 x D	290	406	fz	0,0127	0,0153	0,0204	0,0255	0,0386	0,0517	0,0650	0,0784
	2	0,03 x D	0,03 x D	203	348	fz	0,0096	0,0116	0,0154	0,0193	0,0292	0,0391	0,0491	0,0592
	3	0,02 x D	0,02 x D	216	324	fz	0,0081	0,0097	0,0130	0,0163	0,0245	0,0328	0,0413	0,0497
	4	0,02 x D	0,02 x D	180	252	fz	0,0054	0,0065	0,0087	0,0108	0,0164	0,0219	0,0275	0,0331

F2AL...AWS30L • Extended Neck



Material Group		Profiling		KC637M		Feed per Tooth — Roughing								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0
P	3	0,2 x D	0,1 x D	208	234	fz	0,0037	0,0044	0,0059	0,0075	0,0113	0,0152	0,0192	0,0232
	4	0,2 x D	0,1 x D	182	208	fz	0,0035	0,0042	0,0056	0,0070	0,0105	0,0141	0,0177	0,0213
H	1	0,15 x D	0,1 x D	140	196	fz	0,0052	0,0062	0,0083	0,0104	0,0157	0,0211	0,0265	0,0319
	2	0,1 x D	0,075 x D	119	204	fz	0,0059	0,0070	0,0094	0,0118	0,0178	0,0238	0,0299	0,0360
	3	0,05 x D	0,05 x D	138	207	fz	0,0066	0,0080	0,0106	0,0133	0,0201	0,0269	0,0338	0,0408
	4	0,05 x D	0,05 x D	115	161	fz	0,0044	0,0053	0,0071	0,0089	0,0134	0,0179	0,0226	0,0272



Material Group		Profiling		KC637M		Feed per Tooth — Semi-Finishing								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0
P	3	0,1 x D	0,05 x D	272	306	fz	0,0083	0,0099	0,0133	0,0167	0,0253	0,0339	0,0428	0,0518
	4	0,1 x D	0,05 x D	238	272	fz	0,0077	0,0093	0,0124	0,0155	0,0235	0,0314	0,0396	0,0477
H	1	0,07 x D	0,1 x D	200	280	fz	0,0097	0,0116	0,0155	0,0194	0,0294	0,0393	0,0495	0,0596
	2	0,05 x D	0,04 x D	161	276	fz	0,0084	0,0101	0,0135	0,0169	0,0255	0,0342	0,0430	0,0518
	3	0,03 x D	0,03 x D	174	261	fz	0,0076	0,0091	0,0122	0,0152	0,0230	0,0308	0,0387	0,0466
	4	0,03 x D	0,03 x D	145	203	fz	0,0051	0,0061	0,0081	0,0102	0,0153	0,0205	0,0258	0,0311



Material Group		Profiling		KC637M		Feed per Tooth — Finishing								
		A		Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	min	max	mm	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0
P	3	0,04 x D	0,04 x D	416	468	fz	0,0127	0,0153	0,0204	0,0256	0,0389	0,0522	0,0659	0,0796
	4	0,04 x D	0,04 x D	364	416	fz	0,0119	0,0143	0,0191	0,0239	0,0361	0,0484	0,0609	0,0734
H	1	0,03 x D	0,03 x D	290	406	fz	0,0127	0,0153	0,0204	0,0255	0,0386	0,0517	0,0650	0,0784
	2	0,03 x D	0,03 x D	203	348	fz	0,0096	0,0116	0,0154	0,0193	0,0292	0,0391	0,0491	0,0592
	3	0,02 x D	0,02 x D	216	324	fz	0,0081	0,0097	0,0130	0,0163	0,0245	0,0328	0,0413	0,0497
	4	0,02 x D	0,02 x D	180	252	fz	0,0054	0,0065	0,0087	0,0108	0,0164	0,0219	0,0275	0,0331

NOTE: These guidelines may require possible variations to achieve optimum results.

F2AL...AWM30E • Extended Neck Long





Material Group		Profiling		KC637M		Feed per Tooth — Roughing										
		A		Cutting Speed — vc m/min			D1 — Diameter									
		ap	ae	min	max	mm	0,3	0,4	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0	4,0
P	3	0,2 x D	0,1 x D	187	211	fz	0,0022	0,0030	0,0037	0,0044	0,0059	0,0075	0,0113	0,0152	0,0192	0,0232	0,0309
	4	0,2 x D	0,1 x D	164	187	fz	0,0021	0,0028	0,0035	0,0042	0,0056	0,0070	0,0105	0,0141	0,0177	0,0213	0,0285
H	1	0,15 x D	0,1 x D	126	176	fz	0,0031	0,0041	0,0052	0,0062	0,0083	0,0104	0,0157	0,0211	0,0265	0,0319	0,0426
	2	0,1 x D	0,075 x D	107	184	fz	0,0035	0,0047	0,0059	0,0070	0,0094	0,0118	0,0178	0,0238	0,0299	0,0360	0,0480
	3	0,05 x D	0,05 x D	124	186	fz	0,0040	0,0053	0,0066	0,0080	0,0106	0,0133	0,0201	0,0269	0,0338	0,0408	0,0544
	4	0,05 x D	0,05 x D	104	145	fz	0,0027	0,0035	0,0044	0,0053	0,0071	0,0089	0,0134	0,0179	0,0226	0,0272	0,0362





Material Group		Profiling		KC637M		Feed per Tooth — Semi-Finishing										
		A		Cutting Speed — vc m/min			D1 — Diameter									
		ap	ae	min	max	mm	0,3	0,4	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0	4,0
P	3	0,1 x D	0,05 x D	245	275	fz	0,0050	0,0066	0,0083	0,0099	0,0133	0,0167	0,0253	0,0339	0,0428	0,0518	0,0690
	4	0,1 x D	0,05 x D	214	245	fz	0,0046	0,0062	0,0077	0,0093	0,0124	0,0155	0,0235	0,0314	0,0396	0,0477	0,0636
H	1	0,07 x D	0,1 x D	180	252	fz	0,0058	0,0077	0,0097	0,0116	0,0155	0,0194	0,0294	0,0393	0,0495	0,0596	0,0795
	2	0,05 x D	0,04 x D	145	248	fz	0,0050	0,0067	0,0084	0,0101	0,0135	0,0169	0,0255	0,0342	0,0430	0,0518	0,0690
	3	0,03 x D	0,03 x D	157	235	fz	0,0045	0,0061	0,0076	0,0091	0,0122	0,0152	0,0230	0,0308	0,0387	0,0466	0,0621
	4	0,03 x D	0,03 x D	131	183	fz	0,0030	0,0040	0,0051	0,0061	0,0081	0,0102	0,0153	0,0205	0,0258	0,0311	0,0414





Material Group		Profiling		KC637M		Feed per Tooth — Finishing										
		A		Cutting Speed — vc m/min			D1 — Diameter									
		ap	ae	min	max	mm	0,3	0,4	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0	4,0
P	3	0,04 x D	0,04 x D	374	421	fz	0,0076	0,0102	0,0127	0,0153	0,0204	0,0256	0,0389	0,0522	0,0659	0,0796	0,1062
	4	0,04 x D	0,04 x D	328	374	fz	0,0071	0,0095	0,0119	0,0143	0,0191	0,0239	0,0361	0,0484	0,0609	0,0734	0,0979
H	1	0,03 x D	0,03 x D	261	365	fz	0,0076	0,0102	0,0127	0,0153	0,0204	0,0255	0,0386	0,0517	0,0650	0,0784	0,1045
	2	0,03 x D	0,03 x D	183	313	fz	0,0058	0,0077	0,0096	0,0116	0,0154	0,0193	0,0292	0,0391	0,0491	0,0592	0,0789
	3	0,02 x D	0,02 x D	194	292	fz	0,0049	0,0065	0,0081	0,0097	0,0130	0,0163	0,0245	0,0328	0,0413	0,0497	0,0663
	4	0.02 x D	0,02 x D	162	227	fz	0,0032	0,0043	0,0054	0,0065	0,0087	0,0108	0,0164	0,0219	0,0275	0,0331	0,0442

HARVI™ III Family



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- Proprietary Beyond™ grade for exceptional tool life in titanium and stainless steels.

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Beyond™ EADE

Solid Ceramic End Mills

Primary Application

EADE solid ceramic end mills offer higher productivity and tool life in roughing nickel-based high-temperature alloys. Beyond grade KYS40™ delivers best-in-class tool life and exceptionally high Metal Removal Rates (MRR), surpassing those of other solutions on the market today.

- Outstanding reduction of machining time.
- Fewer tool changes due to longer tool life.
- Benefit from throw away-type of tooling.

Features and Benefits

Advanced Technology

- KYS40 Beyond grade solid SiAlON ceramic designed for machining nickel-based high-temperature alloys.
- Cutting speeds up to 1000 m/min increase metal removal rates.
- Tool life up to 5x that of carbide end mills.

Extensive Standard Offering

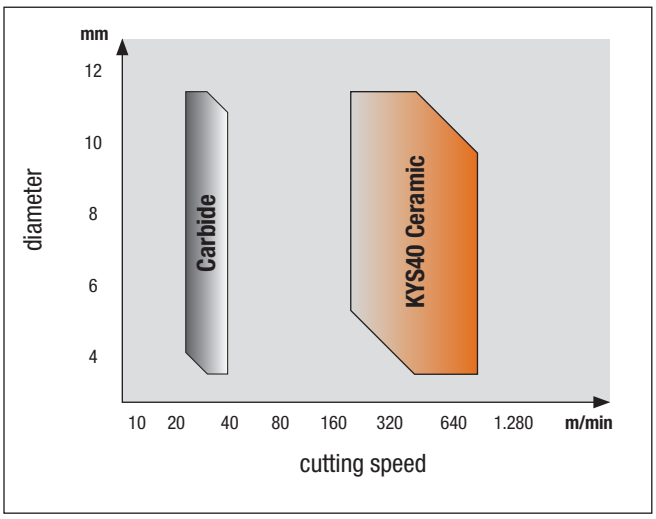
- 4-flute tooling for pocketing and slotting. Undersize end mills leaving stock for finishing operations.
- 6-flute tooling for face milling and profiling.

Customisation

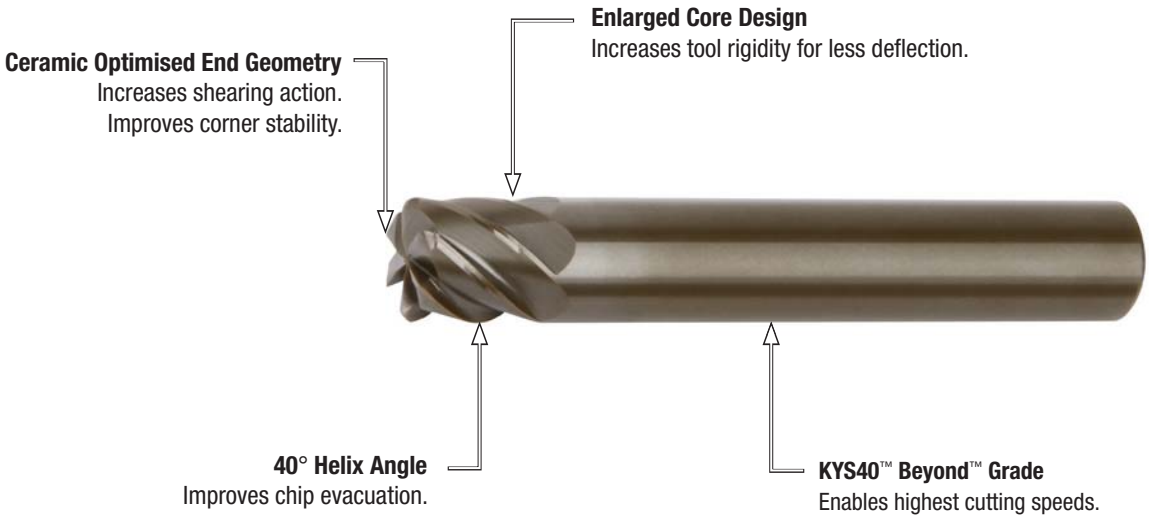
- Engineered solutions are available upon request.

Highest Cutting Speed Capability

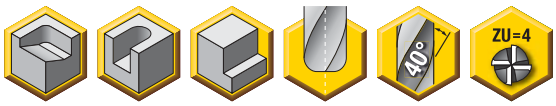
- Increase compared to carbide.



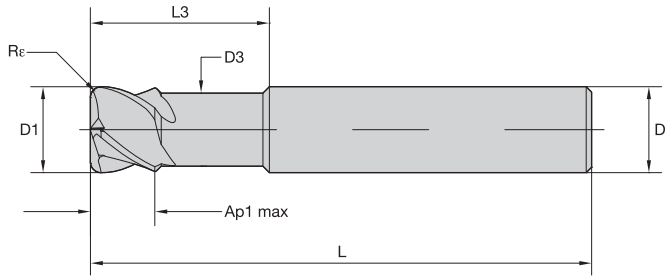



Enlarged Core Design
Increases tool rigidity for less deflection.
Ceramic Optimised End Geometry
Increases shearing action.
Improves corner stability.
40° Helix Angle
Improves chip evacuation.
KYS40™ Beyond™ Grade
Enables highest cutting speeds.

- Kennametal standard dimensions.
- Non-centre cutting.
- Ramping up to 2,5°.
- Optimised geometry for roughing nickel-based high-temperature alloys.





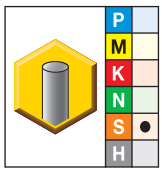


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

EADE • 4 Flute with Neck • Metric

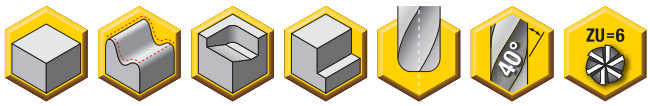


● first choice
○ alternate choice

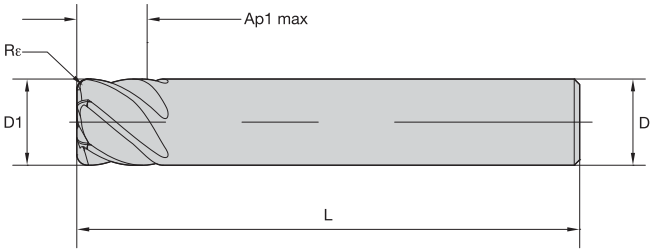
KYS40	D1	D	D3	Ap1 max	L	L3	Rε
EADE0380A4AQE KYS40	3,80	6,00	3,65	3,00	50,00	8,00	0,50
EADE0400A4AQE KYS40	4,00	6,00	3,84	3,00	50,00	8,00	0,50
EADE0570A4AQF KYS40	5,70	6,00	5,47	4,50	50,00	12,00	0,75
EADE0600A4AQF KYS40	6,00	6,00	5,76	4,50	50,00	12,00	0,75
EADE0760A4AQG KYS40	7,60	8,00	7,30	6,00	57,00	16,00	1,00
EADE0800A4AQG KYS40	8,00	8,00	7,68	6,00	57,00	16,00	1,00
EADE0950A4AQH KYS40	9,50	10,00	9,12	7,50	63,00	20,00	1,25
EADE1000A4AQH KYS40	10,00	10,00	9,60	7,50	63,00	20,00	1,25
EADE1140A4AQJ KYS40	11,40	12,00	10,94	9,00	70,00	24,00	1,50
EADE1200A4AQJ KYS40	12,00	12,00	11,52	9,00	70,00	23,50	1,50

NOTE: For application data, see page P178.
For full slotting, profiling, and 3D milling, do not exceed 0,5mm of Ap.

- Kennametal standard dimensions.
- Non-centre cutting.
- Ramping up to 2°.
- Optimised geometry for roughing nickel-based high-temperature alloys.





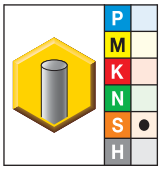


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

beyond

EADE • 6 Flute • Metric

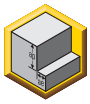


● first choice
○ alternate choice

KYS40	D1	D	Ap1 max	L	Rε
EADE0400A6ARE KYS40	4,00	6,00	3,00	50,00	0,50
EADE0600A6ARF KYS40	6,00	6,00	4,50	50,00	0,75
EADE0800A6ARG KYS40	8,00	8,00	6,00	57,00	1,00
EADE1000A6ARH KYS40	10,00	10,00	7,50	63,00	1,25
EADE1200A6ARJ KYS40	12,00	12,00	9,00	70,00	1,50

NOTE: For application data, see page P178.
For full slotting, profiling, and 3D milling, do not exceed 0,5mm of Ap.

4-Flute with Neck • Metric

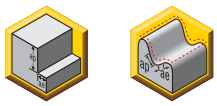




Material Group		Side Milling (A) and Slotting (B)			KYS40		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
		A		B	Cutting Speed — vc m/min			D1 — Diameter				
		ap	ae	ap	min	max	mm	4,0	6,0	8,0	10,0	12,0
S	3	Ap1 max	0,1 x D	0,5 x D*	250	1000	fz	0,020	0,024	0,028	0,030	0,032

NOTE: For above cutting data, do not exceed an overall ae of 1mm.
Use ap of 0.5mm as starting condition.

6-Flute • Metric





Material Group		Side Milling (A) and Profiling		KYS40		Recommended feed per tooth (fz = mm/th) for side milling (A).					
		A		Cutting Speed — vc m/min			D1 — Diameter				
		ap	ae	min	max	mm	4,0	6,0	8,0	10,0	12,0
S	3	Ap1 max*	0,1 x D	250	1000	fz	0,020	0,024	0,028	0,030	0,032

NOTE: For above cutting data, do not exceed an overall ae of 1mm.
Use ap of 0.5mm as starting condition.

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With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalogue, and then manually inputting the tooling information from the catalogue into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**





EADE 4-Flute End Mill

CHALLENGE

- Roughing a slot on turbine blade.
- Depth of slot 22mm
- INCONEL® 718 material.
- Dry machining.

SOLUTION

- Engineered solution EADE KYS40™ ceramic end mill with extended neck.
- Ø 11,4mm with 4 effective cutting edges and 1,5mm corner radii.

CUTTING DATA

- vc 800 m/min
- fz 0,03 mm/z
- ap 0,5mm
- ae 11,4mm

RESULT

- Customer proprietary information.

BENEFIT

- Machining time of 1 minute 54 seconds for one slot only.
- Metal removal rate of 15 cm^3/min consistently achieved.
- Productivity significantly increased.

EADE 4-Flute End Mill

CHALLENGE

- Rough profiling of small turbine blades.
- INCONEL 718 material.
- Dry machining.

SOLUTION

- Standard EADE KYS40 ceramic end mill.
- Ø 11,4mm with 4 effective cutting edges and standard neck.

CUTTING DATA

- vc 645 m/min
- fz 0,03 mm/z
- ap 0,5mm
- ae 11,4mm

RESULT

- 3x tool life compared to 2x tool life with competitive solution in less time.

BENEFIT

- 3x higher productivity as a result of increased cutting data.
- 50% longer tool life compared to competitive carbide end mill.

(continued)

(continued)



EADE 6-Flute End Mill

CHALLENGE

- Rough profiling of aerospace parts.
- Haynes® 288 and INCONEL® 718 material.
- Dry machining.

SOLUTION

- Standard EADE KYS40™ ceramic end mill.
- Ø 10mm with 6 effective cutting edges.

CUTTING DATA

- vc 462 m/min
- fz 0,03 mm/z
- ap 0,5–1mm
- ae Varying

RESULT

- Customer proprietary information.

BENEFIT

- Machining time reduced.
- Productivity significantly increased.

EADE 6-Flute End Mill

CHALLENGE

- Rough profiling of blisk (blade integrated disc).
- INCONEL 718 material (42 HRC).
- Compressed air coolant.

SOLUTION

- Standard EADE KYS40 ceramic end mill.
- Ø 12mm with 6 effective cutting edges.

CUTTING DATA

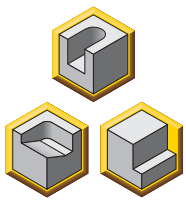
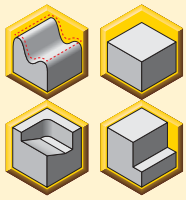
- vc 679 m/min
- fz 0,03 mm/z
- ap Varying up to 0,5mm
- ae Varying

RESULT

- 2 blisk segments machined with one tool.
- 12 minute machining time per segment.

BENEFIT

- Unprecedented reduction in machining time.

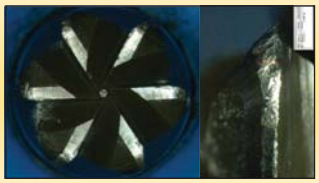
Materials to Cut	• Nickel-based high-temperature alloys. • Cobalt-based alloys after consulting technical assistance. • P6 and M1–3 stainless steels after consulting technical assistance. • Do not apply on iron-based high-temperature alloys.
Cutting Speed	• Maximum RPM machine can provide recommended cutting speed: 400–1000 m/min. • Highly dynamic machines recommended. • Use of spindle speeders applicable (no wet coolant).
Feed Rate	• Refer to application data recommendation. • General starting condition fz 0,03 mm/z.
Depth of Cut	• Refer to application data recommendation. • General starting condition ap 0,5mm.
Coolant	• Power cool nozzle preferred to flush chips away. • Pressurized air applicable. • Minimal quantity lubrication (MQL) and dry applicable. • No coolant with emulsion or oil due to thermal shock.
Adaptation	• Hydraulic chuck with or without sleeve preferred. • Collet or milling power chucks applicable. • Balancing at 25,000 RPM (2,5G) preferred.
Roughing Application	Yes
Finishing Application	No
Milling Strategy	• Conventional milling preferred at lower speeds. • Climb milling preferred at higher speeds.
4-Flute EADE	• Slotting and pocketing. • Common sizes and undersize leaving finishing stock. • Side milling possible up to ap max with increased feed. • Non-centre cutting. • Ramping and helical interpolation possible under 2.5°. 
6-Flute EADE	• Profiling and face milling. • Non-centre cutting. • Side milling possible up to ap max with increased feed. • Ramping and helical interpolation possible under 2°. 
Engineered Solutions	Available upon request.
Reconditioning Service	Not applicable.

Wear Indication

New

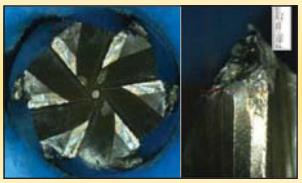


Used



Wear rate 0,48mm.
Still good to use.

End of Tool Life



Wear rate 1,4mm.
End of tool life reached.

Chip Formation

Carbide



Regular curled chips. Shape and length depend on end mill geometry and cutting data.

Ceramic



Chips are nearly like dust. Pressurised air coolant recommended to blow away chips.

Causes of and Remedies for End Milling Problems

problem	cause	remedy
Excessive bur formation	• Softness of material to cut. • Excessive wear on radii.	• Use undersize end mills that leave stock for finishing operation. • Replace tool as end of tool life reached. • Check tool runout.
Sudden breakage	• Vibration of the workpiece. • Unstable tool clamping. • Use of 6-flute tooling in slotting.	• Check workpiece and tool clamping. • Use of 4-flute EADE recommended.
Chips sticking	• Lack of cutting speed.	• Increase cutting speed.
Chipping	• Unstable tool and/or workpiece clamping. • Initial cutting speed too high.	• Check workpiece and tool clamping. • Reduce cutting speed during initial cut and increase as cutting continues.
Thermal cracks	• Wet coolant.	• Do not use wet coolant.

KC643M™ Key Way Cutter

Primary Application

F2AU and F3AU Key Way Cutters offer highest precision when machining slots for a shaft to hub connection. The corner radii increases workpiece durability as crack causing forces between floor and wall are minimised. To produce key slots according to ISO, the radii are adjusted accordingly to match this standard.

New KC643M Key Way Cutters replace old KC635M™ and KC625M™ versions.

- Highest accuracy with finishing (conventional milling).
- Roughing and finishing with one tool.
- Less tool changes due to higher tool life.

Features and Benefits

Advanced Technology

- Unequally spaced flutes with F3AU for chatter-free machining at high feed rates.
- F2AU designed for unstable machining conditions.
- Radii transition created between floor and wall at key slot increases durability of machined components by preventing cracks.
- True 90° wall straightness due to tapered peripheral edges creating a defined passive force during finishing cut (conventional cut).
- Roughing and finishing with one tool resulting in fewer tool changes and less tooling inventory necessary.

Tailored Grade

- Universal KC643M grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customisation

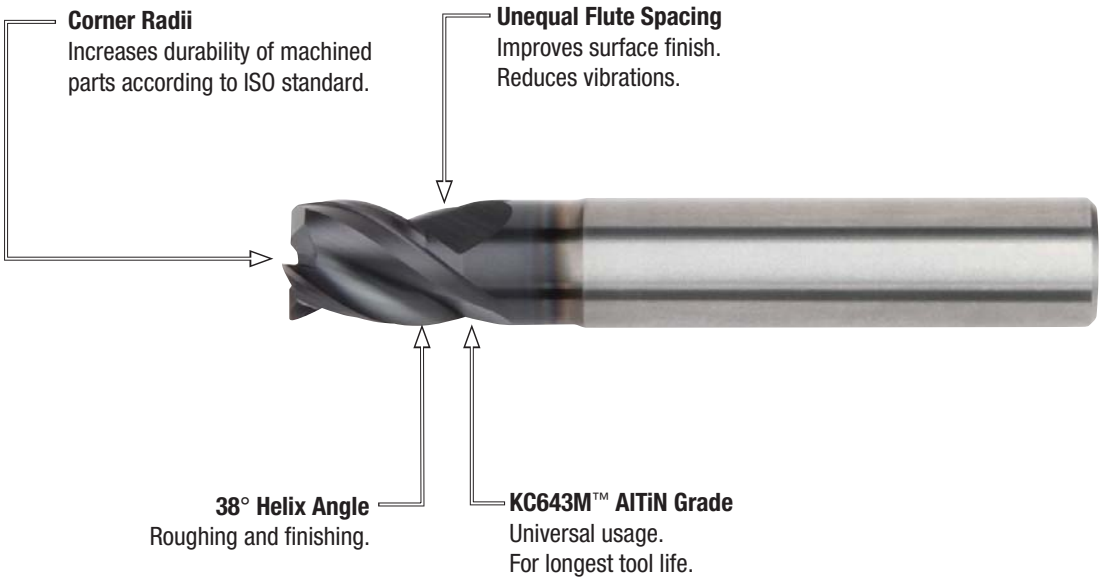
- Expanded length of tool as well as increased length of cut are possible.
- Internal coolant axial as well as radial available.
- Various shank and non-standard coatings options available.

Extensive Standard Offering

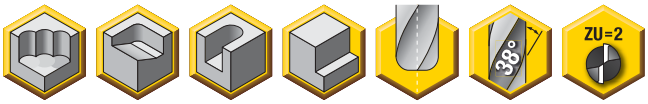
- Diameter range 1,80–19,70mm.
- 2-flute and 3-flute tooling in stock.

Various shank and non-standard coating options available.

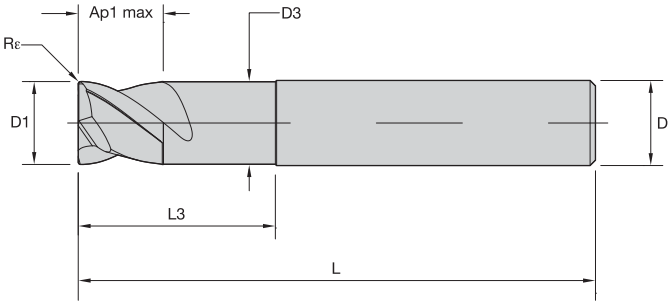




- Kennametal standard dimensions.
- Centre cutting.
- Single tool for roughing and finishing applications requiring fewer setups.
- Optimised for unstable machining conditions.



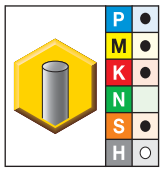




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F2AU.. • 2-Flute • Metric

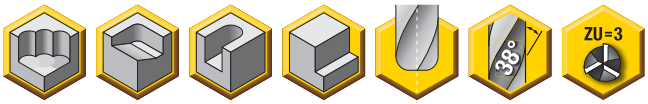


● first choice
○ alternate choice

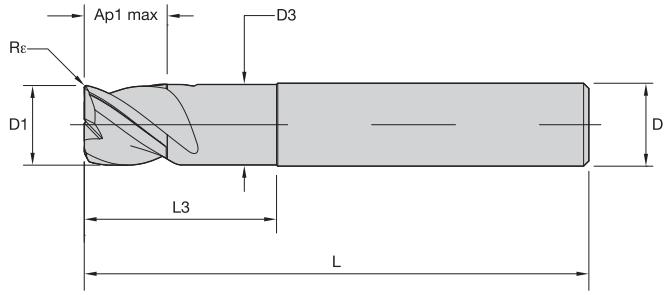
KC643M	D1	D	D3	Ap1 max	L3	L	Rε
F2AU0180ADK38	1,80	4,00	1,75	2,00	6,00	38,00	0,12
F2AU0280ADK38	2,80	6,00	2,75	4,00	12,00	50,00	0,12
F2AU0380ADK38	3,80	6,00	3,71	5,00	16,00	54,00	0,12
F2AU0480ADK38	4,80	6,00	4,71	6,00	16,00	54,00	0,20
F2AU0575ADK38	5,75	6,00	5,71	7,00	18,00	54,00	0,20
F2AU0775ADK38	7,75	8,00	7,70	9,00	22,00	58,00	0,20
F2AU0970ADK38	9,70	10,00	9,65	11,00	26,00	66,00	0,33
F2AU1170ADK38	11,70	12,00	11,64	12,00	28,00	73,00	0,33
F2AU1370ADK38	13,70	14,00	13,64	14,00	30,00	75,00	0,33
F2AU1570ADK38	15,70	16,00	15,64	16,00	34,00	82,00	0,33
F2AU1770ADK38	17,70	18,00	17,64	18,00	36,00	84,00	0,40
F2AU1970ADK38	19,70	20,00	19,63	20,00	42,00	92,00	0,40

NOTE: For application data, see page P188.

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for roughing and finishing applications requiring fewer setups.
- Optimised for high Metal Removal Rates (MRR) under stable machining conditions.



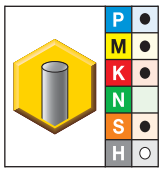




End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤3	-0,014/-0,028	≤3	+0/-0,006
>3–6	-0,020/-0,038	>3–6	+0/-0,008
>6–10	-0,025/-0,047	>6–10	+0/-0,009
>10–18	-0,032/-0,059	>10–18	+0/-0,011
>18–30	-0,040/-0,073	>18–30	+0/-0,013

F3AU.. • 3-Flute • Metric



● first choice
○ alternate choice

KC643M	D1	D	D3	Ap1 max	L3	L	Rε
F3AU0280ADK38	2,80	6,00	2,75	4,00	12,00	50,00	0,12
F3AU0380ADK38	3,80	6,00	3,71	5,00	16,00	54,00	0,12
F3AU0480ADK38	4,80	6,00	4,71	6,00	16,00	54,00	0,20
F3AU0575ADK38	5,75	6,00	5,71	7,00	18,00	54,00	0,20
F3AU0775ADK38	7,75	8,00	7,70	9,00	22,00	58,00	0,20
F3AU0970ADK38	9,70	10,00	9,65	11,00	26,00	66,00	0,33
F3AU1170ADK38	11,70	12,00	11,64	12,00	28,00	73,00	0,33
F3AU1370ADK38	13,70	14,00	13,64	14,00	30,00	75,00	0,33
F3AU1570ADK38	15,70	16,00	15,64	16,00	34,00	82,00	0,33
F3AU1770ADK38	17,70	18,00	17,64	18,00	36,00	84,00	0,40
F3AU1970ADK38	19,70	20,00	19,63	20,00	42,00	92,00	0,40

NOTE: For application data, see page P189.

F2AU...A/BDK38...



Material Group		Side Milling (A) and Slotting (B)			KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.										
		A		B	Cutting Speed — vc m/min				D1 — Diameter									
		ap	ae	ap	min		max	mm	2,0	3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0	20,0
P	0	1 x D	0,5 x D	0,75 x D	150	–	200	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	1	1 x D	0,5 x D	0,75 x D	150	–	200	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	140	–	190	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	3	1 x D	0,5 x D	0,75 x D	120	–	160	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	4	1 x D	0,5 x D	0,75 x D	90	–	150	fz	0,010	0,016	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,088
	5	1 x D	0,5 x D	0,75 x D	60	–	100	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
	6	1 x D	0,5 x D	0,75 x D	50	–	75	fz	0,008	0,012	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,065
M	1	1 x D	0,5 x D	0,75 x D	90	–	115	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	2	1 x D	0,5 x D	0,75 x D	60	–	80	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
	3	1 x D	0,5 x D	0,75 x D	60	–	70	fz	0,008	0,012	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,065
K	1	1 x D	0,5 x D	0,75 x D	120	–	150	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	110	–	140	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	3	1 x D	0,5 x D	0,75 x D	110	–	130	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
S	1	1 x D	0,3 x D	0,3 x D	50	–	90	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	2	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,009	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,054
	3	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,009	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,054
	4	1 x D	0,5 x D	0,75 x D	50	–	60	fz	0,007	0,011	0,016	0,026	0,037	0,045	0,052	0,058	0,064	0,074
H	1	1 x D	0,5 x D	0,75 x D	80	–	140	fz	0,010	0,016	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,088

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

F3AU...A/BDK38... • Unequal Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.									
		A		B	Cutting Speed – vc m/min				D1 – Diameter								
		ap	ae	ap	min		max	mm	2,0	3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0	20,0
P	0	1 x D	0,5 x D	0,75 x D	150	–	200	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	1	1 x D	0,5 x D	0,75 x D	150	–	200	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	140	–	190	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	3	1 x D	0,5 x D	0,75 x D	120	–	160	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	4	1 x D	0,5 x D	0,75 x D	90	–	150	fz	0,010	0,016	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,088
	5	1 x D	0,5 x D	0,75 x D	60	–	100	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
	6	1 x D	0,5 x D	0,75 x D	50	–	75	fz	0,008	0,012	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,065
M	1	1 x D	0,5 x D	0,75 x D	90	–	115	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	2	1 x D	0,5 x D	0,75 x D	60	–	80	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
	3	1 x D	0,5 x D	0,75 x D	60	–	70	fz	0,008	0,012	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,065
K	1	1 x D	0,5 x D	0,75 x D	120	–	150	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	110	–	140	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	3	1 x D	0,5 x D	0,75 x D	110	–	130	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
S	1	1 x D	0,3 x D	0,3 x D	50	–	90	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	2	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,009	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,054
	3	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,009	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,054
	4	1 x D	0,5 x D	0,75 x D	50	–	60	fz	0,007	0,011	0,016	0,026	0,037	0,045	0,052	0,058	0,064	0,074
H	1	1 x D	0,5 x D	0,75 x D	80	–	140	fz	0,010	0,016	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,088

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

GOmill™

Economical High-Performance End Mills

Primary Application

The GOmill line is specifically engineered to work on short length-of-cut applications in multiple workpiece materials, like soft and hard steels up to 48 HRC, stainless steels, high-temperature alloys, and cast iron. With the very short overall length and soft cutting geometries, this line is made to conform to the growing market of mill-turn machines.

- Extremely stable cutting tool due to extremely short design.
- Less vibration due to unequal flute spacing.
- Soft cut to support mill-turn machines as well driven units in lathe tooling.
- Use a new GOmill with 100% performance instead of regrinding.

Features and Benefits

Advanced Technology

- The 3-flute sharp and 4-flute chamfer versions support roughing, semi-finishing, and finishing applications.
- The 3-flute ball nose tool supports roughing and semi-finishing applications.
- All geometries work in slotting and side milling applications up to 1 x D depth of cut.
- Shortened shank applicable for all common clamping adaptors without modifications. Only use clamping sleeve in hydraulic chucks to avoid vibrations.

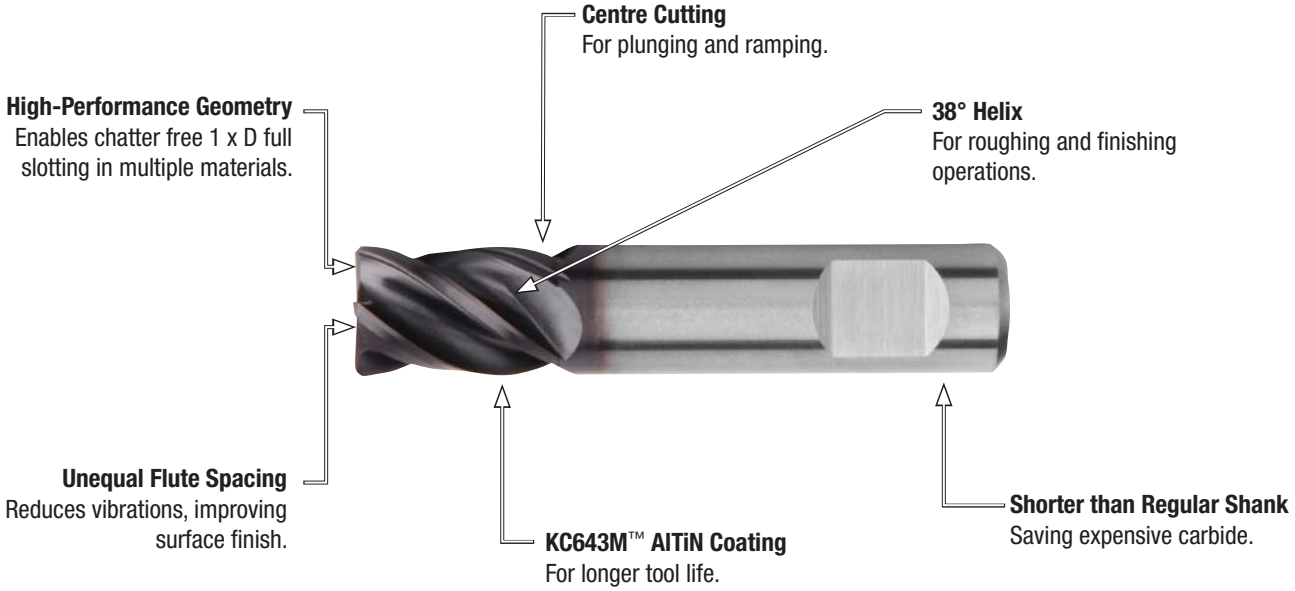
Tailored Grades

- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

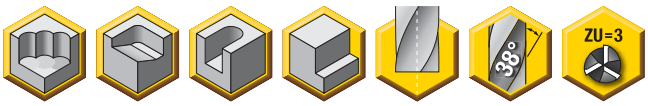
Extensive Standard Offering

- Diameter ranges 2 to 12mm.
- Straight and adapted Weldon® shanks.

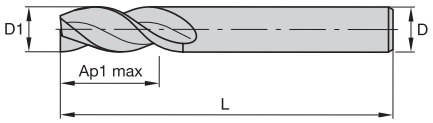



Centre Cutting
For plunging and ramping.
High-Performance Geometry
Enables chatter free 1 x D full slotting in multiple materials.
38° Helix
For roughing and finishing operations.
Unequal Flute Spacing
Reduces vibrations, improving surface finish.
KC643M™ AlTiN Coating
For longer tool life.
Shorter than Regular Shank
Saving expensive carbide.

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing.
- Roughing/finishing.





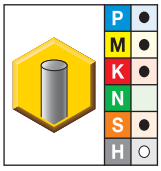


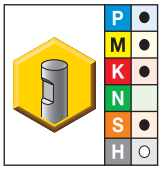
End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤ 3	-0,014 / -0,028	≤ 3	+0 / -0,006
> 3–6	-0,020 / -0,038	> 3–6	+0 / -0,008
> 6–10	-0,025 / -0,047	> 6–10	+0 / -0,009
> 10–18	-0,032 / -0,059	> 10–18	+0 / -0,011
> 18–30	-0,040 / -0,073	> 18–30	+0 / -0,013

GOmill

GOmill • UEDE



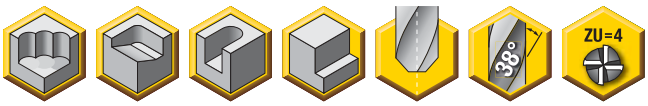


● first choice
○ alternate choice

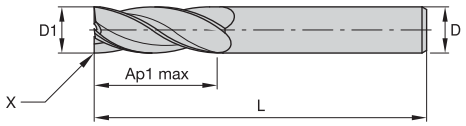
KC643M	KC643M	D1	D	Ap1 max	L
UEDE0200A3AS	**UEDE0200B3AS**	2,00	6,00	4,00	38,00
UEDE0300A3AS	**UEDE0300B3AS**	3,00	6,00	5,00	38,00
UEDE0400A3AS	**UEDE0400B3AS**	4,00	6,00	7,00	38,00
UEDE0500A3AS	**UEDE0500B3AS**	5,00	6,00	8,00	38,00
UEDE0600A3AS	**UEDE0600B3AS**	6,00	6,00	8,00	38,00
UEDE0800A3AS	**UEDE0800B3AS**	8,00	8,00	11,00	43,00
UEDE1000A3AS	**UEDE1000B3AS**	10,00	10,00	13,00	50,00
UEDE1200A3AS	**UEDE1200B3AS**	12,00	12,00	15,00	55,00

NOTE: For application data, see page P196.
Use reducer sleeve when clamping in hydraulic chucks.

- Single tool for both roughing and finishing operations for fewer setups.
- Unequal flute spacing minimises chatter for smoother machining.
- Kennametal standard dimensions.
- Centre cutting.





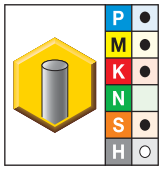


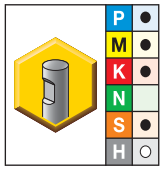
End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤ 3	-0,014 / -0,028	≤ 3	+0 / -0,006
> 3–6	-0,020 / -0,038	> 3–6	+0 / -0,008
> 6–10	-0,025 / -0,047	> 6–10	+0 / -0,009
> 10–18	-0,032 / -0,059	> 10–18	+0 / -0,011
> 18–30	-0,040 / -0,073	> 18–30	+0 / -0,013

GOmill™

GOmill • UEDE





● first choice
○ alternate choice

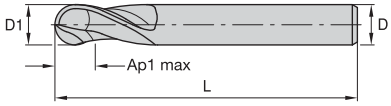
KC643M	KC643M	D1	D	Ap1 max	L
UEDE0400A4AH	**UEDE0400B4AH**	4,00	6,00	7,00	38,00
UEDE0600A4AH	**UEDE0600B4AH**	6,00	6,00	8,00	38,00
UEDE0800A4AH	**UEDE0800B4AH**	8,00	8,00	11,00	43,00
UEDE1000A4AH	**UEDE1000B4AH**	10,00	10,00	13,00	50,00
UEDE1200A4AH	**UEDE1200B4AH**	12,00	12,00	15,00	55,00

NOTE: For application data, see page P196.
Use reducer sleeve when clamping in hydraulic chucks.

- Kennametal standard dimensions.
- Semi-finishing/finishing.
- Centre cutting.





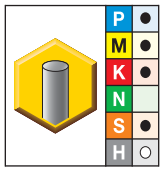


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤ 3	-0,014 / -0,028	≤ 3	+0 / -0,006
> 3–6	-0,020 / -0,038	> 3–6	+0 / -0,008
> 6–10	-0,025 / -0,047	> 6–10	+0 / -0,009
> 10–18	-0,032 / -0,059	> 10–18	+0 / -0,011
> 18–30	-0,040 / -0,073	> 18–30	+0 / -0,013

GOmill

GOmill • UEBC



● first choice
○ alternate choice

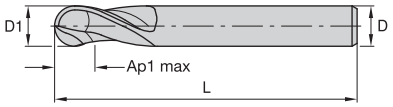
KC643M	D1	D	Ap1 max	L
UEBC0200A2A	2,00	6,00	4,00	38,00
UEBC0300A2A	3,00	6,00	5,00	38,00
UEBC0400A2A	4,00	6,00	7,00	38,00
UEBC0500A2A	5,00	6,00	8,00	38,00
UEBC0600A2A	6,00	6,00	8,00	38,00
UEBC0800A2A	8,00	8,00	11,00	43,00
UEBC1000A2A	10,00	10,00	13,00	50,00
UEBC1200A2A	12,00	12,00	15,00	73,00

NOTE: For application data, see page P197.
Use reducer sleeve when clamping in hydraulic chucks.

- Single tool for both roughing and finishing operations for fewer setups.
- Unequal flute spacing minimises chatter for smoother machining.
- Kennametal standard dimensions.
- Centre cutting.





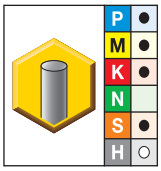


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤ 3	-0,014 / -0,028	≤ 3	+0 / -0,006
> 3–6	-0,020 / -0,038	> 3–6	+0 / -0,008
> 6–10	-0,025 / -0,047	> 6–10	+0 / -0,009
> 10–18	-0,032 / -0,059	> 10–18	+0 / -0,011
> 18–30	-0,040 / -0,073	> 18–30	+0 / -0,013

GOmill™

GOmill • UEBE

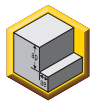


● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L
UEBE0200A3A	2,00	6,00	4,00	38,00
UEBE0300A3A	3,00	6,00	5,00	38,00
UEBE0400A3A	4,00	6,00	7,00	38,00
UEBE0500A3A	5,00	6,00	8,00	38,00
UEBE0600A3A	6,00	6,00	8,00	38,00
UEBE0800A3A	8,00	8,00	11,00	43,00
UEBE1000A3A	10,00	10,00	13,00	50,00
UEBE1200A3A	12,00	12,00	15,00	55,00

NOTE: For application data, see page P197.
Use reducer sleeve when clamping in hydraulic chucks.

UEDE • 3-Flute Sharp

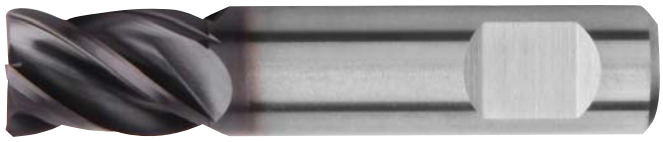




Material Group		Side Milling (A) and Slotting (B)			KC643M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.							
		A		B	Cutting Speed — vc m/min			D1 — Diameter							
		ap	ae	ap	min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	3	1,5 x D	0,5 x D	1 x D	120	160	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	4	1,5 x D	0,5 x D	0,75 x D	90	150	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062
	5	1,5 x D	0,5 x D	1 x D	60	100	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	6	1,5 x D	0,5 x D	0,75 x D	50	75	fz	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047
M	1	1,5 x D	0,5 x D	1 x D	90	115	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,5 x D	1 x D	60	80	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	3	1,5 x D	0,5 x D	1 x D	60	70	fz	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	110	140	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	3	1,5 x D	0,5 x D	1 x D	110	130	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
S	1	1,5 x D	0,3 x D	0,3 x D	50	90	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	3	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	4	1,5 x D	0,5 x D	1 x D	50	60	fz	0,008	0,013	0,016	0,021	0,026	0,037	0,045	0,052
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062

UEDE • 4-Flute Chamfer





Material Group		Side Milling (A) and Slotting (B)			KC643M			Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ae	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	3	1,5 x D	0,5 x D	1 x D	120	160	fz	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	4	1,5 x D	0,5 x D	0,75 x D	90	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062
	5	1,5 x D	0,5 x D	1 x D	60	100	fz	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	6	1,5 x D	0,5 x D	0,75 x D	50	75	fz	0,012	0,016	0,020	0,025	0,034	0,040	0,047
M	1	1,5 x D	0,5 x D	1 x D	90	115	fz	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,5 x D	1 x D	60	80	fz	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	3	1,5 x D	0,5 x D	1 x D	60	70	fz	0,012	0,016	0,020	0,025	0,034	0,040	0,047
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	110	140	fz	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	3	1,5 x D	0,5 x D	1 x D	110	130	fz	0,015	0,019	0,024	0,029	0,040	0,048	0,056
S	1	1,5 x D	0,3 x D	0,3 x D	50	90	fz	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	3	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	4	1,5 x D	0,5 x D	1 x D	50	60	fz	0,013	0,016	0,021	0,026	0,037	0,045	0,052
H	1	1,5 x D	0,5 x D	0,75 x D	80	140	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

UEBC • 2-Flute Ball Nose



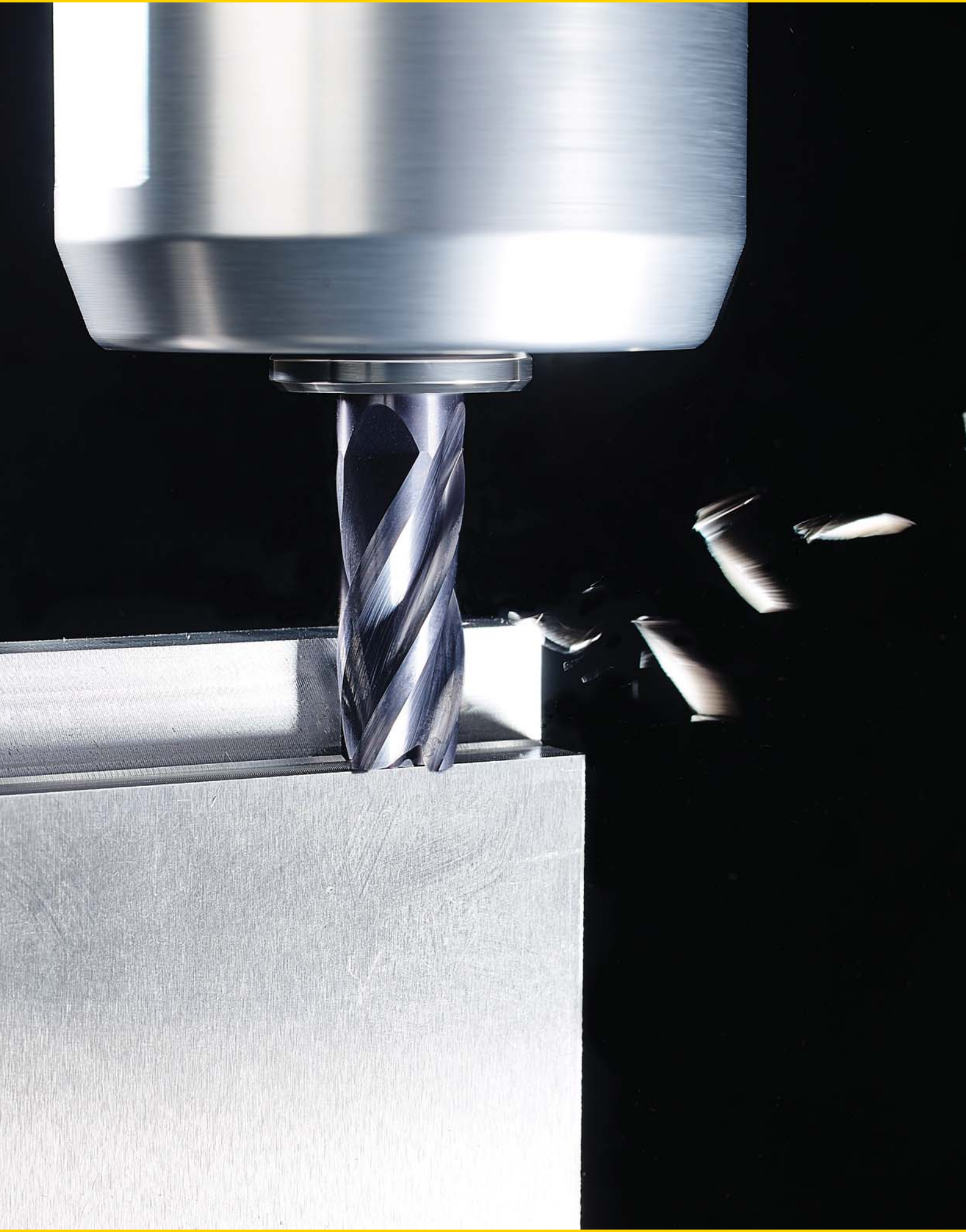
Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC643M Cutting Speed — vc m/min min		max		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	3	1,5 x D	0,5 x D	1 x D	120	–	160	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062
	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	fz	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047
M	1	1,5 x D	0,5 x D	1 x D	90	–	115	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	3	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	110	–	140	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	3	1,5 x D	0,5 x D	1 x D	110	–	130	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,008	0,013	0,016	0,021	0,026	0,037	0,045	0,052
H	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062

UEBE • 3-Flute Ball Nose



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC643M Cutting Speed — vc m/min min		max		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	3	1,5 x D	0,5 x D	1 x D	120	–	160	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062
	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	fz	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047
M	1	1,5 x D	0,5 x D	1 x D	90	–	115	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
	3	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	110	–	140	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	3	1,5 x D	0,5 x D	1 x D	110	–	130	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,008	0,013	0,016	0,021	0,026	0,037	0,045	0,052
H	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.



Solid End Milling • General Purpose Solid Carbide End Mills

GOmill Portfolio Overview.....Q2–Q3

GOmill GP 2-Flute End Mills Q4–Q15

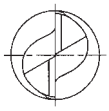
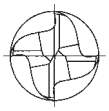
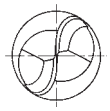
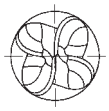
GOmill GP 3-Flute End Mills Q16–Q21

GOmill GP 4-Flute End Mills Q22–Q33

Catalogue Numbering System.....Q34

GOmill GP Cross Reference Guide.....Q35–Q43

End Mill Type Recommendation

End Mills									
Z = number of teeth		Fine Finishing	Finishing	Roughing	Slot Milling	Plunging	Contour Milling	Peel Milling	Trochoidal Milling
end mill Z = 2		○	○	◑	●	●	○	○	○
end mill Z = 3		○	◑	◑	●	◑	○	○	○
end mill Z = 4		◑	●	●	●	○	○	●	●
Ball Nose End Mills									
ball nose end mill Z = 2					●		●		
ball nose end mill Z = 4					◑		●		

● first choice

◑ suitable with limitations

○ not recommended

Always select a tool with the shortest possible flute length whenever possible. This will increase the stability of the tool and give the best results.

When selecting an end mill, the following machining factors will affect your selection of the correct end mill for your application:

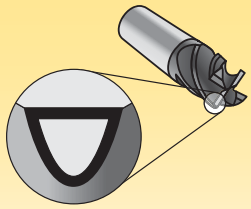
1. Tool overhang.
2. Coolant flow.
3. Machine and setup stability.
4. Machine power and torque.
5. Material to be machined.
6. Machine adaptor size (DV40, DV50, HSK63, etc.).

Select Adaptor per Technical Data/Characteristics

Technical data/characteristics	Toolholders				
	HydroForce™ high torque	Shrink Fit	Milling chuck	ER collet chuck	Weldon® adaptor
torque transmission	★★★★★	★★★★	★★★★★	★★	★★★★★
radial runout (T.I.R.)[1]	★★★★★	★★★★★	★★★★	★★★	★
radial rigidity[2]	★★★★	★★★★★	★★★	★★★	★★★
tool length adjustment	★★★★★	★★★★	★	★★★★	★★
tool shank tolerance requirement	★★★★	★★	★★★	★★★★★	★★★
through coolant	★★★★★	★★★★★	★★★	★★★	★★
minimum quantity lubrication (MQL)	★★★★★	★★★★★	★	★	★
dampening capability	★★★★★	★	★★★	★★★	★★★
shank diameter range[3]	★★★★★	★	★★★★★	★★★★★	★
cost of toolholder	★★	★★★	★	★★★★	★★★★★
low requirement of external devices[4]	★★★★★	★	★★★★	★★★★	★★★★★
ease of handling	★★★★★	★★★	★★	★★★★	★★★★
dust resistance	★★★★★	★★★★★	★★★	★★★	★★★★
high-speed capability	★★★★★	★★★★★	★★★	★★★	★
balancing accuracy	★★★★★	★★★★★	★★★	★★★	★

[1] Radial runout may affect tool life.
[2] Radial rigidity for Weldon holder is low at a direction perpendicular to the screw.
[3] Accepts different shank diameters through the use of reduction sleeves or due to collapse range.
[4] Collet chucks and milling chucks may require the use of a torque or special wrench; Shrink Fit adaptor requires a shrinking unit.

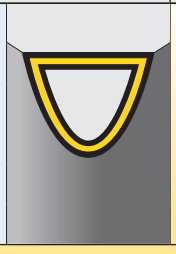
Grades and Grade Descriptions



Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron

wear resistance ◄——► toughness

Grade	Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC633M		Coated carbide grade with PVD multilayer coating. KC633M™ is designed for dry milling most types of material, apart from the hardened variety. This grade is characterised by high hardness and wear resistance. It provides outstanding protection for solid carbide tools against cratering and abrasion.	P									
			M									
			K									

GOmill™ GP General Purpose Solid Carbide End Mills · 2 Flute

Primary Application

The GOmill GP series offers plunging, slotting, and profiling with long tool life on a wide range of workpiece materials. They are designed to provide high Metal Removal Rates (MRR) and achieve good surface quality at an excellent cost-benefit ratio. A wide range of diameters and lengths are available with chamfered edge and ball nose as stocked standard.

- Roughing and finishing with one tool.
- Excellent cost-benefit ratio.
- Multilayer KC633M™ grades for high tool life.



Features and Benefits

Advanced Technology

- Roughing and finishing with one tool reduces tool changes and unnecessary tooling inventory.
- Eccentric relief increases edge stability for longer tool life and better surface quality.
- Eccentric relief eases regrinding and reduces reconditioning cost.
- 2-flute design for unstable conditions and high flexibility.

Tailored Grades

- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless (wet).

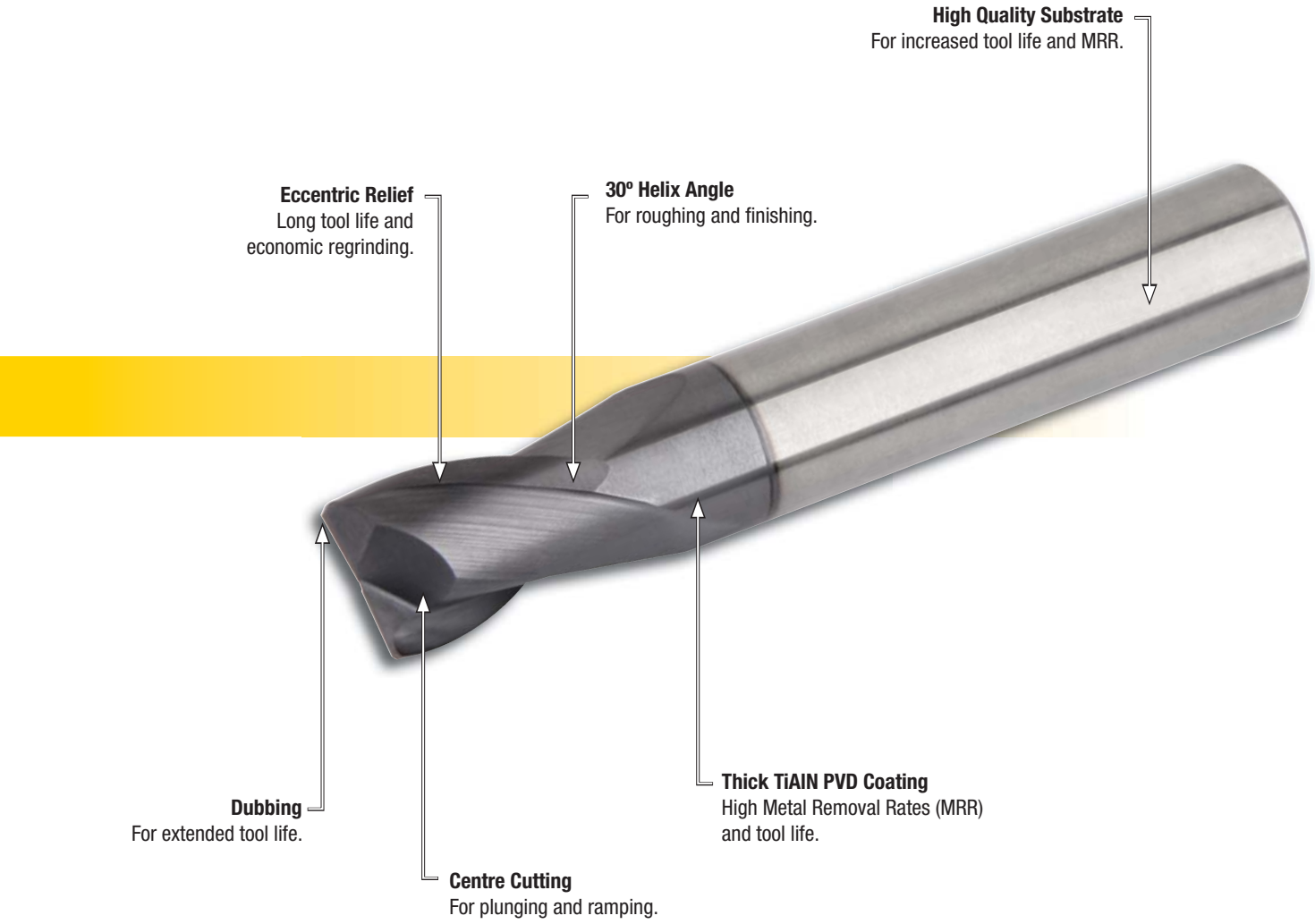
Customisation

- Intermediate diameters available.

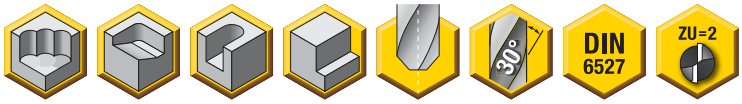
Extensive Standard Offering

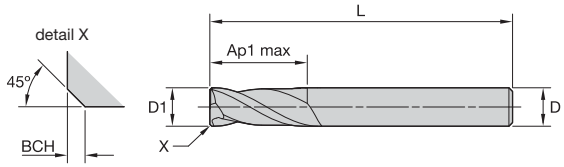
- Diameter range 1–20mm.
- Chamfered edge and ball nose as standard offering.

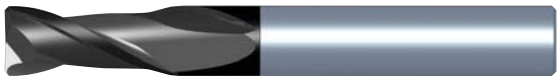
Designed for roughing and finishing with one tool at a value price.



- Centre cutting.



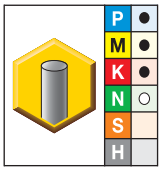


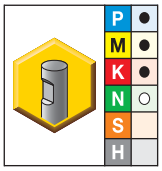


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

2CH..DK-DL • 2 Flute • Metric



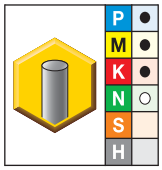


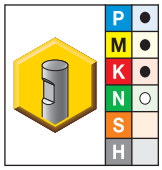
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH0200DK003A	–	2,0	6	3,00	50	–
2CH0300DK004A	–	3,0	6	4,00	50	–
2CH0300DL007A	–	3,0	6	7,00	57	–
2CH0350DK004A	–	3,5	6	4,00	50	–
2CH0400DK005A	–	4,0	6	5,00	54	0,10
2CH0400DL008A	–	4,0	6	8,00	57	0,10
2CH0450DK005A	–	4,5	6	5,00	54	0,10
2CH0450DL008A	–	4,5	6	8,00	57	0,10
2CH0500DK006A	–	5,0	6	6,00	54	0,10
2CH0500DL010A	–	5,0	6	10,00	57	0,10
2CH0600DK007A	–	6,0	6	7,00	54	0,10
2CH0600DL010A	–	6,0	6	10,00	57	0,10
2CH0700DK008A	–	7,0	8	8,00	58	0,10
2CH0700DL013A	–	7,0	8	13,00	63	0,10
2CH0800DK009A	–	8,0	8	9,00	58	0,20
2CH0800DL016A	–	8,0	8	16,00	63	0,20
2CH0900DK010A	–	9,0	10	10,00	66	0,20
2CH0900DL016A	–	9,0	10	16,00	72	0,20
2CH1000DK011A	–	10,0	10	11,00	66	0,20
2CH1000DL019A	–	10,0	10	19,00	72	0,20
2CH1200DK012A	2CH1200DK012B	12,0	12	12,00	73	0,30
2CH1200DL022A	2CH1200DL022B	12,0	12	22,00	83	0,30
2CH1400DK014A	2CH1400DK014B	14,0	14	14,00	75	0,30
2CH1400DL022A	2CH1400DL022B	14,0	14	22,00	83	0,30

(continued)

(2CH..DK-DL • 2 Flute • Metric — continued)



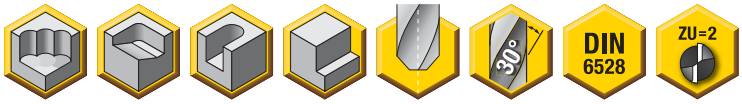


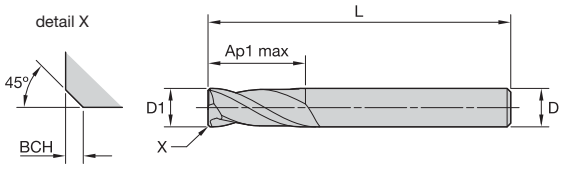
● first choice
○ alternate choice

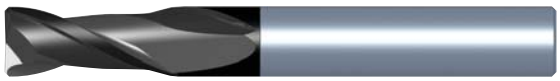
KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH1600DK016A	**2CH1600DK016B**	16,0	16	16,00	82	0,30
2CH1600DL026A	**2CH1600DL026B**	16,0	16	26,00	92	0,30
2CH1800DK018A	**2CH1800DK018B**	18,0	18	18,00	84	0,30
2CH1800DL026A	**–**	18,0	18	26,00	92	0,30
2CH2000DK020A	**2CH2000DK020B**	20,0	20	20,00	92	0,30
2CH2000DL032A	**2CH2000DL032B**	20,0	20	32,00	104	0,30

NOTE: For application data, please see page Q14.

• Centre cutting.



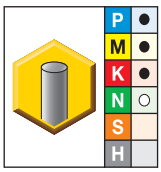




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

2CH..DD • 2 Flute • Metric

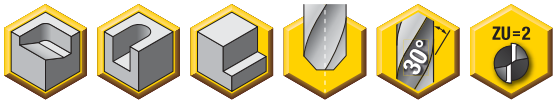


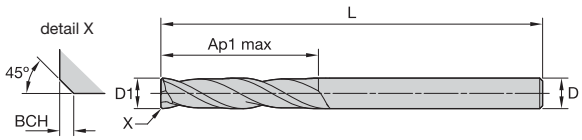
● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH0300DD007A	3,0	3	8,00	50	–
2CH0400DD008A	4,0	4	8,00	50	0,10
2CH0500DD010A	5,0	5	10,00	50	0,10
2CH0600DD010A	6,0	6	10,00	57	0,10
2CH0700DD013A	7,0	7	13,00	60	0,10
2CH0800DD016A	8,0	8	16,00	63	0,20
2CH0900DD016A	9,0	9	16,00	67	0,20
2CH1000DD019A	10,0	10	19,00	72	0,20
2CH1200DD022A	12,0	12	22,00	83	0,30
2CH1400DD022A	14,0	14	22,00	83	0,30
2CH1500DD026A	15,0	15	26,00	92	0,30
2CH1600DD026A	16,0	16	26,00	92	0,30
2CH1800DD026A	18,0	18	26,00	92	0,30
2CH2000DD032A	20,0	20	32,00	104	0,30

NOTE: For application data, please see page Q14.

• Centre cutting.



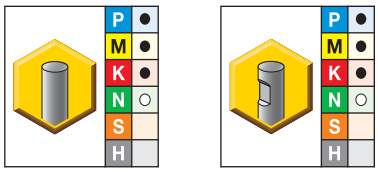




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

2CH..MR-ML-MX • 2 Flute • Metric

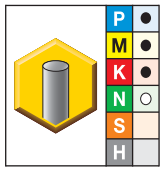


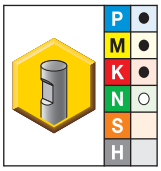
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH0200MR006A	–	2,0	3	6,30	38	–
2CH0250MR006A	–	2,5	3	6,30	38	–
2CH0300MR009A	–	3,0	3	9,50	38	–
2CH0300ML019A	–	3,0	3	19,00	63	–
2CH0300MX025A	–	3,0	3	25,00	75	–
2CH0350MR012A	–	3,5	4	12,00	50	–
2CH0400MR012A	–	4,0	4	12,00	50	0,10
2CH0400ML019A	–	4,0	4	19,00	63	0,10
2CH0400MX031A	–	4,0	4	31,00	75	0,10
2CH0450MR014A	–	4,5	6	14,00	50	0,10
2CH0480MR014A	–	4,8	6	14,00	50	0,10
2CH0500MR014A	–	5,0	5	14,00	50	0,10
2CH0500ML020A	–	5,0	5	20,00	63	0,10
2CH0500MX031A	–	5,0	5	31,00	100	0,10
2CH0550MR014A	–	5,5	6	14,00	50	0,10
2CH0600MR016A	–	6,0	6	16,00	50	0,10
2CH0600ML028A	–	6,0	6	28,00	76	0,10
2CH0600MX038A	–	6,0	6	38,00	100	0,10
2CH0700MR020A	–	7,0	7	20,00	63	0,10
2CH0800MR020A	–	8,0	8	20,00	63	0,20
2CH0800ML028A	–	8,0	8	28,00	76	0,20
2CH0800MX041A	–	8,0	8	41,00	100	0,20
2CH0900MR020A	–	9,0	9	20,00	63	0,20
2CH1000MR022A	–	10,0	10	22,00	72	0,20
2CH1000ML032A	–	10,0	10	32,00	89	0,20
2CH1000MX045A	–	10,0	10	45,00	100	0,20
2CH1100MR025A	–	11,0	11	25,00	76	0,30
2CH1200MR025A	2CH1200MR025B	12,0	12	25,00	76	0,30

(continued)

(2CH..MR-ML-MX • 2 Flute • Metric — continued)





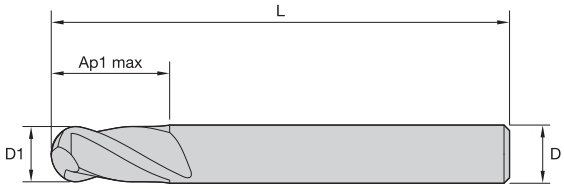
● first choice
○ alternate choice

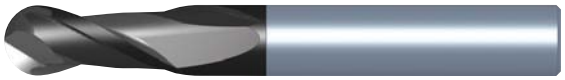
KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH1200ML045A	**2CH1200ML045B**	12,0	12	45,00	100	0,30
2CH1200MX075A	**2CH1200MX075B**	12,0	12	75,00	150	0,30
2CH1400MR032A	**2CH1400MR032B**	14,0	14	32,00	83	0,30
2CH1400ML050A	**2CH1400ML050B**	14,0	14	50,00	100	0,30
2CH1400MX075A	**2CH1400MX075B**	14,0	14	75,00	150	0,30
2CH1600MR032A	**2CH1600MR032B**	16,0	16	32,00	89	0,30
2CH1600ML056A	**2CH1600ML056B**	16,0	16	56,00	110	0,30
2CH1600MX075A	**2CH1600MX075B**	16,0	16	75,00	150	0,30
2CH1800MX075A	**–**	18,0	18	75,00	150	0,30
2CH2000MR038A	**2CH2000MR038B**	20,0	20	38,00	104	0,30
2CH2000ML056A	**2CH2000ML056B**	20,0	20	56,00	125	0,30
2CH2000MX075A	**2CH2000MX075B**	20,0	20	75,00	150	0,30

NOTE: For application data, please see page Q14.

• Centre cutting.



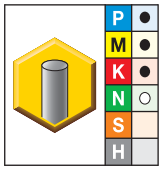




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

2BN..DK-DL • 2 Flute • Ball Nose • Metric



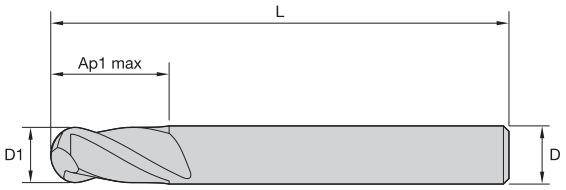
● first choice
○ alternate choice

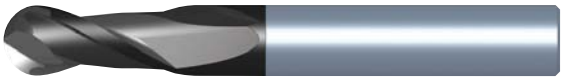
KC633M	D1	D	length of cut Ap1 max	length L
2BN0200DL006A	2,0	6	6,00	57
2BN0300DK004A	3,0	6	4,00	50
2BN0300DL007A	3,0	6	7,00	57
2BN0400DK005A	4,0	6	5,00	54
2BN0400DL008A	4,0	6	8,00	57
2BN0500DL010A	5,0	6	10,00	57
2BN0600DL010A	6,0	6	10,00	57
2BN0700DL013A	7,0	8	13,00	63
2BN0800DL016A	8,0	8	16,00	63
2BN1000DL019A	10,0	10	19,00	72
2BN1200DL022A	12,0	12	22,00	83
2BN1400DL022A	14,0	14	22,00	83
2BN1600DL026A	16,0	16	26,00	92
2BN2000DK020A	20,0	20	20,00	92
2BN2000DL032A	20,0	20	32,00	104

NOTE: For application data, please see page Q15.

• Centre cutting.



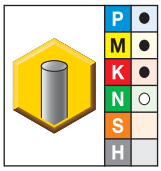




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

2BN..DD • 2 Flute • Ball Nose • Metric

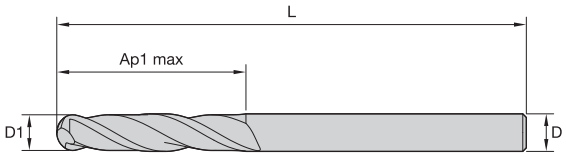


● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
2BN0200DD007A	2,0	2	7,00	50
2BN0300DD007A	3,0	3	7,00	50
2BN0400DD008A	4,0	4	8,00	50
2BN0500DD010A	5,0	5	10,00	50
2BN0600DD010A	6,0	6	10,00	57
2BN0800DD016A	8,0	8	16,00	63
2BN1000DD019A	10,0	10	19,00	72
2BN1200DD022A	12,0	12	22,00	83
2BN1400DD022A	14,0	14	22,00	83
2BN1600DD026A	16,0	16	26,00	92
2BN2000DD032A	20,0	20	32,00	104

NOTE: For application data, please see page Q15.

• Centre cutting.



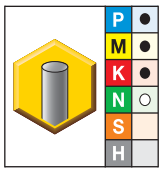




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

2BN..MR-ML-MX • 2 Flute • Ball Nose • Metric



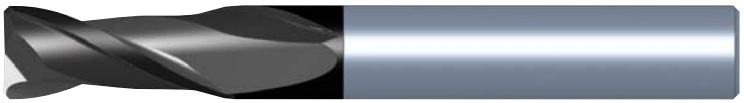
● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
2BN0100MR004A	1,0	3	4,00	38
2BN0200MR006A	2,0	3	6,30	38
2BN0300MR009A	3,0	3	9,50	38
2BN0350MR012A	3,5	4	12,00	50
2BN0400MR012A	4,0	4	12,00	50
2BN0500MR014A	5,0	6	14,00	50
2BN0600MR038A	6,0	6	38,00	100
2BN0800MR040A	8,0	8	40,00	100
2BN1000MR045A	10,0	10	45,00	100
2BN1200MR025A	12,0	12	25,00	75
2BN1200ML045A	12,0	12	45,00	100
2BN1200MX075A	12,0	12	75,00	150
2BN1400MR032A	14,0	14	32,00	89
2BN1600MR032A	16,0	16	32,00	89
2BN2000MR038A	20,0	20	38,00	100
2BN2000ML075A	20,0	20	75,00	150

NOTE: For application data, please see page Q15.

GOmill GP • 2CH..DK-MR • 2 Flute • Short • Regular

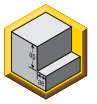
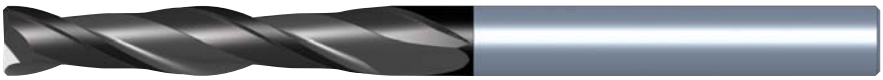




Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
		A		B	Cutting Speed — vc m/min			D1 — Diameter												
		ap	ae	ap	min		max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	0,5 x D	250	–	1000	fz	0,020	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,016	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

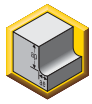
GOmill GP • 2CH..DL-DD-ML-MX • 2 Flute • Long • Extra Long

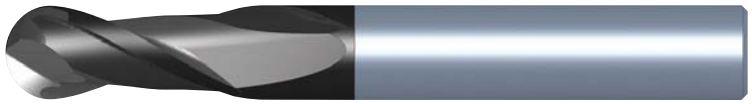



Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A).										
		A		Cutting Speed — vc m/min			D1 — Diameter										
		ap	ae	min		max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	250	–	1000	fz	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	250	–	750	fz	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	250	–	750	fz	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

GOmill GP • 2BN..DK-MR • 2 Flute • Ball Nose • Short • Regular

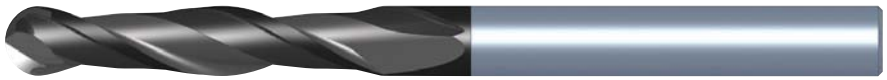




Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
		A		B	Cutting Speed — vc m/min			D1 — Diameter													
		ap	ae	ap	min		max	mm	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	0,5 x D	250	–	1000	fz	0,010	0,020	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,008	0,016	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,009	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

GOmill GP • 2BN..DL-DD-ML-MX • 2 Flute • Ball Nose • Long • Extra Long

Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A).											
		A		Cutting Speed — vc m/min			D1 — Diameter											
		ap	ae	min		max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	140	–	190	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	120	–	160	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	90	–	150	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	90	–	115	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	60	–	80	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	120	–	150	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	110	–	140	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	250	–	1000	fz	0,020	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	250	–	750	fz	0,016	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	250	–	750	fz	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

GOmill™ GP General Purpose Solid Carbide End Mills · 3 Flute

Primary Application

The GOmill GP series offers plunging, slotting, and profiling with long tool life on a wide range of materials. Designed to provide high Metal Removal Rates (MRR) and to achieve good surface conditions at excellent cost-benefit ratio. A wide range of diameters and lengths with sharp edge are available from stock.

- Roughing and finishing with one tool.
- Excellent cost-benefit ratio.
- Multilayer KC633M™ grades for long tool life.



Features and Benefits

Advanced Technology

- Roughing and finishing with one tool reduces tool changes and unnecessary tooling inventory.
- Eccentric relief increases edge stability for longer tool life and better surface quality.
- Eccentric relief eases regrinding and enables higher flexibility and lower reconditioning cost.
- 3-flute design for maximum manufacturing flexibility.

Tailored Grade

- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless steel (wet).

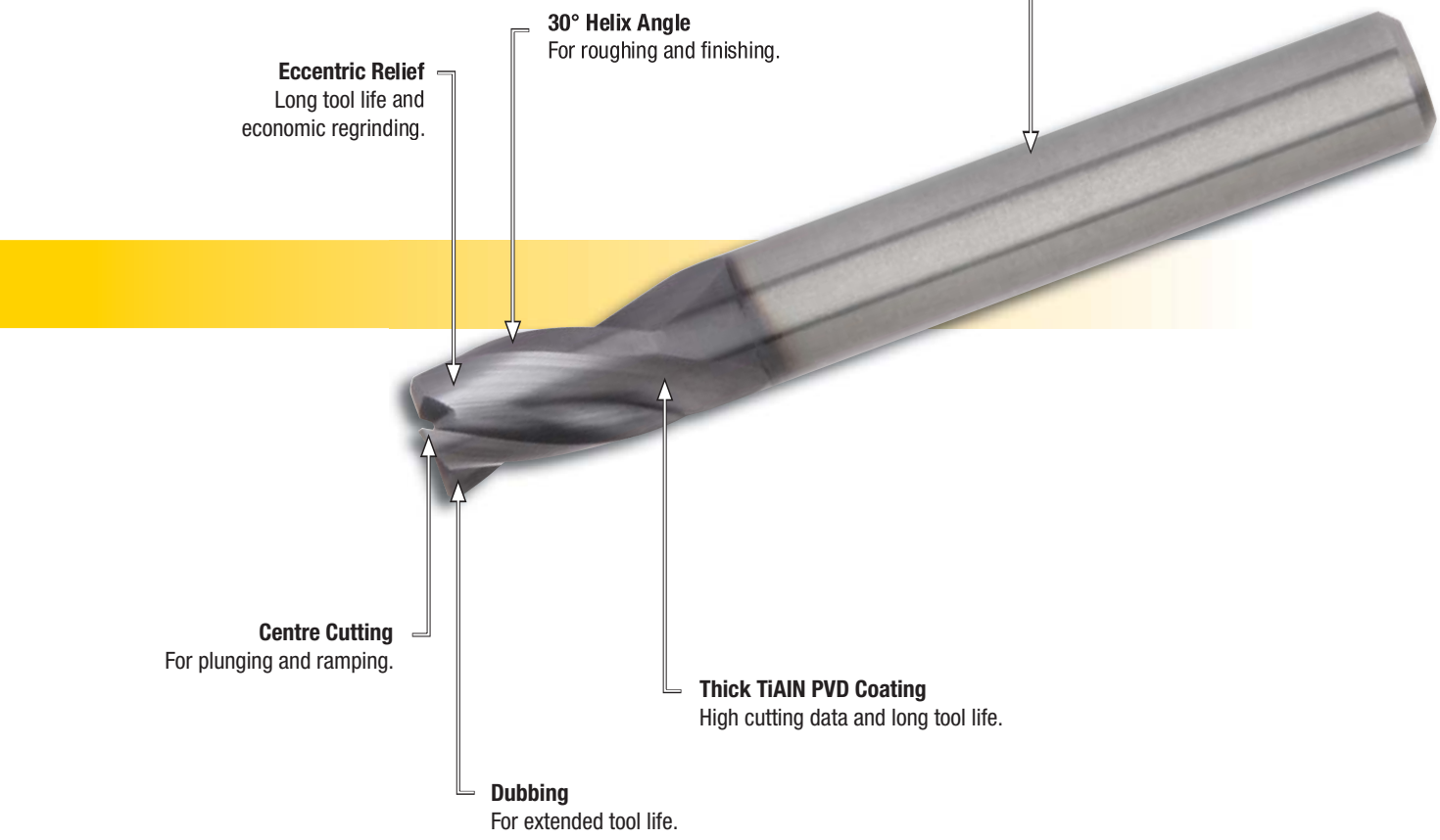
Customisation

- Intermediate diameters available.

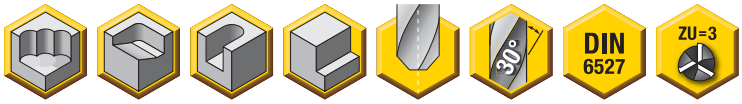
Extensive Standard Offering

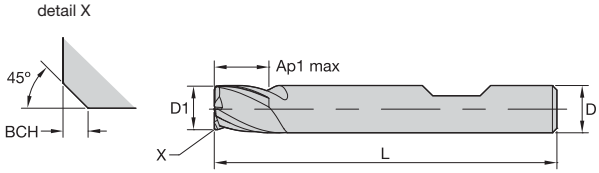
- Diameter range 1–20mm.
- Chamfered edge as standard offering.
- Four different lengths as DIN and factory standards in stock.

Designed for roughing and finishing with one tool at an economical price.



• Centre cutting.



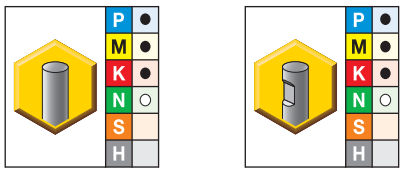




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

3CH..DK-DL • 3 Flute • Metric

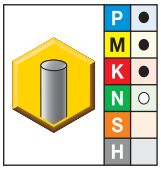


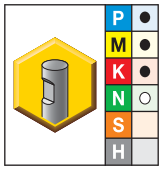
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
3CH0200DL006A	3CH0200DL006B	2,0	6	6,00	57	–
3CH0250DK003A	3CH0250DK003B	2,5	6	3,00	50	–
3CH0250DL007A	3CH0250DL007B	2,5	6	7,00	57	–
3CH0300DK004A	3CH0300DK004B	3,0	6	4,00	50	–
3CH0300DL007A	3CH0300DL007B	3,0	6	7,00	57	–
3CH0350DK004A	3CH0350DK004B	3,5	6	4,00	50	–
3CH0350DL007A	3CH0350DL007B	3,5	6	7,00	57	–
3CH0400DK005A	3CH0400DK005B	4,0	6	5,00	54	0,10
3CH0400DL008A	3CH0400DL008B	4,0	6	8,00	57	0,10
3CH0450DK005A	3CH0450DK005B	4,5	6	5,00	54	0,10
3CH0450DL008A	3CH0450DL008B	4,5	6	8,00	57	0,10
3CH0500DK006A	3CH0500DK006B	5,0	6	6,00	54	0,10
3CH0500DL010A	3CH0500DL010B	5,0	6	10,00	57	0,10
3CH0550DK007A	3CH0550DK007B	5,5	6	7,00	54	0,10
3CH0550DL010A	3CH0550DL010B	5,5	6	10,00	57	0,10
3CH0600DK007A	3CH0600DK007B	6,0	6	7,00	54	0,10
3CH0600DL010A	3CH0600DL010B	6,0	6	10,00	57	0,10
3CH0700DK008A	3CH0700DK008B	7,0	8	8,00	58	0,10
3CH0700DL013A	3CH0700DL013B	7,0	8	13,00	63	0,10
3CH0800DK009A	3CH0800DK009B	8,0	8	9,00	58	0,20
3CH0800DL016A	3CH0800DL016B	8,0	8	16,00	63	0,20
3CH1000DK011A	3CH1000DK011B	10,0	10	11,00	66	0,20
3CH1000DL019A	3CH1000DL019B	10,0	10	19,00	72	0,20
3CH1200DK012A	3CH1200DK012B	12,0	12	12,00	73	0,30

(continued)

(3CH..DK-DL • 3 Flute • Metric — continued)



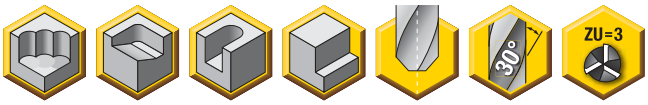


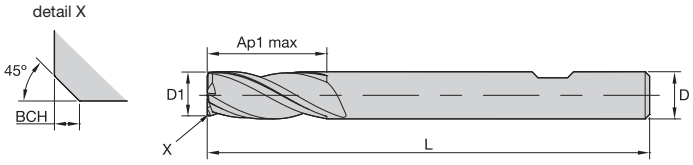
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
3CH1200DL022A	**3CH1200DL022B**	12,0	12	22,00	83	0,30
3CH1400DK014A	**3CH1400DK014B**	14,0	14	14,00	75	0,30
3CH1400DL022A	**3CH1400DL022B**	14,0	14	22,00	83	0,30
3CH1600DK016A	**3CH1600DK016B**	16,0	16	16,00	82	0,30
3CH1600DL026A	**3CH1600DL026B**	16,0	16	26,00	92	0,30
3CH1800DK018A	**3CH1800DK018B**	18,0	18	18,00	84	0,30
3CH1800DL026A	**3CH1800DL026B**	18,0	18	26,00	92	0,30
3CH2000DK020A	**3CH2000DK020B**	20,0	20	20,00	92	0,30
3CH2000DL032A	**3CH2000DL032B**	20,0	20	32,00	104	0,30

NOTE: For application data, please see page Q21.

- Centre cutting.



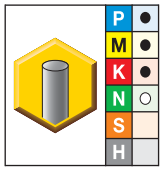


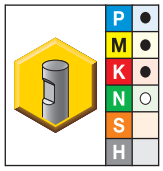


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

3CH..MS-MX • 3 Flute • Metric





● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
3CH0100MS004A	–	1,0	3	4,00	38	–
3CH0150MS004A	–	1,5	3	4,00	38	–
3CH0200MS006A	–	2,0	3	6,30	38	–
3CH0250MS006A	–	2,5	3	6,30	38	–
3CH0300MS009A	–	3,0	3	9,50	38	–
3CH0300MX019A	**3CH0300MX019B**	3,0	6	19,00	63	–
3CH0400MS012A	–	4,0	4	12,00	50	0,10
3CH0400MX019A	–	4,0	4	19,00	63	0,10
3CH0500MX020A	**3CH0500MX020B**	5,0	6	20,00	63	0,10
3CH0600MS016A	**3CH0600MS016B**	6,0	6	16,00	50	0,10
3CH0600MX028A	**3CH0600MX028B**	6,0	6	28,00	75	0,10
3CH0800MS019A	–	8,0	8	19,00	63	0,20
3CH0800MX028A	**3CH0800MX028B**	8,0	8	28,00	75	0,20
3CH1000MS022A	**3CH1000MS022B**	10,0	10	22,00	76	0,20
3CH1000MX032A	**3CH1000MX032B**	10,0	10	32,00	89	0,20
3CH1200MS025A	**3CH1200MS025B**	12,0	12	25,00	75	0,30
3CH1200MX045A	**3CH1200MX045B**	12,0	12	45,00	100	0,30
3CH1600MS032A	**3CH1600MS032B**	16,0	16	32,00	89	0,30
3CH1600MX056A	**3CH1600MX056B**	16,0	16	56,00	110	0,30
3CH2000MX064A	**3CH2000MX064B**	20,0	20	64,00	125	0,30

NOTE: For application data, please see page Q21.

GOmill • GP 3CH..DK-DL-MS • 3 Flute • Short • Regular



Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
		A		B	Cutting Speed – vc m/min				D1 – Diameter												
		ap	ae	ap	min		max	mm	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	0,5 x D	250	–	1000	fz	0,010	0,020	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,008	0,016	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,009	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.

GOmill • GP 3CH..MX • 3 Flute • Long



Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A).													
		A		Cutting Speed – vc m/min				D1 – Diameter												
		ap	ae	min		max	mm	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	140	–	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	120	–	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	90	–	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	90	–	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	60	–	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	120	–	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	250	–	1000	fz	0,010	0,020	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	250	–	750	fz	0,008	0,016	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	250	–	750	fz	0,009	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.

GOmill™ GP General Purpose Solid Carbide End Mills · 4 Flute

Primary Application

The GOmill GP series offers plunging, slotting, and profiling with long tool life in a wide range of workpiece materials. These end mills are designed to provide high Metal Removal Rates (MRR) and to achieve good surface quality at an excellent cost-benefit ratio. A wide range of diameters and lengths are available with chamfered edge and ball nose as stocked standard.

- Roughing and finishing with one tool.
- Excellent cost-benefit ratio.
- Multilayer KC633M™ grades for long tool life.



Features and Benefits

Advanced Technology

- Roughing and finishing with one tool reduces tool changes and unnecessary tooling inventory.
- Eccentric relief increases edge stability for longer tool life and better surface quality.
- Eccentric relief eases regrinding and reduces reconditioning cost.
- 4-flute design for high MRR and reduced machining time.

Tailored Grades

- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless steel (wet).

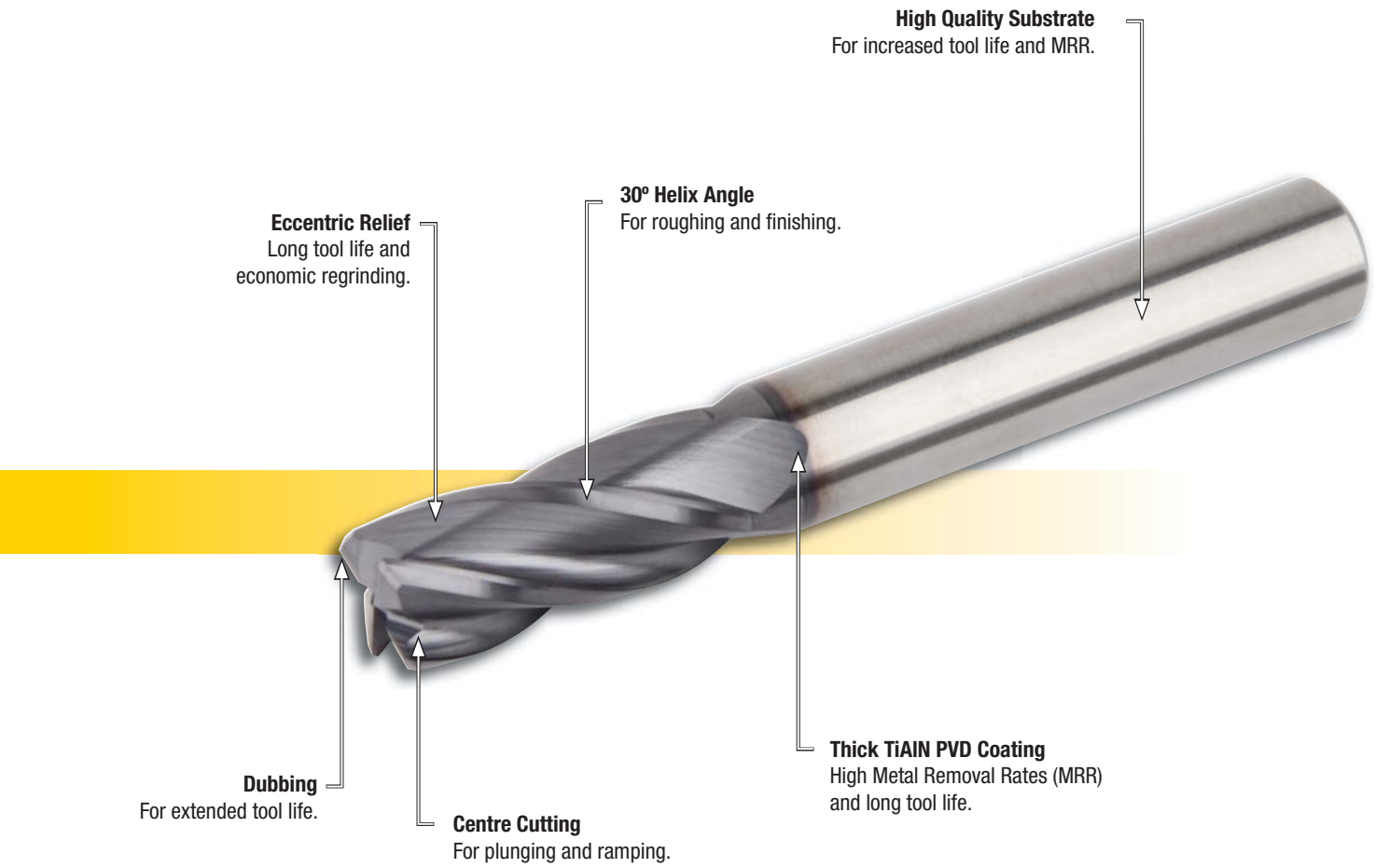
Customisation

- Intermediate diameters available.

Extensive Standard Offering

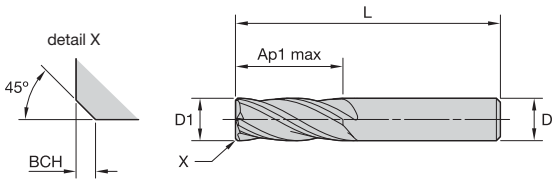
- Diameter range 2–20mm.
- Chamfered edge and ball nose as standard offering.

Designed for roughing and finishing with one tool at a value price.



• Centre cutting.



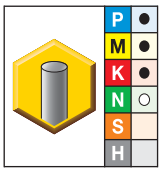


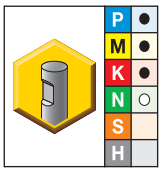


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

4CH..DK-DL • 4 Flute • Metric



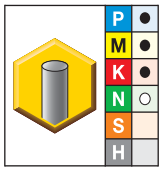


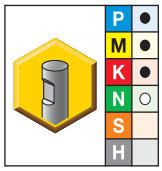
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4CH0200DK004A	–	2,0	3	4,00	38	–
4CH0250DL008A	–	2,5	6	8,00	57	–
4CH0300DK005A	–	3,0	6	5,00	50	–
4CH0350DL010A	–	3,5	6	10,00	58	–
4CH0400DK008A	–	4,0	6	8,00	54	0,10
4CH0400DL011A	–	4,0	6	11,00	57	0,10
4CH0450DL011A	–	4,5	6	11,00	57	0,10
4CH0500DK009A	–	5,0	6	9,00	54	0,10
4CH0500DL013A	–	5,0	6	13,00	57	0,10
4CH0550DL013A	–	5,5	6	13,00	57	0,10
4CH0600DK010A	–	6,0	6	10,00	54	0,10
4CH0600DL013A	–	6,0	6	13,00	57	0,10
4CH0650DL016A	–	6,5	8	16,00	63	0,10
4CH0700DK011A	–	7,0	8	11,00	58	0,10
4CH0700DL016A	–	7,0	8	16,00	63	0,10
4CH0800DK012A	–	8,0	8	12,00	58	0,20
4CH0800DL019A	–	8,0	8	19,00	63	0,20
4CH0900DK013A	–	9,0	10	13,00	66	0,20
4CH0900DL019A	–	9,0	10	19,00	72	0,20
4CH1000DK014A	–	10,0	10	14,00	66	0,20
4CH1000DL022A	–	10,0	10	22,00	72	0,20
4CH1200DK016A	4CH1200DK016B	12,0	12	16,00	73	0,30
4CH1200DL026A	4CH1200DL026B	12,0	12	26,00	83	0,30
4CH1400DK018A	4CH1400DK018B	14,0	14	18,00	75	0,30

(continued)

(4CH..DK-DL • 4 Flute • Metric — continued)





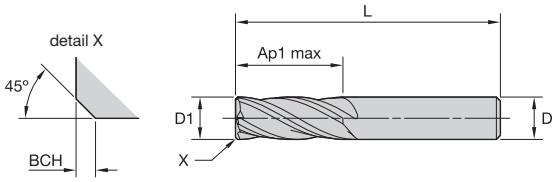
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4CH1400DL026A	**4CH1400DL026B**	14,0	14	26,00	83	0,30
4CH1600DK022A	**4CH1600DK022B**	16,0	16	22,00	82	0,30
4CH1600DL032A	**4CH1600DL032B**	16,0	16	32,00	92	0,30
4CH1800DK024A	**4CH1800DK024B**	18,0	18	24,00	84	0,30
4CH1800DL032A	**4CH1800DL032B**	18,0	18	32,00	92	0,30
4CH2000DK026A	**4CH2000DK026B**	20,0	20	26,00	92	0,30
4CH2000DL038A	**4CH2000DL038B**	20,0	20	38,00	104	0,30

NOTE: For application data, please see page Q32.

• Centre cutting.



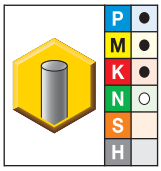




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

4CH..DD • 4 Flute • Metric

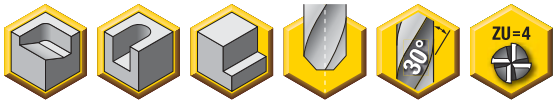


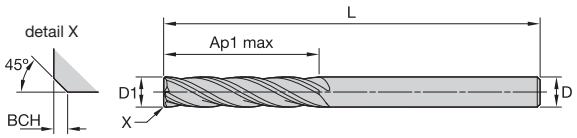
● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L	BCH
4CH0400DD011A	4,0	4	11,00	50	0,10
4CH0500DD013A	5,0	5	13,00	50	0,10
4CH0600DD013A	6,0	6	13,00	57	0,10
4CH0800DD019A	8,0	8	19,00	63	0,20
4CH1000DD022A	10,0	10	22,00	72	0,20
4CH1200DD026A	12,0	12	26,00	83	0,30
4CH1400DD026A	14,0	14	26,00	83	0,30
4CH1600DD032A	16,0	16	32,00	92	0,30
4CH1800DD032A	18,0	18	32,00	92	0,30
4CH2000DD038A	20,0	20	38,00	104	0,30

NOTE: For application data, please see page Q32.

• Centre cutting.



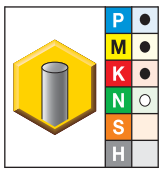


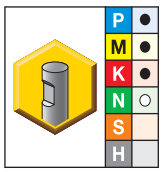


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

4CH..MR-ML-MX • 4 Flute • Metric



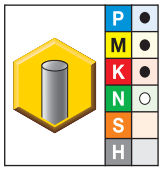


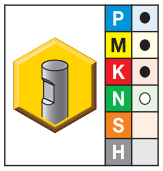
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4CH0200MR006A	–	2,0	3	6,30	38	–
4CH0300MR009A	–	3,0	3	9,50	38	–
4CH0300ML019A	–	3,0	3	19,00	63	–
4CH0300MX025A	–	3,0	3	25,00	75	–
4CH0400MR011A	–	4,0	4	11,00	50	0,10
4CH0400ML019A	–	4,0	4	19,00	63	0,10
4CH0400MX031A	–	4,0	4	31,00	75	0,10
4CH0500MR030A	–	5,0	5	30,00	75	0,10
4CH0600MR016A	–	6,0	6	16,00	50	0,10
4CH0600ML028A	–	6,0	6	28,00	75	0,10
4CH0600MX038A	–	6,0	6	38,00	100	0,10
4CH0800MR020A	–	8,0	8	20,00	50	0,20
4CH0800ML028A	–	8,0	8	28,00	75	0,20
4CH0800MX041A	–	8,0	8	41,00	100	0,20
4CH1000MR022A	–	10,0	10	22,00	72	0,20
4CH1000ML032A	–	10,0	10	32,00	89	0,20
4CH1000MX045A	–	10,0	10	45,00	100	0,20
4CH1200MR025A	4CH1200MR025B	12,0	12	25,00	89	0,30
4CH1200ML045A	4CH1200ML045B	12,0	12	45,00	100	0,30
4CH1200MX075A	4CH1200MX075B	12,0	12	75,00	150	0,30
4CH1400MR032A	4CH1400MR032B	14,0	14	32,00	83	0,30
4CH1400ML050A	4CH1400ML050B	14,0	14	50,00	100	0,30
4CH1400MX075A	4CH1400MX075B	14,0	14	75,00	150	0,30
4CH1600MR032A	4CH1600MR032B	16,0	16	32,00	92	0,30

(continued)

(4CH..MR-ML-MX • 4 Flute • Metric — continued)



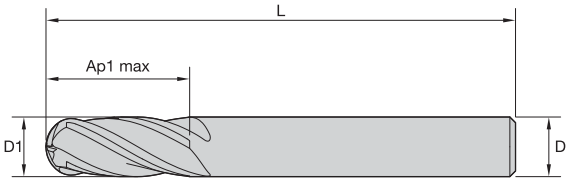


● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4CH1600ML056A	**4CH1600ML056B**	16,0	16	56,00	110	0,30
4CH1600MX075A	**4CH1600MX075B**	16,0	16	75,00	150	0,30
4CH1800MR038A	**4CH1800MR038B**	18,0	18	38,00	100	0,30
4CH1800ML060A	**4CH1800ML060B**	18,0	18	60,00	125	0,30
4CH1800MX075A	**4CH1800MX075B**	18,0	18	75,00	150	0,30
4CH2000MR038A	**4CH2000MR038B**	20,0	20	38,00	104	0,30
4CH2000ML056A	**4CH2000ML056B**	20,0	20	56,00	125	0,30
4CH2000MX075A	**4CH2000MX075B**	20,0	20	75,00	150	0,30

NOTE: For application data, please see page Q32.

- Centre cutting.



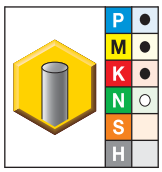


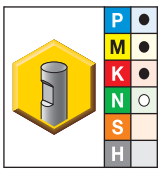


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

4BN..DK-DL • 4 Flute • Ball Nose • Metric





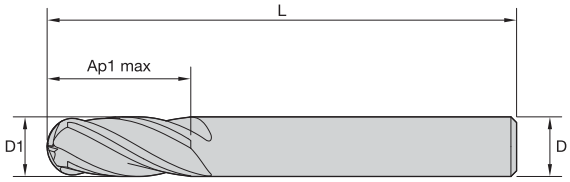
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L
4BN0300DL008A	–	3,0	6	8,00	57
4BN0400DL011A	–	4,0	6	11,00	57
4BN0500DL013A	–	5,0	6	13,00	57
4BN0600DL013A	–	6,0	6	13,00	57
4BN0800DL019A	–	8,0	8	19,00	63
4BN1000DL022A	–	10,0	10	22,00	72
4BN1200DL026A	**4BN1200DL026B**	12,0	12	26,00	83
4BN1400DL026A	–	14,0	14	26,00	83
4BN1600DL032A	**4BN1600DL032B**	16,0	16	32,00	92
4BN1800DL032A	**4BN1800DL032B**	18,0	18	32,00	92
4BN2000DL038A	**4BN2000DL038B**	20,0	20	38,00	104

NOTE: For application data, please see page Q33.

- Centre cutting.



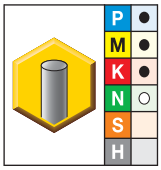




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

4BN..DD • 4 Flute • Ball Nose • Metric

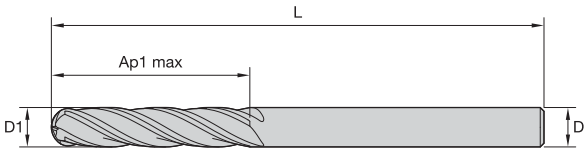


● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
4BN0400DD011A	4,0	4	11,00	50
4BN0500DD013A	5,0	5	13,00	50
4BN0600DD013A	6,0	6	13,00	57
4BN0800DD019A	8,0	8	19,00	63
4BN1000DD022A	10,0	10	22,00	72
4BN1200DD026A	12,0	12	26,00	83
4BN1400DD026A	14,0	14	26,00	83
4BN1600DD032A	16,0	16	32,00	92
4BN1800DD032A	18,0	18	32,00	92
4BN2000DD038A	20,0	20	38,00	104

NOTE: For application data, please see page Q33.

• Centre cutting.



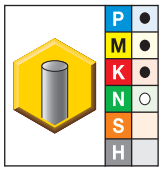




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

4BN..MR-ML • 4 Flute • Ball Nose • Metric



● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
4BN0300MR020A	3,0	3	20,00	75
4BN0400MR025A	4,0	4	25,00	75
4BN0500MR030A	5,0	5	30,00	75
4BN0600MR030A	6,0	6	30,00	75
4BN0800MR040A	8,0	8	40,00	100
4BN1000MR040A	10,0	10	40,00	100
4BN1200MR025A	12,0	12	25,00	75
4BN1200ML045A	12,0	12	45,00	150
4BN1600MR032A	16,0	16	32,00	89
4BN1800MR038A	18,0	18	38,00	100
4BN2000MR056A	20,0	20	56,00	125

NOTE: For application data, please see page Q33.

GOmill GP • 4CH..DK-MR • 4 Flute • Short • Regular

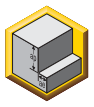




Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.											
		A		B	Cutting Speed — vc m/min			D1 — Diameter											
		ap	ae	ap	min		max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	0,5 x D	250	–	1000	fz	0,020	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,016	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

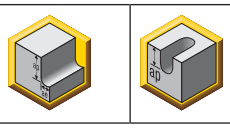
GOmill GP • 4CH..DL-DD-ML-MX • 4 Flute • Long • Extra Long




Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A).										
		A		Cutting Speed — vc m/min			D1 — Diameter										
		ap	ae	min		max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	250	–	1000	fz	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	250	–	750	fz	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	250	–	750	fz	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

GOmill GP • 4BN..DK-MR • 4 Flute • Ball Nose • Short • Regular

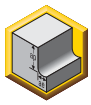




Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.											
		A		B	Cutting Speed — vc m/min			D1 — Diameter											
		ap	ae	ap	min		max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	0,5 x D	250	–	1000	fz	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	0,5 x D	250	–	750	fz	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

GOmill GP • 4BN..DL-DD-ML-MX • 4 Flute • Ball Nose • Long • Extra Long

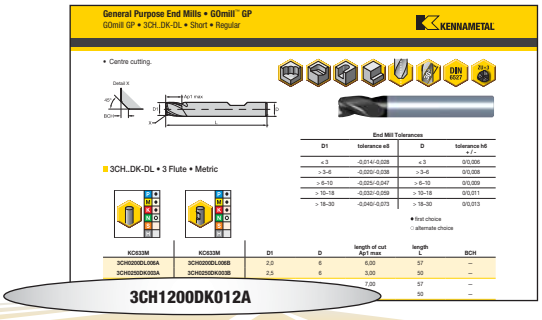



Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (fz = mm/th) for side milling (A).											
		A		Cutting Speed — vc m/min			D1 — Diameter											
		ap	ae	min		max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
N	1	Ap1 max	0,1 x D	250	–	1000	fz	0,030	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	2	Ap1 max	0,1 x D	250	–	750	fz	0,024	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	4	Ap1 max	0,1 x D	250	–	750	fz	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



3	CH	1200	DK	012	A
Number of Flutes	End Mill Shape	Cutting Diameter mm	Standard	Ap1 max mm	Shank Style
2 = 2 Flute **3** = 3 Flute **4** = 4 Flute	**CH** = Chamfer Edge **BN** = Ball Nose		**DK** = DIN 6527 Short **DL** = DIN 6527 Long **DD** = DIN 6528 **MS** = Factory Standard Short **MR** = Factory Standard Regular **ML** = Factory Standard Long **MX** = Factory Standard Extra Long		**A** = Plain Shank **B** = Weldon® Shank

Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
2231390	F3AH1200ADK30	KC633M	6146883	3CH1200DK012A	KC633M
2231509	F4AJ1100ADL30	KC633M	no replacement	no replacement	no replacement
2231456	F3AH0400BDL30	KC633M	6146961	3CH0400DL008B	KC633M
1722900	F4AJ2000AWX30	KC625M	5824249	4CH2000MX075A	KC633M
2226743	F2AH1300ADN30	KC633M	no replacement	no replacement	no replacement
1723336	F4AL0600ADL30	KC633M	5824923	4BN0600DL013A	KC633M
2226804	F4AJ1200ADN30	KC633M	5824203	4CH1200DD026A	KC633M
1722852	F4AJ1000AWL30	KC625M	5824234	4CH1000MX045A	KC633M
2231437	F3AH0775BDK30	KC633M	no replacement	no replacement	no replacement
2226803	F4AJ1000ADN30	KC633M	5824202	4CH1000DD022A	KC633M
2231423	F3AH0300BDK30	KC633M	6146891	3CH0300DK004B	KC633M
2231421	F3AH0250BDK30	KC633M	6146890	3CH0250DK003B	KC633M
2231514	F4AJ1600ADL30	KC633M	5824193	4CH1600DL032A	KC633M
1722966	F4AL0400ADL30	KC633M	5824921	4BN0400DL011A	KC633M
2231459	F3AH0500BDL30	KC633M	6146963	3CH0500DL010B	KC633M
1723007	F2AL0200ADL30	KC633M	5874065	2BN0200DL006A	KC633M
2226775	F3AH1000ADN30	KC633M	6146951	3CH1000DL019A	KC633M
1722733	F3AH1600BDL30	KC633M	6146971	3CH1600DL026B	KC633M
1722712	F3AH1200BDL30	KC633M	6146969	3CH1200DL022B	KC633M
2231443	F3AH0970BDK30	KC633M	no replacement	no replacement	no replacement
2231508	F4AJ1000ADL30	KC633M	5824187	4CH1000DL022A	KC633M
1722842	F4AJ1200AWX30	KC625M	5824237	4CH1200MX075A	KC633M
2226774	F3AH0800ADN30	KC633M	6146950	3CH0800DL016A	KC633M
2231510	F4AJ1200ADL30	KC633M	5824189	4CH1200DL026A	KC633M
2231364	F3AH0250ADK30	KC633M	6146871	3CH0250DK003A	KC633M
2231367	F3AH0350ADK30	KC633M	6146874	3CH0350DK004A	KC633M
1722714	F3AH0800BDL30	KC633M	6146967	3CH0800DL016B	KC633M
1722853	F4AJ0800AWL30	KC625M	5824231	4CH0800MX041A	KC633M
1722874	F4AJ1600AWX30	KC625M	5824243	4CH1600MX075A	KC633M
2226780	F4AJ2000ADN30	KC633M	5824207	4CH2000DD038A	KC633M
2226784	F4AJ0550ADN30	KC633M	5824176	4CH0550DL013A	KC633M
2226802	F4AJ0800ADN30	KC633M	5824201	4CH0800DD019A	KC633M
2226783	F4AJ0500ADN30	KC633M	5824199	4CH0500DD013A	KC633M
2226778	F4AJ1600ADN30	KC633M	5824205	4CH1600DD032A	KC633M
1723038	F4AL0300ADN30	KC633M	no replacement	no replacement	no replacement
1722970	F4AL1200ADN30	KC633M	5824936	4BN1200DD026A	KC633M
1723032	F2AL0600ADN30	KC633M	5874174	2BN0600DD010A	KC633M
2231356	F2AH0400BDL30	KC633M	5872948	2CH0400DL008A	KC633M
1722309	F3AH1000ADL30	KC633M	6146951	3CH1000DL019A	KC633M
1722713	F3AH1000BDL30	KC633M	6146968	3CH1000DL019B	KC633M
1722860	F2AH2000AWX30	K600	no replacement	no replacement	no replacement
2226771	F2AH1000ADN30	KC633M	5872974	2CH1000DL019A	KC633M
2226801	F4AJ0600ADN30	KC633M	5824200	4CH0600DD013A	KC633M
1722973	F4AL0600ADN30	KC633M	5824933	4BN0600DD013A	KC633M
1722715	F3AH0600BDL30	KC633M	6146965	3CH0600DL010B	KC633M
2231480	F4AJ0400ADK30	KC633M	5824171	4CH0400DK008A	KC633M
2231504	F4AJ0600ADL30	KC633M	5824178	4CH0600DL013A	KC633M
1723339	F4AL1600ADL30	KC633M	5824928	4BN1600DL032A	KC633M
1722684	F3AH2000BDL30	KC633M	6146973	3CH2000DL032B	KC633M
2231402	F3AH0500ADL30	KC633M	6146946	3CH0500DL010A	KC633M
1722968	F4AL1600ADN30	KC633M	5824959	4BN1600MR032A	KC633M
1722967	F4AL0300ADL30	KC633M	5824720	4BN0300DL008A	KC633M
2226781	F4AJ0400ADN30	KC633M	5824198	4CH0400DD011A	KC633M
2231311	F2AH0250ADL30	KC633M	no replacement	no replacement	no replacement
1722885	F2AH1600AWX30	KC625M	5873046	2CH1600MX075A	KC633M
2226791	F4AJ1300ADN30	KC633M	no replacement	no replacement	no replacement
1722311	F3AH0600ADL30	KC633M	6146948	3CH0600DL010A	KC633M
1330141	F4AJ1200ADL30	KC625M	5824189	4CH1200DL026A	KC633M
1723337	F4AL1000ADL30	KC633M	5824925	4BN1000DL022A	KC633M
1723029	F2AL0300ADL30	KC633M	5874067	2BN0300DL007A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
1722855	F4AJ0500AWM30	KC625M	5824225	4CH0500MR030A	KC633M
2226776	F3AH1200ADN30	KC633M	6146952	3CH1200DL022A	KC633M
1200670	F3AH0300ADL30	KC625M	6146942	3CH0300DL007A	KC633M
2231431	F3AH0575BDK30	KC633M	no replacement	no replacement	no replacement
1722306	F3AH2000ADL30	KC633M	6146956	3CH2000DL032A	KC633M
1722310	F3AH0800ADL30	KC633M	6146950	3CH0800DL016A	KC633M
1722965	F4AL0500ADL30	KC633M	5824922	4BN0500DL013A	KC633M
1723208	F4AJ1000ADL30	KC625M	5824187	4CH1000DL022A	KC633M
2226805	F4AJ1400ADN30	KC633M	5824204	4CH1400DD026A	KC633M
2273254	F3AH1800BDL30	KC633M	6146972	3CH1800DL026B	KC633M
2231411	F3AH0900ADL30	KC633M	no replacement	no replacement	no replacement
2226756	F3AH0600ADN30	KC633M	6146948	3CH0600DL010A	KC633M
2231277	F2AH0200ADK30	KC633M	5872943	2CH0200DK003A	KC633M
1723009	F4AL0500ADN30	KC633M	5824932	4BN0500DD013A	KC633M
2231387	F3AH1000ADK30	KC633M	6146882	3CH1000DK011A	KC633M
2226755	F3AH2000ADN30	KC633M	6146956	3CH2000DL032A	KC633M
2231506	F4AJ0800ADL30	KC633M	5824183	4CH0800DL019A	KC633M
1722972	F4AL0800ADN30	KC633M	5824934	4BN0800DD019A	KC633M
2231399	F3AH0400ADL30	KC633M	6146944	3CH0400DL008A	KC633M
1722889	F2AH2000AWX30	KC625M	5873052	2CH2000MX075A	KC633M
1722955	F2AL1000AWL30L400	KC633M	5874199	2BN1000MR045A	KC633M
2226767	F3AH1100ADN30	KC633M	no replacement	no replacement	no replacement
2226753	F3AH1600ADN30	KC633M	6146954	3CH1600DL026A	KC633M
2231503	F4AJ0500ADL30	KC633M	5824175	4CH0500DL013A	KC633M
2226800	F4AJ2000BDL30	KC633M	5824217	4CH2000DL038B	KC633M
1723041	F2AL1200ADN30	KC633M	5874177	2BN1200DD022A	KC633M
2231366	F3AH0300ADK30	KC633M	6146872	3CH0300DK004A	KC633M
1722232	F3AH0300ADN30	KC625M	no replacement	no replacement	no replacement
2231409	F3AH0850ADL30	KC633M	no replacement	no replacement	no replacement
2231405	F3AH0650ADL30	KC633M	no replacement	no replacement	no replacement
1722856	F4AJ0400AWM30	KC625M	5824224	4CH0400MX031A	KC633M
1722854	F4AJ0600AWM30	KC625M	5824227	4CH0600ML028A	KC633M
1722961	F4AL0800AWL30L400	KC633M	5824955	4BN0800MR040A	KC633M
1722971	F4AL1000ADN30	KC633M	5824935	4BN1000DD022A	KC633M
2231493	F4AJ1100ADK30	KC633M	no replacement	no replacement	no replacement
2231489	F4AJ0850ADK30	KC633M	no replacement	no replacement	no replacement
2273253	F3AH1400BDL30	KC633M	6146970	3CH1400DL022B	KC633M
1723042	F2AL1000ADN30	KC633M	5874176	2BN1000DD019A	KC633M
2231312	F2AH0300ADL30	KC633M	5872945	2CH0300DL007A	KC633M
2231382	F3AH0850ADK30	KC633M	no replacement	no replacement	no replacement
1723022	F4AL1000AWL30L400	KC633M	5824956	4BN1000MR040A	KC633M
2231516	F4AJ2000ADL30	KC633M	5824197	4CH2000DL038A	KC633M
2231464	F3AH0700BDL30	KC633M	6146966	3CH0700DL013B	KC633M
2231417	F3AH1400ADL30	KC633M	6146953	3CH1400DL022A	KC633M
1722850	F4AJ1400AWX30	KC625M	5824240	4CH1400MX075A	KC633M
2226795	F4AJ1000BDL30	KC633M	5824187	4CH1000DL022A	KC633M
1723329	F4AL1200ADL30	KC633M	5824926	4BN1200DL026A	KC633M
2231478	F4AJ0300ADK30	KC633M	5824129	4CH0300DK005A	KC633M
1723222	F4AJ0800ADL30	KC625M	5824183	4CH0800DL019A	KC633M
2231418	F3AH1500ADL30	KC633M	no replacement	no replacement	no replacement
1722308	F3AH1200ADL30	KC633M	6146952	3CH1200DL022A	KC633M
2231492	F4AJ1000ADK30	KC633M	5824186	4CH1000DK014A	KC633M
2231484	F4AJ0600ADK30	KC633M	5824177	4CH0600DK010A	KC633M
2231428	F3AH0480BDK30	KC633M	no replacement	no replacement	no replacement
1722872	F4AJ1800AWX30	KC625M	5824246	4CH1800MX075A	KC633M
2231369	F3AH0400ADK30	KC633M	6146875	3CH0400DK005A	KC633M
1806853	F4BL1600BWL20	KC633M	5824964	4BN1600DL032B	KC633M
1723006	F4AL1200AWX30L450	KC633M	5824958	4BN1200ML045A	KC633M
1723030	F2AL0400ADL30	KC633M	5874069	2BN0400DL008A	KC633M
2231476	F4AJ0200ADK30	KC633M	no replacement	no replacement	no replacement

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
1722956	F2AL0800AWL30L400	KC633M	5874198	2BN0800MR040A	KC633M
1722960	F4AL2000ADN30	KC633M	5824940	4BN2000DD038A	KC633M
2231474	F3AH1500BDL30	KC633M	no replacement	no replacement	no replacement
2231505	F4AJ0700ADL30	KC633M	5824181	4CH0700DL016A	KC633M
2231393	F3AH1400ADK30	KC633M	6146884	3CH1400DK014A	KC633M
1722883	F4AJ2000AWX30	K600	5824249	4CH2000MX075A	KC633M
2231500	F4AJ2000ADK30	KC633M	5824196	4CH2000DK026A	KC633M
1722213	F4AJ1200ADN30	KC625M	5824189	4CH1200DL026A	KC633M
1722993	F4AL0600AWM30L300	KC633M	5824954	4BN0600MR030A	KC633M
1723027	F2AL0300ADN30	KC633M	no replacement	no replacement	no replacement
2226768	F3AH1300ADN30	KC633M	no replacement	no replacement	no replacement
2231488	F4AJ0800ADK30	KC633M	5824182	4CH0800DK012A	KC633M
2226777	F3AH1400ADN30	KC633M	6146953	3CH1400DL022A	KC633M
2226798	F4AJ1600BDL30	KC633M	5824213	4CH1600DL032B	KC633M
2226770	F2AH0800ADN30	KC633M	5873000	2CH0800DD016A	KC633M
2231370	F3AH0450ADK30	KC633M	6146876	3CH0450DK005A	KC633M
1722285	F4AJ0300ADN30	KC625M	no replacement	no replacement	no replacement
2231375	F3AH0600ADK30	KC633M	6146879	3CH0600DK007A	KC633M
2231372	F3AH0500ADK30	KC633M	6146877	3CH0500DK006A	KC633M
1806781	F4BL1200BWL20	KC633M	5824962	4BN1200DL026B	KC633M
1723035	F2AL0800ADN30	KC633M	5874175	2BN0800DD016A	KC633M
2231394	F3AH1500ADK30	KC633M	no replacement	no replacement	no replacement
2226794	F4AJ0800BDL30	KC633M	5824183	4CH0800DL019A	KC633M
2231403	F3AH0550ADL30	KC633M	6146947	3CH0550DL010A	KC633M
2231412	F3AH0970ADL30	KC633M	no replacement	no replacement	no replacement
2231386	F3AH0970ADK30	KC633M	no replacement	no replacement	no replacement
2231313	F2AH0400ADL30	KC633M	5872948	2CH0400DL008A	KC633M
2231413	F3AH1100ADL30	KC633M	no replacement	no replacement	no replacement
1722862	F4AJ1600AWX30	K600	5824243	4CH1600MX075A	KC633M
2231317	F2AH0600ADL30	KC633M	5872964	2CH0600DL010A	KC633M
2226796	F4AJ1200BDL30	KC633M	5824209	4CH1200DL026B	KC633M
2226786	F4AJ0700ADN30	KC633M	5824181	4CH0700DL016A	KC633M
1723341	F4AL2000ADL30	KC633M	5824930	4BN2000DL038A	KC633M
1723332	F2AL0800ADL30	KC633M	5874163	2BN0800DL016A	KC633M
2231398	F3AH2000ADK30	KC633M	6146888	3CH2000DK020A	KC633M
1723021	F4AL0400ADN30	KC633M	5824931	4BN0400DD011A	KC633M
2231485	F4AJ0650ADK30	KC633M	no replacement	no replacement	no replacement
1722997	F4AL0500AWM30L300	KC633M	5824953	4BN0500MR030A	KC633M
2226792	F4AJ1500ADN30	KC633M	no replacement	no replacement	no replacement
2226772	F2AH1200ADN30	KC633M	5873003	2CH1200DD022A	KC633M
2231288	F2AH0800ADK30	KC633M	no replacement	no replacement	no replacement
2231501	F4AJ0400ADL30	KC633M	5824172	4CH0400DL011A	KC633M
2231365	F3AH0280ADK30	KC633M	no replacement	no replacement	no replacement
2231368	F3AH0380ADK30	KC633M	no replacement	no replacement	no replacement
2231378	F3AH0700ADK30	KC633M	6146880	3CH0700DK008A	KC633M
1722954	F2AL1200AWX30L450	KC633M	no replacement	no replacement	no replacement
2231355	F2AH0300BDL30	KC633M	5872945	2CH0300DL007A	KC633M
2231400	F3AH0450ADL30	KC633M	6146945	3CH0450DL008A	KC633M
1722307	F3AH1600ADL30	KC633M	6146954	3CH1600DL026A	KC633M
2231325	F2AH1500ADL30	KC633M	no replacement	no replacement	no replacement
2231381	F3AH0800ADK30	KC633M	6146881	3CH0800DK009A	KC633M
2231497	F4AJ1500ADK30	KC633M	no replacement	no replacement	no replacement
2226736	F2AH0650ADN30	KC633M	no replacement	no replacement	no replacement
2226762	F3AH0700ADN30	KC633M	no replacement	no replacement	no replacement
1722974	F2AL0300AWM30L200	KC633M	no replacement	no replacement	no replacement
2226760	F3AH0550ADN30	KC633M	no replacement	no replacement	no replacement
2226091	F2AH0600ADN30	KC633M	5872998	2CH0600DD010A	KC633M
2231371	F3AH0480ADK30	KC633M	no replacement	no replacement	no replacement
1722959	F2AL0400AWM30L250	KC633M	no replacement	no replacement	no replacement
2231319	F2AH0800ADL30	KC633M	5872968	2CH0800DL016A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
2226799	F4AJ1800BDL30	KC633M	5824215	4CH1800DL032B	KC633M
2231425	F3AH0380BDK30	KC633M	no replacement	no replacement	no replacement
2231415	F3AH1300ADL30	KC633M	no replacement	no replacement	no replacement
2231396	F3AH1600ADK30	KC633M	6146885	3CH1600DK016A	KC633M
1722206	F4AJ0800ADN30	KC625M	5824183	4CH0800DL019A	KC633M
1722957	F2AL0600AWM30L300	KC633M	no replacement	no replacement	no replacement
2226759	F3AH0500ADN30	KC633M	no replacement	no replacement	no replacement
2231441	F3AH0900BDK30	KC633M	no replacement	no replacement	no replacement
2231324	F2AH1400ADL30	KC633M	5873005	2CH1400DD022A	KC633M
1722210	F4AJ1000ADN30	KC625M	5824187	4CH1000DL022A	KC633M
1723010	F2AL0400ADN30	KC633M	5874172	2BN0400DD008A	KC633M
2231435	F3AH0700BDK30	KC633M	6146898	3CH0700DK008B	KC633M
2231449	F3AH1370BDK30	KC633M	no replacement	no replacement	no replacement
2226769	F3AH1500ADN30	KC633M	no replacement	no replacement	no replacement
2231292	F2AH1000ADK30	KC633M	5872972	2CH1000DK011A	KC633M
1722873	F2AH1000AWL30	K600	5873036	2CH1000MX045A	KC633M
1722857	F4AJ0300AWM30	KC625M	5824221	4CH0300MX025A	KC633M
1722898	F2AH1000AWL30	KC625M	5873036	2CH1000MX045A	KC633M
2231419	F3AH1570ADL30	KC633M	no replacement	no replacement	no replacement
2231279	F2AH0300ADK30	KC633M	5872944	2CH0300DK004A	KC633M
2231498	F4AJ1600ADK30	KC633M	5824192	4CH1600DK022A	KC633M
1723034	F2AL0200ADN30	KC633M	no replacement	no replacement	no replacement
1722951	F4AL0400AWM30L250	KC633M	5824952	4BN0400MR025A	KC633M
2231542	F4AJ0400BDL30	KC633M	5824172	4CH0400DL011A	KC633M
2226793	F4AJ0600BDL30	KC633M	5824178	4CH0600DL013A	KC633M
2226757	F3AH0400ADN30	KC633M	no replacement	no replacement	no replacement
1723327	F2AL0600ADL30	KC633M	no replacement	no replacement	no replacement
1723040	F4AL0200ADN30	KC633M	no replacement	no replacement	no replacement
2231284	F2AH0600ADK30	KC633M	5872963	2CH0600DK007A	KC633M
1320063	F4AJ2000ADN30	KC625M	5824197	4CH2000DL038A	KC633M
2231377	F3AH0675ADK30	KC633M	no replacement	no replacement	no replacement
2231389	F3AH1170ADK30	KC633M	no replacement	no replacement	no replacement
2231444	F3AH1000BDK30	KC633M	6146900	3CH1000DK011B	KC633M
2231407	F3AH0700ADL30	KC633M	6146949	3CH0700DL013A	KC633M
1500117	F4AJ1600ADL30	KC625M	5824193	4CH1600DL032A	KC633M
2226789	F4AJ0900ADN30	KC633M	5824185	4CH0900DL019A	KC633M
1722230	F3AH0200ADN30	KC625M	no replacement	no replacement	no replacement
1723342	F4AL0800ADL30	KC633M	5824924	4BN0800DL019A	KC633M
2231477	F4AJ0250ADK30	KC633M	no replacement	no replacement	no replacement
2231315	F2AH0500ADL30	KC633M	5872962	2CH0500DL010A	KC633M
1722886	F2AH1800AWX30	KC625M	5873049	2CH1800MX075A	KC633M
2231482	F4AJ0500ADK30	KC633M	5824174	4CH0500DK009A	KC633M
1722880	F4AJ0400AWM30	K600	5824224	4CH0400MX031A	KC633M
1722953	F4AL0300AWM30L200	KC633M	5824951	4BN0300MR020A	KC633M
2231446	F3AH1170BDK30	KC633M	no replacement	no replacement	no replacement
2231490	F4AJ0900ADK30	KC633M	5824184	4CH0900DK013A	KC633M
2231374	F3AH0575ADK30	KC633M	no replacement	no replacement	no replacement
2231388	F3AH1100ADK30	KC633M	no replacement	no replacement	no replacement
2231468	F3AH0900BDL30	KC633M	no replacement	no replacement	no replacement
1323736	F4AJ0400ADL30	KC625M	5824172	4CH0400DL011A	KC633M
1722877	F2AH0600AWM30	K600	5873026	2CH0600ML028A	KC633M
2231280	F2AH0400ADK30	KC633M	5872947	2CH0400DK005A	KC633M
1722358	F4AJ0200ADK30	KC625M	no replacement	no replacement	no replacement
2226773	F2AH1400ADN30	KC633M	5872978	2CH1400DL022A	KC633M
2231549	F4AJ1500BDL30	KC633M	no replacement	no replacement	no replacement
2231304	F2AH1200ADK30	KC633M	5872975	2CH1200DK012A	KC633M
1722906	F2AH0600AWM30	KC625M	no replacement	no replacement	no replacement
1722204	F4AJ1600ADN30	KC625M	5824193	4CH1600DL032A	KC633M
1806854	F4BL2000BWX20	KC633M	5824966	4BN2000DL038B	KC633M
1723338	F4AL1400ADL30	KC633M	5824927	4BN1400DL026A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
1722286	F4AJ0350ADN30	KC625M	no replacement	no replacement	no replacement
1723328	F2AL1600ADL30	KC633M	5874167	2BN1600DL026A	KC633M
2231397	F3AH1800ADK30	KC633M	6146886	3CH1800DK018A	KC633M
1723031	F2AL0500ADL30	KC633M	no replacement	no replacement	no replacement
2231376	F3AH0650ADK30	KC633M	no replacement	no replacement	no replacement
2231467	F3AH0870BDL30	KC633M	no replacement	no replacement	no replacement
1722283	F4AJ0200ADN30	KC625M	no replacement	no replacement	no replacement
2231547	F4AJ1100BDL30	KC633M	no replacement	no replacement	no replacement
2226092	F2AH0400ADN30	KC633M	5872996	2CH0400DD008A	KC633M
2231323	F2AH1200ADL30	KC633M	5872976	2CH1200DL022A	KC633M
2231380	F3AH0775ADK30	KC633M	no replacement	no replacement	no replacement
2231479	F4AJ0350ADK30	KC633M	5824130	4CH0350DL010A	KC633M
2231511	F4AJ1300ADL30	KC633M	no replacement	no replacement	no replacement
2226737	F2AH0700ADN30	KC633M	5872999	2CH0700DD013A	KC633M
2231494	F4AJ1200ADK30	KC633M	5824188	4CH1200DK016A	KC633M
1722888	F2AH0800AWL30	KC625M	5873032	2CH0800MX041A	KC633M
1722287	F4AJ0400ADN30	KC625M	5824198	4CH0400DD011A	KC633M
1722904	F2AH0400AWM30	KC625M	no replacement	no replacement	no replacement
2231470	F3AH1100BDL30	KC633M	no replacement	no replacement	no replacement
1722903	F2AH0300AWM30	KC625M	no replacement	no replacement	no replacement
2226734	F2AH0500ADN30	KC633M	5872997	2CH0500DD010A	KC633M
2226744	F2AH1500ADN30	KC633M	no replacement	no replacement	no replacement
2231454	F3AH1800BDK30	KC633M	6146904	3CH1800DK018B	KC633M
1723164	F4AJ2000ADL30	KC625M	5824197	4CH2000DL038A	KC633M
2231472	F3AH1300BDL30	KC633M	no replacement	no replacement	no replacement
2226088	F2AH1600ADN30	KC633M	5873007	2CH1600DD026A	KC633M
1723213	F4AJ0500ADL30	KC625M	5824175	4CH0500DL013A	KC633M
1723028	F2AL0500ADN30	KC633M	5874173	2BN0500DD010A	KC633M
1722291	F4AJ0600ADN30	KC625M	5824178	4CH0600DL013A	KC633M
2231519	F4AJ0300BDK30	KC633M	5824129	4CH0300DK005A	KC633M
1723212	F4AJ0600ADL30	KC625M	5824178	4CH0600DL013A	KC633M
2226779	F4AJ1800ADN30	KC633M	5824206	4CH1800DD032A	KC633M
1723331	F2AL1200ADL30	KC633M	5874165	2BN1200DL022A	KC633M
2226742	F2AH1100ADN30	KC633M	no replacement	no replacement	no replacement
2226758	F3AH0450ADN30	KC633M	no replacement	no replacement	no replacement
2231289	F2AH0850ADK30	KC633M	no replacement	no replacement	no replacement
2231373	F3AH0550ADK30	KC633M	6146878	3CH0550DK007A	KC633M
2231282	F2AH0500ADK30	KC633M	5872961	2CH0500DK006A	KC633M
1722866	F4AJ0600AWM30	K600	no replacement	no replacement	no replacement
2231426	F3AH0400BDK30	KC633M	6146893	3CH0400DK005B	KC633M
1723165	F4AJ1800ADL30	KC625M	5824195	4CH1800DL032A	KC633M
2231420	F3AH1800ADL30	KC633M	6146955	3CH1800DL026A	KC633M
2231438	F3AH0800BDK30	KC633M	6146899	3CH0800DK009B	KC633M
2226754	F3AH1800ADN30	KC633M	6146955	3CH1800DL026A	KC633M
2231321	F2AH1000ADL30	KC633M	5873002	2CH1000DD019A	KC633M
1722851	F2AH0400AWM30	K600	5873018	2CH0400MX031A	KC633M
2231496	F4AJ1400ADK30	KC633M	5824190	4CH1400DK018A	KC633M
2231544	F4AJ0500BDL30	KC633M	5824175	4CH0500DL013A	KC633M
2033937	F2AH0350ADK30	KC633M	5872946	2CH0350DK004A	KC633M
1722947	F4AL1800ADN30	KC633M	5824939	4BN1800DD032A	KC633M
1723330	F2AL1000ADL30	KC633M	5874164	2BN1000DL019A	KC633M
1722233	F3AH0350ADN30	KC625M	no replacement	no replacement	no replacement
1324459	F2AH1600AWX30	K600	no replacement	no replacement	no replacement
2231309	F2AH1800ADK30	KC633M	5872981	2CH1800DK018A	KC633M
1722289	F4AJ0500ADN30	KC625M	5824199	4CH0500DD013A	KC633M
1722875	F2AH0800AWL30	K600	5873032	2CH0800MX041A	KC633M
2231392	F3AH1370ADK30	KC633M	no replacement	no replacement	no replacement
2231338	F2AH0650BDK30	KC633M	no replacement	no replacement	no replacement
2231384	F3AH0900ADK30	KC633M	no replacement	no replacement	no replacement
2226788	F4AJ0850ADN30	KC633M	no replacement	no replacement	no replacement

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
2231331	F2AH0300BDK30	KC633M	5872944	2CH0300DK004A	KC633M
2231429	F3AH0500BDK30	KC633M	6146895	3CH0500DK006B	KC633M
2231305	F2AH1300ADK30	KC633M	no replacement	no replacement	no replacement
1722316	F4AJ1000ADK30	KC625M	5824186	4CH1000DK014A	KC633M
1722969	F4AL1400ADN30	KC633M	5824937	4BN1400DD026A	KC633M
2226766	F3AH0950ADN30	KC633M	no replacement	no replacement	no replacement
1722870	F2AH0300AWM30	K600	5873014	2CH0300MX025A	KC633M
2231318	F2AH0700ADL30	KC633M	5872966	2CH0700DL013A	KC633M
2231465	F3AH0775BDL30	KC633M	no replacement	no replacement	no replacement
1722353	F4AJ0300ADK30	KC625M	5824129	4CH0300DK005A	KC633M
2231330	F2AH0250BDK30	KC633M	no replacement	no replacement	no replacement
2231385	F3AH0950ADK30	KC633M	no replacement	no replacement	no replacement
2226748	F2AH1200BDL30	KC633M	5872986	2CH1200DL022B	KC633M
2231379	F3AH0750ADK30	KC633M	no replacement	no replacement	no replacement
2231546	F4AJ0900BDL30	KC633M	5824185	4CH0900DL019A	KC633M
1722905	F2AH0500AWM30	KC625M	no replacement	no replacement	no replacement
2231327	F2AH1800ADL30	KC633M	5872982	2CH1800DL026A	KC633M
2231455	F3AH2000BDK30	KC633M	6146905	3CH2000DK020B	KC633M
2231278	F2AH0250ADK30	KC633M	no replacement	no replacement	no replacement
2231513	F4AJ1500ADL30	KC633M	no replacement	no replacement	no replacement
2231507	F4AJ0900ADL30	KC633M	5824185	4CH0900DL019A	KC633M
2231432	F3AH0600BDK30	KC633M	6146897	3CH0600DK007B	KC633M
2226765	F3AH0900ADN30	KC633M	no replacement	no replacement	no replacement
1723036	F2AL2000ADN30	KC633M	5874180	2BN2000DD032A	KC633M
2226787	F4AJ0750ADN30	KC633M	no replacement	no replacement	no replacement
1722359	F4AJ0400ADK30	KC625M	5824171	4CH0400DK008A	KC633M
2226090	F2AH2000ADN30	KC633M	5873009	2CH2000DD032A	KC633M
2231404	F3AH0575ADL30	KC633M	no replacement	no replacement	no replacement
2231539	F4AJ1600BDK30	KC633M	5824212	4CH1600DK022B	KC633M
2231450	F3AH1400BDK30	KC633M	6146902	3CH1400DK014B	KC633M
2231427	F3AH0450BDK30	KC633M	6146894	3CH0450DK005B	KC633M
2231439	F3AH0850BDK30	KC633M	no replacement	no replacement	no replacement
2226747	F2AH1000BDL30	KC633M	5872974	2CH1000DL019A	KC633M
1722878	F2AH0500AWM30	K600	no replacement	no replacement	no replacement
2226761	F3AH0650ADN30	KC633M	no replacement	no replacement	no replacement
2226746	F2AH0800BDL30	KC633M	5872968	2CH0800DL016A	KC633M
2231533	F4AJ1000BDK30	KC633M	5824186	4CH1000DK014A	KC633M
1722284	F4AJ0250ADN30	KC625M	no replacement	no replacement	no replacement
2231401	F3AH0480ADL30	KC633M	no replacement	no replacement	no replacement
2231495	F4AJ1300ADK30	KC633M	no replacement	no replacement	no replacement
2231447	F3AH1200BDK30	KC633M	6146901	3CH1200DK012B	KC633M
2226740	F2AH0900ADN30	KC633M	5873001	2CH0900DD016A	KC633M
2226782	F4AJ0450ADN30	KC633M	5824173	4CH0450DL011A	KC633M
1722958	F2AL0500AWM30L300	KC633M	no replacement	no replacement	no replacement
1324457	F2AH1200AWX30	K600	no replacement	no replacement	no replacement
2231353	F2AH2000BDK30	KC633M	5872993	2CH2000DK020B	KC633M
2231515	F4AJ1800ADL30	KC633M	5824195	4CH1800DL032A	KC633M
2231283	F2AH0550ADK30	KC633M	no replacement	no replacement	no replacement
1722864	F4AJ1000AWL30	K600	5824234	4CH1000MX045A	KC633M
2231308	F2AH1600ADK30	KC633M	5872979	2CH1600DK016A	KC633M
2231424	F3AH0350BDK30	KC633M	6146892	3CH0350DK004B	KC633M
2231512	F4AJ1400ADL30	KC633M	5824191	4CH1400DL026A	KC633M
2231410	F3AH0870ADL30	KC633M	no replacement	no replacement	no replacement
1723354	F4AL1200BDL30	KC633M	no replacement	no replacement	no replacement
2231320	F2AH0900ADL30	KC633M	5872971	2CH0900DL016A	KC633M
2231358	F2AH0500BDL30	KC633M	5872962	2CH0500DL010A	KC633M
1722376	F2AH0250ADN30	KC625M	no replacement	no replacement	no replacement
2231517	F4AJ0200BDK30	KC633M	no replacement	no replacement	no replacement
2231408	F3AH0775ADL30	KC633M	no replacement	no replacement	no replacement
1722867	F4AJ0500AWM30	K600	5824225	4CH0500MR030A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
2226785	F4AJ0650ADN30	KC633M	5824179	4CH0650DL016A	KC633M
2231360	F2AH0700BDL30	KC633M	5872966	2CH0700DL013A	KC633M
2226797	F4AJ1400BDL30	KC633M	5824211	4CH1400DL026B	KC633M
2231532	F4AJ0950BDK30	KC633M	no replacement	no replacement	no replacement
2226745	F2AH0600BDL30	KC633M	5872964	2CH0600DL010A	KC633M
2231322	F2AH1100ADL30	KC633M	no replacement	no replacement	no replacement
2231306	F2AH1400ADK30	KC633M	5872977	2CH1400DK014A	KC633M
2231461	F3AH0575BDL30	KC633M	no replacement	no replacement	no replacement
2231483	F4AJ0550ADK30	KC633M	no replacement	no replacement	no replacement
2226764	F3AH0850ADN30	KC633M	no replacement	no replacement	no replacement
1722377	F2AH0300ADN30	KC625M	no replacement	no replacement	no replacement
1722869	F4AJ0300AWM30	K600	5824221	4CH0300MX025A	KC633M
2231521	F4AJ0400BDK30	KC633M	5824171	4CH0400DK008A	KC633M
2231486	F4AJ0700ADK30	KC633M	5824180	4CH0700DK011A	KC633M
2231471	F3AH1170BDL30	KC633M	no replacement	no replacement	no replacement
2231462	F3AH0650BDL30	KC633M	no replacement	no replacement	no replacement
2226741	F2AH0950ADN30	KC633M	no replacement	no replacement	no replacement
1200671	F3AH0300BDL30	KC625M	6146959	3CH0300DL007B	KC633M
2231352	F2AH1800BDK30	KC633M	5872991	2CH1800DK018B	KC633M
2231430	F3AH0550BDK30	KC633M	6146896	3CH0550DK007B	KC633M
2231406	F3AH0675ADL30	KC633M	no replacement	no replacement	no replacement
2231285	F2AH0650ADK30	KC633M	no replacement	no replacement	no replacement
2231307	F2AH1500ADK30	KC633M	no replacement	no replacement	no replacement
2226763	F3AH0750ADN30	KC633M	no replacement	no replacement	no replacement
2231337	F2AH0600BDK30	KC633M	5872963	2CH0600DK007A	KC633M
2231538	F4AJ1500BDK30	KC633M	no replacement	no replacement	no replacement
1806780	F4BL1000BWM20	KC633M	no replacement	no replacement	no replacement
2231326	F2AH1600ADL30	KC633M	5872980	2CH1600DL026A	KC633M
2231361	F2AH0900BDL30	KC633M	5872971	2CH0900DL016A	KC633M
2231453	F3AH1600BDK30	KC633M	6146903	3CH1600DK016B	KC633M
1722212	F4AJ1100ADN30	KC625M	no replacement	no replacement	no replacement
1722865	F4AJ0800AWL30	K600	5824231	4CH0800MX041A	KC633M
2226790	F4AJ0950ADN30	KC633M	no replacement	no replacement	no replacement
2231458	F3AH0480BDL30	KC633M	no replacement	no replacement	no replacement
2231541	F4AJ2000BDK30	KC633M	5824216	4CH2000DK026B	KC633M
2231448	F3AH1300BDK30	KC633M	no replacement	no replacement	no replacement
2231343	F2AH0900BDK30	KC633M	5872970	2CH0900DK010A	KC633M
1722647	F4AJ1200ADN30	K600	5824189	4CH1200DL026A	KC633M
1806782	F4BL1400BWL20	KC633M	no replacement	no replacement	no replacement
1722375	F2AH0200ADN30	KC625M	no replacement	no replacement	no replacement
1722217	F4AJ0600ADK30	KC625M	5824177	4CH0600DK010A	KC633M
2231287	F2AH0750ADK30	KC633M	no replacement	no replacement	no replacement
2231345	F2AH1000BDK30	KC633M	5872972	2CH1000DK011A	KC633M
2231535	F4AJ1200BDK30	KC633M	5824208	4CH1200DK016B	KC633M
2231460	F3AH0550BDL30	KC633M	6146964	3CH0550DL010B	KC633M
2231291	F2AH0950ADK30	KC633M	no replacement	no replacement	no replacement
2231310	F2AH2000ADK30	KC633M	5872983	2CH2000DK020A	KC633M
1723209	F4AJ0900ADL30	KC625M	5824185	4CH0900DL019A	KC633M
2226735	F2AH0550ADN30	KC633M	no replacement	no replacement	no replacement
2231422	F3AH0280BDK30	KC633M	no replacement	no replacement	no replacement
2231314	F2AH0450ADL30	KC633M	5872950	2CH0450DL008A	KC633M
2231525	F4AJ0600BDK30	KC633M	5824177	4CH0600DK010A	KC633M
2226739	F2AH0850ADN30	KC633M	no replacement	no replacement	no replacement
2231433	F3AH0650BDK30	KC633M	no replacement	no replacement	no replacement
1723340	F4AL1800ADL30	KC633M	5824929	4BN1800DL032A	KC633M
1569199	F4AJ1200AWX30	K600	5824237	4CH1200MX075A	KC633M
2231286	F2AH0700ADK30	KC633M	5872965	2CH0700DK008A	KC633M
2231395	F3AH1570ADK30	KC633M	no replacement	no replacement	no replacement
2231481	F4AJ0450ADK30	KC633M	5824173	4CH0450DL011A	KC633M
2231522	F4AJ0450BDK30	KC633M	5824173	4CH0450DL011A	KC633M

(continued)

(continued)

Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
2231332	F2AH0350BDK30	KC633M	5872946	2CH0350DK004A	KC633M
2231548	F4AJ1300BDL30	KC633M	no replacement	no replacement	no replacement
1722882	F2AH1200AWX30	KC625M	5873040	2CH1200MX075A	KC633M
1722129	F3AH0250ADN30	KC625M	no replacement	no replacement	no replacement
2231442	F3AH0950BDK30	KC633M	no replacement	no replacement	no replacement
2231303	F2AH1100ADK30	KC633M	no replacement	no replacement	no replacement
2231346	F2AH1100BDK30	KC633M	no replacement	no replacement	no replacement
1723352	F4AL0600BDL30	KC633M	no replacement	no replacement	no replacement
2226733	F2AH0450ADN30	KC633M	no replacement	no replacement	no replacement
2231434	F3AH0675BDK30	KC633M	no replacement	no replacement	no replacement
2231529	F4AJ0800BDK30	KC633M	5824182	4CH0800DK012A	KC633M
2226751	F2AH1800BDL30	KC633M	no replacement	no replacement	no replacement
2231536	F4AJ1300BDK30	KC633M	no replacement	no replacement	no replacement
2231329	F2AH0200BDK30	KC633M	5872943	2CH0200DK003A	KC633M
1200487	F3AH1100BDK30	K600	no replacement	no replacement	no replacement
2231363	F2AH1500BDL30	KC633M	no replacement	no replacement	no replacement
2231349	F2AH1400BDK30	KC633M	5872987	2CH1400DK014B	KC633M
2226738	F2AH0750ADN30	KC633M	no replacement	no replacement	no replacement
1723353	F4AL0800BDL30	KC633M	5824955	4BN0800MR040A	KC633M
2231348	F2AH1300BDK30	KC633M	no replacement	no replacement	no replacement
2231328	F2AH2000ADL30	KC633M	5872984	2CH2000DL032A	KC633M
1723167	F4AJ1400ADL30	KC625M	5824191	4CH1400DL026A	KC633M
2231335	F2AH0500BDK30	KC633M	no replacement	no replacement	no replacement
2231466	F3AH0850BDL30	KC633M	no replacement	no replacement	no replacement
2231457	F3AH0450BDL30	KC633M	6146962	3CH0450DL008B	KC633M
1723358	F4AL1000BDL30	KC633M	no replacement	no replacement	no replacement
2231281	F2AH0450ADK30	KC633M	5872949	2CH0450DK005A	KC633M
2231362	F2AH1100BDL30	KC633M	no replacement	no replacement	no replacement
1723335	F2AL1400ADL30	KC633M	no replacement	no replacement	no replacement
1722335	F4AJ0900ADK30	KC625M	5824184	4CH0900DK013A	KC633M
1996193	F2AL0400AWS00	KC637M	5874172	2BN0400DD008A	KC633M
2231383	F3AH0870ADK30	KC633M	no replacement	no replacement	no replacement
2231316	F2AH0550ADL30	KC633M	no replacement	no replacement	no replacement
2231416	F3AH1370ADL30	KC633M	no replacement	no replacement	no replacement
1722881	F2AH1400AWX30	K600	no replacement	no replacement	no replacement
2231502	F4AJ0450ADL30	KC633M	5824173	4CH0450DL011A	KC633M
2226089	F2AH1800ADN30	KC633M	5873008	2CH1800DD026A	KC633M
2231341	F2AH0800BDK30	KC633M	5872967	2CH0800DK009A	KC633M
1723163	F4AJ1100ADL30	KC625M	no replacement	no replacement	no replacement
1722884	F2AH1400AWX30	KC625M	no replacement	no replacement	no replacement
2231334	F2AH0450BDK30	KC633M	5872949	2CH0450DK005A	KC633M
1722216	F4AJ1500ADN30	KC625M	no replacement	no replacement	no replacement
2231491	F4AJ0950ADK30	KC633M	no replacement	no replacement	no replacement
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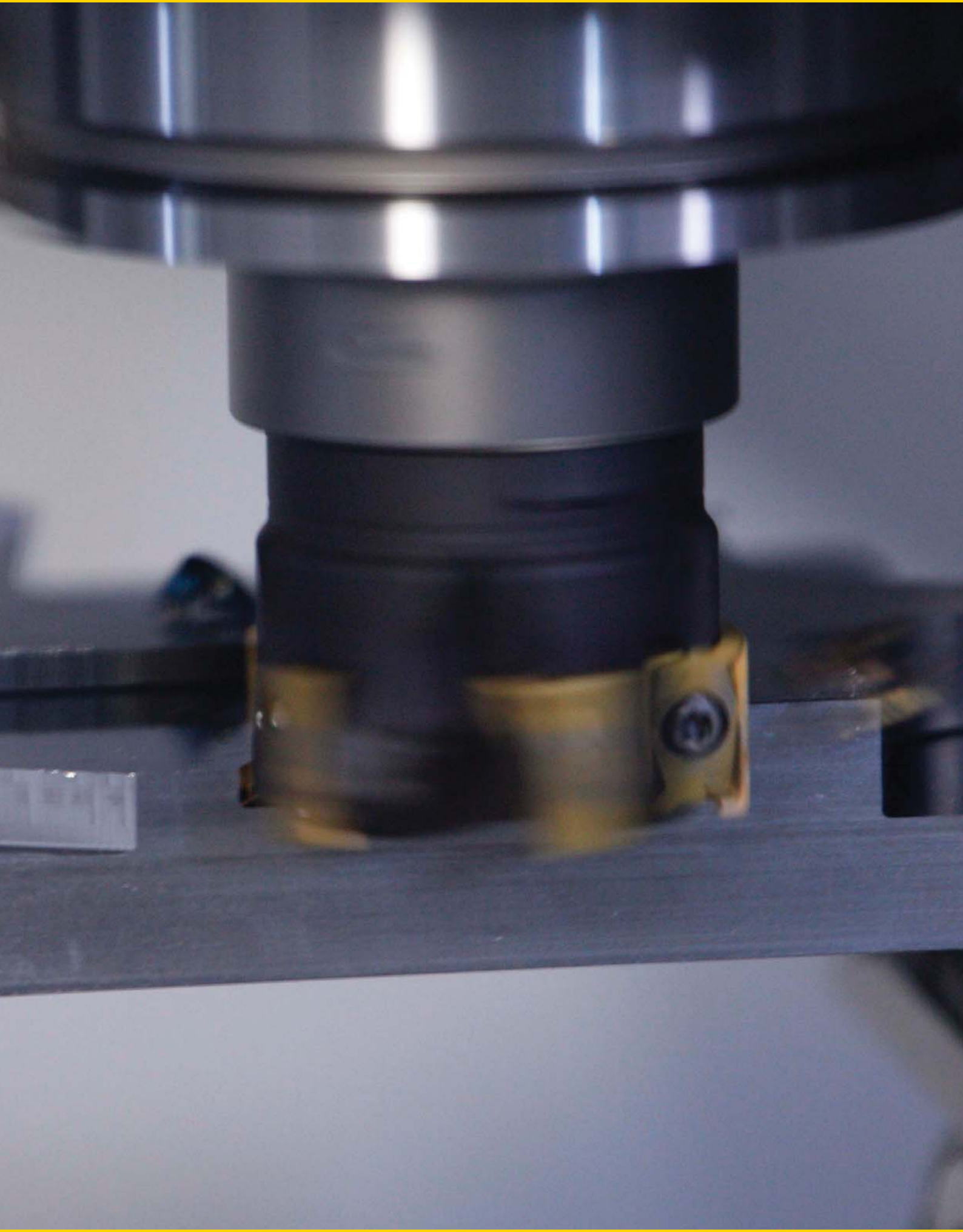
1722443	F2AL0150AWS30	KC635M	no replacement	no replacement	no replacement
2231336	F2AH0550BDK30	KC633M	no replacement	no replacement	no replacement
1722331	F4AJ0800ADK30	KC625M	5824182	4CH0800DK012A	KC633M
2231534	F4AJ1100BDK30	KC633M	no replacement	no replacement	no replacement
2231436	F3AH0750BDK30	KC633M	no replacement	no replacement	no replacement
2226752	F2AH2000BDL30	KC633M	5872994	2CH2000DL032B	KC633M
2231526	F4AJ0650BDK30	KC633M	no replacement	no replacement	no replacement
1722288	F4AJ0450ADN30	KC625M	5824173	4CH0450DL011A	KC633M
2231357	F2AH0450BDL30	KC633M	5872950	2CH0450DL008A	KC633M
2226750	F2AH1600BDL30	KC633M	5872990	2CH1600DL026B	KC633M
2231414	F3AH1170ADL30	KC633M	no replacement	no replacement	no replacement
2231487	F4AJ0750ADK30	KC633M	no replacement	no replacement	no replacement
1722352	F4AJ1200ADK30	KC625M	5824188	4CH1200DK016A	KC633M
2231445	F3AH1100BDK30	KC633M	no replacement	no replacement	no replacement
2231347	F2AH1200BDK30	KC633M	5872985	2CH1200DK012B	KC633M
1200475	F3AH0650BDK30	K600	no replacement	no replacement	no replacement

(continued)

(continued)

Old General Purpose			GOmill GP Replacement		
Order Number	Catalogue Number	Grade	Order Number	Catalogue Number	Grade
2231342	F2AH0850BDK30	KC633M	no replacement	no replacement	no replacement
2231339	F2AH0700BDK30	KC633M	5872965	2CH0700DK008A	KC633M
2231391	F3AH1300ADK30	KC633M	no replacement	no replacement	no replacement
2231537	F4AJ1400BDK30	KC633M	5824210	4CH1400DK018B	KC633M
1722248	F2AH0350ADN30	KC625M	5873015	2CH0350MR012A	KC633M
2231290	F2AH0900ADK30	KC633M	5872970	2CH0900DK010A	KC633M
2231543	F4AJ0450BDL30	KC633M	5824173	4CH0450DL011A	KC633M
2231523	F4AJ0500BDK30	KC633M	5824174	4CH0500DK009A	KC633M
2231545	F4AJ0700BDL30	KC633M	5824181	4CH0700DL016A	KC633M
2231518	F4AJ0250BDK30	KC633M	no replacement	no replacement	no replacement
2231527	F4AJ0700BDK30	KC633M	5824180	4CH0700DK011A	KC633M
1996194	F2AL0500AWS00	KC637M	5874173	2BN0500DD010A	KC633M
1996195	F2AL0600AWS00	KC637M	5874161	2BN0600DL010A	KC633M
1996196	F2AL0800AWM00	KC637M	5874175	2BN0800DD016A	KC633M
1996197	F2AL1000AWM00	KC637M	5874164	2BN1000DL019A	KC633M
1996198	F2AL1200AWL00	KC637M	5874165	2BN1200DL022A	KC633M
2231333	F2AH0400BDK30	KC633M	5872947	2CH0400DK005A	KC633M
2231520	F4AJ0350BDK30	KC633M	5824130	4CH0350DL010A	KC633M
1723037	F2AL1800ADN30	KC633M	no replacement	no replacement	no replacement
2231350	F2AH1500BDK30	KC633M	no replacement	no replacement	no replacement
2231354	F2AH0250BDL30	KC633M	no replacement	no replacement	no replacement
2231359	F2AH0550BDL30	KC633M	no replacement	no replacement	no replacement
2231524	F4AJ0550BDK30	KC633M	no replacement	no replacement	no replacement
2231340	F2AH0750BDK30	KC633M	no replacement	no replacement	no replacement
2231528	F4AJ0750BDK30	KC633M	no replacement	no replacement	no replacement
2231530	F4AJ0850BDK30	KC633M	no replacement	no replacement	no replacement
2231344	F2AH0950BDK30	KC633M	no replacement	no replacement	no replacement
2231440	F3AH0870BDK30	KC633M	no replacement	no replacement	no replacement
2231452	F3AH1570BDK30	KC633M	no replacement	no replacement	no replacement
2231463	F3AH0675BDL30	KC633M	no replacement	no replacement	no replacement
2231469	F3AH0970BDL30	KC633M	no replacement	no replacement	no replacement
2231473	F3AH1370BDL30	KC633M	no replacement	no replacement	no replacement
2231475	F3AH1570BDL30	KC633M	no replacement	no replacement	no replacement
1723334	F2AL2000ADL30	KC633M	5874169	2BN2000DL032A	KC633M
2226749	F2AH1400BDL30	KC633M	5872988	2CH1400DL022B	KC633M
1723343	F4AL1400BDL30	KC633M	5824937	4BN1400DD026A	KC633M
1723168	F4AJ0450ADL30	KC625M	5824173	4CH0450DL011A	KC633M
1722280	F4AJ0500ADK30	KC625M	5824174	4CH0500DK009A	KC633M
1723211	F4AJ0700ADL30	KC625M	5824181	4CH0700DL016A	KC633M
2231531	F4AJ0900BDK30	KC633M	5824184	4CH0900DK013A	KC633M
1722355	F4AJ1400ADK30	KC625M	5824190	4CH1400DK018A	KC633M
1722267	F4AJ1400ADN30	KC625M	5824191	4CH1400DL026A	KC633M
1722863	F4AJ1400AWX30	K600	5824240	4CH1400MX075A	KC633M
1722305	F4AJ1600ADK30	KC625M	5824192	4CH1600DK022A	KC633M
2231499	F4AJ1800ADK30	KC633M	5824194	4CH1800DK024A	KC633M
2231540	F4AJ1800BDK30	KC633M	5824194	4CH1800DK024A	KC633M
1722861	F4AJ1800AWX30	K600	5824246	4CH1800MX075A	KC633M
1192078	F3AH1400ADL30	K600	6146953	3CH1400DL022A	KC633M
2231351	F2AH1600BDK30	KC633M	5872989	2CH1600DK016B	KC633M
2231451	F3AH1500BDK30	KC633M	no replacement	no replacement	no replacement
1723033	F2AL1400ADN30	KC633M	5874178	2BN1400DD022A	KC633M
1723039	F2AL1600ADN30	KC633M	5874179	2BN1600DD026A	KC633M



Indexable Milling

Indexable Milling Introduction R2–R21

Face Milling S1–S150

Shoulder Milling T1–T123

Slot Milling U1–U53

Copy Milling V1–V157

Thread Milling W1–W55

Technical Information X1–X20

Recommended Starting Speeds X22–X37



Indexable Milling Products

Our latest Metalcutting Innovations are designed to deliver higher productivity, longer tool life, and increased application versatility.

For more information about the latest products and services from Kennametal, please contact your Kennametal Representative or Authorised Kennametal Distributor, or visit **kennametal.com**.

FACE MILLS

- Dodeka™ Mini
- Dodeka
- Dodeka MAX™
- Mill 16™
- KSSM 45°
- KSOM™ Mini
- KSOM
- KSSM8+™
- Fix-Perfect™
- HexaCut™
- KSSR™ 84°
- KCFM
- MEGA
- KBDM™
- KSCM™ PCD AluMill™
- Fix-Perfect 90° Aluminium

SHOULDER MILLS

- Mill 4-11™
- Mill 4-15™
- Mill 1-7™
- Mill 1-10™
- Mill 1-14™
- Mill 1-18™
- Mill 1-25™
- 5720VZ
- KSSM™
- KSSM-KSSP, Helical Cutters
- 5230VS





SLOT MILLS

- KTMS™ T-Slot
- KVNS™
- SN
- LN
- KSSM™

COPY MILLS

- 7792VX
- KenFeed™ 2X
- Rodeka™
- KSRM™
- 7713VR
- 5505VX
- KDMB™ and KDMT™
- Z-Axis • Plunge Milling Cutters
- KCRA
- KIPR

INDEXABLE THREAD MILLS

- TM Series
  - TM24
  - TM25
  - TM40
  - TM41
- KTMD U Series
- TMS — Thread Milling System







The Most Advanced Milling Solutions in the Industry

For unsurpassed quality, value, and performance, you can trust Kennametal to provide the most comprehensive line of reliable metalcutting tools. Whatever your indexable milling product requirements, be assured that you will find the appropriate solution in this all-inclusive, easy-to-use guide.

For every milling application, workpiece, or equipment need, we offer the best tools on the market, designed to reduce your machining time, provide superior surface finishes, and exceed your expectations!

Identify material to be machined:

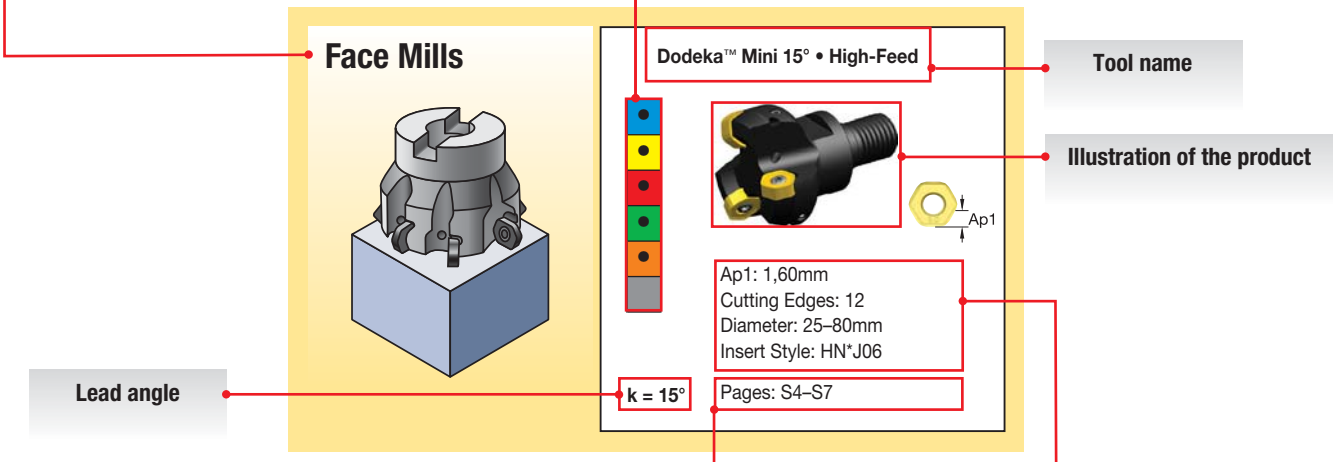
Each tool has a material grid marked with a letter indicating the materials that can be machined.

● first choice
○ alternate choice

P	○	Steel
M	●	Stainless Steel
K		Cast Iron
N		Non-Ferrous
S	○	High-Temp Alloys
H	○	Hardened Materials

Choose your application:

- Face Milling
- Chamfer Milling
- Shoulder Milling
- Slotting
- Copy Milling
- Ceramic Milling
- Thread Milling



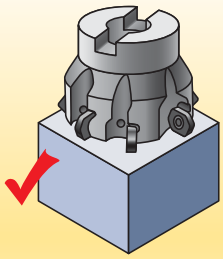
Location of introduction detail, tool bodies, inserts, and cutting data.

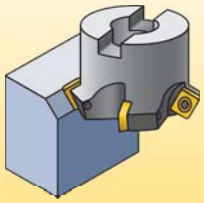
Select tool based on maximum depth of cut and diameter required:

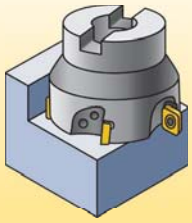
Information is given in this area to provide specific detail as a quick reference.

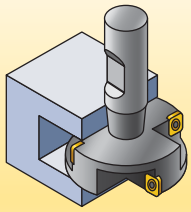
How to Navigate the 2018 Catalogue

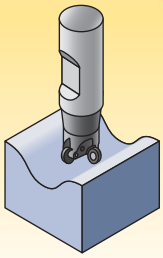
Step 1 • Select Application

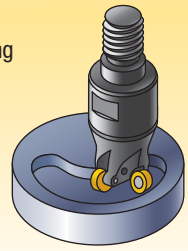

Face Milling

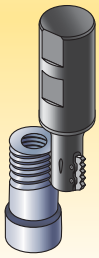

Chamfer Milling


Shoulder Milling (End Milling)


Slotting


Copy Milling


Ceramic Milling

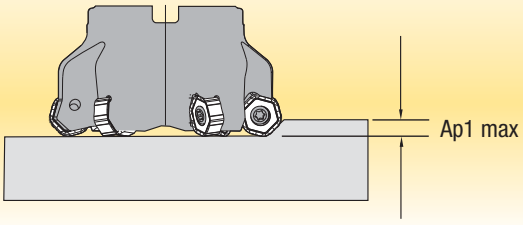

Thread Milling

Step 2 • Select Workpiece Material

● first choice
○ alternate choice

ISO Description			Material Group	
Steel	P	●	P1–P2	Carbon steels
			P3–P4	Alloy steels and tool steels
			P5–P6	Ferritic, martensitic, and PH stainless steels
Stainless Steel	M	●	M1–M2	Austenitic stainless steels
			M3	Duplex stainless steels (ferritic and austenitic mixture)
Cast Iron	K		K1–K2	Grey, ductile, CGI, and malleable cast irons >80 KSI
			K3	Ductile, CGI, and malleable cast irons >80 KSI
Non-Ferrous Materials	N		N1–N2	Aluminium alloys <12.2% Si
			N3	Aluminium alloys >12.2% Si
High-Temp Alloys	S	●	S1–S2	Iron- and cobalt-based heat-resistant alloys
			S3	Nickel-based heat-resistant alloys
			S4	Alpha-Beta titanium alloys
Hardened Materials	H	○	H1	Hardened steels and irons

Step 3 • Select a Maximum Axial Depth of Cut (Ap)



(continued)

How to Navigate the 2018 Catalogue *(continued)*

Step 4 • Select Milling Cutter from Application Selector

Face milling 1

Material 2

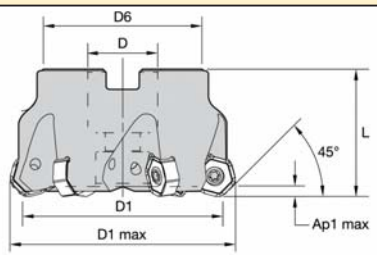


Ap1: 3,2mm
Cutting Edges: 12
Diameter: 25–125mm
Insert Style: HN*J06
Pages: S8–S13

k = 45°

3 Axial depth of cut

Select the Cutter





Dodeka Mini 45° • Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	kg	max RPM
4126387	KSHR040A04RS45HN06	40	48,2	22	38	40	3,2	4	0,25	15800
4124313	KSHR040A05RS45HN06	40	48,2	22	38	40	3,2	5	0,25	15800
4126388	KSHR050A04RS45HN06	50	58,2	22	38	40	3,2	4	0,36	12700
4122886	KSHR050A05RS45HN06	50	58,2	22	38	40	3,2	5	0,37	12700
4126389	KSHR050A06RS45HN06	50	58,2	22	38	40	3,2	6	0,36	12700
4122887	KSHR063A04RS45HN06	63	71,2	22	50	40	3,2	4	0,59	10100
4122889	KSHR063A06RS45HN06	63	71,2	22	50	40	3,2	6	0,65	10100
4126390	KSHR063A08RS45HN06	63	71,2	22	50	40	3,2	8	0,64	10100

4

Step 5 • Insert Selection Guide

Insert Selection Guide

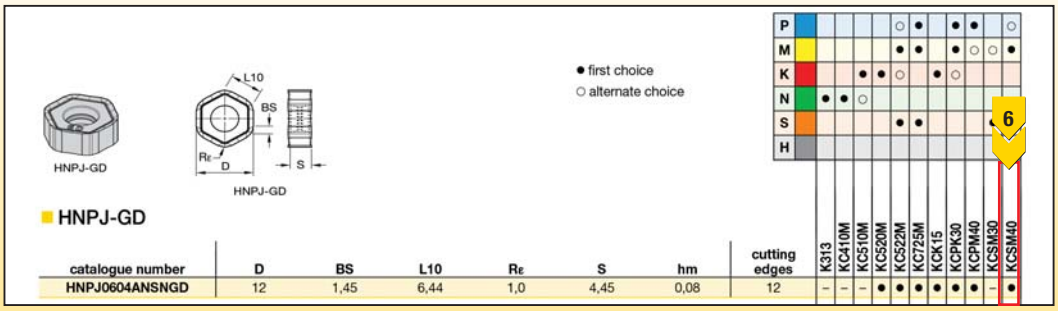
Material Group	Light Machining (Light geometry) wear resistance		General Purpose		Heavy Machining (Strong geometry) toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1 – P2	.E..LD	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
P3 – P4	.E..LD	KCPK30	.S..GD	KCPK30	.S..HD	KCPK30
P5 – P6	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KCPK30
M1 – M2	.E..LD	KC522M	.S..GD	KCSM40	.S..HD	KCSM40
M3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCPM40
K1 – K2	.E..LD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KC520M	.S..GD	KC520M	.S..HD	KC520M
N1 – N2	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KC510M
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KC510M
S1 – S2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	.E..LD	KC510M	.E..LD	KC510M	.E..LD	KC510M

5

(continued)

How to Navigate the 2018 Catalogue *(continued)*

Step 6 • Insert Chart, Providing the Inserts and Grades



HNPJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges
HNPJ0604ANSNGD	12	1,45	6,44	1,0	4,45	0,08	12

Step 7 • Defining the Feed per Tooth

Geometry (S.GD)
20% radial width of cut, follow arrows for value.
% = radial width of cut (Ae) ÷ cutter diameter (D1)
Using a round or ball nose insert, consider the axial depth of cut; see separate chart on the cutter page.

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.F..LDJ	0,17	**0,46**	0,79	0,12	**0,33**	0,57	0,09	**0,25**	0,43	0,08	**0,22**	0,37	0,07	**0,20**	0,34	.F..LDJ
.E..LD	0,18	**0,59**	0,99	0,13	**0,43**	0,71	0,10	**0,32**	0,53	0,09	**0,28**	0,46	0,08	**0,25**	0,42	.E..LD
.S..GD	0,33	**0,79**	1,19	0,24	**0,57**	0,86	0,18	**0,43**	0,64	0,16	**0,37**	0,56	0,14	**0,34**	0,51	.S..GD
.S..HD	0,33	**0,84**	1,35	0,24	**0,**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..HD

7

Always consider starting with the "Light Machining" value. Once established, increase the feed per tooth from the chart.
These are minimum values and can be increased when the application has been proven.
Light Machining — Low Feed Rate, High Speed
General Purpose — Normal Feed, Normal Speed
Heavy Machining — Higher Feed, Reduced Speed

Step 8 • Recommended Starting Speeds [m/min]

8

Material Group		SC6525			SP4019			SP6519			KCSM30			K[illegible]40			X400			X500		
P	1	445	**305**	170	380	**275**	170	355	**260**	155	445	**385**	360	–	–	–	310	**230**	145	325	**240**	155
	2	390	**270**	145	330	**240**	145	310	**230**	140	365	**325**	265	–	–	–	275	**205**	125	290	**215**	140
	3	350	**240**	125	295	**210**	125	275	**200**	120	340	**290**	235	–	–	–	240	**180**	115	250	**185**	120
	4	250	**175**	95	230	**160**	95	210	**150**	90	300	**245**	200	–	–	–	180	**130**	85	190	**145**	90
	5	190	**145**	95	180	**130**	85	170	**125**	85	245	**230**	200	205	**175**	145	–	–	–	155	**120**	85
	6	170	**120**	70	155	**110**	60	145	**100**	60	220	**170**	130	180	**130**	95	–	–	–	130	**95**	60
M	1	240	**215**	170	335	**240**	145	325	**235**	140	270	**240**	220	250	**205**	170	–	–	–	300	**220**	140
	2	230	**190**	145	300	**215**	130	280	**205**	125	245	**215**	175	215	**175**	145	–	–	–	265	**190**	120
	3	175	**155**	110	240	**175**	110	235	**170**	100	185	**160**	125	175	**130**	100	–	–	–	215	**155**	95
K	1	470	**325**	175	395	**290**	175	355	**265**	170	–	–	–	–	–	–	–	–	–	310	**265**	205
	2	365	**250**	140	305	**220**	140	290	**210**	130	–	–	–	–	–	–	–	–	–	265	**215**	155
	3	–	–	–	280	**205**	125	265	**190**	120	–	–	–	–	–	–	–	–	–	205	**170**	120
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: For starting speed recommendations, please refer to section X22–X37 pages. Kennametal provides starting speed conditions for both wet and dry applications. Fine pitch cutters, such as Mill16™, KSSR™, and HexaCut™, also have separate speed tables provided.

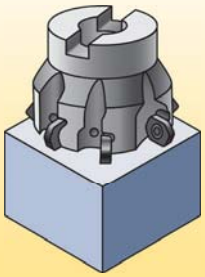
Choose the Application

- Face Milling
- Shoulder Milling
- Slotting
- Copy Milling
- Ceramic Milling
- Thread Milling

● first choice
○ alternate choice

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Face Mills



Dodeka™ Mini 15° • High-Feed



Ap1: 1,60mm
Cutting Edges: 12
Diameter: 25–80mm
Insert Style: HN*J06
k = 15° Pages: S4–S7

Dodeka™ Mini 45°



Ap1: 3,2mm
Cutting Edges: 12
Diameter: 25–125mm
Insert Style: HN*J06
k = 45° Pages: S8–S13

Dodeka™ Mini 60°



Ap1: 4,4mm
Cutting Edges: 12
Diameter: 40–125mm
Insert Style: HN*J06
k = 60° Pages: S14–S16

Dodeka™ • High-Feed • 15°



Ap1: 2,2mm
Cutting Edges: 12
Diameter: 50–160mm
Insert Style: HN*J0905
k = 15° Pages: S17–S19

Dodeka™



Ap1: 4,5mm
Cutting Edges: 12
Diameter: 40–315mm
Insert Style: HN*J0905
k = 45° Pages: S20–S24

Dodeka MAX™



Ap1: 8mm
Cutting Edges: 12
Diameter: 80–315mm
Insert Style: HN*J1307
k = 45° Pages: S25–S27

Mill 16™



Ap1: 5,5mm
Cutting Edges: 16
Diameter: 50–250mm
Split case: 315–500mm
k= 43,5° Insert Style: ON*X0806
Pages: S32–S36

KSSM™ 45°



Ap1: 6,6mm
Cutting Edges: 4
Diameter: 40–160mm
Insert Style: SE.T1404
k= 45° Pages: S41–S43

KSOM™ Mini



Ap1: 3,5mm (8 edges)
Ap2: 9mm (4 edges)
Diameter: 32–160mm
Insert Style: OF*T06
k = 43° Pages: S46–S51

KSOM™



Ap1: 5mm (8 edges)
Ap2: 11mm (4 edges)
Diameter: 63–160mm
Insert Style: OF*T07
k = 43° Pages: S53–S56

KSSM8+™ • IC10



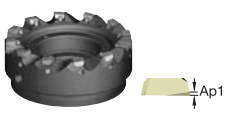
Ap1: 9,16mm
Cutting Edges: 8
Diameter: 50–160mm
Insert Style: SN*J10T3
k= 88° Pages: S60–S61

KSSM8+ • IC12



Ap1: 6mm (-ENLD)
Ap1: 11,86mm (-SNGD)
Cutting Edges: 8
Diameter: 50–160mm
k= 87° Insert Style: SN*J1206
Pages: S62–S64

Fix-Perfect™ • Finisher



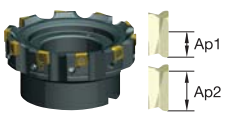
Ap1: 1mm
Cutting Edges: 4
Diameter: 63–250mm
Insert Style: MDHX1004
k = 15° Pages: S68–S70

Fix-Perfect™ 70° • Cast Iron • IC12



Ap1: 5,9mm (8 edges)
Ap2: 9,5mm (4 edges)
Diameter: 50–250mm
Insert Style: SPHX1205
k = 70° Pages: S72–S74

Fix-Perfect™ 90° • Cast Iron • IC12



Ap1: 6mm (8 edges)
Ap2: 10mm (4 edges)
Diameter: 50–200mm
Insert Style: SPHX1205
k = 90° Pages: S76–S78

Fix-Perfect™ 70° • Cast Iron • IC15



Ap1: 6,5mm (8 edges)
Ap2: 12mm (4 edges)
Diameter: 80–250mm
Insert Style: SPHX15T6
k = 70° Pages: S79–S81

(continued)

(Face Mills Application Selection Guide — continued)

Fix-Perfect™ 90° • Cast Iron • IC15



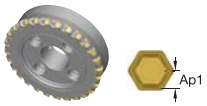
Ap1: 8mm (8 edges)
Ap2: 12mm (4 edges)
Diameter: 80–200mm
Insert Style: SPHX15T6
k = 90° Pages: S82–S84

HexaCut™ 45° • Cast Iron



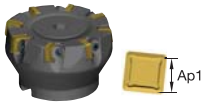
Ap1: 6,5mm
Cutting Edges: 12
Diameter: 80–200mm
Insert Style: HN*0905
k = 45° Pages: S89–S92

HexaCut™ 60° • Cast Iron



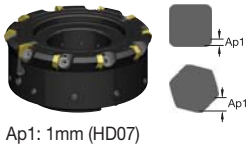
Ap1: 8mm
Cutting Edges: 12
Diameter: 80–200mm
Insert Style: HN*0905
k = 60° Pages: S94–S98

KSSR™ 84°



Ap1: 5mm
Cutting Edges: 8
Diameter: 63–250mm
Insert Style: SNXF1204
k = 84° Pages: S102–S106

KCFM



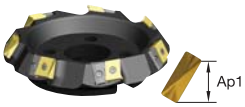
Ap1: 1mm (HD07)
Ap1: 3mm (SD12)
Cutting Edges: 6/4
Diameter: 80–250mm
Insert Style: HDHN07, SDHN12
k = 45° Pages: S110–S112

MEGA 45° • Heavy Duty



Ap1: 17,2mm
Cutting Edges: 4
Diameter: 125–315mm
Insert Style: LNPU24
k = 45° Pages: S116–S117

MEGA 60 • Heavy Duty



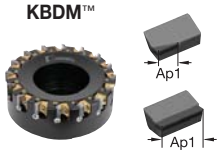
Ap1: 21,4mm
Cutting Edges: 4
Diameter: 125–315mm
Insert Style: LNPU2210
k = 60° Pages: S120–S121

MEGA 90 • Heavy Duty



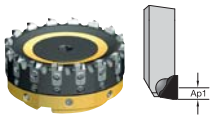
Ap1: 25,5mm
Cutting Edges: 4
Diameter: 125–315mm
Insert Style: LNPU2210
k = 90° Pages: S122–S123

KBDM™



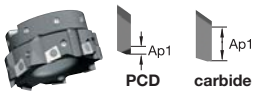
Ap1: 2,5/6,3/12,7mm
Cutting Edges: 1
Diameter: 63–200mm
Insert Style: KSDR10
Pages: S126–S128

KSCM™ AluMill™



Ap1: 3mm
Cutting Edges: 1
Diameter: 63–315mm
k = 90° Pages: S131–S134

Fix-Perfect™ 90° • Aluminium

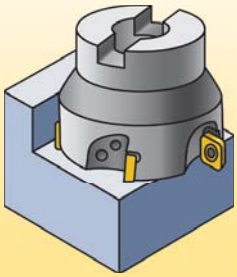


Ap1: 9,5mm (carbide)
Ap1: 2,5–5,2mm (PCD)
Cutting Edges: 4 (carbide)
1 (PCD)
Diameter: 40–315mm
Insert Style: BGHX15L5
k = 90° Pages: S143–S149

● first choice
○ alternate choice

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Shoulder Mills



Mill 4-11™



Ap1: 11mm
Cutting Edges: 4
Diameter: 16–80mm
Insert Style: LN*U1104
k = 90° Pages: T4–T10

Mill 4-15™



Ap1: 15,5mm
Cutting Edges: 4
Diameter: 25–160mm
Insert Style: LN*U15T6
k = 90° Pages: T14–T20

Mill 1-7™



Ap1: 7mm
Cutting Edges: 2
Diameter: 12–20mm
Insert Style: EDPT0703
k = 90° Pages: T24–T25

Mill 1-10™



Ap1: 10mm (carbide)
Ap1: 4mm (PCD)
Cutting Edges: 2
Diameter: 12–100mm
Insert Style: ED*T10T3
k = 90° Pages: T29–T37

Mill 1-10™ Helical



Ap1: up to 45mm
Cutting Edges: 2
Diameter: 20–50mm
Insert Style: ED*T10T3
k = 90° Pages: T38–T44

Mill 1-14™



Ap1: 14mm
Cutting Edges: 2
Diameter: 20–160mm
Insert Style: ED*T1404
k = 90° Page: T47–T54

Mill 1-14™ Helical



Ap1: 27–54mm
Cutting Edges: 2
Diameter: 32–63mm
Insert Style: ED*T1404
k = 90° Pages: T57–T63

Mill 1-18™



Ap1: 18mm
Cutting Edges: 2
Diameter: 25–160mm
Insert Style: ED*T1805
k = 90° Pages: T69–T76

Mill 1-25™



Ap1: 25mm
Cutting Edges: 2
Diameter: 40–100mm
Insert Style: KE*25L5
k = 90° Pages: T79–T83

5720VZ16



Ap: 16mm
Cutting Edges: 2
Diameter: 25–80mm
Insert Style: ZDET16M5
k = 90° Pages: T86–T91

KSSM™ 90° • IC 10mm



Ap1: 6,6mm
Cutting Edges: 4
Diameter: 25–100mm
Insert Style: SP*T10T3
k = 90° Pages: T97–T101

KSSM™ 90° • IC12mm



Ap1: 9,2mm
Cutting Edges: 4
Diameter: 50–200mm
Insert Style: SD*T1204
k = 90° Pages: T102–T106

KSSM™-KSSP • Helical 90° • IC 12mm



Ap1: 32–61mm
Cutting Edges: 4
Diameter: 50–80mm
Insert Style: SD*T1204
k = 90° Pages: T109–T113

5230VS09



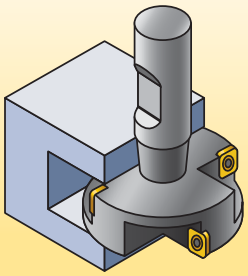
Cutting Edges: 4
Diameter: 50mm
Insert Style: SDHT09T3/ SDMW09T3
k = 90° Pages: T115–T117

5230VS12

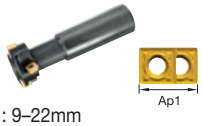


Cutting Edges: 4
Diameter: 63–100mm
Insert Style: SDHT1204/ SDMW1204
k = 90° Pages: T118–T120

Slotting



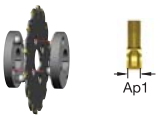
KTMS™ Slotting Cutter



Ap1: 9–22mm
Diameter: 21–50mm
Insert Style: SDMT
Pages: U3–U4

k = 90°

KVNS™ A2™ Slotting Cutters



Ap1: 1,6–4mm
Cutting Edge: 1
Diameter: 63–250mm
Pages: U7–U10

k = 90°

90° SN Slotting Cutters



B min: 4–14mm
Cutting Edges: 4
Diameter: 80–250mm
Insert Style: SNHX
Pages: U13–U15

k = 90°

90° LN Slotting Cutters



B min: 6–12mm
Cutting Edges: 4
Diameter: 80–200mm
Insert Style: LNEU/LNEQ
Pages: U17–U22

k = 90°

KSSM™ Slotting Cutters • IC 10



B min: 14–18mm
Cutting Edges: 4
Diameter: 100–315mm
Insert Style: SP*T10T3
Pages: U25–U37

k = 90°

KSSM™ Slotting Cutters • IC 12



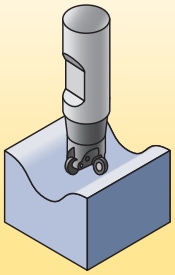
B min: 18–23,3mm
Cutting Edges: 4
Diameter: 125–315mm
Insert Style: SD*T1204
Pages: U38–U52

k = 90°

● first choice
○ alternate choice

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Copy Mills



7792VXP06



Ap: 0,9mm
Cutting Edges: 4
Diameter: 16–35mm
Insert Style: XP*T0603
Pages: V4–V8

7792VXD09



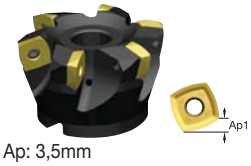
Ap: 1,5mm
Cutting Edges: 4
Diameter: 25–66mm
Insert Style: XD*T0904
Pages: V9–V17

7792VXD12



Ap: 2,5mm
Cutting Edges: 4
Diameter: 32–160mm
Insert Style: XD*T1205
Pages: V18–V26

7792VXE16



Ap: 3,5mm
Cutting Edges: 4
Diameter: 40–160mm
Insert Style: XE*1605
Pages: V27–V32

KenFeed™ 2X Series



HF

Ap1: 1,5mm
Cutting Edges: 6
Diameter: 25–80mm
Insert Style: WOEJ09
Pages: V38–V42

Rodeka™ 10



Ap: 5mm
Cutting Edges: 8
Diameter: 25–80mm
Insert Style: RN*J10
Pages: V46–V52

Rodeka™ IC12



Round

Ap1: 3mm/6mm
Cutting Edges:12/8
Diameter: 32–100mm
Insert Style: RN*J12
Pages: V53–V59

Rodeka 16



Ap: 4mm
Cutting Edges: 12
Diameter: 50–160mm
Insert Style: RN*J16
Pages: V60–V62

Rodeka 12X



Ap: 6mm
Cutting Edges: 8
Diameter: 40–80mm
Insert Style: RNGJ12
Pages: V64–V66

KSRM™ • IC12



Round

Ap1: 6mm
Diameter: 32–100mm
Insert Style: RP*T1204
Pages: V70–V75

KSRM™ • IC16



Round

Ap1: 8mm
Diameter: 40–125mm
Insert Style: RP*T1605
Pages: V77–V80

KSRM™ • IC20



Round

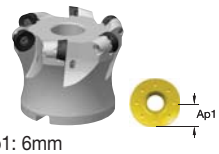
Ap1: 10mm
Diameter: 63–200mm
Insert Style: RCTG2006
Pages: V82–V84

7713VR10



Ap1: 5mm
Diameter: 20–63mm
Insert Style: RP*10
Pages: V87–V92

7713VR12



Ap1: 6mm
Diameter: 25–80mm
Insert Style: RP*12
Pages: V93–V98

5505VX



Ap1: 16–50mm
Diameter: 16–50mm
Insert Style: XPNT
Pages: V101–V108

KDMB™ Ball Nose Platform



Ap1: 3–16mm
Cutting Edges: 1
Diameter: 6–32mm
Insert Style: KDMB
Pages: V111–V127

(continued)

(Copy Mills Application Selection Guide — continued)

KDMT™ Platform • KDMS



Ap1: up to 8mm
Cutting Edges: 1
Diameter: 8–32mm
Insert Style: KDMS
Pages: V128–V134

KDMT™ High Feed



HF

Ap1: up to 8mm
Cutting Edges: 1
Diameter: 6–20mm
Insert Style: KDMT
Pages: V128–V134

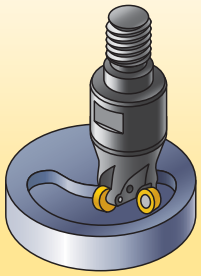
Z-Axis Plunge Mill



k = 88.5°

Ap1: 11mm
Cutting Edges: 4
Diameter: 32–160mm
Insert Style: SD*T1204
Pages: V137–V141

Ceramic Mills



KCRA



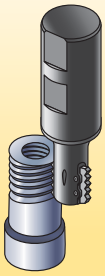
Ap: 6,4mm
Diameter: 40–80mm
Insert Style: RNGN1204
Pages: V146–V149

KIPR



Ap: 6,3mm
Diameter: 16–40mm
Insert Style: RPGN06/ RPGN09/RPGN12
Pages: V153–V157

Thread Mills



Indexable Thread Mills • Parallel and Conical Threads



Inserts: TM24, TM25, TM40, TM41
Diameter: 11,5–52mm
Pages: W4–W27

KTMD U Series



Diameter: 14,8–56mm
Pages: W29–W37

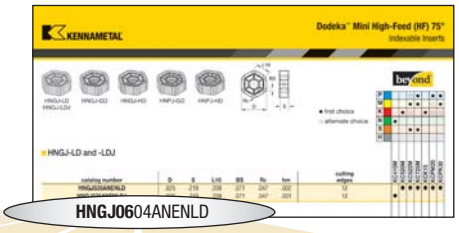
TMS Thread Milling System



Diameter: 9–46mm
Mini Shank: STN10
Normal Shank: STN11, STN16, STN27, STN38
Long Shank: STN16, STN27, STN38
Pages: W39–W47

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



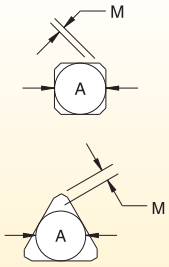
H — Insert Shape

A	Parallelogram 85°	
C	Rhomboid 80°	
E	75°	
H	Hexagon 120°	
L	Rectangular 90°	
O	Octagon 135°	
R	Round —	
S	Square 90°	
T	Triangular 60°	
X	Kennametal Standard Form	

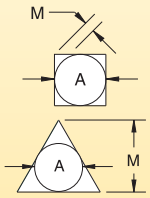
N — Insert Clearance Angle

A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°

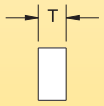
G — Tolerance Class



Indexable inserts with facets/wipers



Indexable inserts with corner radii



Insert thickness

J — Geometry and Clamping Type

06 — Size

A	"L" for shapes C	T	R	O	C	H	E
6,00	–	–	06	–	–	–	–
6,35	06	11	06	02	06	03	06
8,00	–	–	08	–	–	–	–
9,52	09	16	09	04	09	05	09
10,00	–	–	10	–	–	–	–
12,00	–	–	12	–	–	–	–
12,70	12	22	12	05	12	07	13
15,88	15	27	15	06	16	09	16
16,00	–	–	16	–	–	–	–
19,05	19	33	19	07	19	11	19
20,00	–	–	20	–	–	–	–
25,00	–	–	25	–	–	–	–
25,40	25	44	25	10	25	14	26

For shapes A, L, and X, see position #1; use length of leading cutting edge.

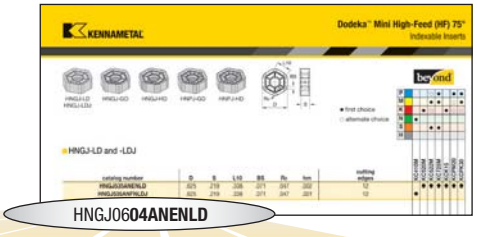
tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"	tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"
A	0,025	0,005	0,025	J	0,05–0,13*	0,005	0,025
B	0,025	0,005	0,13	K	0,05–0,13*	0,013	0,025
C	0,025	0,013	0,025	L	0,05–0,13*	0,025	0,025
D	0,025	0,013	0,13	M	0,05–0,10*	0,05–0,25*	0,13
E	0,025	0,025	0,025	N	0,05–0,10*	0,05–0,25*	0,025
F	0,013	0,005	0,025	P**	0,038	0,038	0,038
G	0,025	0,025	0,13	U	0,08–0,25*	0,13–0,30*	0,13
H	0,013	0,013	0,025	—	—	—	—

*See table below for tolerances according to insert size and class.
**Kennametal standard only.

A	tolerances on "A"		tolerances on "M"	
	classes J, K, L, M, N	class U	classes M & N	class U
4,76–10,00	0,051	0,076	0,076	0,127
11,11–14,29	0,076	0,127	0,127	0,203
15,00–20,64	0,102	0,178	0,152	0,279
22,00–31,16	0,127	0,254	0,178	0,381
31,75–35,00	0,152	0,254	0,203	0,381

symbol	hole	shape of hole	chipbreaker	shape of insert's section
N	without		without	
R			single sided	
F			double sided	
A	with	cylindrical hole	without	
M			single sided	
G			double sided	
W		partly cylindrical hole, 40–60° countersink	without	
T			single sided	
Q		partly cylindrical hole, 40–60° double countersink	without	
U			double sided	
B		partly cylindrical hole, 70–90° countersink	without	
H			single sided	
C		partly cylindrical hole, 70–90° double countersink	without	
J			double sided	
X	special design			

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.

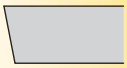


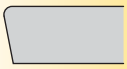
04	AN	E	N	L	D	
Thickness	Corner Configuration	Cutting Edge Form	Insert Hand	Edge Prep Size	Rake Face Angle	Added Info



insert thickness

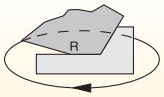
T	
2,38	02
3,18	03
3,97	T3
4,76	04
5,56	05
6,35	06
7,94	07

F  Sharp

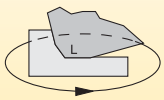
E  Honed

T  T-land

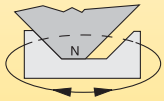
S  Honed T-land



direction of cutter rotation



direction of cutter rotation



direction of cutter rotation

J = Polished rake face

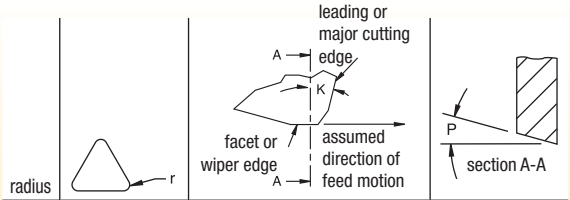
P = Partial T-land

W = Wiper/radiused facet

L = Light — sharp or lightly honed and/or T-land

G = General — medium hone and/or T-land

H = Heavy — large hone and/or T-land



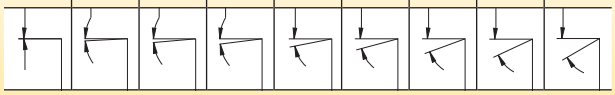
MO	round insert
01	0,1mm
02	0,2mm
04	0,4mm
05	0,5mm
08	0,8mm
10	1,0mm
12	1,2mm
15	1,5mm
16	1,6mm
24	2,4mm
32	3,2mm

If letter is replaced by number(s), refer to table for radius "r".

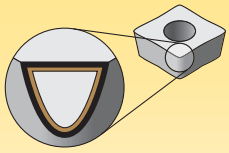
lead angle K	
A	45°
D	60°
E	75°
P	90°

wiper edge clearance P	
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°

N	A	B	C	P	D	E	F	G
0° or less	3°	5°	7°	11°	15°	20°	25°	30°



Nominal or average angle of rake on insert face at leading cutting edge before edge prep and before installation.

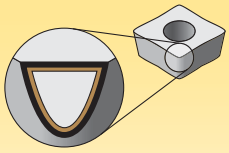


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Grades

Coating	Grade Description	wear resistance ⟷ toughness: 05	10	15	20	25	30	35	40	45
GH1	Uncoated submicron carbide grade with high wear resistance. GH1 is suitable for machining of aluminium and non-ferrous materials. Also a good choice for the finishing of cast iron. This grade can be used both wet and dry and is designed for light and general machining.	K, N	K, N	K, N						
GH2	Uncoated, fine grained carbide grade with good strength. GH2 is suitable for machining of aluminium and non-ferrous materials. Also good choice for cast iron for medium toughness requirements. This grade can be used both wet and dry and is designed for light and general machining.				K, N, S	K, N, S	K, N			
K110M	Uncoated carbide grade K110M is a universal grade for machining non-ferrous material. For use in light and general machining. K110M can be used with or without coolant.		K, N, S	K, N, S	N					
K115M	Uncoated carbide grade. K115M is a premium uncoated grade designed for high edge-wear resistance in non-ferrous and cast iron materials. Recommended to be used with coolant.		K, N	K, N						
K313	Uncoated carbide grade. K313 is suitable for machining cast iron, high-temperature alloys and non-ferrous materials. This grade can be used both wet and dry and is designed for light and general machining.		K, N, S	K, N, S						
KBK50	A high CBN content, PcBN tip brazed onto a carbide insert. Designed to machine at highest speeds and tool life on semi-finishing and finishing cast iron materials.		K	K						
KC410M	PVD, TiB_2 coating on grade KC410M is extremely hard and provides very good wear characteristics at higher cutting speeds. KC410M resists built-up edge, can help reduce burring, and generates excellent surface finishes. The grade is best suited for aluminium with <10% silicon and other non-ferrous materials.		N	N						



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

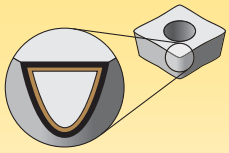
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

wear resistance ← → **toughness**

Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC422M	The PVD TiB_2 coating is very wear resistant. Together with hard coating and a tough substrate, this is an excellent combination for medium to roughing applications in aluminium <10% silicon and other non-ferrous materials.	N									
KC505M	Coated carbide with PVD TiAlN. KC505M is a highly wear-resistant grade; primarily used for light maching applications in steel and hardened steels.	P									
		H									
KC510M	Coated carbide grade with a TiAiN coating (PVD). KC510M is a highly wear-resistant grade primarily for use in milling aluminium and high-temperature alloys in light applications. Can also be used for machining of steel and hardened steel.	P									
		N									
		S									
		H									
KC514M	Coated carbide grade with a thicker PVD TiAlN coating. KC514M combines high wear resistance with good toughness. Primarily for light to medium machining of cast irons. This grade can be used both wet and dry.	K									
KC515M	Premium-coated grade K10 substrate with built-in wear resistance and (TiAlN) coating for extended life during finishing applications. Used in finish ball nose and back draft inserts for the die and mould industry. Capable of running at moderate to high cutting speeds.	P									
		M									
		K									
KC520M	Coated carbide grade with TiAlN coating (PVD). KC520M is a carbide grade developed specifically for general machining of ductile cast iron. This grade can be used with or without coolant.	K									
KC522M	Coated carbide grade with a AlTiN (PVD) coating. KC522M is engineered to provide better performance in general machining of high-temperature alloys and stainless steel. KC522M resists breakage and offers improved wear resistance and increased strength.	P									
		M									
		K									
		S									



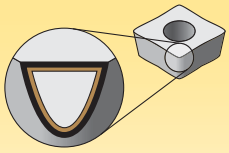
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

Grades

Coating	Grade Description	wear resistance ← → toughness	05	10	15	20	25	30	35	40	45
KC524M	Coated carbide grade with a thicker PVD TiAlN coating. KC524M combines good wear resistance with high toughness. Primarily for general machining of all cast irons. This grade can be used both wet and dry.	K				■	■	■	■		
KC525M	Coated carbide grade with a TiAlN coating (PVD). New universal carbide grade for milling steel, stainless steel, and high-temperature alloys. KC525M can be used with or without coolant. Primarily for use in light and general machining.	P M S				■ ■ ■	■ ■ ■	■ ■ ■			
KC530M	Premium PVD-coated carbide grade (P40) with a TiAlN coating. Enables extended tool life at moderate feeds and high cutting speeds. First choice for milling in all steels, including die and mould steels. Recommended for use without coolant.	P M					■ ■	■ ■	■		
KC725M	Coated carbide grade with an advanced PVD TiAlN coating. KC725M is a high-performance grade for milling steel, stainless steel, and ductile cast iron. The good thermal shock resistance of the substrate makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.	P M S						■ ■ ■	■ ■ ■	■ ■ ■	
KC735M	PVD/TiN coated carbide grade. This grade offers an unusual combination of high toughness and wear resistance. Even under extreme toughness requirements, it achieves outstanding results in general and heavy-machining applications. Suitable for dry and wet machining.	P M						■ ■	■ ■	■	
KCK15	Coated carbide grade with CVD multilayer coating (TiN/MT TiCN/Al_2O_3) and advanced Beyond™ post-coat treatment. KCK15 is a wear-resistant grade with balanced toughness for general milling of cast irons at higher speeds. Best results in dry, but can also be used wet.	K		■	■	■					
KCK20	A new PVD multilayer AlTiN + AlCrN coated carbide with an excellent combination of wear resistance and coating strength. The KCK20 grade is specifically engineered to maximise coating adhesion and edge strength, making this grade ideal in wet interrupted cutting of gray and ductile irons, and can also be used in dry conditions. It can be used in a wide range of applications, from finishing to roughing, to maximise productivity wherever strength and reliability are needed.	K		■	■	■	■				



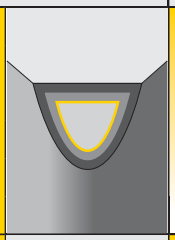
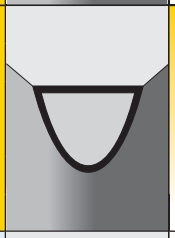
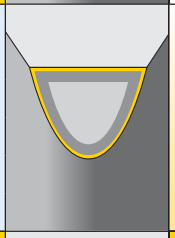
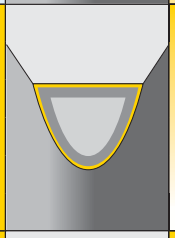
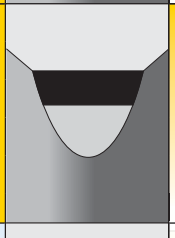
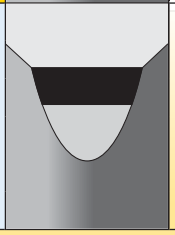
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

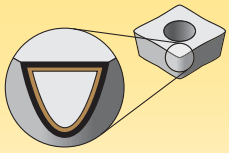
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

wear resistance ⟷ **toughness**

Grades

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KCPK30		Coated carbide grade with CVD multilayer (TiN/TiCN/Al_2O_3) and advanced Beyond™ post-coat treatment. Substrate is very tough. KCPK30 has a wide application area in general and roughing milling of steels and cast irons. Performs best dry, but can also be used wet.	P					■	■	■	■	
			M									
			K					■	■	■	■	
			N									
			S									
			H									
KCPM40		Coated carbide grade with an advanced PVD TiAlN/AlCrN coating. Tough substrate with excellent capability at higher temperatures. KCPM40™ is the first choice for milling steel and stainless steel. Good thermal shock resistance makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.	P					■	■	■	■	
			M					■	■	■	■	
			K									
			N									
			S									
			H									
KCSM30		Submicron substrate coated with high-performance TiAlN-PVD coating is an excellent choice for titanium, but also high-temperature alloys and stainless with higher speeds for light to medium cuts. First choice for application with thin to medium chip thickness, dry and wet.	P				■	■	■			
			M					■	■	■		
			K									
			N									
			S				■	■	■	■		
			H									
KCSM40		Coated carbide grade with an advanced PVD TiAlN/TiN coating. Premium substrate with newly developed binder composition. KCSM40 is a high-performance grade for titanium, super alloys, and stainless steel. High thermal shock resistance of the substrate makes this grade ideal for wet machining. First choice for roughing and unsuitable cutting conditions.	P									
			M					■	■	■	■	
			K									
			N									
			S					■	■	■	■	
			H									
KD1400		A PCD-tip brazed to a carbide carrier for high-speed machining of non-ferrous materials. KD1400 has excellent chipping resistance with good wear characteristics. Coolant is preferred.	P									
			M									
			K									
			N	■	■	■						
			S									
			H									
KD1410		A PCD-tip brazed to carbide for machining aluminium with a very high silicon content, abrasive non-ferrous materials, and fibre-reinforced plastics. KD1410 can be used at very high cutting speeds, even where good surface finishes are required. This grade can be used both wet or dry but is suggested to use coolant where good surface finishes are required.	P									
			M									
			K									
			N		■	■						
			S									
			H									

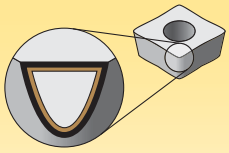


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Grades

Coating	Grade Description	wear resistance ← → toughness	05	10	15	20	25	30	35	40	45
KD1415	PCD-tip brazed to carbide for general machining of aluminium with a low silicon content, non-ferrous heavy metals, and plastics. KD1415™ can be used at high cutting speeds and for continuous cutting, even where outstanding surface finishes are required. KD1415 is suitable for wet and dry machining.	N		■	■						
KD1425	A PCD-tipped brazed to a carbide carrier for high-speed machining of aluminium and other non-ferrous materials. KD1425™ provides superior wear resistance with moderate toughness to resist chipping. Coolant is preferred.	N	■	■	■						
KTPK20	Cermet with PVD-TiAlN/AlCrN multi-layer coating. This tough cermet is primarily used in light and general machining of steel, stainless steels, and cast irons. Performs best dry.	P M K			■ ■ ■	■ ■ ■	■ ■				
KY3500	A ceramic cutting material based on micro-grain Si_3N_4 primarily for use in light to general machining of grey cast iron and ferritic ductile cast iron. Dry machining is preferred while using this grade.	K				■	■	■	■		
KYS30	KYS30™ is the latest in the line of α/βSiAlON grades for general purpose to finish machining of high-temperature alloys. This grade provides excellent wear characteristics, with better toughness and thermal shock resistance than whisker ceramics. KYS30 also gives improved thermal stability.	S				■	■	■			
KYSP30	Combines excellent wear properties, fracture toughness, and thermal shock resistance for general purpose to finish machining of high-temperature alloys. KYSP30 provides superior depth-of-cut notch resistance compared to whisker ceramics.	S					■	■	■		
MP91M	CVD-coated carbide grade with TiN/MT-TiCN/Al_2O_3. Tough substrate in combination with wear resistant for roughing and semi-finishing of steel, cast iron, and hardened materials.	P K H				■ ■	■ ■ ■	■ ■ ■	■ ■ ■		



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

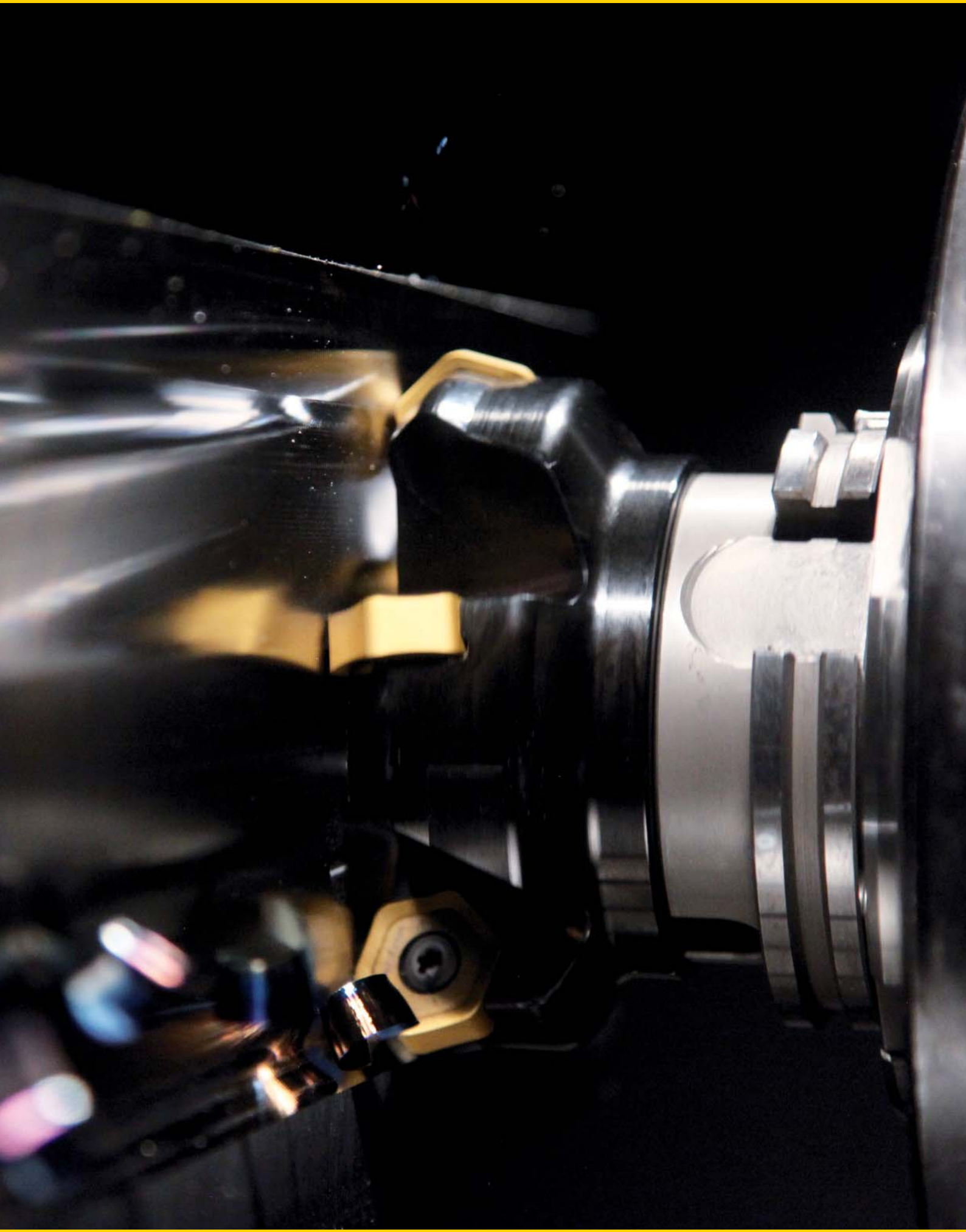
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

wear resistance ⟷ toughness

Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
SC3025	Coated carbide grade with CVD multilayer coating (TiN/TiCN/Al_2O_3). SC3025 is a wear-resistant grade with balanced toughness for general milling of cast irons at higher speeds. Best results when using dry, but can also be used wet.	K									
SC6525	Coated carbide grade with CVD multi-layer (TiN/TiCN/Al_2O_3). Tough substrate with good speed capability. SC6525 has a wide application area in general and roughing milling of steels, stainless steels, and cast irons. Performs best dry, but can also be used wet.	P, M, K									
SP4019	Fine-grained substrate coated with PVD TiAlN nano-composite. First choice for applications with thin to medium chip thickness. This grade works on many workpiece materials, dry and wet.	M, K, N, S, H									
SP6519	Coated carbide grade with PVD TiAlN nano-composite coating on a tough substrate. Primarily for use in general and heavy machining, dry and wet.	P, M, K, N, S, H									
X400	Coated carbide grade with thick PVD TiAlN nanocomposite on X-Grade™ technology substrate. With excellent toughness, good choice for difficult cutting conditions on alloyed and hardened steels. Usable in combination with high feeds.	P, H									
X500	CVD TiN/TiCN/TiN coated carbide on tough substrate (X-Grade™ technology). For difficult applications with heavy impacts, vibrations, or unstable conditions. High stability against thermal cracks. Excellent grade for high-temperature alloys, stainless steels, and titanium.	P, M, S									
X700	PVD TiAlN nano-coating on premium substrate (X-Grade™ technology). Milling of stainless steel, super alloys, and titanium with medium applications.	M, S									



Indexable Milling • Face Milling

Dodeka • Leader in Advanced Face Milling (12 Edges per Insert) S2–S27

Mill 16 • 16-Edged Inserts for Machining Cast Iron Materials S30–S37

KSSM 45° • Conventional Machining S40–S43

KSOM Mini • KSOM • Best in Class-Free Cutting Face Mills S44–S56

KSSM8+ • 8-Edged Double-Sided Face Mills with Lead Angle Close to 90° S58–S64

Fix-Perfect • Cast Iron Rougher and Finisher S66–S85

HexaCut Series • Machining Automotive Components S86–S99

KSSR • Cast iron • Roughing and Finishing 84° Lead S100–S106

KCFM 45° • Cast Iron Finishing Milling S108–S113

MEGA 45 • For True Heavy-Duty Machining S114–S117

MEGA 60 and 90 • For True Heavy-Duty Machining S118–S123

KBDM • PCD Face Milling S124–S129

KSCM AluMill • KSCM PCD AluMill S130–S141

Fix-Perfect Aluminium S142–S150

Dodeka™ Series

Leader in Advanced Face Milling Applications

Primary Application

Dodeka Mini, Dodeka, and Dodeka MAX™ platforms are the most comprehensive face milling boosters on the market today. Twelve true cutting edges per insert mean low cost-per-edge and high productivity. With Beyond™ premium milling grades, achieve up to 30% higher metal removal rates (MRR), 25% lower cutting forces due to soft cutting action, and up to 35% better tool life in light to heavy machining.

Features and Benefits

Dodeka Series • Most comprehensive face milling platform on the market. Providing an excellent cost-per-cutting edge with market leading performance. The Dodeka Series platform will cover all your face milling application needs.

All cutter body variations can be loaded with one insert style.

Dodeka Mini High-Feed 15°
Dodeka High-Feed 15°



12 True Cutting Edges



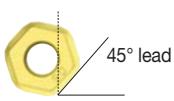
Dodeka Mini **Ap1 max = 1,6mm**
Dodeka **Ap1 max = 2,2mm**

Dodeka Mini HF and Dodeka HF can be loaded with all Dodeka Mini standard inserts, except wiper inserts.

Dodeka Mini 45°
Dodeka 45°
Dodeka MAX 45°



12 True Cutting Edges



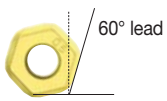
Dodeka Mini **Ap1 max = 3,2mm**
Dodeka **Ap1 max = 4,5mm**
Dodeka MAX **Ap1 max = 8,0mm**

Best-in-class leader in face milling up to Ap1 max = 8mm.

Dodeka Mini 60°



12 True Cutting Edges



Dodeka Mini **Ap1 max = 4,4mm**

Achieve a higher axial depth-of-cut capability up to Ap1 = 4,4mm with standard Dodeka Mini inserts.



Dodeka™ Mini Series

insert size HN.J06
Ap1 max = 4,4mm
pages S4–S16



Dodeka

insert size HN.J0905
Ap1 max = 4,5mm
pages S17–S24



Dodeka MAX™

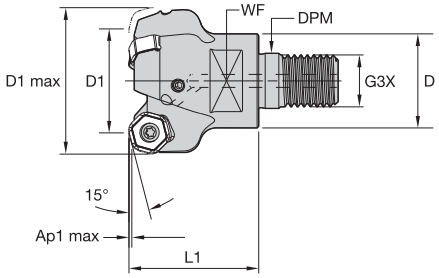
insert size HN.J1307
Ap1 max = 8mm
pages S25–S27

P M K N S

Applicable in most material groups • Excellent results in machining titanium

- Twelve cutting edges per insert.
- High-feed capability.





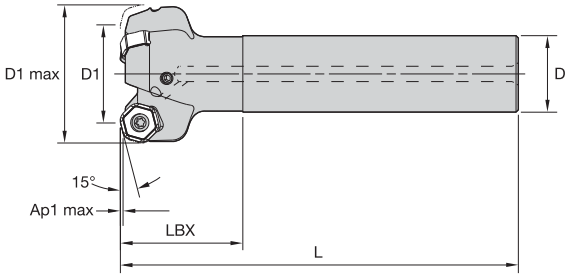


Dodeka Mini High-Feed 15° • Screw-On End Mills

order number	catalogue number	D1	D1 max	D	DPM	G3X	L1	WF	Ap1 max	Z	kg	max RPM
4153687	**KSHRHF025D03M16HN06**	25	38,2	29	17,0	M16	32,0	22	1,6	3	0,16	20000
4153689	**KSHRHF032D04M16HN06**	32	45,2	29	17,0	M16	40,0	22	1,6	4	0,25	17600

- Twelve cutting edges per insert.
- High-feed capability.







Dodeka Mini High-Feed 15° • Cylindrical End Mills

order number	catalogue number	D1	D1 max	D	L	LBX	Ap1 max	Z	kg	max RPM
4153703	**KSHRHF025D03A20HN06L120**	25	38,2	20	120	32	1,6	3	0,31	20000
4153704	**KSHRHF032D03A25HN06L130**	32	45,2	25	130	40	1,6	3	0,52	17600

Spare Parts



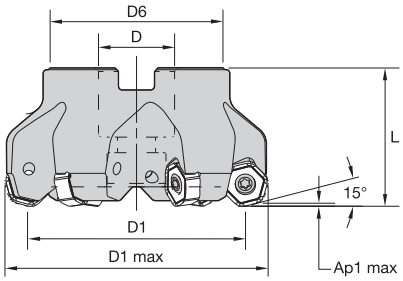


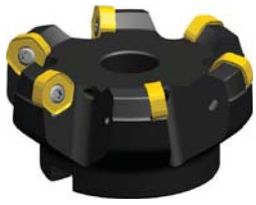


D1	insert screw	Nm	wrench
25	**193.492**	3,5	**170.025**
32	**193.492**	3,5	**170.025**

- Twelve cutting edges per insert.
- High-feed capability.







Dodeka Mini High-Feed 15° • Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	kg	max RPM
4153706	**KSHRHF040A05RS15HN06**	40	53,2	22	38	40	1,6	5	0,29	15800
4153707	**KSHRHF050A05RS15HN06**	50	63,1	22	38	40	1,6	5	0,39	12700
4153708	**KSHRHF063A06RS15HN06**	63	76,1	22	50	40	1,6	6	0,67	10100
4153709	**KSHRHF080A08RS15HN06**	80	93,1	27	60	50	1,6	8	1,26	7900

Spare Parts

D1	 insert screw	 Nm	 wrench	 socket-head cap screw
40	**193.492**	3,5	**170.025**	**125.025**
50	**193.492**	3,5	**170.025**	**125.025**
63	**193.492**	3,5	**170.025**	**125.025**
80	**193.492**	3,5	**170.025**	**125.230**



Dodeka Mini High-Feed

First choice for long reach face milling applications or light fixtures.

Chip thinning effect due to lead angle 14,5°. Tremendous enlargement of feed rate and metal removal rate (MRR).

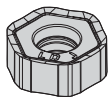
Up to 40% shorter machining cycle time versus conventional milling.

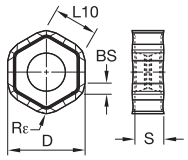
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

Indexable Inserts

- First choice for machining aluminium.


HNGJ-LDJ



HNGJ-LDJ

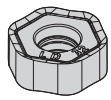
● first choice
○ alternate choice

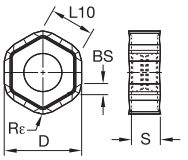
		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											

HNGJ-LDJ

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANFNLDJ	12	1,54	6,44	1,0	4,48	0,02	12	●	●	–	–	–	–	–	–	–	–

- First choice for light machining.


HNGJ-LD



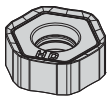
HNGJ-LD

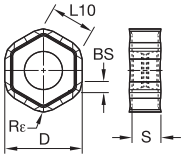
HNGJ-LD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANENLD	12	1,54	6,44	1,0	4,48	0,04	12	–	–	●	●	●	●	●	●	●	●
HNGJ060432ANENLD	12	–	6,43	3,2	4,48	0,05	12	–	–	–	–	–	●	–	●	–	–

Face Milling

• First choice for high-performance heavy roughing.


HNGJ-HD



HNGJ-HD

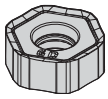
● first choice
○ alternate choice

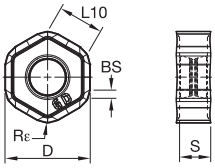
P					○	●		●	●	○			
M					●	●		●	○	●			
K			●	●	○		●	○					
N	●	●	○										
S					●	●				●			
H													

HNGJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANSNHD	12	1,45	6,44	1,0	4,40	0,14	12	–	–	–	–	●	–	●	●	●	●

• First choice for general purpose.


HNPJ-GD

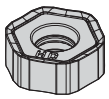


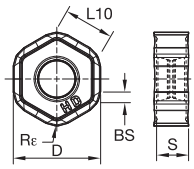
HNPJ-GD

HNPJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ0604ANSNGD	12	1,45	6,44	1,0	4,45	0,08	12	–	–	–	●	●	●	●	●	●	●

• First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ0604ANSNHD	12	1,45	6,44	1,0	4,40	0,14	12	–	–	–	●	●	●	●	●	●	●
HNPJ060432ANSNHD	12	–	6,43	3,2	4,42	0,10	12	–	–	–	–	●	●	●	●	●	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

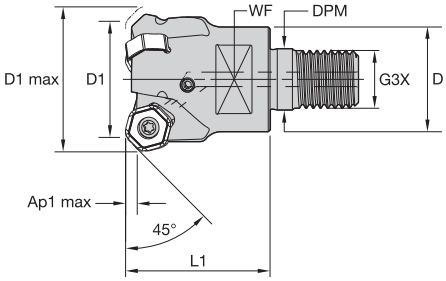
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40%–100%			
.F..LDJ	0,45	**1,27**	2,22	0,33	**0,91**	1,57	0,25	**0,68**	1,17	0,21	**0,59**	1,01	0,20	**0,54**	0,93	.F..LDJ
.E..LD	0,51	**1,65**	2,81	0,37	**1,17**	1,97	0,27	**0,87**	1,46	0,24	**0,76**	1,27	0,22	**0,70**	1,16	.E..LD
.S..GD	0,92	**2,22**	3,41	0,66	**1,57**	2,38	0,49	**1,17**	1,75	0,43	**1,01**	1,52	0,39	**0,93**	1,39	.S..GD
.S..HD	0,92	**2,35**	3,89	0,66	**1,67**	2,70	0,49	**1,23**	1,98	0,43	**1,07**	1,72	0,39	**0,98**	1,57	.S..HD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.



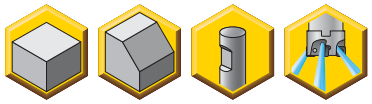


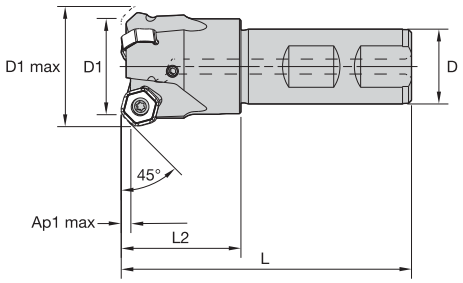


Dodeka Mini 45° • Screw-On End Mills

order number	catalogue number	D1	D1 max	D	DPM	G3X	L1	WF	Ap1 max	Z	kg	max RPM
4125882	**KSHR025D03M16HN06**	25	33,2	29	17,0	M16	32,0	22	3,2	3	0,13	20000
4126343	**KSHR032D03M16HN06**	32	40,2	29	17,0	M16	40,0	22	3,2	3	0,21	17600
4126344	**KSHR032D04M16HN06**	32	40,2	29	17,0	M16	40,0	22	3,2	4	0,21	17600

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.







Dodeka Mini 45° • Weldon® End Mills

order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	kg	max RPM
4126348	**KSHR025D03B20HN06**	25	33,2	20	82	32	3,2	3	0,21	20000
4126349	**KSHR032D03B25HN06**	32	40,2	25	97	40	3,2	3	0,40	17600
4126350	**KSHR032D04B25HN06**	32	40,2	25	97	40	3,2	4	0,41	17600

Spare Parts

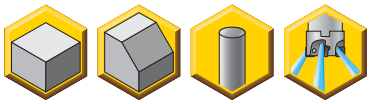


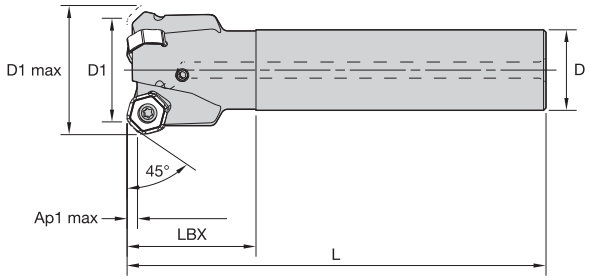




D1	insert screw	Nm	wrench
25	**193.492**	3,5	**170.025**
32	**193.492**	3,5	**170.025**

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.







Dodeka Mini 45° • Cylindrical End Mills

order number	catalogue number	D1	D1 max	D	L	LBX	Ap1 max	Z	kg	max RPM
4126351	**KSHR025D02A20HN06L120**	25	33,2	20	120	32	3,2	2	0,28	20000
4126352	**KSHR025D03A20HN06L120**	25	33,2	20	120	32	3,2	3	0,28	20000
4126386	**KSHR025D03A25HN06L200**	25	33,2	25	200	32	3,2	3	0,71	20000
4126383	**KSHR032D03A25HN06L130**	32	40,2	25	130	40	3,2	3	0,50	17600
4126384	**KSHR032D04A25HN06L130**	32	40,2	25	130	40	3,2	4	0,50	17600

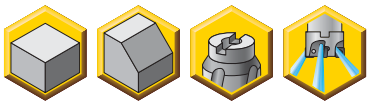
Spare Parts

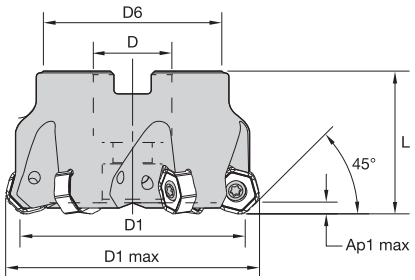


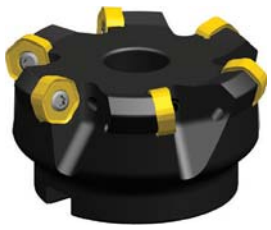


D1	insert screw	Nm	wrench
25	**193.492**	3,5	**170.025**
32	**193.492**	3,5	**170.025**

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.







Dodeka Mini 45° • Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	kg	max RPM
4126387	KSHR040A04RS45HN06	40	48,2	22	38	40	3,2	4	0,25	15800
4124313	KSHR040A05RS45HN06	40	48,2	22	38	40	3,2	5	0,25	15800
4126388	KSHR050A04RS45HN06	50	58,2	22	38	40	3,2	4	0,36	12700
4122886	KSHR050A05RS45HN06	50	58,2	22	38	40	3,2	5	0,37	12700
4126389	KSHR050A06RS45HN06	50	58,2	22	38	40	3,2	6	0,36	12700
4122887	KSHR063A04RS45HN06	63	71,2	22	50	40	3,2	4	0,59	10100
4122889	KSHR063A06RS45HN06	63	71,2	22	50	40	3,2	6	0,65	10100
4126390	KSHR063A08RS45HN06	63	71,2	22	50	40	3,2	8	0,64	10100
4126391	KSHR080A05RS45HN06	80	88,1	27	60	50	3,2	5	1,13	7900
4126392	KSHR080A08RS45HN06	80	88,1	27	64	50	3,2	8	1,25	7900
4126403	KSHR080A10RS45HN06	80	88,1	27	60	50	3,2	10	1,19	7900
4126404	KSHR100B06RS45HN06	100	108,1	32	80	50	3,2	6	1,73	6300
4126405	KSHR100B09RS45HN06	100	108,1	32	80	50	3,2	9	1,84	6300
4126406	KSHR100B12RS45HN06	100	108,1	32	80	50	3,2	12	1,84	6300
4126407	KSHR125B08RS45HN06	125	133,1	40	90	63	3,2	8	2,87	5050
4126408	KSHR125B12RS45HN06	125	133,1	40	90	63	3,2	12	2,98	5050
4124262	KSHR125B16RS45HN06	125	133,1	40	90	63	3,2	16	3,05	5050

Spare Parts

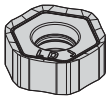


D1	insert screw	Nm	wrench	socket-head cap screw	coolant lock screw assembly	coolant lock screw	coolant shower plate
40	193.492	3,5	170.025	125.025	–	–	–
50	193.492	3,5	170.025	125.025	–	–	–
63	193.492	3,5	170.025	125.025	–	–	–
80	193.492	3,5	170.025	125.230	–	–	–
100	193.492	3,5	170.025	–	MS2189C	–	–
125	193.492	3,5	170.025	–	–	420.200	470.232

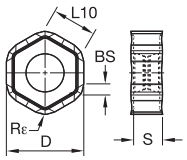
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

- First choice for machining aluminium.



HNGJ-LDJ



HNGJ-LDJ

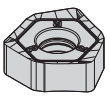
● first choice
○ alternate choice

		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											

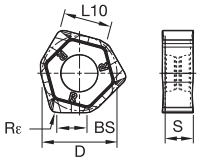
HNGJ-LDJ

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANFNLDJ	12	1,54	6,44	1,0	4,48	0,02	12	●	●	–	–	–	–	–	–	–	–

- Wiper insert for fine finishing aluminium.



Wiper XNGJ *



Wiper XNGJ *

XNGJ-LDJ3W

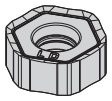
catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
XNGJ0604ANFNLDJ3W	12	4,80	7,20	1,6	4,51	0,02	3	–	●	–	–	–	–	–	–	–	–

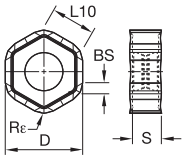
* For wiper insert XNGJ, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- First choice for light machining.

● first choice
○ alternate choice

P					○	●		●	●	○	
M					●	●		●	○	●	
K			●	●	○		●	○			
N	●	●	○								
S					●	●					●
H											


HNGJ-LD



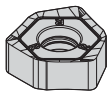
HNGJ-LD

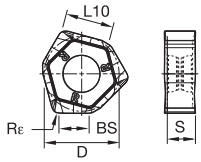
HNGJ-LD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANENLD	12	1,54	6,44	1,0	4,48	0,04	12	–	–	●	●	●	●	●	●	●	●
HNGJ060432ANENLD	12	–	6,43	3,2	4,48	0,05	12	–	–	–	–	–	●	–	●	–	–

* For wiper insert HNGJ-LD, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- Wiper insert for excellent floor finish.


Wiper XNGJ *

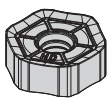


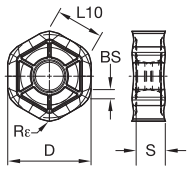
Wiper XNGJ *

XNGJ-LD3W

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
XNGJ0604ANENLD3W	12	4,80	7,20	1,6	4,51	0,05	3	–	–	●	–	●	●	–	–	●	●

* For wiper insert XNGJ, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.


HNGJ-HD

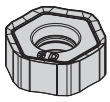


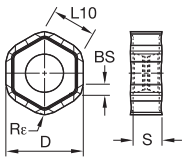
HNGJ-HD

HNGJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANSNHD	12	1,45	6,44	1,0	4,40	0,14	12	–	–	–	–	●	–	●	●	●	●

- First choice for general purpose.


HNPJ-GD



HNPJ-GD

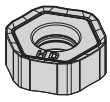
● first choice
○ alternate choice

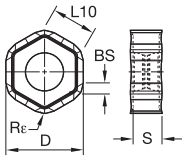
		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M					●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											

HNPJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ0604ANSNGD	12	1,45	6,44	1,0	4,45	0,08	12	–	–	–	●	●	●	●	●	●	●

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ0604ANSNHD	12	1,45	6,44	1,0	4,40	0,14	12	–	–	–	●	●	●	●	●	●	●
HNPJ060432ANSNHD	12	–	6,43	3,2	4,42	0,10	12	–	–	–	–	●	●	●	●	●	●

Recommended Starting Feeds

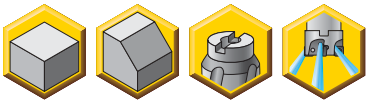
Recommended Starting Feeds [mm]

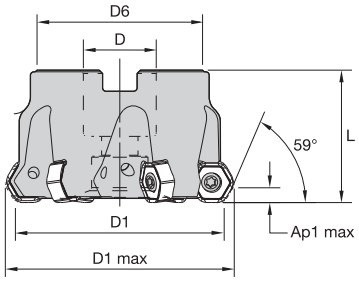
Light Machining	General Purpose	Heavy Machining

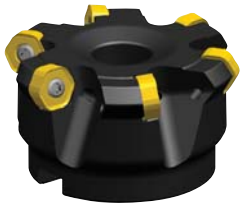
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,17	**0,46**	0,79	0,12	**0,33**	0,57	0,09	**0,25**	0,43	0,08	**0,22**	0,37	0,07	**0,20**	0,34	.F..LDJ
.E..LD	0,18	**0,59**	0,99	0,13	**0,43**	0,71	0,10	**0,32**	0,53	0,09	**0,28**	0,46	0,08	**0,25**	0,42	.E..LD
.S..GD	0,33	**0,79**	1,19	0,24	**0,57**	0,86	0,18	**0,43**	0,64	0,16	**0,37**	0,56	0,14	**0,34**	0,51	.S..GD
.S..HD	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Higher Ap1 max with standard inserts.
- Productivity booster in all materials.







Dodeka Mini 60° • Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	kg	max RPM
4147022	KSHR040A04RS60HN06	40	46,4	22	38	40	4,3	4	0,21	15800
4147713	KSHR040A05RS60HN06	40	46,4	22	38	40	4,3	5	0,21	15800
4147714	KSHR050A04RS60HN06	50	56,4	22	38	40	4,3	4	0,32	12700
4147715	KSHR050A05RS60HN06	50	56,4	22	38	40	4,3	5	0,32	12700
4147716	KSHR063A04RS60HN06	63	69,3	22	50	40	4,3	4	0,57	10100
4147717	KSHR063A06RS60HN06	63	69,3	22	50	40	4,3	6	0,59	10100
4147718	KSHR080A05RS60HN06	80	86,3	27	60	50	4,3	5	1,08	7900
4147719	KSHR080A08RS60HN06	80	86,3	27	60	50	4,3	8	1,15	7900
4147720	KSHR100B06RS60HN06	100	106,3	32	80	50	4,3	6	1,70	6300
4147721	KSHR100B09RS60HN06	100	106,3	32	80	50	4,3	9	1,78	6300
4147722	KSHR125B08RS60HN06	125	131,3	40	90	63	4,3	8	2,92	5050
4147723	KSHR125B12RS60HN06	125	131,3	40	90	63	4,3	12	2,96	5050

Spare Parts



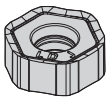
D1	insert screw	Nm	wrench	mounting screw	socket-head cap screw	coolant lock screw assembly	coolant lock screw	coolant shower plate
40	193.492	3,5	170.025	KLSSM22-39-CG	–	–	–	–
50	193.492	3,5	170.025	–	125.025	–	–	–
63	193.492	3,5	170.025	–	125.025	–	–	–
80	193.492	3,5	170.025	–	125.230	–	–	–
100	193.492	3,5	170.025	–	–	MS2189C	–	–
125	193.492	3,5	170.025	–	–	–	420.200	470.232

Insert Selection Guide

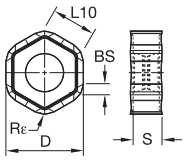
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

Indexable Inserts

- First choice for machining aluminium.



HNGJ-LDJ



HNGJ-LDJ

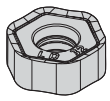
● first choice
○ alternate choice

P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											

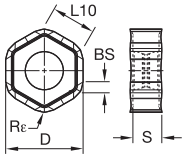
HNGJ-LDJ

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANFNLDJ	12	1,54	6,44	1,0	4,48	0,02	12	●	●	–	–	–	–	–	–	–	–

- First choice for light machining.



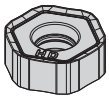
HNGJ-LD

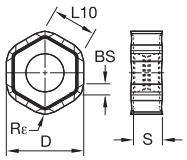


HNGJ-LD

HNGJ-LD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANENLD	12	1,54	6,44	1,0	4,48	0,04	12	–	–	●	●	●	●	●	●	●	●
HNGJ060432ANENLD	12	–	6,43	3,2	4,48	0,05	12	–	–	–	–	–	●	–	●	–	–


HNGJ-HD



HNGJ-HD

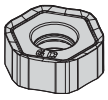
● first choice
○ alternate choice

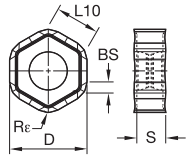
P					○	●		●	●	○			
M						●	●		●	○	●		
K				●	●	○		●	○				
N	●	●	○										
S						●	●				●		
H													

HNGJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ0604ANSNHD	12	1,45	6,44	1,0	4,40	0,14	12	–	–	–	–	●	–	●	●	●	●

- First choice for general purpose.


HNPJ-GD

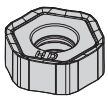


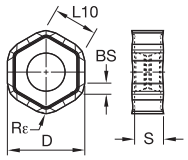
HNPJ-GD

HNPJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ0604ANSNGD	12	1,45	6,44	1,0	4,45	0,08	12	–	–	–	●	●	●	●	●	●	●

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ0604ANSNHD	12	1,45	6,44	1,0	4,40	0,14	12	–	–	–	●	●	●	●	●	●	●
HNPJ060432ANSNHD	12	–	6,43	3,2	4,42	0,10	12	–	–	–	–	●	●	●	●	●	●

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [mm]

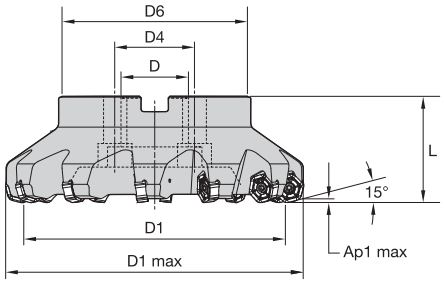
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,13	**0,37**	0,64	0,10	**0,27**	0,46	0,07	**0,20**	0,35	0,06	**0,18**	0,30	0,06	**0,16**	0,28	.F..LDJ
.E..LD	0,15	**0,48**	0,81	0,11	**0,35**	0,58	0,08	**0,26**	0,43	0,07	**0,23**	0,38	0,07	**0,21**	0,35	.E..LD
.S..GD	0,27	**0,64**	0,97	0,20	**0,46**	0,70	0,15	**0,35**	0,52	0,13	**0,30**	0,45	0,12	**0,28**	0,42	.S..GD
.S..HD	0,27	**0,68**	1,10	0,20	**0,49**	0,79	0,15	**0,37**	0,59	0,13	**0,32**	0,51	0,12	**0,29**	0,47	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- High feed rates for rough face milling.
- 2mm depth-of-cut capability.
- Twelve cutting edges per insert.







Dodeka High-Feed 15° • Shell Mills

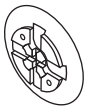
order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	kg	max RPM
4042332	**KSHRHF50A04RS15HN09**	50	67,9	22	–	38	40	2,2	4	0,41	11400
4042533	**KSHRHF63A05RS15HN09**	63	80,9	22	–	50	40	2,2	5	0,65	8950
4042534	**KSHRHF80A06RS15HN09**	80	97,9	27	–	60	50	2,2	6	1,24	7300
4042535	**KSHRHF100B08RS15HN09**	100	117,9	32	–	80	50	2,2	8	1,89	5900
4042536	**KSHRHF125B09RS15HN09**	125	142,9	40	–	90	63	2,2	9	3,23	4800
4042537	**KSHRHF160C12RS15HN09**	160	177,9	40	67	110	63	2,2	12	5,14	3900

Spare Parts









D1	insert screw	Nm	wrench	socket-head cap screw	coolant lock screw assembly	coolant lock screw	coolant shower plate
50	**193.492**	3,5	**170.025**	**125.025**	–	–	–
63	**193.492**	3,5	**170.025**	**125.025**	–	–	–
80	**193.492**	3,5	**170.025**	**125.230**	–	–	–
100	**193.492**	3,5	**170.025**	–	**MS2189C**	–	–
125	**193.492**	3,5	**170.025**	–	–	**420.200**	**470.232**
160	**193.492**	3,5	**170.025**	–	–	**420.200**	**470.233**

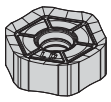
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KC520M
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	–	–	–	–	–	KC510M

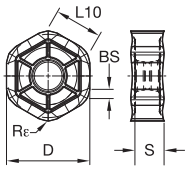
Indexable Inserts

beyond

- First choice for light machining and aluminium.



HNGJ-LD
HNGJ-LDJ



HNGJ-LD
HNGJ-LDJ

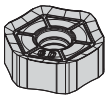
● first choice
○ alternate choice

P			○	●		●	●	○	
M			●	●		●	○	●	
K		●	○		●	○			●
N	●								
S			●	●				●	
H									

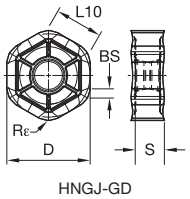
HNGJ-LD and -LDJ

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ0905ANFNLDJ	16	1,80	8,58	1,2	5,56	0,02	12	●	–	–	–	–	–	–	–	–
HNGJ0905ANENLD	16	1,80	8,58	1,2	5,56	0,05	12	–	●	●	●	●	●	–	●	–

- First choice for general purpose.



HNGJ-GD

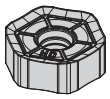


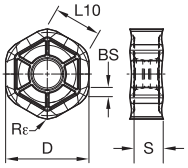
HNGJ-GD

HNGJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ0905ANSNGD	16	1,80	8,58	1,2	5,56	0,10	12	–	–	–	●	●	●	●	●	–

- First choice for heavy roughing.


HNGJ-HD



HNGJ-HD

● first choice
○ alternate choice

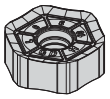
beyond

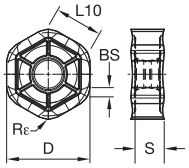
P			○	●		●	●	○	
M			●	●		●	○	●	
K		●	○		●	○			●
N	●								
S			●	●				●	
H									

HNGJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ0905ANSNHD	16	1,66	8,59	1,2	5,46	0,17	12	–	●	–	●	●	●	●	●	–
HNGJ090543ANSNHD	16	–	8,50	4,4	5,44	0,20	12	–	●	–	●	●	●	●	●	–

- First choice for general purpose.


HNPJ-GD

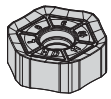


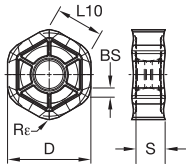
HNPJ-GD

HNPJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ0905ANSNGD	16	1,80	8,58	1,2	5,56	0,10	12	–	●	●	●	●	●	●	–	–

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ0905ANSNHD	16	1,66	8,59	1,2	5,46	0,18	12	–	●	●	●	●	●	●	●	–
HNPJ090543ANSNHD	16	–	8,50	4,3	5,44	0,13	12	–	–	●	●	●	●	●	●	–

Recommended Starting Feeds

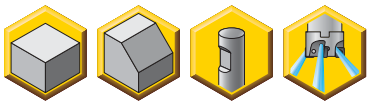
Recommended Starting Feeds [mm]

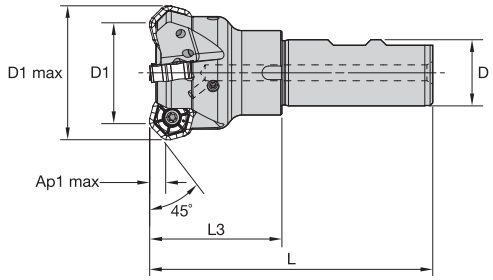
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0.45	**1.27**	2.22	0.33	**0.91**	1.57	0.25	**0.68**	1.17	0.21	**0.59**	1.01	0.20	**0.54**	0.93	.F..LDJ
.E..LD	0.63	**1.84**	2.81	0.46	**1.31**	1.97	0.34	**0.97**	1.46	0.30	**0.84**	1.27	0.27	**0.77**	1.16	.E..LD
.S..GD	0.92	**2.01**	3.27	0.66	**1.42**	2.29	0.49	**1.06**	1.69	0.43	**0.92**	1.46	0.39	**0.84**	1.34	.S..GD
.S..HD	0.92	**2.35**	3.89	0.66	**1.67**	2.70	0.49	**1.23**	1.98	0.43	**1.07**	1.72	0.39	**0.98**	1.57	.S..HD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Soft cutting action.
- Through tool coolant.







Dodeka 45° • Weldon® End Mills

order number	catalogue number	D1	D1 max	D	L	L3	Ap1 max	Z	kg	max RPM
3324829	**KSHR40D03R50B25SHN09**	40	51,0	25	107	50,00	4,5	3	0,53	15800
3324830	**KSHR40D04R50B25SHN09**	40	51,0	25	107	50,00	4,5	4	0,52	15800

Spare Parts

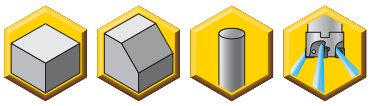


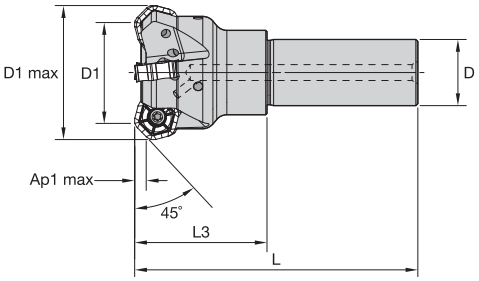




D1	insert screw	Nm	wrench
40	**193.492**	3,5	**170.025**

- Twelve cutting edges per insert.
- Soft cutting action.
- Through tool coolant.







Dodeka 45° • Cylindrical End Mills

order number	catalogue number	D1	D1 max	D	L	L3	Ap1 max	Z	kg	max RPM
3644452	**KSHR40D03R50A25SHN09**	40	51,0	25	107	50	4,5	3	0,53	15800
3645083	**KSHR40D04R50A25SHN09**	40	51,0	25	107	50	4,5	4	0,53	15800

Spare Parts

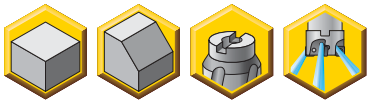




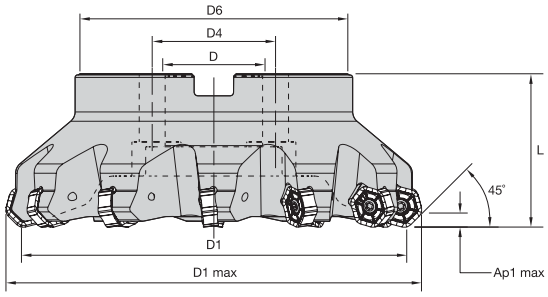


D1	insert screw	Nm	wrench
40	**193.492**	3,5	**170.025**

- Twelve cutting edges per insert.
- Through coolant standard.
- Soft cutting action.







Dodeka 45° • Shell Mills

order number	catalogue number	D1	D1 max	D	D4	D41	D6	L	Ap1 max	Z	kg	max RPM
3647201	KSHR40A04RS45HN09	40	51,0	22	–	–	39	40	4,5	4	0,25	15800
3324831	KSHR50A04RS45HN09	50	61,0	22	–	–	38	40	4,5	4	0,32	12700
3324832	KSHR50A05RS45HN09	50	61,0	22	–	–	38	40	4,5	5	0,33	12700
3749959	KSHR63A05RS45HN09	63	74,0	22	–	–	50	40	4,5	5	0,60	10100
3325163	KSHR63A06RS45HN09	63	74,0	22	–	–	50	40	4,5	6	0,56	10100
3325164	KSHR63A07RS45HN09	63	74,0	22	–	–	50	40	4,5	7	0,57	10100
3749960	KSHR80A05RS45HN09	80	91,0	27	–	–	60	50	4,5	5	1,12	7900
3325165	KSHR80A06RS45HN09	80	91,0	27	–	–	60	50	4,5	6	1,07	7900
3325166	KSHR80A09RS45HN09	80	91,0	27	–	–	60	50	4,5	9	1,11	7900
3749961	KSHR100B06RS45HN09	100	111,0	32	–	–	80	50	4,5	6	1,73	6300
3325167	KSHR100B08RS45HN09	100	111,0	32	–	–	80	50	4,5	8	1,68	6300
3325168	KSHR100B11RS45HN09	100	111,0	32	–	–	80	50	4,5	11	1,73	6300
3749962	KSHR125B08RS45HN09	125	135,9	40	–	–	90	63	4,5	8	2,84	5050
3325169	KSHR125B10RS45HN09	125	135,9	40	–	–	90	63	4,5	10	2,77	5050
3325170	KSHR125B14RS45HN09	125	136,0	40	–	–	90	63	4,5	14	2,86	5050
3750013	KSHR160C10RS45HN09	160	171,0	40	67	–	110	63	4,5	10	4,75	3900
3325171	KSHR160C12RS45HN09	160	171,0	40	67	–	110	63	4,5	12	4,56	3900
3325172	KSHR160C16RS45HN09	160	171,0	40	67	–	110	63	4,5	16	4,70	3900
3587732	KSHR200C16RS45HN09	200	211,0	60	102	–	130	63	4,5	16	6,43	3180
3587753	KSHR250C20RS45HN09	250	261,0	60	102	–	130	63	4,5	20	9,93	2550
3587754	KSHR315C24RS45HN09	315	326,0	60	102	178	230	80	4,5	24	22,90	2020

Spare Parts



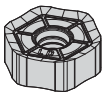
D1	insert screw	Nm	wrench	mounting screw with coolant grooves	low-head cap screw	socket-head cap screw	coolant lock screw assembly	coolant lock screw	coolant shower plate
40	193.492	3,5	170.025	KLSSM22-39-CG	–	–	–	–	–
50	193.492	3,5	170.025	MS2072CG	129.025	–	–	–	–
63	193.492	3,5	170.025	MS1234CG	–	125.025	–	–	–
80	193.492	3,5	170.025	MS2038CG	–	125.230	–	–	–
100	193.492	3,5	170.025	–	–	–	MS2189C	–	–
125	193.492	3,5	170.025	–	–	–	–	420.200	470.232
160	193.492	3,5	170.025	–	–	–	–	420.200	470.233
200	193.492	3,5	170.025	–	–	–	–	–	470.234
250	193.492	3,5	170.025	–	–	–	–	–	470.235
315	193.492	3,5	170.025	–	–	–	–	–	470.236

NOTE: Please order all spare parts separately.

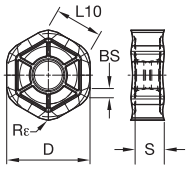
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KC520M
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	–	–	**–**	**–**	–	–

- First choice for light machining and aluminium.



HNGJ-LDJ
HNGJ-LD



HNGJ-LDJ
HNGJ-LD

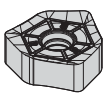
● first choice
○ alternate choice

		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N		●								
S				●	●				●	
H										

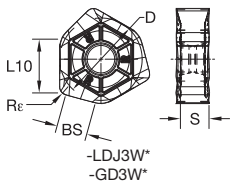
HNGJ-LDJ and -LD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ0905ANFNLDJ	16	1,80	8,58	1,2	5,56	0,02	12	●	–	–	–	–	–	–	–	–
HNGJ0905ANENLD	16	1,80	8,58	1,2	5,56	0,05	12	–	●	●	●	●	●	–	●	–

- Wiper insert for excellent surface floor finish.



-LDJ3W*
-GD3W*



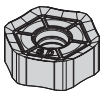
-LDJ3W*
-GD3W*

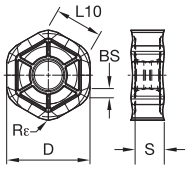
XNGJ-LDJ3W and -GD3W

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
XNGJ0905ANFNLDJ3W	16	6,00	9,60	1,6	5,51	0,02	3	●	–	–	–	–	–	–	–	–
XNGJ0905ANSNGD3W	16	6,00	9,60	1,6	5,51	0,09	3	–	–	–	●	●	●	–	●	–

*3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- First choice for general purpose.


HNGJ-GD



HNGJ-GD

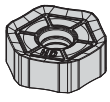
● first choice
○ alternate choice

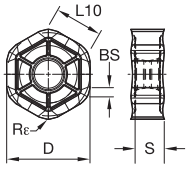
P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N		●								
S				●	●				●	
H										

HNGJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ0905ANSNGD	16	1,80	8,58	1,2	5,56	0,10	12	–	–	–	●	●	●	●	●	–

- First choice for heavy roughing.


HNGJ-HD

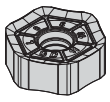


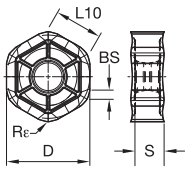
HNGJ-HD

HNGJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ0905ANSNHD	16	1,66	8,59	1,2	5,46	0,17	12	–	●	–	●	●	●	●	●	–
HNGJ090543ANSNHD	16	–	8,50	4,4	5,44	0,20	12	–	●	–	●	●	●	●	●	–

- First choice for general purpose.


HNPJ-GD

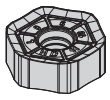


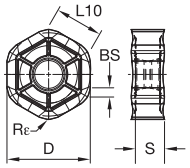
HNPJ-GD

HNPJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ0905ANSNGD	16	1,80	8,58	1,2	5,56	0,10	12	–	●	●	●	●	●	●	–	–

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

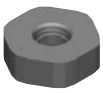
● first choice
○ alternate choice

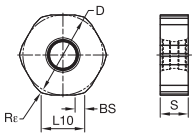
		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N		●								
S				●	●				●	
H										

HNPJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ0905ANSNHD	16	1,66	8,59	1,2	5,46	0,18	12	–	●	●	●	●	●	●	●	–
HNPJ090543ANSNHD	16	–	8,50	4,3	5,44	0,13	12	–	–	●	●	●	●	●	●	–

- Ceramic KYON 3500 for machining grey cast iron with high cutting speed.


HNEC-ANSN



HNEC-ANSN

HNEC-ANSN Ceramic Insert

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNEC0905ANSN	16	1,95	9,17	1,2	5,56	0,19	12	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

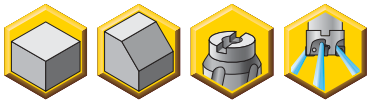
Recommended Starting Feeds [mm]

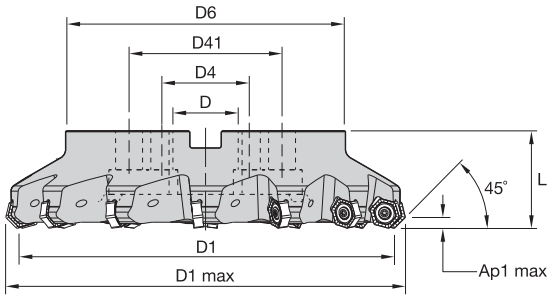
Light Machining	General Purpose	Heavy Machining

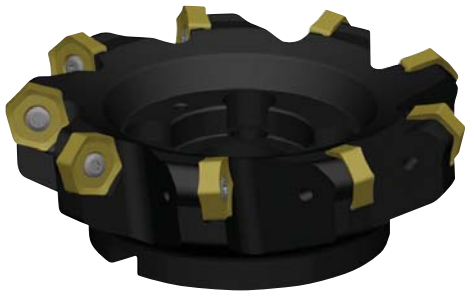
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,17	**0,46**	0,79	0,12	**0,33**	0,57	0,09	**0,25**	0,43	0,08	**0,22**	0,37	0,07	**0,20**	0,34	.F..LDJ
.E..LD	0,23	**0,66**	0,99	0,17	**0,47**	0,71	0,13	**0,35**	0,53	0,11	**0,31**	0,46	0,10	**0,28**	0,42	.E..LD
.S..GD	0,33	**0,72**	1,15	0,24	**0,52**	0,82	0,18	**0,39**	0,61	0,16	**0,34**	0,54	0,14	**0,31**	0,49	.S..GD
.S..HD	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- 25% lower cutting forces.
- Laser-hardened pocket seats.







Dodeka MAX 45° • Shell Mills

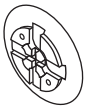
order number	catalogue number	D1	D1 max	D	D4	D41	D6	L	Ap1 max	Z	kg	max RPM
4059463	**KSHR80A04RS45HN13**	80	97,3	27	–	–	60	50	8,0	4	1,26	7900
4060935	**KSHR100B05RS45HN13**	100	117,3	32	–	–	80	50	8,0	5	1,81	6300
4060936	**KSHR125B06RS45HN13**	125	142,3	40	–	–	90	63	8,0	6	3,07	5050
4059485	**KSHR160C09RS45HN13**	160	177,3	40	66,7	–	110	63	8,0	9	4,34	3900
4060912	**KSHR200C10RS45HN13**	200	217,3	60	101,6	–	130	63	8,0	10	6,41	3180
4060937	**KSHR200C12RS45HN13**	200	217,3	60	101,6	–	130	63	8,0	12	6,48	3180
4060933	**KSHR250C12RS45HN13**	250	267,3	60	101,6	–	130	63	8,0	12	10,30	2550
4060938	**KSHR250C14RS45HN13**	250	267,3	60	101,6	–	130	63	8,0	14	10,27	2550
4060934	**KSHR315C14RS45HN13**	315	332,3	60	101,6	177,8	230	80	8,0	14	24,04	2020
4059486	**KSHR315C18RS45HN13**	315	332,3	60	101,6	177,8	230	80	8,0	18	24,62	2020

Spare Parts









D1	insert screw	Nm	Torx Plus wrench	socket-head cap screw	coolant lock screw assembly	coolant lock screw	coolant shower plate
80	**193.531**	8,0	**TTP25**	**125.230**	**–**	**–**	**–**
100	**193.531**	8,0	**TTP25**	**–**	**MS2189C**	**–**	**–**
125	**193.531**	8,0	**TTP25**	**–**	**–**	**420.200**	**470.232**
160	**193.531**	8,0	**TTP25**	**–**	**–**	**420.200**	**470.233**
200	**193.531**	8,0	**TTP25**	**–**	**–**	**–**	**470.234**
250	**193.531**	8,0	**TTP25**	**–**	**–**	**–**	**470.235**
315	**193.531**	8,0	**TTP25**	**–**	**–**	**–**	**470.236**

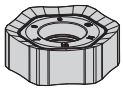
NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus bit (order number 6205892 BTQTP25L90) may be purchased separately in order to ensure proper torque setting.

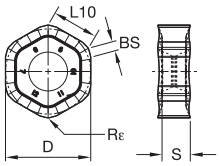
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD**	**KCPK30**	.S..HD	KCPM40
P3–P4	.E..GD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
M3	.E..GD	KCPM40	**.S..GD**	**KC725M**	.S..HD	KCSM40
K1–K2	.E..GD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..GD	KCK15	**.S..GD**	**KC520M**	.S..HD	KC725M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
S3	.E..GD	KCPM40	**.S..GD**	**KC725M**	.S..HD	KCSM40
S4	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for light machining.


HNGJ-GD



HNGJ-GD

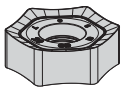
● first choice
○ alternate choice

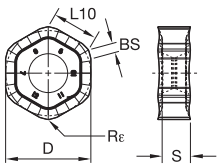
P			●		●	●	○
M			●		○	○	●
K	●		●		●		
N							
S			●				●
H							

HNGJ-GD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ1307ANENGD	22	1,88	12,83	1,2	7,41	0,05	12	–	●	–	●	●	–

- First choice for general purpose.


HNPJ-GD

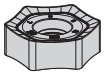


HNPJ-GD

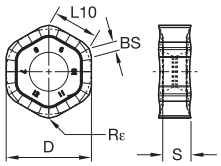
HNPJ-GD

catalogue number	D	L10	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ130720ANSNGD	22	12,83	2,0	7,53	0,13	12	●	●	–	●	–	–

- First choice for heavy roughing.



HNPJ-HD



HNPJ-HD

● first choice
○ alternate choice

P			●		●	●	○
M			●		○	○	●
K	●		●	●	●		
N							
S			●				●
H							

HNPJ-HD

catalogue number	D	BS	L10	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ1307ANSNHD	22	1,88	12,83	1,2	7,31	0,25	12	–	●	●	●	●	●
HNPJ130720ANSNHD	22	–	12,83	2,0	7,42	0,23	12	–	●	–	●	●	–
HNPJ130735ANSNHD	22	–	12,83	3,5	7,33	0,23	12	●	–	●	●	–	–

Recommended Starting Feeds

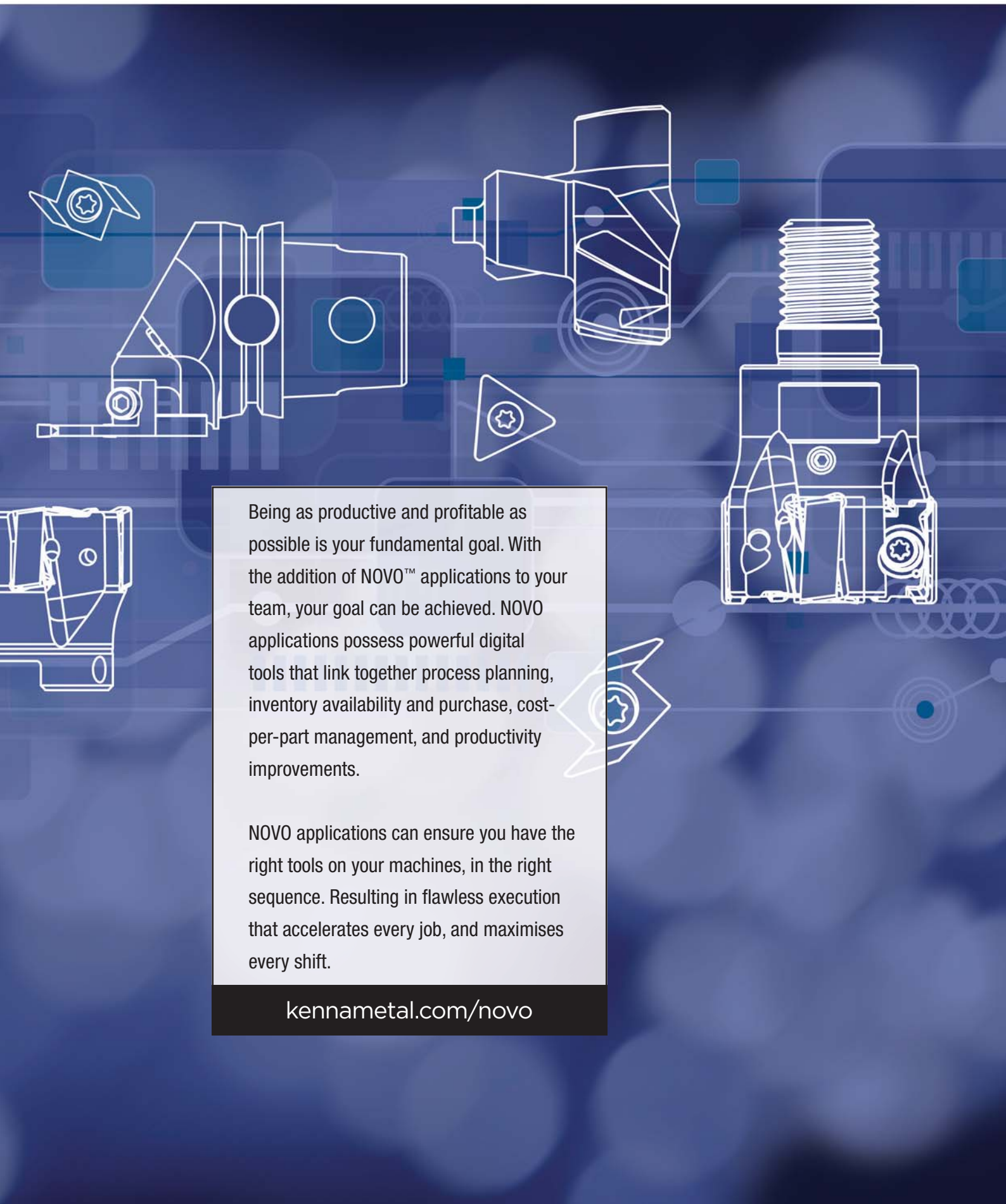
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GD	0,23	**0,66**	1,16	0,17	**0,47**	0,83	0,13	**0,35**	0,62	0,11	**0,31**	0,54	0,10	**0,28**	0,49	.E..GD
.S..GD	0,33	**0,74**	1,27	0,24	**0,53**	0,91	0,18	**0,40**	0,68	0,16	**0,35**	0,59	0,14	**0,32**	0,54	.S..GD
.S..HD	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

NOVO KNOWS
ART TO PART TO PROFIT



Being as productive and profitable as possible is your fundamental goal. With the addition of NOVO™ applications to your team, your goal can be achieved. NOVO applications possess powerful digital tools that link together process planning, inventory availability and purchase, cost-per-part management, and productivity improvements.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift.

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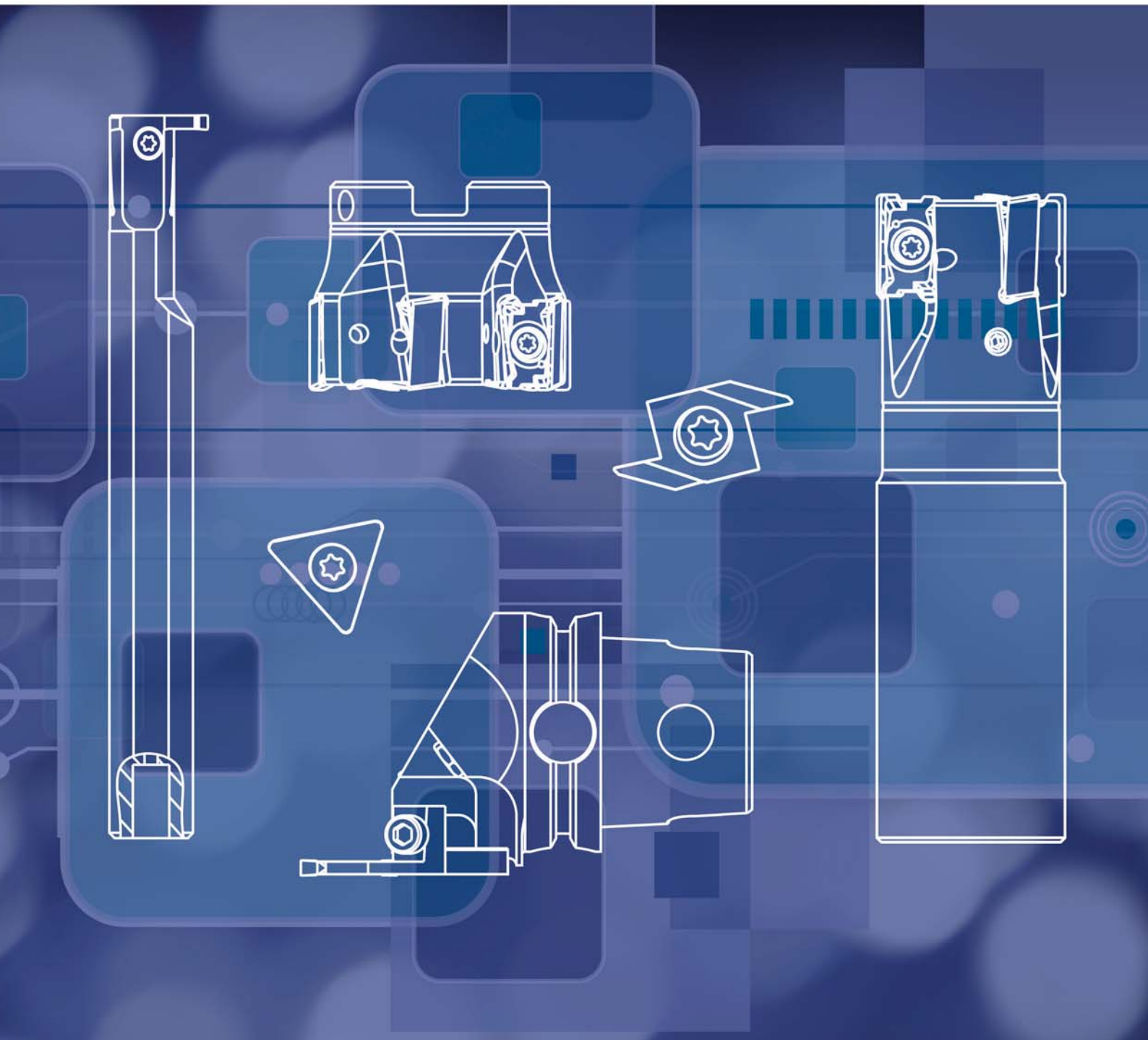

01

THE DIGITAL SOURCE FOR DELIVERING
SMART MACHINING SOLUTIONS

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NOVO™

Mill 16™

Face Mills for Cast Iron Machining.



Screw-On Clamping



Wedge Clamping

Features

- 16 effective cutting edges per insert.
- Ap1 max = 5,5mm.
- Coarse, medium and fine pitch cutters.
- Cutter bodies with pocket seat numbering system.
- Cutter diameter range = 50–250mm.
- High-precision periphery ground inserts.
- Inserts with cutting edge numbering system.
- Lower cutting forces.
- Clearance on second main cutting edge.

Benefits

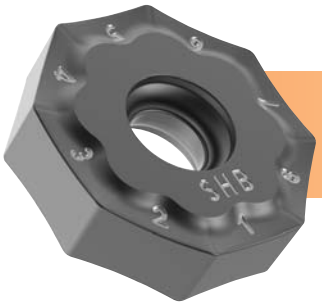
- Low cost per edge to cut cost per part (CPP).
- Perfect fit for most cast iron face milling requirements.
- High feed rates to boost productivity and reduce cycle time.
- Comprehensive standard offering to address most needs of the shop floor.
- Improved axial runout and tool life.
- Very smooth cutting action and lower cutting forces.
- Orientated edge positioning to support axial and radial runout.
- Reliable cutting above Ap1 = 5,5mm addresses castings with varying skin thickness.

Primary Application

The new Mill 16™ series is a specially-made platform for rough milling of components like engine heads and blocks, housings and gear boxes in cast iron materials (CGI, DCI, GCI), and all other cast iron face milling jobs. Best-in-class for machining CGI materials.

Split Case Design

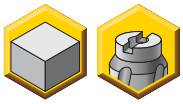


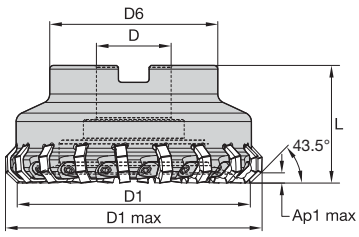


Innovative insert design to reduce cutting forces and increase productivity at lower cost per edge.

- Semi-finishing and light machining
- Medium roughing
- Heavy roughing

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.







Mill 16 • Shell Mills • Wedge Clamping

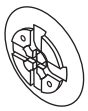
order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	kg	max RPM
6001972	**MILL16D050Z05ON08W**	50	63	22	50	50	5,5	5	0,61	11300
6001973	**MILL16D063Z06ON08W**	63	76	22	50	50	5,5	6	0,86	9400
6134054	**MILL16D080Z08ON08W**	80	93	27	60	50	5,5	8	1,27	7900
6001974	**MILL16D080Z10ON08W**	80	93	27	60	50	5,5	10	1,18	7900
6134055	**MILL16D100Z10ON08W**	100	113	32	80	50	5,5	10	1,84	6900
6001975	**MILL16D100Z14ON08W**	100	113	32	80	50	5,5	14	1,76	6900
6134056	**MILL16D125Z14ON08W**	125	138	40	90	63	5,5	14	3,26	6000
6001976	**MILL16D125Z18ON08W**	125	138	40	90	63	5,5	18	3,18	6000
6134057	**MILL16D160Z16ON08W**	160	173	40	90	63	5,5	16	4,22	5200
6001977	**MILL16D160Z22ON08W**	160	173	40	90	63	5,5	22	4,11	5200
6134058	**MILL16D200Z20ON08W**	200	213	60	140	63	5,5	20	7,13	4600
6001978	**MILL16D200Z28ON08W**	200	213	60	140	63	5,5	28	6,99	4600
6134059	**MILL16D250Z24ON08W**	250	263	60	140	63	5,5	24	10,70	4000
6017625	**MILL16D250Z34ON08W**	250	263	60	140	63	5,5	34	10,52	4000

Spare Parts







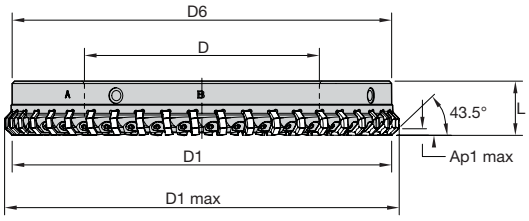





D1	wedge	wedge screw	Nm	wrench	socket-head cap screw with coolant groove	socket-head cap screw with coolant groove	coolant lock screw	coolant shower plate	adjustable torque wrench	bit SW3 for adjustable torque wrench
50	**CW16**	**12748601000**	7,0	**12148044900**	**KLSSM22-39-CG**	**–**	**–**	**–**	**DTQ50140**	**BTQSW3L90**
63	**CW16**	**12748601000**	7,0	**12148044900**	**–**	**MS1242**	**–**	**–**	**DTQ50140**	**BTQSW3L90**
80	**CW16**	**12748601000**	7,0	**12148044900**	**–**	**–**	**–**	**–**	**DTQ50140**	**BTQSW3L90**
100	**CW16**	**12748601000**	7,0	**12148044900**	**–**	**–**	**420.160**	**–**	**DTQ50140**	**BTQSW3L90**
125	**CW16**	**12748601000**	7,0	**12148044900**	**–**	**–**	**420.200**	**470.232**	**DTQ50140**	**BTQSW3L90**
160	**CW16**	**12748601000**	7,0	**12148044900**	**–**	**–**	**420.200**	**470.233**	**DTQ50140**	**BTQSW3L90**
200	**CW16**	**12748601000**	7,0	**12148044900**	**–**	**–**	**–**	**–**	**DTQ50140**	**BTQSW3L90**
250	**CW16**	**12748601000**	7,0	**12148044900**	**–**	**–**	**–**	**–**	**DTQ50140**	**BTQSW3L90**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.





Mill 16 • Split Case Design

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	kg	max RPM
6152227	MILL16D315Z44ON08WSC *	315	327,6	195	315	45	5,5	44	11,65	3600
6152228	MILL16D355Z48ON08WSC *	355	367,6	230	355	45	5,5	48	13,96	3300
6152229	MILL16D400Z56ON08WSC *	400	412,6	280	400	45	5,5	56	15,62	3100
6152230	MILL16D500Z70ON08WSC *	500	512,6	380	500	45	5,5	70	20,37	2800

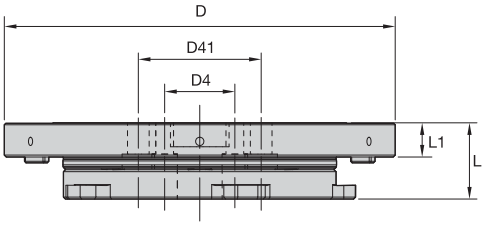
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



D1	wedge	wedge screw	Nm	wrench	adjustable torque wrench	bit SW3 for adjustable torque wrench
315	CW16	12748601000	7,000	12148044900	DTQ50140	BTQSW3L90
355	CW16	12748601000	7,000	12148044900	DTQ50140	BTQSW3L90
400	CW16	12748601000	7,000	12148044900	DTQ50140	BTQSW3L90
500	CW16	12748601000	7,000	12148044900	DTQ50140	BTQSW3L90

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.





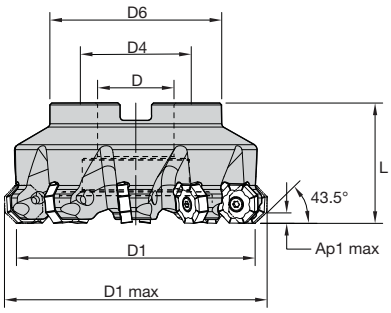
Carrier Flange Assembly

order number	catalogue number	D	D4	D41	L1	L	kg
6152251	D315CFA *	315	102	178	34	78	26,89
6152252	D355CFA *	355	102	178	35	78	37,18
6152253	D400CFA *	400	102	178	35	78	50,95
6152254	D500CFA *	500	102	178	35	78	87,34

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.







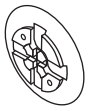
Mill 16 • Screw-On Clamping

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	kg	max RPM
6159024	MILL16D050Z04ON08SC	50	62,7	22	–	50	40	5,5	4	0,37	14700
6159025	MILL16D063Z04ON08SC	63	75,0	22	–	50	40	5,5	4	0,55	12200
6159026	MILL16D063Z05ON08SC	63	75,0	22	–	50	40	5,5	5	0,52	12200
6159027	MILL16D080Z05ON08SC	80	92,0	27	–	60	50	5,5	5	1,26	10400
6159028	MILL16D080Z07ON08SC	80	92,0	27	–	60	50	5,5	7	1,23	10400
6159029	MILL16D100Z06ON08SC	100	112,0	32	–	80	50	5,5	6	1,75	9000
6159030	MILL16D100Z08ON08SC	100	112,0	32	–	80	50	5,5	8	1,66	9000
6159061	MILL16D125Z08ON08SC	125	137,0	40	–	90	63	5,5	8	3,20	7800
6159062	MILL16D125Z10ON08SC	125	137,0	40	–	90	63	5,5	10	3,17	7800
6159063	MILL16D160Z10ON08SC	160	172,0	40	67	90	63	5,5	10	4,04	6800
6159064	MILL16D160Z12ON08SC	160	172,0	40	67	90	63	5,5	12	4,10	6800
6159065	MILL16D200Z10ON08SC	200	212,0	60	102	130	63	5,5	10	6,68	6000
6159066	MILL16D200Z14ON08SC	200	212,0	60	102	130	63	5,5	14	6,85	6000
6159067	MILL16D250Z12ON08SC	250	262,0	60	102	130	63	5,5	12	10,94	5300
6159068	MILL16D250Z16ON08SC	250	262,0	60	102	130	63	5,5	16	11,17	5300

Spare Parts





D1	insert screw	Nm	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw	coolant shower plate
50	MS2060	4,5	–	KLSSM22-39-CG	–	–
63	MS2060	4,5	–	–	–	–
80	MS2060	4,5	125.230	–	–	–
100	MS2060	4,5	–	–	420.160	–
125	MS2060	4,5	–	–	420.200	470.232
160	MS2060	4,5	–	–	420.200	470.233
200	MS2060	4,5	–	–	–	470.234
250	MS2060	4,5	–	–	–	470.235

Insert Selection Guide

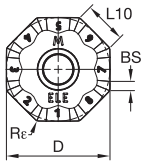
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LE	KC514M	.S..GP	KC514M	.S..HB	KC514M
K3	.E..LE	KCK20	.S..GP	KCK20	.S..HB	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

- ...ANENLE = semi-finishing with improved surface floor finish.
- ...ENLE = light machining.

● first choice
○ alternate choice

P						
M						
K	●	●	●	●	●	
N						
S						
H						


ONGX08-LE



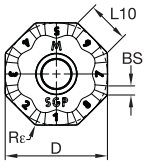
ONGX08-LE

ONGX-LE • High-Precision Periphery Ground

catalogue number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX080620ENLE	20,00	5,81	8,28	—	2,0	0,05	●	●	●	–	–
ONGX0806ANENLE	20,00	5,81	8,21	1,50	0,8	0,05	●	●	●	–	–

- ...ANSNGP = medium roughing with improved surface floor finish.
- ...SNGP = medium roughing with low cutting forces.


ONGX08-GP



ONGX08-GP

ONGX-GP • High-Precision Periphery Ground

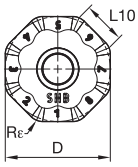
catalogue number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX080620SNGP	20,00	5,81	8,28	—	2,0	0,16	●	●	●	●	–
ONGX0806ANSNGP	20,00	5,81	8,21	1,50	0,8	0,16	●	●	●	–	–

- First choice for heavy roughing.

● first choice
○ alternate choice

P						
M						
K	●	●	●	●	●	
N						
S						
H						


ONGX08-HB



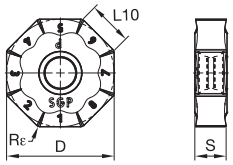
ONGX08-HB

ONGX-HB • High-Precision Periphery Ground

catalogue number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX080608SNHB	20,00	5,81	8,28	–	0,8	0,18	●	●	–	–	–
ONGX080620SNHB	20,00	5,81	8,28	–	2,0	0,18	●	●	●	●	–
ONGX080630SNHB	20,00	5,81	8,28	–	3,0	0,18	●	●	●	–	–

- Medium roughing with lower cutting forces.


ONPX08-GP



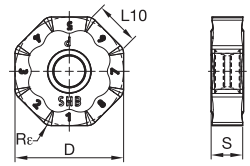
ONPX08-GP

ONPX-GP • Precision Pressed and Sintered to Size

catalogue number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONPX080608SNGP	20,00	5,81	8,28	–	0,8	0,16	–	●	●	●	–

- Heavy roughing with regular performance.


ONPX08-HB



ONPX08-HB

ONPX-HB • Precision Pressed and Sintered to Size

catalogue number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONPX080620SNHB	20,00	5,81	8,28	–	2,0	0,18	–	●	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LE	0,23	**0,66**	1,16	0,17	**0,47**	0,83	0,13	**0,35**	0,62	0,11	**0,31**	0,54	0,10	**0,28**	0,49	.E..LE
.S..GP	0,33	**0,74**	1,26	0,24	**0,53**	0,90	0,18	**0,40**	0,67	0,16	**0,35**	0,59	0,14	**0,32**	0,54	.S..GP
.S..HB	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..HB

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

User Information

- Only use with indexable inserts ONPX0806**/ONGX0806** (ONPX64**/ONGX64**).
- Only use original Kennametal spare parts as per the current catalogue.

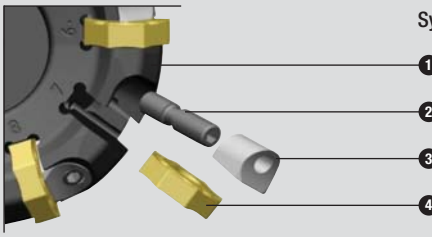


- Maintenance and repair of cutters should only be carried out by Kennametal.
- The tools must only be used in combination with suitable tool adaptors and machine spindles.
- Use only the recommended torque settings when assembling the cutters for use. For further information contact the KMT CAS Team.

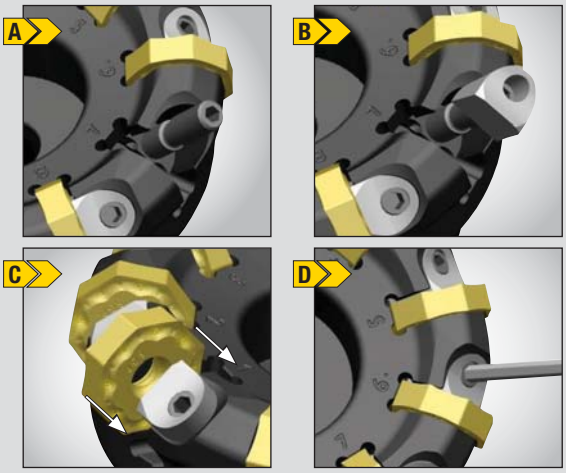
* These assembly instructions relate only to the Kennametal Mill 16 Face Mill family and not to its connection to a spindle or spindle adaptor.

Preparation

- Prior to use, ensure the cutter is thoroughly cleaned and remove all dirt, grease, and anti-corrosive protection.
- Carefully grease the differential screws with copper grease. Ensure the rest of the cutter is clean.
- When loading the inserts into the cutter, please ensure that they are inserted in the clean pocket seat in the correct position.
- Mounting position: The flat side of the clamping wedge sits on top of the insert face. We recommend to mount the inserts by following the insert's edge numbering system for orientated insert seating. Active cutting edges shall all have the same cutting edge number.



Insert Clamping and Adjusting



Pre-setting of Inserts

A. Screw the differential screw (2) into the cutter body (1) by approximately 2 turns using a 3mm hex wrench.

B. Place wedge (3) on differential screw (2) and fasten into the cutter body.

C. Push insert (4) into the pocket seat by hand in the direction shown.

D. Clamp insert (4) with wedge (3) by rotating the differential screw with a clamping force of MA = 2 Nm (18 in/lbs). The differential screw must not stick out of wedge.

E. Repeat steps A–D for all inserts.

Tightening the Inserts

F. Tighten all inserts of the pockets with the wedge using the differential screw with a clamping torque of MA = 7 Nm (62 in/lbs).

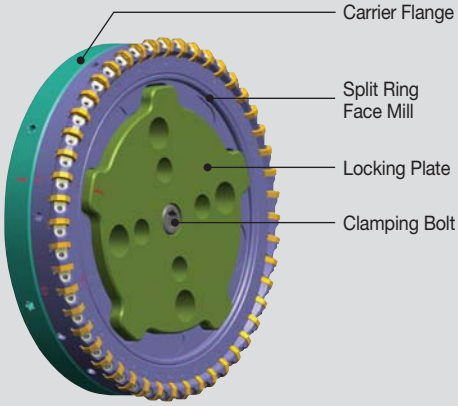
Split Cutter Assembly Instructions

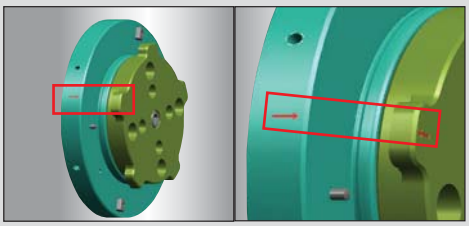
Please read and follow the instructions below for safe and productive application.

User Information

These assembly instructions relate only to Kennametal split-case milling cutters and not to its connection to a spindle or spindle adaptor.

System Components

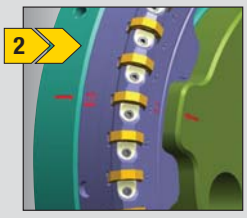




Initial position must be in such a way that the arrows in the carrier flange and locking plate coincide with each other.



Place the split ring face mill over the carrier flange in such a way that arrows in the locking plate and carrier flange coincide with the marking "A" in the cutter.



Turn the cutter ring clockwise from marking "A" to marking "B".



Tighten the clamping bolt with a torque of 100 Nm.

Extended Kennametal Service

Adjustable Torque Wrenches

When working with inserts, it is especially important to use the correct torque. Kennametal offers extended service levels by assuring best tightening with adjustable torque wrenches. Please order separately as needed.

Adjustable torque wrenches • 0,6–5,4 Nm (5.3–47.8 in. lbs)



3641463



3641464

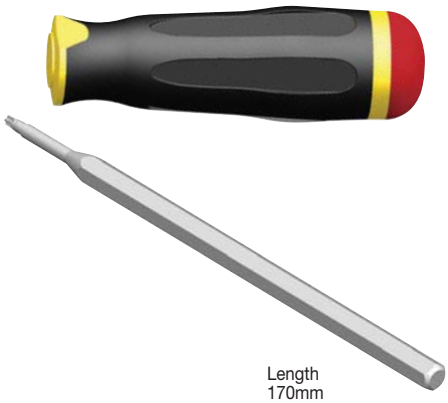


3641465

Order Number	ANSI/ISO Catalogue Number	Description	Nm range	in. lbs range
3641463	**DTQ0615**	Torque control wrench handle	0,7–1,5 Nm	5.4–13.3
3641464	**DTQ1530**	Torque control wrench handle	1,6–3,0 Nm	13.4–26.6
3641465	**DTQ3054**	Torque control wrench handle	3,1–5,4 Nm	26.7–47.8

Blades

Order Number	Description	Drive	Max Torque
3641466	Blade Screw Driver TORX	BTQT6	0,8 Nm
3641467	Blade Screw Driver TORX	BTQT7	1,4 Nm
3641468	Blade Screw Driver TORX	BTQT8	2,4 Nm
3641469	Blade Screw Driver TORX	BTQT9	3,3 Nm
3641470	Blade Screw Driver TORX	BTQT10	4,0 Nm
3641471	Blade Screw Driver TORX	BTQT15	7,0 Nm
3641472	Blade Screw Driver TORX	BTQT20	10,5 Nm
3641473	Blade Screw Driver TORX	BTQT25	20,0 Nm
3641474	Blade Screw Driver TORX PLUS	BTQ6IP	0,9 Nm
3641475	Blade Screw Driver TORX PLUS	BTQ7IP	1,7 Nm
3641476	Blade Screw Driver TORX PLUS	BTQ8IP	2,8 Nm
3641477	Blade Screw Driver TORX PLUS	BTQ9IP	3,6 Nm
3641478	Blade Screw Driver TORX PLUS	BTQ10IP	5,0 Nm



Length 170mm (6.693")

Adjustable torque wrenches • 5–14 Nm (3.7–10.3 in. lbs)

Order Number	ANSI/ISO Catalogue Number	Description
6197561	**DTQ50140**	Torque Wrench Handle 5–14Nm + bitholder
6205876	**BTQSW3L90**	Bit SW3 L=90mm
6205877	**BTQT15L90**	Bit Torx 15 L=90mm
6205878	**BTQT20L90**	Bit Torx 20 L=90mm
6205879	**BTQT25L90**	Bit Torx 25 L=90mm
6205880	**BTQTP15L90**	Bit Torx Plus 15 L=90mm
6205891	**BTQTP20L90**	Bit Torx Plus 20 L=90mm
6205892	**BTQTP25L90**	Bit Torx Plus 25 L=90mm



NOTE: For a complete overview of our screw drivers, bits, torque wrenches, and bit drivers, see pages X2–X3.

Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

KSSM™ 45°

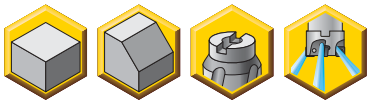
Universal face mill for conventional machining.

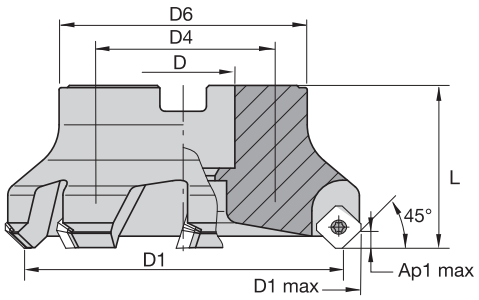


Features and Benefits

- Insert SE.T1404.
- Ap1 max = 6,6mm.
- Four true cutting edges.
- Pocket seat protection with carbide shims.
- Easy handling and rapid insert change.

- Rapid insert changes.
- Carbide shims for pocket protection.







KSSM 45° • Shell Mills

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	kg	max RPM
1926850	**40A03RS45SE14EG**	40	54,0	16	–	44	40	6,6	3	0,30	26000
1926812	**50A03RS45SE14EG**	50	63,9	22	–	50	40	6,6	3	0,40	22500
1926900	**50A04RS45SE14EG**	50	63,9	22	–	50	40	6,6	4	0,40	22500
1926899	**63A04RS45SE14EG**	63	76,8	22	–	50	40	6,6	4	0,50	20200
1926897	**63A05RS45SE14EG**	63	76,8	22	–	50	40	6,6	5	0,60	20200
1926894	**80A05RS45SE14EG**	80	93,8	27	–	60	50	6,6	5	1,10	18000
1926893	**80A06RS45SE14EG**	80	93,8	27	–	60	50	6,6	6	1,20	18000
1926926	**100B05RS45SE14EG**	100	113,7	32	–	80	50	6,6	5	1,70	16000
1926925	**100B07RS45SE14EG**	100	113,7	32	–	80	50	6,6	7	1,80	16000
1926924	**125B06RS45SE14EG**	125	138,7	40	–	90	63	6,6	6	2,90	14400
1926911	**125B08RS45SE14EG**	125	138,7	40	–	90	63	6,6	8	3,00	14400
1926909	**160C07RS45SE14EG**	160	173,6	40	67	100	63	6,6	7	4,10	12500
1926908	**160C10RS45SE14EG**	160	173,6	40	67	100	63	6,6	10	4,30	12500

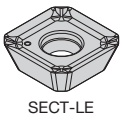
Spare Parts

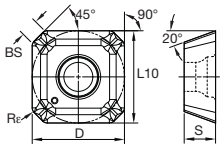
D1	insert screw	Nm	Torx Plus driver	shim	shim screw	hex driver	low-head cap screw	socket-head cap screw
40	**MS2078**	4,0	**DT15IP**	–	–	–	**MS2040**	–
50	**MS2078**	4,0	**DT15IP**	–	–	–	**129.025**	–
63	**MS2078**	4,0	**DT15IP**	–	–	–	**129.025**	–
80	**MS2078**	4,0	**DT15IP**	**SM455**	**SRS3**	**DH35M**	–	**MS2038**
100	**MS2078**	4,0	**DT15IP**	**SM455**	**SRS3**	**DH35M**	–	–
125	**MS2078**	4,0	**DT15IP**	**SM455**	**SRS3**	**DH35M**	–	–
160	**MS2078**	4,0	**DT15IP**	**SM455**	**SRS3**	**DH35M**	–	–

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..GP2	KCPK30	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..GP2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KC725M	**.E..GP2**	**KC725M**	.S..GP2	KC725M
M3	.E..GP2	KCPM40	**.E..GB2**	**KCPM40**	.S..GP2	KCPM40
K1–K2	.E..GP2	KCK15	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..GP2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GP2**	**KC725M**	.S..GP2	KC725M
S3	.E..GB2	KC725M	**.S..GP2**	**KC725M**	.S..GB2	KC725M
S4	.E..GB2	KC725M	**.S..GP2**	**KC725M**	.S..GB2	KC725M
H1	–	–	**–**	**–**	–	–

Indexable Inserts


SECT-LE



SECT-LE

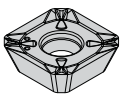
● first choice
○ alternate choice

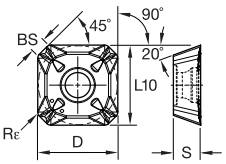
beyond

P				●		●		○	●	
M				●		○	○	●	○	
K			●		●	○		○		●
N		●								
S				●			●	●		
H										

SECT-LE

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECT1404AEFNLE	14,00	4,76	14,00	2,65	1,0	0,02	4	●	–	–	–	–	–	–	–	–


SECT-LD2

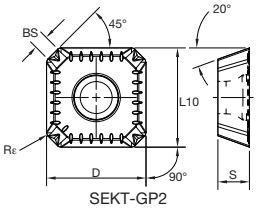


SECT-LD2

SECT-LD2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECT1404AEENLD2	14,00	4,76	14,00	2,65	1,0	0,04	4	–	–	●	–	–	–	–	–	–


SEKT-GP2

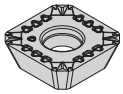


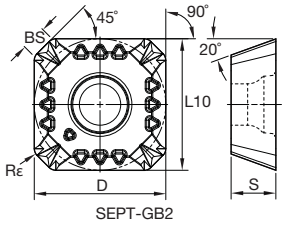
SEKT-GP2

SEKT-GP2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SEKT1404AEENGP2	14,00	4,76	14,00	2,65	1,0	0,05	4	–	●	●	●	●	–	–	●	–
SEKT1404AESNGP2	14,00	4,76	14,00	2,65	1,0	0,11	4	–	●	●	●	●	–	–	●	–

Face Milling


SEPT-GB2



SEPT-GB2

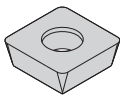
● first choice
○ alternate choice

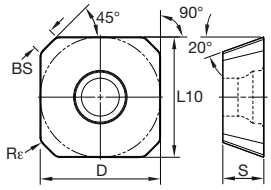
beyond

P			●		●		○	●	
M			●		○	○	●	○	
K		●		●	○		○		●
N	●								
S			●			●	●		
H									

SEPT-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SEPT1404AEENGB2	14,00	4,76	14,00	2,65	1,0	0,08	4	–	–	●	●	●	–	–	●	–
SEPT1404AESNGB2	14,00	4,76	14,00	2,65	1,0	0,13	4	–	–	●	●	●	–	–	●	–

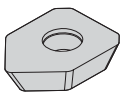

SECW-GN

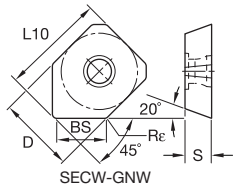


SECW-GN

SECW-GN

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECW1404AESNGN	14,00	4,76	14,00	2,65	1,0	0,16	4	–	–	–	–	–	–	–	–	●


SECW-GNW



SECW-GNW

SECW-GNW

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECW1404AEENGNW	14,00	4,76	8,26	8,26	0,8	0,04	2	–	–	●	–	–	–	–	–	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	0,17	**0,59**	0,99	0,12	**0,43**	0,71	0,09	**0,32**	0,53	0,08	**0,28**	0,46	0,07	**0,25**	0,42	.F..LE
.E..LD2	0,17	**0,62**	1,15	0,13	**0,45**	0,82	0,10	**0,34**	0,61	0,08	**0,29**	0,53	0,08	**0,27**	0,49	.E..LD2
.E..LD	0,24	**0,67**	1,17	0,17	**0,48**	0,84	0,13	**0,36**	0,62	0,11	**0,31**	0,54	0,10	**0,29**	0,50	.E..LD
.E..GP	0,17	**0,62**	1,26	0,13	**0,45**	0,90	0,10	**0,34**	0,67	0,08	**0,29**	0,59	0,08	**0,27**	0,54	.E..GP
.E..GP2	0,24	**0,74**	1,27	0,17	**0,53**	0,91	0,13	**0,40**	0,68	0,11	**0,35**	0,59	0,10	**0,32**	0,54	.E..GP2
.E..GB2	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.E..GB2
.S..GP2	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..GP2
.S..GB2	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..GB2
.S..GN	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSOM™ Mini · KSOM Milling Tools

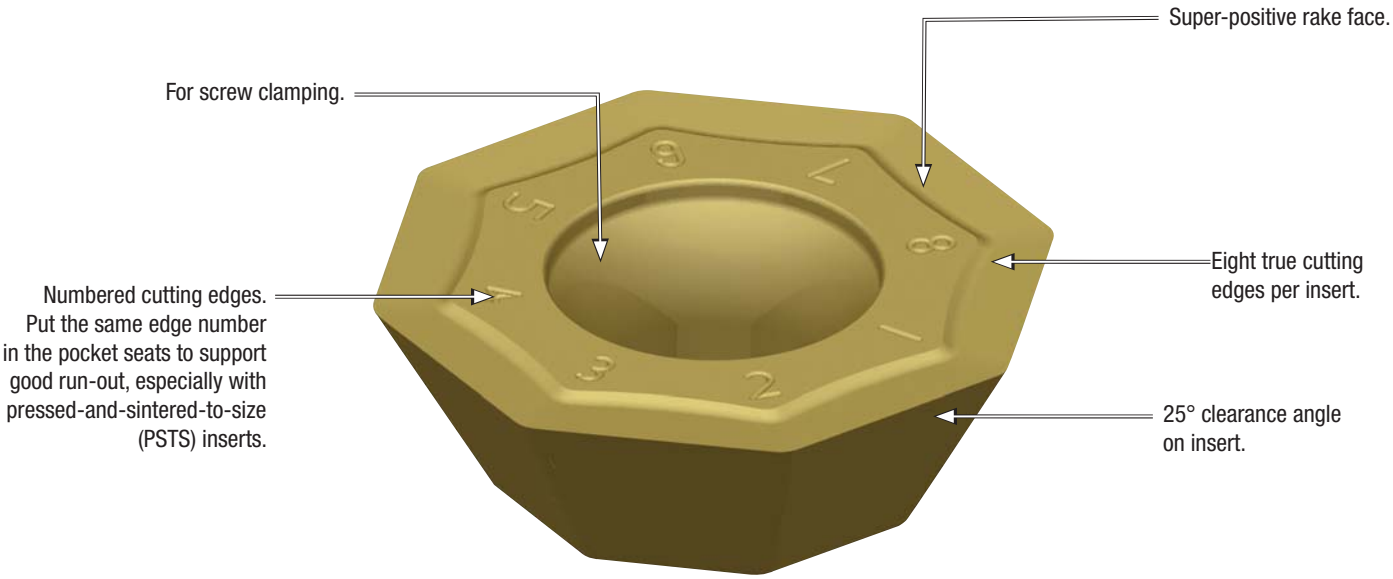
Primary Application

High-positive face mills with eight cutting edges for use in most workpieces materials. Due to its design, face milling, plunging, helical interpolation, and ramping are possible with KSOM mills.

Features and Benefits

- Super-positive rake face for soft cutting action.
- Low cutting forces deliver higher feed capability.
- 25° clearance angle on insert allows excellent free cutting.
- Excellent performance in stainless steel and super alloys.
- First choice solution for machining turbocharger materials like 1.4826, 1.4838, 1.4848, and 1.4849.

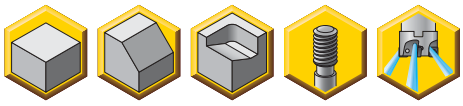


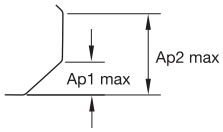


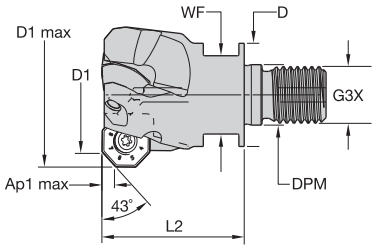
KSOM Mini: insert OF*T06
— Ap1 max = 3,5mm (8 indexes)
— Ap2 max = 9mm (4 indexes)

KSOM insert OF*T07
— Ap1 max = 5mm (8 indexes)
— Ap2 max = 11mm (4 indexes)

- Eight cutting edges per insert.
- Super soft cutting.







Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges); reduce feed rate by 40%



KSOM Mini • Screw-On End Mills

order number	catalogue number	D1	D1 max	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	kg	max RPM
5358886	**KSOM32Z03M16OF06X**	32	41,1	29	17,0	M16	40	22	3,5	3	11.0°	0,22	19890
5358887	**KSOM40Z04M16OF06X**	40	49,0	29	17,0	M16	40	22	3,5	4	7.5°	0,27	15920

Spare Parts





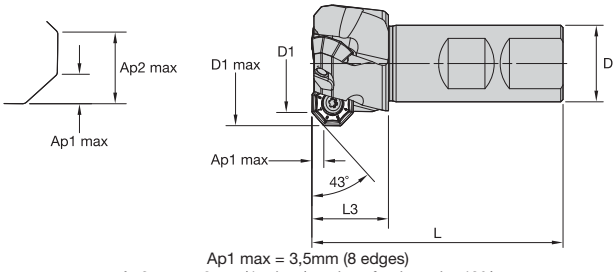


D1	insert screw	Nm	Torx Plus wrench
32	**193.433**	6,0	**TTP15**
40	**193.433**	6,0	**TTP15**

NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus15 (order number 6205880) may be purchased separately in order to ensure proper torque setting.

- Super soft cutting.
- Eight cutting edges per insert.







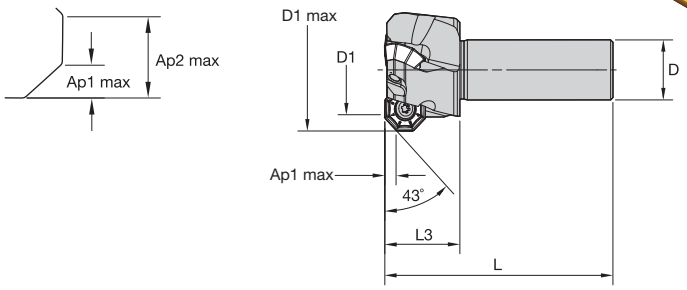
Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges); reduce feed rate by 40%

KSOM Mini • Weldon® End Mills

order number	catalogue number	D1	D1 max	D	L	L3	Ap1 max	Z	max ramp angle	kg	max RPM
3115894	**KSOM32R02B20OF06**	32	41,1	20	76	25	3,5	2	11.0°	0,25	19890
3115893	**KSOM32R03B20OF06**	32	41,1	20	76	25	3,5	3	11.0°	0,23	19890
3115882	**KSOM32R03B25OF06**	32	41,1	25	82	25	3,5	3	11.0°	0,32	19890
3115899	**KSOM40R03B25OF06**	40	49,0	25	82	25	3,5	3	8.0°	0,37	15920
3115898	**KSOM40R04B25OF06**	40	49,0	25	82	25	3,5	4	8.0°	0,37	15920
3115897	**KSOM40R04B32OF06**	40	49,0	32	110	49	3,5	4	8.0°	0,67	15920

- Eight cutting edges per insert.
- Super soft cutting.







Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges); reduce feed rate by 40%

KSOM Mini • Cylindrical End Mills

order number	catalogue number	D1	D1 max	D	L	L3	Ap1 max	Z	max ramp angle	kg	max RPM
3660312	**KSOM32R03A20OF06**	32	41,1	20	76	25	3,5	3	11.0°	0,24	19890
5358888	**KSOM32Z03A32OF06X**	32	41,1	32	90	—	3,5	3	11.0°	0,52	19890

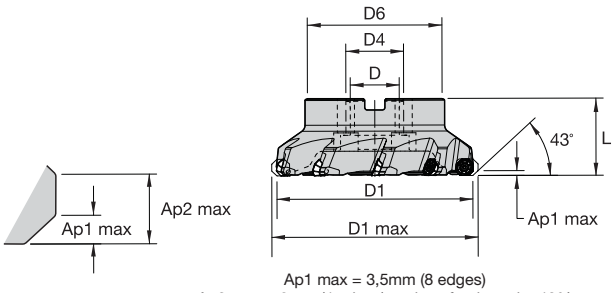
Spare Parts

D1	insert screw	Nm	Torx Plus wrench
32	**193.433**	6,0	**TTP15**
40	**193.433**	6,0	**TTP15**

NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus15 (order number 6205880) may be purchased separately in order to ensure proper torque setting.

- Eight cutting edges per insert.
- Super soft cutting.







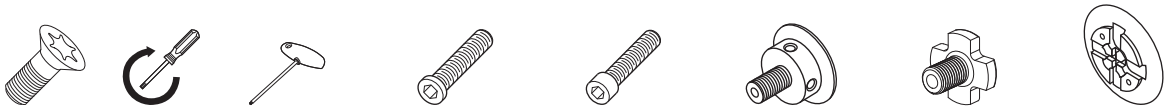
Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges); reduce feed rate by 40%

KSOM Mini • Shell Mills

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM
5358889	**KSOM40Z04OF06X**	40	49,0	16	–	33	40	3,5	4	8.0°	0,23	15920
3115903	**KSOM50R04OF06**	50	58,9	22	–	38	43	3,5	4	5.0°	0,35	12730
5358930	**KSOM50Z06OF06X**	50	58,8	22	–	42	43	3,5	6	5.0°	0,37	12730
3115905	**KSOM63R05OF06**	63	71,8	22	–	50	43	3,5	5	4.0°	0,62	10110
5358931	**KSOM63Z07OF06X**	63	71,7	22	–	50	43	3,5	7	4.0°	0,61	10110
3115907	**KSOM80R06OF06**	80	88,7	27	–	60	50	3,5	6	3.0°	1,10	7960
5358932	**KSOM80Z09OF06X**	80	88,7	27	–	60	50	3,5	9	3.0°	1,09	7960
3115909	**KSOM100R07OF06**	100	108,6	32	–	80	50	3,5	7	2.0°	1,71	6370
3115908	**KSOM100R10OF06**	100	108,6	32	–	80	50	3,5	10	2.0°	1,75	6370
3115911	**KSOM125R08OF06**	125	133,6	40	–	94	63	3,5	8	2.0°	2,74	5090
3115910	**KSOM125R12OF06**	125	133,6	40	–	94	63	3,5	12	2.0°	2,83	5090
3115913	**KSOM160R10OF06**	160	168,5	40	67	114	63	3,5	10	1.0°	4,30	3980
3115912	**KSOM160R16OF06**	160	168,5	40	67	114	63	3,5	16	1.0°	4,46	3980

NOTE: “X” in the catalogue number stands for improved finishing capabilities.

Spare Parts



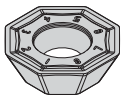
D1	insert screw	Nm	Torx Plus wrench	low-head cap screw	socket-head cap screw	coolant lock screw assembly	coolant lock screw	coolant shower plate
40	**193.433**	6,0	**TTP15**	–	**MS1294**	–	–	–
50	**193.433**	6,0	**TTP15**	**129.025**	–	–	–	–
63	**193.433**	6,0	**TTP15**	–	**125.025**	–	–	–
80	**193.433**	6,0	**TTP15**	–	**125.230**	–	–	–
100	**193.433**	6,0	**TTP15**	–	–	**MS2189C**	–	–
125	**193.433**	6,0	**TTP15**	–	–	–	**420.200**	**470.232**
160	**193.433**	6,0	**TTP15**	–	–	–	**420.200**	**470.233**

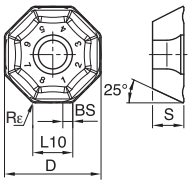
NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus 15 (order number 6205880) may be purchased seperately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LB	KCPK30	**.E..GB**	**KCPM40**	.S..HB	KCPK30
P3–P4	.E..LB	KCPK30	**.E..GB**	**KCPK30**	.S..HB	KCPK30
P5–P6	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M1–M2	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
M3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
K1–K2	.E..LB	KCK15	**.E..GB**	**KC520M**	.E..GB	KCK15
K3	.E..LB	KCPK30	**.E..GB**	**KC520M**	.S..HB	KCPK30
N1–N2	.F..LBJ	KC410M	**.E..LBJ**	**KC422M**	.E..LBJ	KC422M
N3	.F..LBJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
S1–S2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
S3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
S4	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
H1	–	–	**–**	**–**	–	–

- First choice for machining aluminium with low feed rate.


OF.T-LNJ



OF.T-LNJ

beyond

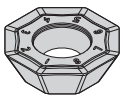
● first choice
○ alternate choice

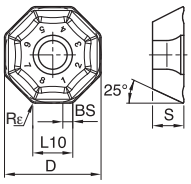
P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N		●	●							
S					●	●				●
H										

OFKT-LNJ

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT06L5AFFNLNJ	15	5,00	6,00	–	0,8	0,02	8	●	–	–	–	–	–	–	–	–

- First choice for machining aluminium.


OF.T-LBJ



OF.T-LBJ

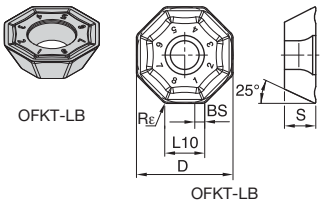
OFKT-LBJ

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT06L5AFENLBJ	15	5,00	6,00	–	0,8	0,03	8	–	●	–	–	–	–	–	–	–
OFKT06L5AFFNLBJ	15	5,00	6,00	–	0,8	0,02	8	●	–	–	–	–	–	–	–	–

- First choice for light machining.
- -LB light geometry is the first choice for turbine blade applications.

● first choice
○ alternate choice

P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N	●	●								
S					●	●				●
H										

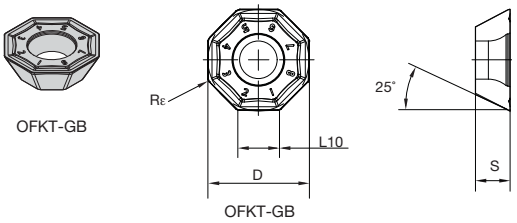


OFKT-LB

OFKT-LB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT06L5AFENLB	15	5,00	6,00	1,23	0,8	0,10	8	–	–	–	●	●	●	●	–	●
OFKT06L5AFSNLB	15	5,00	6,00	1,21	0,8	0,22	8	–	–	●	●	●	–	●	–	–

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.

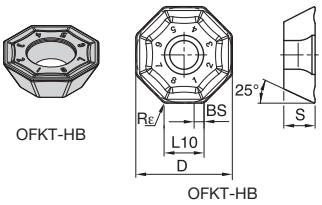


OFKT-GB

OFKT-GB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT06L5AFENGB	15	5,00	6,00	–	0,8	0,15	8	–	–	●	●	●	●	●	●	●

- First choice for heavy roughing.



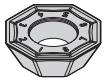
OFKT-HB

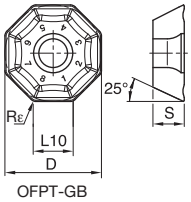
OFKT-HB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT06L5AFSNHB	15	5,00	6,00	–	0,8	0,21	8	–	–	–	●	●	–	●	–	●

- First choice for general purpose.

beyond


OFPT-GB



OFPT-GB

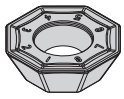
● first choice
○ alternate choice

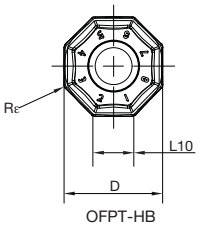
		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N		●	●							
S					●	●				●
H										

OFPT-GB

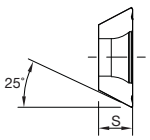
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFPT06L5AFENGB	15	5,00	6,00	–	0,8	0,15	8	–	–	●	–	●	●	●	●	–

- First choice for heavy roughing.
- -HB geometry with the strongest cutting edge is the first choice for roughing operations on steel and cast iron.


OFPT-HB



OFPT-HB



OFPT-HB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFPT06L5AFSNHB	15	5,00	6,00	–	0,8	0,21	8	–	–	●	–	●	●	●	–	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

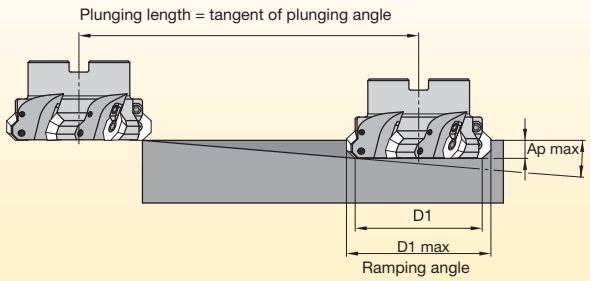
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LBJ	0,17	**0,61**	1,03	0,12	**0,44**	0,74	0,09	**0,33**	0,55	0,08	**0,29**	0,48	0,07	**0,26**	0,44	.F..LBJ
.F..LNJ	0,17	**0,61**	1,03	0,12	**0,44**	0,74	0,09	**0,33**	0,55	0,08	**0,29**	0,48	0,07	**0,26**	0,44	.F..LNJ
.E..LBJ	0,17	**0,61**	1,13	0,12	**0,44**	0,81	0,09	**0,33**	0,61	0,08	**0,29**	0,53	0,07	**0,26**	0,48	.E..LBJ
.E..LB	0,34	**0,75**	1,20	0,25	**0,54**	0,86	0,19	**0,40**	0,64	0,16	**0,35**	0,56	0,15	**0,32**	0,51	.E..LB
.S..LB	0,34	**0,73**	1,30	0,25	**0,53**	0,93	0,19	**0,39**	0,69	0,16	**0,34**	0,60	0,15	**0,32**	0,55	.S..LB
.E..GB	0,34	**0,87**	1,39	0,25	**0,62**	1,00	0,19	**0,47**	0,74	0,16	**0,41**	0,65	0,15	**0,37**	0,59	.E..GB
.S..HB	0,34	**0,87**	1,49	0,25	**0,62**	1,07	0,19	**0,47**	0,79	0,16	**0,41**	0,69	0,15	**0,37**	0,63	.S..HB

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSOM Mini Application • OF.T06L5

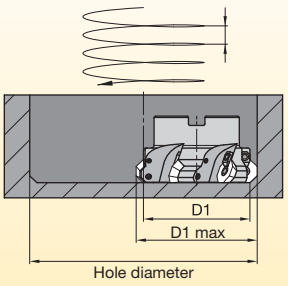
Ramping



Metric version

D1 mm	D1 max mm	max ap mm	ramping angle (°)	ramping length mm
32	41,1	9	11,0	46,3
40	49,0	9	7,5	68,4
50	58,9	9	5,0	102,9
63	71,8	9	3,9	132,0
80	88,7	9	2,9	177,7
100	108,6	9	2,2	234,3
125	133,6	9	1,7	303,2
160	168,5	9	1,3	396,6

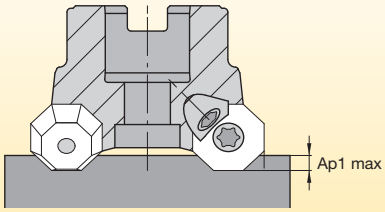
Helical Interpolation



Metric version

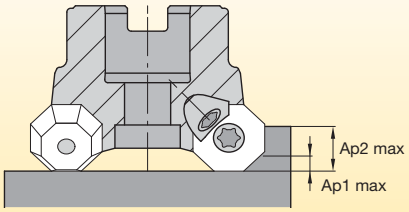
D1 mm	D1 max mm	Hole Diameter min. mm	Hole Diameter max. mm	Ap/Rev. mm
32	41,1	61,7	81,7	4,7
40	49,0	77,5	97,6	4,7
50	58,9	97,4	117,4	4,7
63	71,8	123,3	143,3	4,7
80	88,7	157,2	177,2	4,7
100	108,6	197,2	217,1	4,7
125	133,6	247,1	267,0	4,7
160	168,5	317,1	377,0	4,7

Plunging



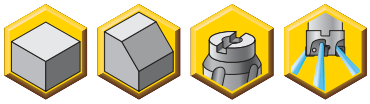
max. plunging depth	mm
Ap1 max	3,2

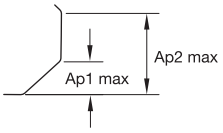
Face Milling

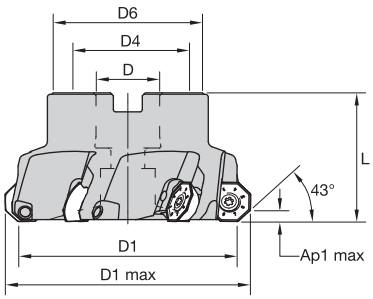


max. DOC Ap	mm	chipload (fz)
Ap1 max	3,5	1 x fz
Ap2 max	9,0	0,6 x fz

- Eight cutting edges per insert.
- Super soft cutting.







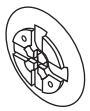


Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges); reduce feed rate by 40%

KSOM • Shell Mills

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM
3115873	**KSOM63R04OF07**	63	74,3	22	–	50	43	5,0	4	6.0°	0,61	10100
3115582	**KSOM63R05OF07**	63	74,3	22	–	50	43	5,0	5	6.0°	0,55	10100
3115875	**KSOM80R04OF07**	80	91,2	27	–	60	50	5,0	4	4.0°	1,14	7900
3115874	**KSOM80R06OF07**	80	91,2	27	–	60	50	5,0	6	4.0°	1,06	7900
3115877	**KSOM100R05OF07**	100	110,9	32	–	80	50	5,0	5	3.0°	1,66	6300
3115876	**KSOM100R08OF07**	100	110,9	32	–	80	50	5,0	8	3.0°	1,57	6300
3115879	**KSOM125R06OF07**	125	136,0	40	–	90	63	5,0	6	2.0°	2,56	5000
3115878	**KSOM125R10OF07**	125	136,0	40	–	90	63	5,0	10	2.0°	2,68	5000
3115881	**KSOM160R07OF07**	160	170,9	40	67	110	63	5,0	7	2.0°	4,20	3900
3115880	**KSOM160R12OF07**	160	170,9	40	67	110	63	5,0	12	2.0°	4,34	3900

Spare Parts

D1	 insert screw	 Nm	 Torx Plus wrench	 socket-head cap screw	 coolant lock screw assembly	 coolant lock screw	 coolant shower plate
63	**193.409**	6,0	**TTP20**	**125.025**	–	–	–
80	**193.409**	6,0	**TTP20**	**125.230**	–	–	–
100	**193.409**	6,0	**TTP20**	–	**MS2189C**	–	–
125	**193.409**	6,0	**TTP20**	–	–	**420.200**	**470.232**
160	**193.409**	6,0	**TTP20**	–	–	**420.200**	**470.233**

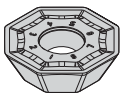
NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus 20 (order number 6205891) may be purchased separately in order to ensure proper torque setting.

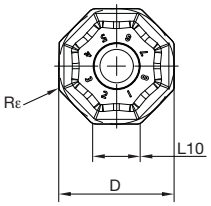
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LB	KCPK30	**.E..GB**	**KCPM40**	.S..HB	KCPM40
P3–P4	.E..LB	KCPK30	**.E..GB**	**KCPK30**	.S..HB	KCPK30
P5–P6	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M1–M2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
K1–K2	.E..LB	KCK15	**.E..GB**	**KC520M**	.S..HB	KCK15
K3	.E..LB	KC520M	**.E..GB**	**KC520M**	.S..HB	KC520M
N1–N2	.F..LNJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
N3	.F..LNJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
S1–S2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
S3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
S4	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for machining aluminium.


OFKT-LNJ



OFKT-LNJ

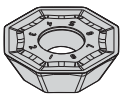
● first choice
○ alternate choice

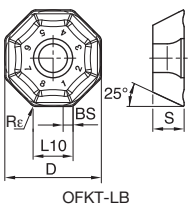
		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										

OFKT-LNJ

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT07L6AFFNLNJ	19	6,00	7,50	–	1,20	0,02	8	●	–	–	–	–	–	–	–	–

- First choice for light machining.


OFKT-LB



OFKT-LB

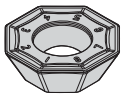
OFKT-LB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT07L6AFENLB	19	6,00	7,50	2,10	1,20	0,10	8	–	–	●	●	–	●	–	–	●
OFKT07L6AFSNLB	19	6,00	7,50	2,10	1,20	0,22	8	–	–	–	●	–	●	–	–	–

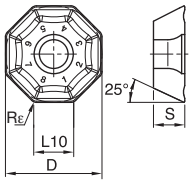
- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.

● first choice
○ alternate choice

P			○	●		●	●		○
M			●	●		○	○	○	●
K		●	○		●	○			
N	●								
S			●	●				●	●
H									



OFKT-GB

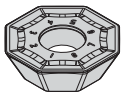


OFKT-GB

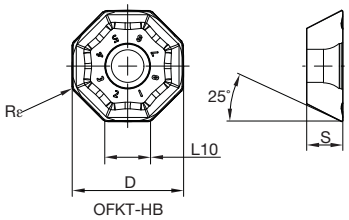
OFKT-GB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT07L6AFENGB	19	6,00	7,50	–	1,20	0,15	8	–	●	●	●	–	●	●	●	●

- First choice for heavy roughing.



OFKT-HB

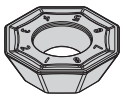


OFKT-HB

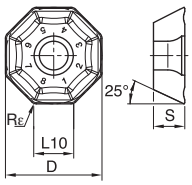
OFKT-HB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT07L6AFSNHB	19	6,00	7,50	–	1,20	0,21	8	–	●	●	●	–	●	●	–	●

- First choice for general purpose.



OFPT-GB

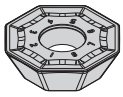


OFPT-GB

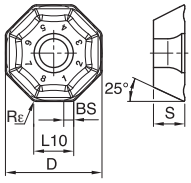
OFPT-GB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFPT07L6AFENGB	19	6,00	7,50	–	1,20	0,15	8	–	●	●	●	●	●	●	–	–

- First choice for heavy roughing.



OFPT-HB



OFPT-HB

OFPT-HB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFPT07L6AFSNHB	19	6,00	7,50	–	1,20	0,21	8	–	–	●	●	●	●	–	–	●

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LNJ	0,17	**0,67**	1,20	0,12	**0,49**	0,86	0,09	**0,36**	0,64	0,08	**0,32**	0,56	0,07	**0,29**	0,51	.F..LNJ
.E..LB	0,34	**0,75**	1,20	0,25	**0,54**	0,86	0,19	**0,40**	0,64	0,16	**0,35**	0,56	0,15	**0,32**	0,51	.E..LB
.S..LB	0,34	**0,73**	1,33	0,25	**0,53**	0,96	0,19	**0,39**	0,71	0,16	**0,34**	0,62	0,15	**0,32**	0,57	.S..LB
.E..GB	0,34	**0,87**	1,40	0,25	**0,62**	1,00	0,19	**0,47**	0,74	0,16	**0,41**	0,65	0,15	**0,37**	0,59	.E..GB
.S..HB	0,34	**0,87**	1,49	0,25	**0,62**	1,07	0,19	**0,47**	0,79	0,16	**0,41**	0,69	0,15	**0,37**	0,63	.S..HB

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

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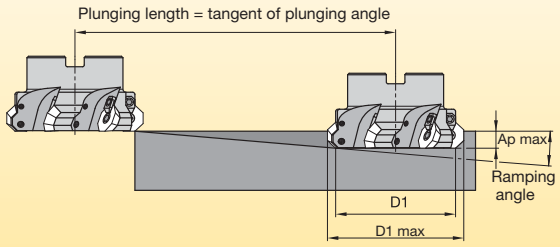
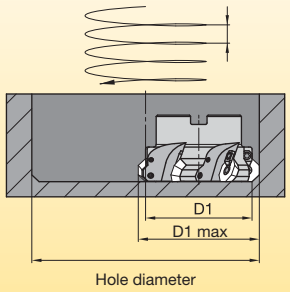
Ramping



Metric version

D1 mm	D1 max mm	Ap max	ramping angle (°)	ramping length mm
63	74,2	9	5,5	121,5
80	91,1	9	4,0	167,3
100	111,0	9	3,0	223,2
125	135,9	9	2,3	291,3
160	170,8	9	1,7	394,2

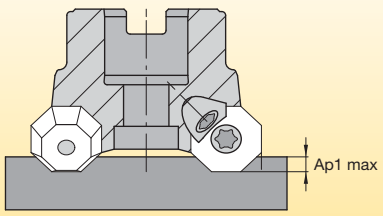
Helical Interpolation



Metric version

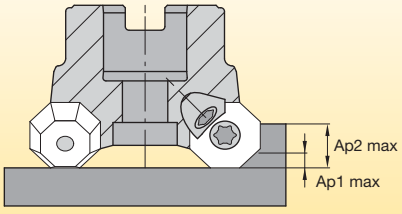
D1 mm	D1 max mm	hole diameter		Ap/rev mm
		min mm	max mm	
63	74,2	122,7	145,0	6,3
80	91,1	156,6	178,0	6,3
100	111,0	196,5	218,7	6,3
125	135,9	246,4	268,7	6,3
160	170,8	316,9	338,6	6,3

Plunging



max plunging depth	mm
Ap1 max	4,2

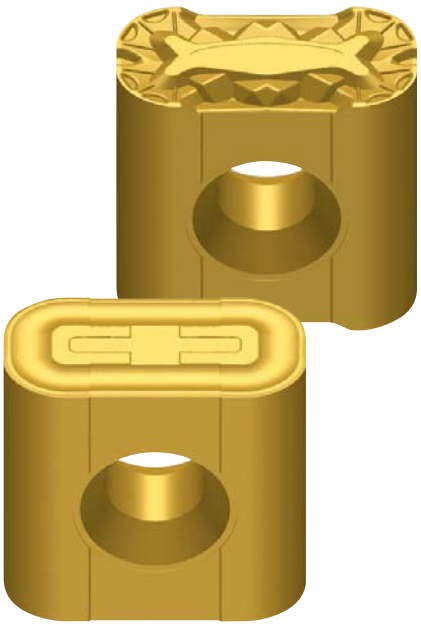
Face Milling



max DOC Ap	mm	chipload (fz)
Ap1 max	5,0	1 x fz
Ap2 max	11,0	0,6 x fz

Kennametal Tools for **Railways** and **Wheel Machining**

Kennametal offers a complete line of tooling for wheel and axle maintenance in railroad shops. All tools incorporate the latest technology for maximum metal removal and higher productivity. They are proven performers in actual use over extended periods of time, under a wide range of operating conditions. Standard off-the-shelf inserts and fewer pieces of hardware reduce inventory and operating costs. Included in this range are tools for reconditioning mounted wheel sets, wheel boring, wheel truing, axle turning, and journal burnishing.



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KSSM8+™ Face Milling Platform

Primary Application

The KSSM8+ platform is a first-choice face milling platform for **versatility** and a **reduced cost per edge**. This platform just got better with the latest pressing technology from Kennametal, which delivers pressed and sintered-to-size (PSTS) inserts ideal for general machining in **cast iron and steel**. With our latest KCPM40™ grade offering, PSTS inserts deliver exceptional performance. Now more than ever, the KSSM8+ platform is the economical solution for applications requiring a **near-90° shoulder**.

Features and Benefits

Features

- Double-sided insert with 8 cutting edges.
- Face mill with close to a 90° shoulder.
  - IC 10 (88° lead)
  - IC 12,7 (87° lead)
- Medium and fine density cutters.
- -LD and -GD geometry inserts.

Benefits

- Maximised number of cutting edges.
- Lower cost-per-edge.
- Reduced power consumption.
- Reduced deformation/chatter.
- Exceptional surface finish.
- Stronger edge for roughing.

Versatile Platform with Multiple Insert Options and Grades

Cost per Edge
Double-sided square inserts,
8 cutting edges.

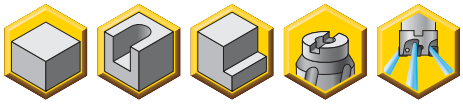


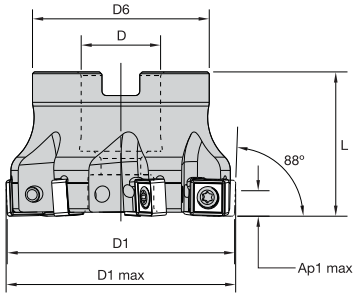


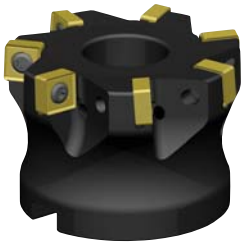
Optimised Cutting Forces
4° axial and 10° radial rake
angles reduce power consumption.

Through Tool Coolant/Air
Directed to the cutting edge
for optimum cooling.

- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.







KSSM8+ • Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	kg	max RPM
5420163	**KSSM88D050Z05SN10**	50,0	50,64	22,00	49,00	40,00	9,16	5	0,36	32900
5420164	**KSSM88D050Z06SN10**	50,0	50,64	22,00	49,00	40,00	9,16	6	0,36	32900
5420165	**KSSM88D063Z05SN10**	63,0	63,64	22,00	49,00	40,00	9,16	5	0,51	28500
5420166	**KSSM88D063Z07SN10**	63,0	63,64	22,00	49,00	40,00	9,16	7	0,52	28500
5420167	**KSSM88D080Z07SN10**	80,0	80,64	27,00	60,00	50,00	9,16	7	1,02	24800
5420168	**KSSM88D080Z09SN10**	80,0	80,64	27,00	60,00	50,00	9,16	9	1,02	24800
5420169	**KSSM88D100Z08SN10**	100,0	100,64	32,00	78,00	50,00	9,16	8	1,72	21900
5420250	**KSSM88D100Z11SN10**	100,0	100,64	32,00	78,00	50,00	9,16	11	1,71	21900

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts

D1	 insert screw	 Nm	 Torx driver	 socket-head cap screw	 coolant lock screw assembly
50,0	**193.492**	4,0	**DT15**	**–**	**–**
63,0	**193.492**	4,0	**DT15**	**–**	**–**
80,0	**193.492**	4,0	**DT15**	**MS2038**	**–**
100,0	**193.492**	4,0	**DT15**	**–**	**MS2189C**

NOTE: For coolant shower plates (MCC..), only use low-presssure coolant.

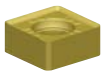
Insert Selection Guide

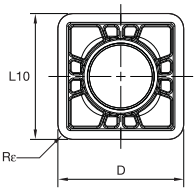
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KC725M	**.E..LD**	**KCPK30**	.S..GD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
P5–P6	.E..LD	KC725M	**.S..GD**	**KCPK30**	.S..GD	KCPM40
M1–M2	.E..LD	KC725M	**.E..LD**	**KC725M**	.S..GD	KCPM40
M3	.E..LD	KC725M	**.S..GD**	**KCPK30**	.S..GD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KC520M**	.S..GD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..GD	KCK15
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.E..LD**	**KC725M**	.E..LD	KC725M
S3	.E..LD	KC725M	**.E..LD**	**KC725M**	.S..GD	KCPM40
S4	.E..LD	KC725M	**.E..LD**	**KC725M**	.E..LD	KC725M
H1	–	–	**–**	**–**	–	–

Indexable Inserts

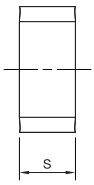
- First choice for light machining of cast iron and steel.
- Low cutting forces.

● first choice
○ alternate choice


SNHJ-LD



SNHJ-LD

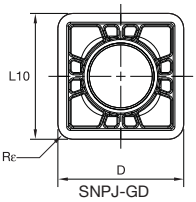


SNHJ-LD

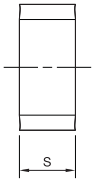
catalogue number	D	S	BS	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
P								○	●	●			●	●	○
M								●	●				○	●	●
K								●	○		●	●	○		
N															
S								●	●					○	●
H															
SNHJ10T308ENLD	10,0	3,98	–	10,00	0,8	0,06	8	●	–	●	●	–	●	–	–
SNHJ10T312ENLD	10,0	3,98	–	10,00	1,2	0,06	8	–	–	●	●	–	–	–	–

- First choice for general purpose machining.


SNPJ-GD



SNPJ-GD



SNPJ-GD

catalogue number	D	S	BS	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNPJ10T308SNGD	10,0	3,98	–	10,00	0,8	0,08	8	●	–	–	●	–	●	●	–
SNPJ10T312SNGD	10,0	3,98	–	10,00	1,2	0,08	8	–	–	–	●	–	–	●	–

Recommended Starting Feeds

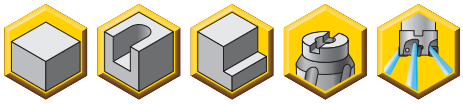
Recommended Starting Feeds [mm]

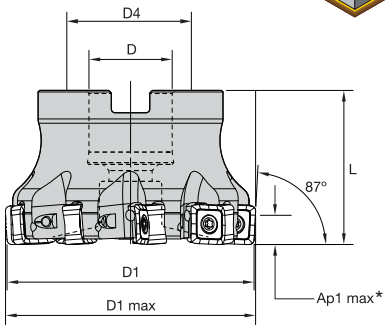
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	0,18	**0,41**	0,70	0,13	**0,29**	0,51	0,10	**0,22**	0,38	0,08	**0,19**	0,33	0,08	**0,18**	0,30	.E..LD
.S..GD	0,23	**0,51**	0,82	0,17	**0,37**	0,59	0,13	**0,27**	0,44	0,11	**0,24**	0,38	0,10	**0,22**	0,35	.S..GD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.





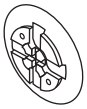


KSSM8+ • Shell Mills

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max*	Z	kg	max RPM
5419998	**KSSM87D050Z05SN12**	50,0	51,15	22,00	–	49,00	40,00	6	5	0,34	22700
5420110	**KSSM87D063Z05SN12**	63,0	64,15	22,00	–	49,00	40,00	6	5	0,49	19600
5420111	**KSSM87D063Z07SN12**	63,0	64,15	22,00	–	49,00	40,00	6	7	0,49	19600
5420112	**KSSM87D080Z07SN12**	80,0	81,15	27,00	–	60,00	50,00	6	7	1,00	16900
5420113	**KSSM87D080Z09SN12**	80,0	81,15	27,00	–	60,00	50,00	6	9	0,99	16900
5420114	**KSSM87D100Z08SN12**	100,0	101,15	32,00	–	78,00	50,00	6	8	1,65	14800
5420115	**KSSM87D100Z11SN12**	100,0	101,15	32,00	–	78,00	50,00	6	11	1,65	14800
5420116	**KSSM87D125Z09SN12**	125,0	126,15	40,00	–	89,00	63,00	6	9	2,87	13100
5420117	**KSSM87D125Z14SN12**	125,0	126,15	40,00	–	89,00	63,00	6	14	2,85	13100
5420118	**KSSM87D160Z12SN12**	160,0	161,15	40,00	66,70	89,00	63,00	6	12	3,34	11400

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.
*Ap1max. 6mm using insert SNHJ120608ENLD
*Ap1max. 11,86mm using insert SNPJ120608SNGD

Spare Parts

D1	 insert screw	 Nm	 Torx driver	 socket-head cap screw	 coolant lock screw assembly	 coolant shower plate assembly
50,0	**193.492**	4,0	**DT15**	**–**	**–**	**–**
63,0	**193.492**	4,0	**DT15**	**–**	**–**	**–**
80,0	**193.492**	4,0	**DT15**	**MS2038**	**–**	**–**
100,0	**193.492**	4,0	**DT15**	**–**	**MS2189C**	**–**
125,0	**193.492**	4,0	**DT15**	**–**	**MS2187C**	**–**
160,0	**193.492**	4,0	**DT15**	**–**	**–**	**MCCM16001**

NOTE: For coolant shower plates (MCC..), only use low-pressure coolant.

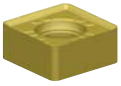
Insert Selection Guide

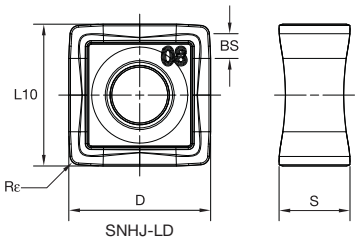
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KC725M	**.E..LD**	**KCPK30**	.S..GD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
P5–P6	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
M1–M2	.E..LD	KC725M	**.S..GD**	**KC522M**	.S..GD	KCSM40
M3	.E..LD	KC725M	**.S..GD**	**KCPM40**	.S..GD	KCSM40
K1–K2	.E..LD	KC520M	**.E..LD**	**KCK15**	.S..GD	KC520M
K3	.E..LD	KCK15	**.S..GD**	**KC520M**	.S..GD	KCK15
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KC522M
S3	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KCPM40
S4	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KC522M
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for light machining of cast iron and steel.

beyond


SNHJ-LD



SNHJ-LD

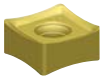
● first choice
○ alternate choice

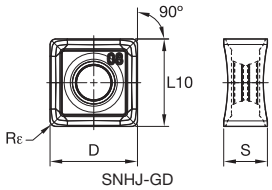
P			○	●			●	●	○
M			●	●			○	●	●
K	●	○		●	●	○			
N									
S			●	●				○	●
H									

SNHJ-LD

catalogue number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ120608ENLD	12,7	6,35	12,70	0,8	0,06	8	●	–	●	●	–	●	–	–
SNHJ120616ENLD	12,7	6,35	12,70	1,6	0,06	8	●	–	●	●	–	●	–	–

- First choice for high-performance roughing.


SNHJ-GD



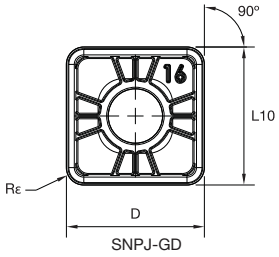
SNHJ-GD

SNHJ-GD

catalogue number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ120608SNGD	12,7	6,35	12,70	0,8	0,13	8	●	●	–	●	–	●	●	●

- First choice for regular roughing.


SNPJ-GD



● first choice
○ alternate choice

beyond

	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
P		○	●			●	●	○
M		●	●			○	●	●
K	●	○		●	●	○		
N								
S		●	●				○	●
H								

SNPJ-GD

catalogue number	D	L10	Rε	S	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNPJ120608SNGD	12,7	12,70	0,8	4,52	0,13	8	●	–	–	●	–	–	●	–
SNPJ120616SNGD	12,7	12,70	1,6	4,52	0,13	8	–	–	–	●	–	–	●	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	0,18	**0,46**	0,82	0,13	**0,33**	0,59	0,10	**0,25**	0,44	0,08	**0,22**	0,38	0,08	**0,20**	0,35	.E..LD
.S..GD	0,23	**0,59**	0,93	0,17	**0,43**	0,67	0,13	**0,32**	0,50	0,11	**0,28**	0,43	0,10	**0,25**	0,40	.S..GD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Solution Capabilities

RAIL MILLING

Kennametal customers benefit from the highest service levels, our long-term experience, and application knowledge in the rail milling industry.

- Solutions for all applications in rail and wheel machining.
- Technical support to find the right tools for the application and to learn how to use them the best way.
- Highly productive tooling solutions, including indexable inserts up to eight cutting edges.
- High-performance tools with helix-like partitions and long tool life.
- Solutions available to optimise vibration, performance, and cutting action, depending on the application.



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KENNAMETAL®

kennametal.com

Fix-Perfect™ Cast Iron Rougher and Finisher

Primary Application

Performance booster in machining cast iron materials. Based on workpiece requirements, Fix-Perfect roughers and finishers cover all face and shoulder milling applications when machining cast iron materials with best-in-class productivity. Eight true cutting edges per insert deliver low cost per edge and best cost per part (CPP) ceramic inserts available as standard line items.

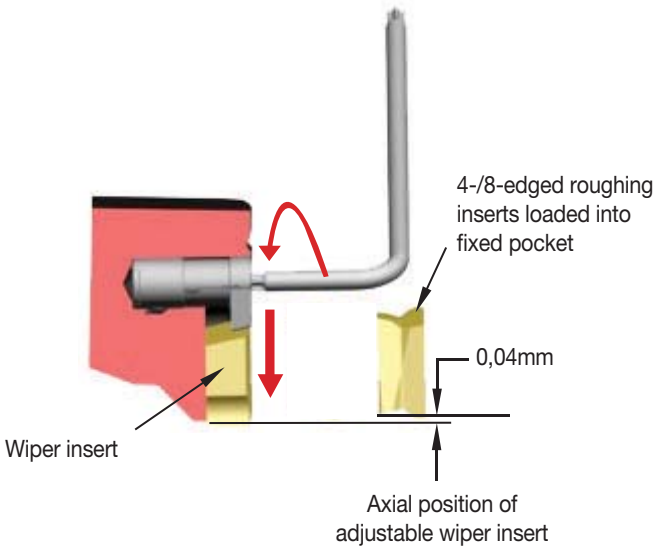
Features and Benefits

Fix-Perfect Cast Iron 70° and 90° Roughing and Finishing in One Tool

- Innovative tangential insert clamping.
- First choice for high feed rates.
- Protection of non-cutting edges.
- Adjustable element for fine finishing with wiper inserts.
- PCBN-tipped wiper inserts available for excellent floor finish.
- Micro-precise runout setup.

Fix-Perfect Cast Iron Finisher Best-in-Class Fine-Finishing Concept

- Rigid and stable cutter design.
- High-precision pocket seat.
- Perfect axial runout without insert adjustment.
- Reliable, excellent floor finish and flatness.
- Easy handling and low-cost cutter setup.





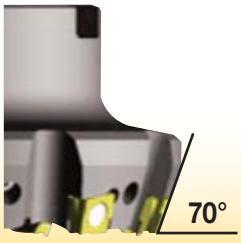
Fix-Perfect™ Finisher



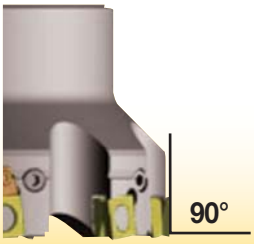
Fix-Perfect Cast Iron

Fix-Perfect Cast Iron 70° and 90°

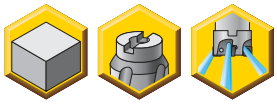
Fix-Perfect 70°

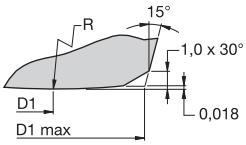


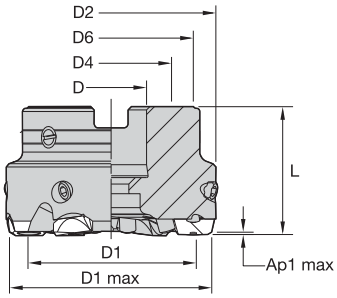
Fix-Perfect 90°



- Perfect axial runout without insert adjustment.
- Excellent floor finish and flatness.
- Easy handling and cutter setup







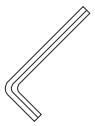


Finishing Face Mills • Shell Mills • Right Hand

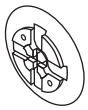
order number	catalogue number	D1	D1 max	D	D2	D4	D6	L	Ap1 max	Z	kg	max RPM
1998359	**63A04RP00MD10CF**	51	63,0	22	65	–	55	40	1,0	4	0,69	20200
1998358	**63A06RP00MD10CF**	51	63,0	22	65	–	55	40	1,0	6	0,72	20200
1893753	**80A06RP00MD10CF**	69	80,0	27	82	–	64	50	1,0	6	1,25	15900
1886327	**80A09RP00MD10CF**	69	80,0	27	82	–	64	50	1,0	9	1,35	15900
1893754	**100B08RP00MD10CF**	89	100,0	32	102	–	84	50	1,0	8	1,85	12750
1886328	**100B12RP00MD10CF**	89	100,0	32	102	–	84	50	1,0	12	2,20	12750
1893755	**125B10RP00MD10CF**	114	125,0	40	127	–	104	63	1,0	10	3,75	10200
1886329	**125B16RP00MD10CF**	114	125,0	40	127	–	104	63	1,0	16	3,85	10200
1893756	**160C12RP00MD10CF**	149	160,0	40	162	66,7	140	63	1,0	12	6,60	7950
1886330	**160C20RP00MD10CF**	149	160,0	40	162	66,7	140	63	1,0	20	6,75	7950
1893757	**200C14RP00MD10CF**	189	200,0	60	202	101,6	180	63	1,0	14	9,70	6350
1886331	**200C24RP00MD10CF**	189	200,0	60	202	101,6	180	63	1,0	24	9,85	6350
1893758	**250C18RP00MD10CF**	235	250,0	60	252	101,6	230	63	1,0	18	16,65	5100
1886332	**250C30RP00MD10CF**	239	250,0	60	252	101,6	230	63	1,0	30	16,85	5100

Spare Parts







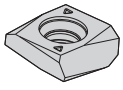


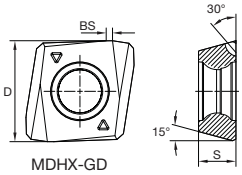
D1 max	clamp stud	clamp screw	hex wrench	Nm	mounting screw	coolant screw	coolant shower plate
63	**410.085**	**420.060**	**170.003**	5,0	**125.025**	**420.104**	–
80	**410.085**	**420.060**	**170.003**	5,0	**125.230**	**420.120**	–
100	**410.085**	**420.060**	**170.003**	5,0	–	**420.160**	–
125	**410.085**	**420.060**	**170.003**	5,0	–	**420.200**	**470.232**
160	**410.085**	**420.060**	**170.003**	5,0	–	**420.200**	**470.233**
200	**410.085**	**420.060**	**170.003**	5,0	–	–	**470.234**
250	**410.085**	**420.060**	**170.003**	5,0	–	–	**470.235**

NOTE: Please order spare parts separately.
For diameters of 125mm and 160mm, use the coolant screw and coolant cap spare parts together.
Torque wrench (DTQ50140, order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.F..GD4W	KC520M	**.E..GD4W**	**KC520M**	.E..GD	KC520M
K3	.F..GD4W	KC520M	**.E..GD4W**	**KC520M**	.E..GD	KC520M
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


MDHX-GD



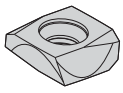
MDHX-GD

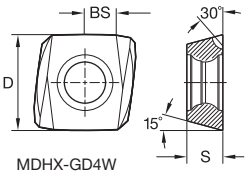
● first choice
○ alternate choice

P						○	●		
M						○	●		
K	●	●	●	○				●	●
N									
S						○	●		
H									

MDHX-GD • Right Hand

catalogue number	D	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC725M	KB1340	KY3500
MDHX1004ZDERGD	13	4,76	0,80	0,04	4	●	●	–	●	–	–	–	–

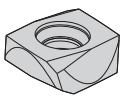

MDHX-GD4W

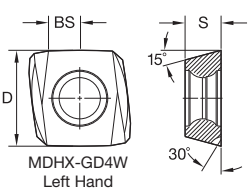


MDHX-GD4W

MDHX-GD4W • Right Hand

catalogue number	D	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC725M	KB1340	KY3500
MDHX1004ZDERGD4W	13	4,76	4,23	0,04	4	●	●	–	●	–	–	–	–
MDHX1004ZDFRGD4W	13	4,76	4,23	0,02	4	●	●	–	●	–	–	–	–


MDHX-GD4W
Left Hand



MDHX-GD4W
Left Hand

MDHX-GD4W • Left Hand

catalogue number	D	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC725M	KB1340	KY3500
MDHX1004ZDFLGD4W	13	4,76	4,23	0,02	4	●	●	–	–	–	–	–	–

Recommended Starting Feeds [mm]

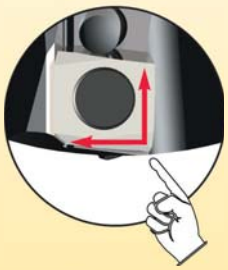
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..GD4W	0,23	**0,84**	1,41	0,17	**0,60**	1,01	0,13	**0,45**	0,75	0,11	**0,39**	0,66	0,10	**0,36**	0,60	.F..GD4W
.E..GD4W	0,26	**0,93**	1,67	0,19	**0,67**	1,19	0,14	**0,50**	0,88	0,12	**0,44**	0,77	0,11	**0,40**	0,70	.E..GD4W
.E..GD	0,26	**1,03**	1,90	0,19	**0,74**	1,35	0,14	**0,55**	1,00	0,12	**0,48**	0,87	0,11	**0,44**	0,80	.E..GD

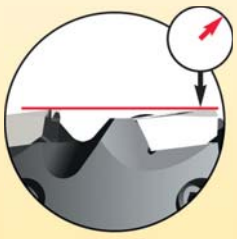
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Insert Loading Procedure

1. Clean insert and insert pocket seat.
2. Load insert — push insert against pin and axial pocket wall.
3. Tighten screw to a torque of 5 Nm.
4. Check the axial runout.
5. Do not exceed the maximum recommended RPM.







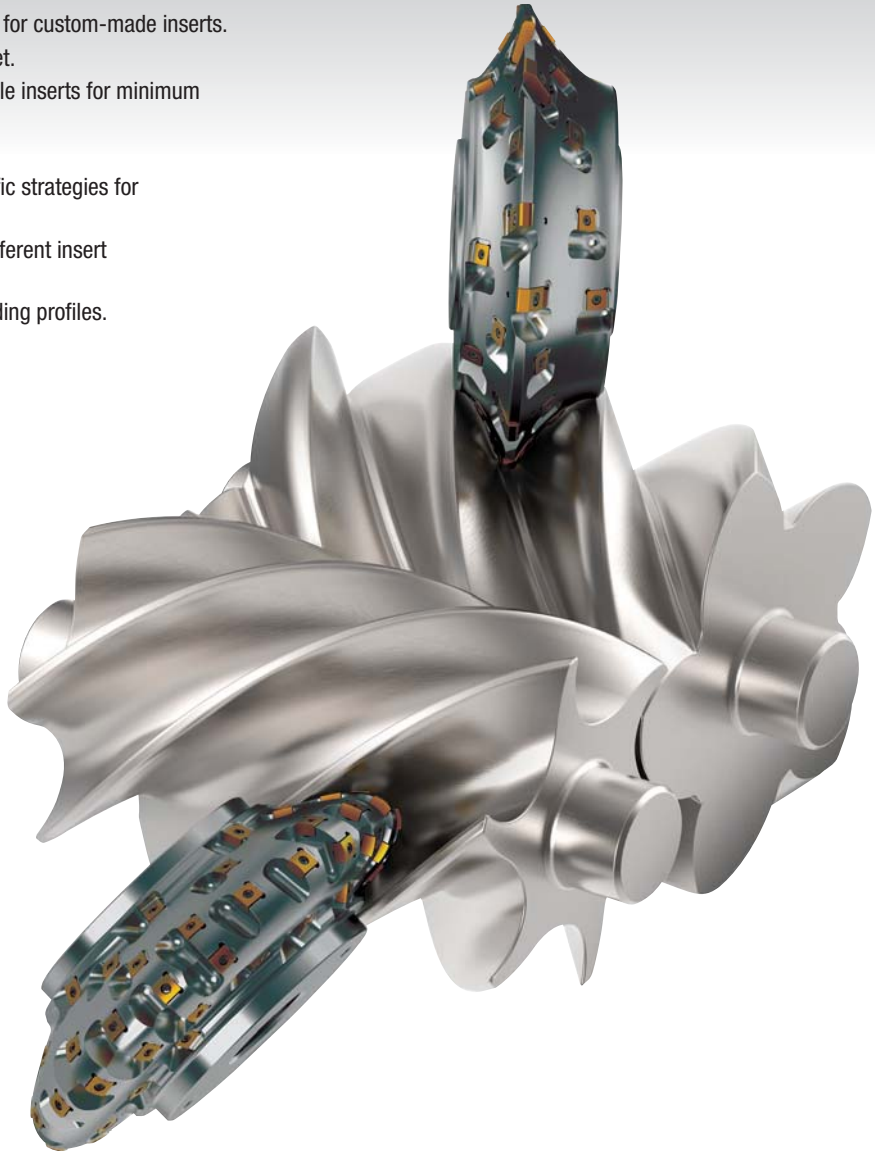
tool diameter (mm)	maximum axial runout	maximum RPM
63	10 µm	20000
80	10 µm	15900
100	10 µm	12750
125	10 µm	10200
160	15 µm	7950
200	15 µm	6350
250	15 µm	5100

Solution Capabilities

SCREW-ROTOR MILLING

Kennametal customers benefit from the highest service levels, our long-term experience, and application knowledge in milling of screw-rotors.

- Faster availability due to standardised processes for custom-made inserts.
- Solutions for all machines currently on the market.
- Very close contour profile with standardised profile inserts for minimum grinding allowance.
- Tools can be used in many different materials.
- Increased productivity through application-specific strategies for optimised milling.
- Smooth cutting action due to multiple rows of different insert alignments for optimum performance.
- Innovative solutions for small rotors with demanding profiles.

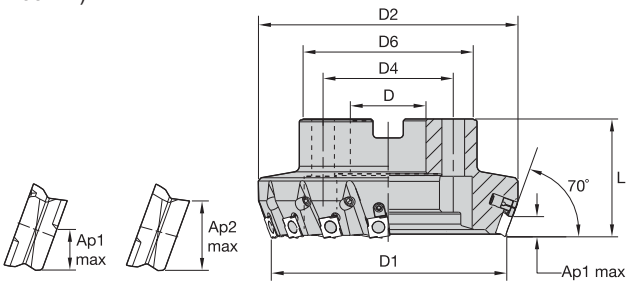


Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

- Eight cutting edges per insert.
- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Adjustable pockets (D1 = 80–160mm).



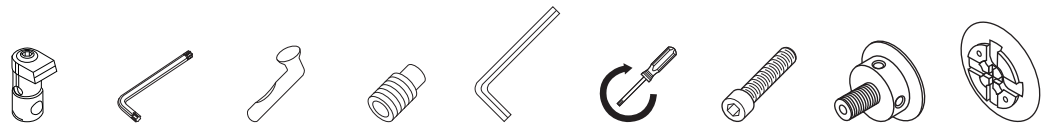
Ap1 max = 5,9mm (8 edges)
Ap2 max = 9,5mm (4 edges), reduce feed rate by 30%



Fix-Perfect 70° • Shell Mills

order number	catalogue number	D1	D	D2	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
1503027	**50A04RP70SP12CFP**	50	22	62	–	42	43	5,9	4	0	0,50	6300
1887100	**50A05RP70SP12CFP**	50	22	62	–	42	43	5,9	5	0	0,50	6300
1501666	**50A06RP70SP12CFP**	50	22	62	–	42	43	5,9	6	0	0,50	6300
1503029	**63B05RP70SP12CFP**	63	22	75	–	54	40	5,9	5	0	0,70	5000
1887101	**63B07RP70SP12CFP**	63	22	75	–	54	40	5,9	7	0	0,75	5000
1501667	**63B08RP70SP12CFP**	63	22	75	–	54	40	5,9	8	0	0,75	5000
1503038	**80B06RP70SP12C1WFP**	80	27	92	–	64	50	5,9	6	1	1,20	4000
1887102	**80B08RP70SP12C2WFP**	80	27	92	–	64	50	5,9	8	2	1,30	4000
1501668	**80B10RP70SP12CFP**	80	27	92	–	64	50	5,9	10	0	1,30	4000
1503034	**100B08RP70SP12C2WFP**	100	32	112	–	84	50	5,9	8	2	2,00	3200
1887173	**100B12RP70SP12C3WFP**	100	32	112	–	84	50	5,9	12	3	2,10	3200
1501701	**100B14RP70SP12CFP**	100	32	112	–	84	50	5,9	14	0	2,00	3200
1503049	**125B10RP70SP12C2WFP**	125	40	137	–	94	63	5,9	10	2	3,20	2500
1503054	**160C12RP70SP12C3WFP**	160	40	173	66,7	94	63	5,9	12	3	4,20	2000
1887175	**160C18RP70SP12C3WFP**	160	40	173	66,7	94	63	5,9	18	3	4,40	2000
1503057	**200C16RP70SP12C4WFP**	200	60	212	101,6	134	63	5,9	16	4	6,50	1600

Spare Parts

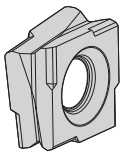


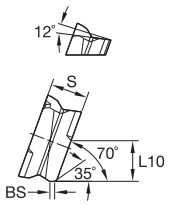
D1	cutting body design	adjusting element	Torx wrench	clamp stud	set screw	hex wrench	Nm	socket-head cap screw	coolant lock screw	coolant shower plate
50	FP	–	–	**410.081**	**121.612**	**170.003**	5,0	**125.025**	**420.100**	–
63	FP	–	–	**410.081**	**121.612**	**170.003**	5,0	–	**420.102**	–
80	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	5,0	–	**420.122**	–
80	FP	–	–	**410.081**	**121.612**	**170.003**	5,0	–	**420.122**	–
100	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	5,0	–	**420.160**	–
100	FP	–	–	**410.081**	**121.612**	**170.003**	5,0	–	**420.160**	–
125	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	5,0	–	**420.200**	**470.232**
160	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	5,0	–	**420.200**	**470.233**
200	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	5,0	–	–	**470.234**

NOTE: Please order spare parts separately.
For diameters of 125mm and 160mm, use the coolant screw and coolant cap spare parts together.
Torque wrench (DTQ50140, order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GP	KC520M	**.E..GP**	**KCK15**	.S..GP	KCK15
K3	.E..GP	KC520M	**.E..GP**	**KCK15**	.S..GP	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SPHX–GP



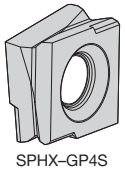
SPHX–GP

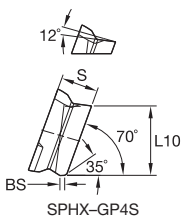
● first choice
○ alternate choice

P								
M								
K	●	●	●	○	○	●	●	
N								
S								
H								

SPHX-GP • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCELGP	5,41	5,50	0,70	0,04	8	–	●	●	–	–	–	–
SPHX1205ZCERGP	5,41	5,50	0,70	0,04	8	–	●	●	–	●	–	–
SPHX1205ZCSRGP	5,41	5,50	0,70	0,14	8	–	–	●	–	●	–	–
SPHX1205ZCTLGPK	5,41	5,50	0,70	0,24	8	–	–	–	–	–	–	●
SPHX1205ZCTRGP	5,41	5,50	0,70	0,24	8	–	–	–	●	–	–	–
SPHX1205ZCTRGPK	5,41	5,50	0,70	0,24	8	–	–	–	–	–	–	●

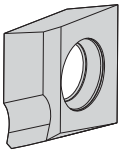

SPHX–GP4S

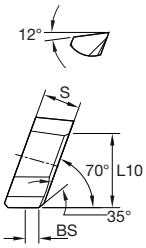


SPHX–GP4S

SPHX-GP4S • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCERGP4S	10,04	5,50	0,70	0,04	4	–	–	●	–	–	–	–
SPHX1205ZCTRGP4SK	10,06	5,50	0,70	0,24	4	–	–	–	–	–	–	●


SPHX–W-GN



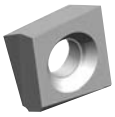
SPHX–W-GN

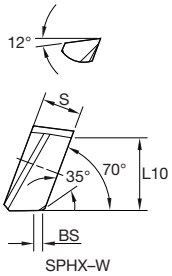
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P								
M								
K		●	●	●	○	○	●	●
N								
S								
H								

SPHX-W • Finishing • GN

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCERGNT1W	10,00	5,50	2,00	0,02	1	–	–	–	–	–	●	–
SPHX1205ZCFRGN1W	10,00	5,50	2,00	0,02	1	–	●	●	–	–	–	–
SPHX1205ZCFRGN1WK	10,00	5,50	2,00	0,02	1	–	–	–	–	–	–	●


SPHX–W



SPHX–W

SPHX-W • Finishing • GP

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCER-GP1W	10,00	5,50	2,00	0,02	1	–	●	●	–	–	–	–
SPHX1205ZCTR-GP1WK	10,00	5,50	2,00	0,24	1	–	–	–	–	–	–	●

NOTE: SPHX-W: Wiper Facet BS = 2mm.

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GP	0,14	**0,49**	0,94	0,10	**0,36**	0,68	0,08	**0,27**	0,51	0,07	**0,23**	0,44	0,06	**0,21**	0,40	.E..GP
.T..GP	0,25	**0,63**	1,01	0,18	**0,45**	0,73	0,14	**0,34**	0,54	0,12	**0,30**	0,47	0,11	**0,27**	0,43	.T..GP
.S..GP	0,25	**0,63**	1,01	0,18	**0,45**	0,73	0,14	**0,34**	0,54	0,12	**0,30**	0,47	0,11	**0,27**	0,43	.S..GP

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

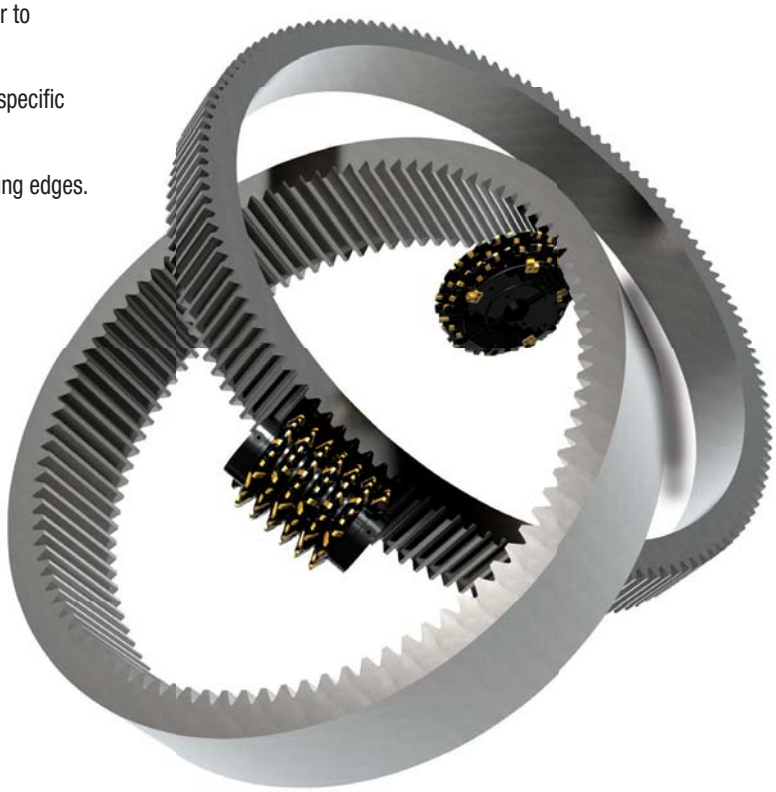
Productivity and Innovation — Powerful Gear Cutting Tools with Optimised Design

Gear Milling

Production requirements for large gears emphasise cost control with improved productivity. Our solutions feature higher cutting speeds, higher feed rates with lower power consumption, and increased productivity by using indexable inserts with up to eight cutting edges.

FEATURES AND BENEFITS

- Optimised cutting division, along with the use of positive cutting insert geometries, ensure low power requirements at higher feed rates.
- Tool wear is minimised by optimising the indexable insert number to achieve smoother cuts and increased productivity.
- Higher cutting speeds achieved through innovative and material-specific tailored cutting materials and geometries.
- Lower tooling costs due to indexable inserts with up to eight cutting edges.
- Easy insert changes made possible by better accessibility.

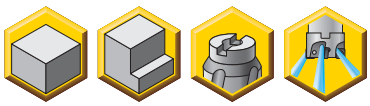


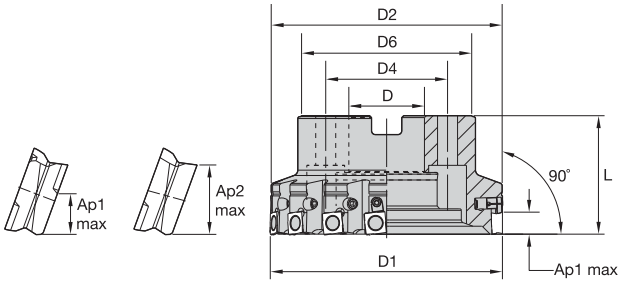
Experience the advantages at your Authorised Kennametal Distributor or at **kennametal.com.**

KENNAMETAL®

kennametal.com

- Eight cutting edges per insert.
- Rough and finish in one operation.
- Tangential mounted inserts enable higher feed rates.
- Adjustable pockets (D1 = 80–200mm).





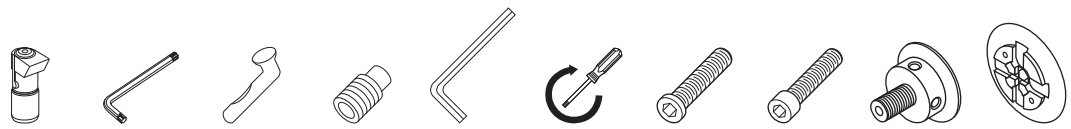
Ap1 max = 6mm (8 edges)
Ap2 max = 10mm (4 edges); reduce feed rate by 30%



Fix-Perfect 90° • Shell Mills

order number	catalogue number	D1	D	D2	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
1503007	**50A04RP90SP12CFP**	50	22	48	–	41	43	6,0	4	0	0,35	6300
1501652	**50A05RP90SP12CFP**	50	22	48	–	41	43	6,0	5	0	0,36	6300
1503012	**63A06RP90SP12CFP**	63	22	61	–	51	40	6,0	6	0	0,59	5000
1887178	**63A07RP90SP12CFP**	63	22	61	–	51	40	6,0	7	0	0,60	5000
1501653	**63A08RP90SP12CFP**	63	22	61	–	51	40	6,0	8	0	0,60	5000
1503013	**80A06RP90SP12C1WFP**	80	27	79	–	64	50	6,0	6	1	1,12	4000
1887179	**80A08RP90SP12C2WFP**	80	27	79	–	64	50	6,0	8	2	1,15	4000
1501655	**80A10RP90SP12CFP**	80	27	79	–	64	50	6,0	10	0	1,15	4000
1503015	**100B08RP90SP12C2WFP**	100	32	99	–	84	50	6,0	8	2	1,70	3200
1887180	**100B12RP90SP12C3WFP**	100	32	99	–	84	50	6,0	12	3	1,80	3200
1501660	**100B14RP90SP12CFP**	100	32	98	–	84	50	6,0	14	0	1,90	3200
1503018	**125B10RP90SP12C2WFP**	125	40	123	–	94	63	6,0	10	2	2,85	2500
1887181	**125B15RP90SP12C3WFP**	125	40	123	–	94	63	6,0	15	3	3,00	2500
1503021	**160C12RP90SP12C3WFP**	160	40	158	66,7	94	63	6,0	12	3	3,90	2000
1887193	**160C18RP90SP12C3WFP**	160	40	158	66,7	94	63	6,0	18	3	4,00	2000
1503022	**200C16RP90SP12C4WFP**	200	60	199	101,6	134	63	6,0	16	4	6,10	1600
1887194	**200C24RP90SP12C4WFP**	200	60	199	101,6	134	63	6,0	24	4	6,30	1600

Spare Parts

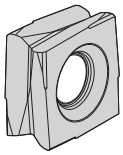


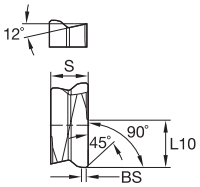
D1	cutting body design	adjusting element	Torx wrench	clamp stud	set screw	hex wrench	Nm	low-head cap screw	socket-head cap screw	coolant lock screw	coolant shower plate
50	FP	–	–	**410.081**	**121.612**	**170.003**	6,0	**129.025**	–	–	–
63	FP	–	–	**410.081**	**121.612**	**170.003**	6,0	–	**125.025**	**420.100**	–
80	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	6,0	–	**125.230**	**420.120**	–
80	FP	–	–	**410.081**	**121.612**	**170.003**	6,0	–	**125.230**	**420.120**	–
100	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	6,0	–	–	**420.160**	–
100	FP	–	–	**410.081**	**121.610**	**170.003**	6,0	–	–	**420.160**	–
125	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	6,0	–	–	**420.200**	**470.232**
160	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	6,0	–	–	**420.200**	**470.233**
200	WFP	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	6,0	–	–	–	**470.234**

NOTE: Please order spare parts separately.
For 125mm and 160mm diameter milling cutters, always use the coolant screw and coolant cap together.
Adjusting element 479.100 includes adjusting element screw 193.300.
Torque wrench (KTW45) and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.
An adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GPB	KC520M	**.E..GPB**	**KCK15**	.S..GPB	KCK15
K3	.E..GPB	KC520M	**.E..GPB**	**KCK15**	.S..GPB	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SPHX-GPB



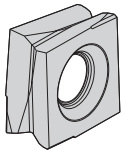
SPHX-GPB

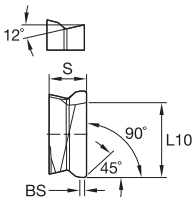
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
P							○	●		
M							○	●		
K		●	●	●	○	○			●	●
N										
S							○	●		
H										

SPHX-GPB • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
4.81201R011	6,50	5,50	–	0,04	8	–	–	●	–	–	–	–	–	–
SPHX1205PCELGPB	6,57	5,50	0,70	0,02	8	–	–	●	–	–	–	–	–	–
SPHX1205PCERGPB	6,57	5,50	0,70	0,02	8	–	●	●	–	●	–	–	–	–
SPHX1205PCSRGPB	6,57	5,50	0,70	0,14	8	–	–	●	–	●	–	●	–	–
SPHX1205PCTLGPBK	6,57	5,50	0,70	0,24	8	–	–	–	–	–	–	–	–	●
SPHX1205PCTRGPB	6,57	5,50	0,70	0,24	8	–	–	–	●	–	–	–	–	–
SPHX1205PCTRGPBK	6,57	5,50	0,70	0,24	8	–	–	–	–	–	–	–	–	●

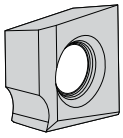

SPHX-GP4S

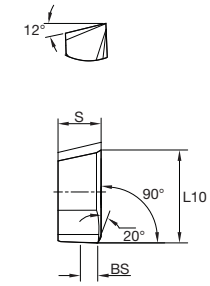


SPHX-GP4S

SPHX-GP4S • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCERGP4SB	11,07	5,50	0,70	0,02	4	–	●	●	–	–	–	–	–	–
SPHX1205PCTRGP4SBK	11,08	5,50	0,70	0,24	4	–	–	–	–	–	–	–	–	●


SPHX-GN1WB
SPHX-GN1WBK



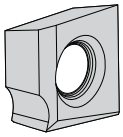
SPHX-GN1WB
SPHX-GN1WBK

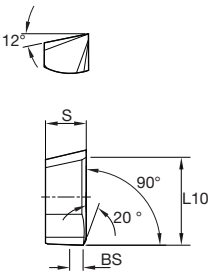
● first choice
○ alternate choice

P							○	●			
M							○	●			
K	●	●	●	○	○				●	●	
N											
S							○	●			
H											

SPHX-W • Finishing • GN

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCERGN1WB	11,00	5,20	2,00	0,04	1	–	–	–	–	●	–	–	–	–
SPHX1205PCERGNT1WB	12,70	5,50	2,00	0,02	1	–	–	–	–	–	–	–	●	–
SPHX1205PCFLGN1WB	11,00	5,50	2,00	0,02	1	–	–	●	–	–	–	–	–	–
SPHX1205PCFRGN1WB	11,00	5,20	2,00	0,02	1	–	●	●	●	–	–	●	–	–
SPHX1205PCFRGN1WBK	11,00	5,20	2,00	0,02	1	–	–	–	–	–	–	–	–	●


SPHX-GP1WB



SPHX-GP1WB

SPHX-W • Finishing • GP

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCER-GP1WB	11,00	5,50	2,00	0,02	1	–	●	●	–	–	–	–	–	–
SPHX1205PCTR-GP1WBK	11,00	5,50	2,00	0,24	1	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

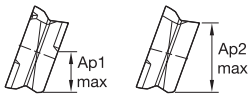
Light Machining	General Purpose	Heavy Machining

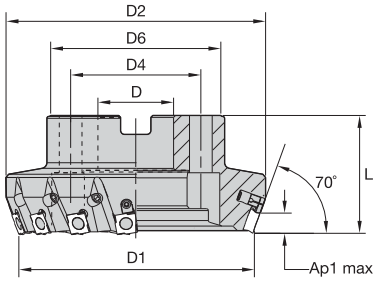
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GPB	0,12	**0,46**	0,82	0,08	**0,33**	0,59	0,06	**0,25**	0,44	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..GPB
.T..GPB	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.T..GPB
.S..GPB	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GPB

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Eight cutting edges per insert.







Ap1 max = 6,5mm (8 edges)
Ap2 max = 9,5mm (4 edges); reduce feed rate by 30%

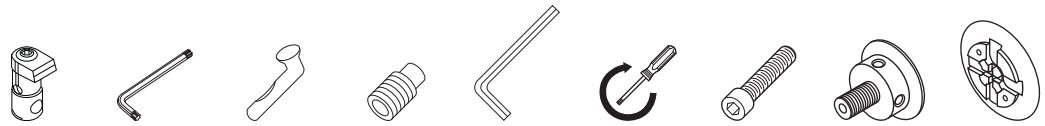


Fix-Perfect 70º • Shell Mills

order number	catalogue number	D1	D	D2	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
1802594	**80A07RP70SP15C1WFP**	80	27	94	–	64	50	6,5	7	1	1,50	4000
1777661	**100B09RP70SP15C2WFP**	100	32	114	–	84	50	6,5	9	2	2,20	3200
1802595	**125B12RP70SP15C2WFP**	125	40	139	–	94	63	6,5	12	2	3,40	2500
1798199	**160C10RP70SP15C2WFP**	160	40	174	66,7	94	63	6,5	10	2	4,60	2000
1802596	**160C16RP70SP15C4WFP**	160	40	174	66,7	94	63	6,5	16	4	4,80	2000
1798200	**200C12RP70SP15C2WFP** *	200	60	214	101,6	134	63	6,5	12	2	6,90	1600

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



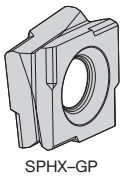
D1	Z	adjusting element	Torx wrench	clamp stud	set screw	hex wrench	Nm	socket-head cap screw	coolant lock screw	coolant shower plate
80	7	**479.100**	**KT9**	**410.084**	**121.616**	**170.003**	5,0	**125.230**	**420.120**	–
100	9	**479.100**	**KT9**	**410.084**	**121.612**	**170.003**	5,0	–	**420.160**	–
125	12	**479.100**	**KT9**	**410.084**	**121.612**	**170.003**	5,0	–	**420.200**	**470.232**
160	10	**479.100**	**KT9**	**410.084**	**121.616**	**170.003**	5,0	–	**420.200**	**470.233**
160	16	**479.100**	**KT9**	**410.084**	**121.612**	**170.003**	5,0	–	**420.200**	**470.233**
200	12	**479.100**	**KT9**	**410.084**	**121.616**	**170.003**	5,0	–	–	**470.234**

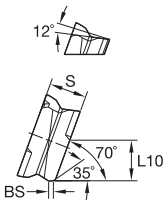
NOTE: Please order spare parts separately.
For 125mm and 160mm diameter milling cutters, always use the coolant screw and coolant cap together.
Adjusting element 479.100 includes adjusting element screw **193.300**.
Torque wrench (DTQ50140,order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GP	KCK15	**.E..GP**	**KCK15**	.E..GP	KCK15
K3	.E..GP	KCK15	**.E..GP**	**KCK15**	.S..GP	KCPK30
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts • SPHX15T6...


SPHX–GP



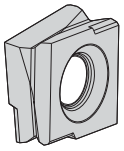
SPHX–GP

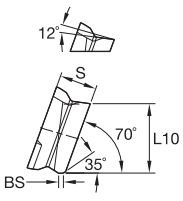
● first choice
○ alternate choice

P								
M								
K	●	●	●	○	○	●	●	
N								
S								
H								

SPHX-GP • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCERGP	6,52	6,60	1,20	0,02	8	–	–	●	–	●	–	–
SPHX15T6ZCSRGP	6,52	6,60	1,20	0,14	8	●	–	–	–	●	–	–
SPHX15T6ZCTRGPK	6,50	6,60	1,20	0,24	8	–	–	–	–	–	–	●

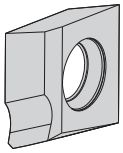

SPHX–GP4S

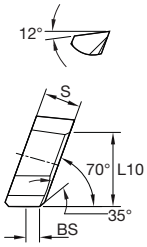


SPHX–GP4S

SPHX-GP4S • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCERGP4S	12,49	6,60	1,20	0,04	4	–	–	●	–	–	–	–
SPHX15T6ZCTRGP4SK	12,51	6,60	1,20	0,24	4	–	–	–	–	–	–	●


SPHX–W-GN



SPHX–W-GN

● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P								
M								
K		●	●	●	○	○	●	●
N								
S								
H								

SPHX-W • Finishing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCFRGN1W	11,00	6,60	2,70	0,02	1	–	–	●	–	–	–	–

NOTE: SPHX-W: Wiper Facet BS = 2,7mm.

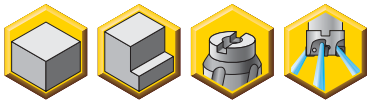
Recommended Starting Feeds [mm]

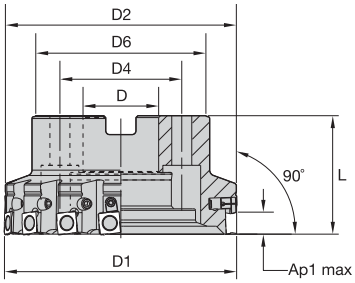
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GP	0,12	**0,49**	0,87	0,09	**0,36**	0,62	0,07	**0,27**	0,47	0,06	**0,23**	0,41	0,05	**0,21**	0,37	.E..GP
.S..GP	0,25	**0,63**	1,01	0,18	**0,45**	0,73	0,14	**0,34**	0,54	0,12	**0,30**	0,47	0,11	**0,27**	0,43	.S..GP

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Rough and finish in one operation.
- Tangential mounted inserts enable higher feed rates.
- Adjustable pockets (D1 = 80–250mm).
- Eight cutting edges per insert.





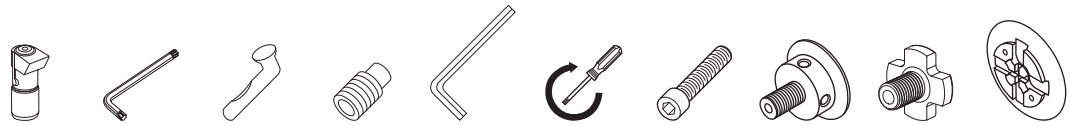
Ap1 max = 8mm (8 edges)
Ap2 max = 12mm (4 edges); reduce feed rate by 30%



Fix-Perfect 90° • Shell Mills

order number	catalogue number	D1	D	D2	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
1795217	**80A05RP90SP15C1WFP**	80	27	78	–	64	50	8,0	5	1	1,12	4000
1798604	**80A06RP90SP15C1WFP**	80	27	78	–	64	50	8,0	6	1	1,20	4000
1777658	**100B08RP90SP15C2WFP**	100	32	99	–	84	50	8,0	8	2	1,80	3200
1798605	**125B10RP90SP15C2WFP**	125	40	123	–	94	63	8,0	10	2	3,00	2500
1795286	**160C10RP90SP15C2WFP**	160	40	158	66,7	94	63	8,0	10	2	4,10	2000
1795288	**200C12RP90SP15C2WFP**	200	60	198	101,6	134	63	8,0	12	2	6,40	1600

Spare Parts

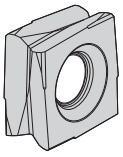


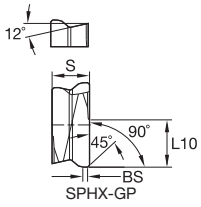
D1	Z	adjusting element	Torx wrench	clamp stud	set screw	hex wrench	Nm	socket-head cap screw	coolant lock screw	mill cutter lock screw	coolant shower plate
80	5	**479.100**	**KT9**	**410.084**	**121.616**	**170.003**	6,0	**125.230**	**420.120**	–	–
80	6	**479.100**	**KT9**	**410.084**	**121.616**	**170.003**	6,0	**125.230**	**420.120**	–	–
100	8	**479.100**	**KT9**	**410.084**	**121.612**	**170.003**	6,0	–	**420.160**	–	–
125	10	**479.100**	**KT9**	**410.084**	**121.612**	**170.003**	6,0	–	–	**420.200**	**470.232**
160	10	**479.100**	**KT9**	**410.084**	**121.616**	**170.003**	6,0	–	–	**420.200**	**470.233**
200	12	**479.100**	**KT9**	**410.084**	**121.616**	**170.003**	6,0	–	–	–	**470.234**

NOTE: Please order spare parts separately.
For 125mm and 160mm diameter milling cutters, the coolant screw and coolant cap should always used together.
Adjusting element 479.100 includes adjusting element screw 193.300.
Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GP	KC520M	**.E..GP**	**KCK15**	.E..GP	KCK15
K3	.E..GP	KC520M	**.E..GP**	**KCK15**	.S..GP	KCPK30
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SPHX-GP



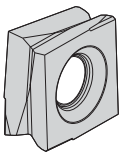
SPHX-GP

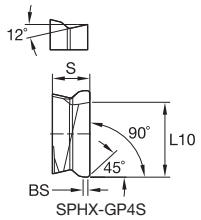
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
P						○	●		
M						○	●		
K		●	●	●	○	○			●	●
N										
S							○	●		
H										

SPHX-GP • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX15T6PCERGP	8,15	6,60	1,20	0,02	8	–	–	●	–	●	–	–	–	–
SPHX15T6PCSRGP	8,16	6,60	1,20	0,14	8	–	–	–	–	●	–	–	–	–
SPHX15T6PCTRGPK	8,15	6,60	1,20	0,24	8	–	–	–	–	–	–	–	–	●

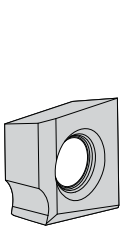

SPHX-GP4S

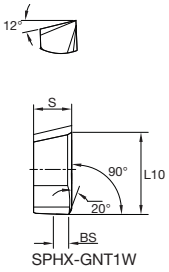


SPHX-GP4S

SPHX-GP4S • Roughing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX15T6PCERGP4S	13,88	6,60	1,20	0,04	4	–	–	●	–	–	–	–	–	–


SPHX-GNT1W



SPHX-GNT1W

● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
P							○	●		
M							○	●		
K		●	●	●	○	○			●	●
N										
S							○	●		
H										

SPHX-W • Finishing

catalogue number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX15T6PCFRGN1W	14,40	6,20	2,70	0,02	1	–	–	●	–	–	–	–	–	–
SPHX15T6PCFRGN1WK	14,40	6,20	2,70	0,02	1	–	–	–	–	–	–	–	–	●
SPHX1205PCERGNT1WB	12,70	5,50	2,00	0,02	1	–	–	–	–	–	–	–	●	–

NOTE: SPHX-W: Wiper Facet BS = 2,7mm.

Recommended Starting Feeds

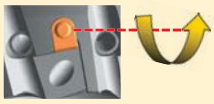
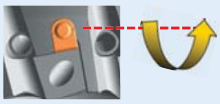
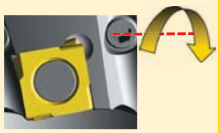
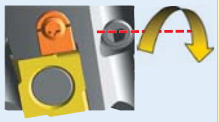
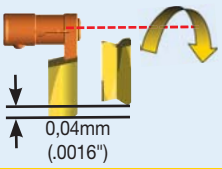
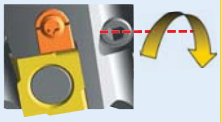
Recommended Starting Feeds [mm]

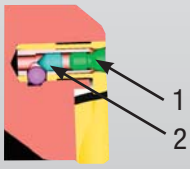
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GP	0,12	**0,46**	0,82	0,08	**0,33**	0,59	0,06	**0,25**	0,44	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..GP
.S..GP	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GP

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Introduction to Fitting Cutting Bodies

procedures:	roughing		roughing/finishing	
	 fixed pocket	 adjustable pocket	 fixed pocket	 adjustable pocket
1 Reset adjusting element T x T9	–		–	
2 Insert roughing insert Tighten SW 3 M_{An} = 5 Nm				–
3 Tighten adjusting element gently	–		–	–
4 Insert finishing insert and pre-tighten SW 3 M_{VG} = 1 Nm	–	–	–	
5 The finishing insert is positioned 0,04mm in front of the highest roughing insert	–	–	–	
6 Tighten the finishing insert M_{An} = 5 Nm	–	–	–	



NOTE: This process must be repeated whenever an indexable insert is changed. The ball is loose.

Changing the adjusting element
1. Remove the taper screw①.
2. Loosen the SW 1,5 screw②.
3. Remove the adjusting element.

ATTENTION: The maximum permissible cutting speed of the milling cutter heads is vc max = 1000 m/min. Only use original parts when clamping the indexable inserts.

Next Generation of HexaCut™

Milling Inserts Are Now Available for Roughing and Semi-Finishing of Cast Iron Materials

Primary Application

The Kennametal HexaCut face milling programme is specifically engineered for rough and semi-finish face milling of cast, ductile, and compacted graphite iron. Twelve cutting edges drastically reduce your cost per edge and increase tool life. Shorter setup times and excellent cutter accuracy allow you to apply the HexaCut programme to the most demanding jobs. One ceramic and eight carbide grades with six insert geometries deliver high feed rates and will enable you to reach optimum horsepower.

Features and Benefits

- New insert topographies for existing HexaCut platform with latest cutting edge design.
- Specifically engineered for rough and semi-finish face milling of cast, ductile, and compacted graphite iron.
- Up to 20% better tool life and 10% less power consumption.
- High precision ground on insert IC to achieve a better axial and radial runout.
- First HexaCut roughing insert with integrated wiper facet for better floor finish.



New Standard Insert Offering for HexaCut™ Series

Roughing and semi-finishing of automotive engine blocks and other cast iron face milling operations.



HNHX0905..ENLE
New geometry for semi-finishing and light roughing operations.



HNHX0905ANSNGE
New geometry for roughing; integrated wiper facet for advanced floor finish.

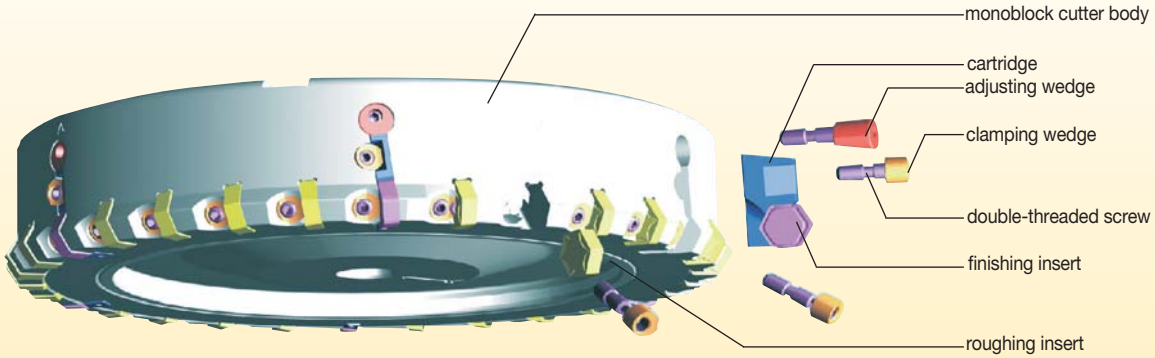


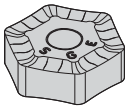
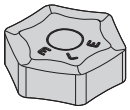
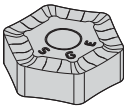
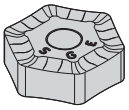
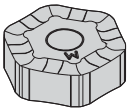
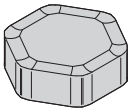
HNHX0905..SNGE
New geometry with improved rake and edge prep design for roughing operations.



HNPX0905..SNGE
New stable geometry for heavy roughing in severe machining conditions.

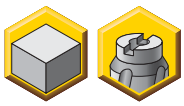
HexaCut 60° Cutter Body Design with Fixed and Adjustable Pocket Seats

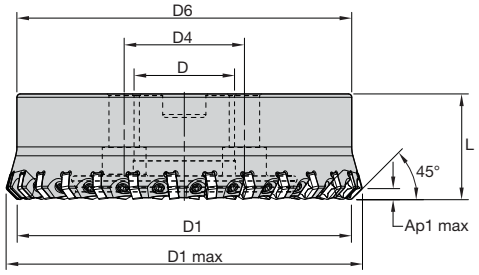


			▼= roughing indexable insert						▼▼ = finishing indexable insert
									
Recommended combination of standard indexable inserts and geometries			HNGX 090516 -SNGE Z = 12	HNHX 090516 - ENLE Z = 12	HNHX 090520 -ENLE Z = 12	HNHX 090520 -SGE Z = 12	HNHX 090530 -SNGE Z = 12	HNHX 0905 -ANSNGE Z = 12	HNGF 090504 -MF Z = 12
Operation	Lead	Ap max							
▼/▼▼	45°	6	■ OR	■ OR	■ OR	■	■	■	
▼	60°	8	■ OR	■ OR	■ OR	■	■		
▼▼	60°	1		■	■ OR	■ OR	■		■
▼/▼▼	60°	8	■ OR	■ OR	■ OR	■	■		

NOTE: Z = number of cutting edges.

- Monoblock cutter design.
- High feed rates.
- CGI milling solution.
- Twelve cutting edges per insert.







HexaCut 45° • Shell Mills • Monoblock Design • Right Hand

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	kg	max RPM
2016107	**80A10RF45HN09C**	80	92,8	27	–	80	50	6,5	10	1,60	3900
2016109	**100B14RF45HN09C**	100	112,8	32	–	100	50	6,5	14	2,30	3400
2016111	**125B18RF45HN09C**	125	137,8	40	–	125	63	6,5	18	4,60	3000
2016133	**160C22RF45HN09C**	160	172,8	40	67	160	63	6,5	22	7,40	2600

NOTE: Split case design with adaptor flange for D1 = 250mm and D1 = 315mm can be ordered as preferred custom solution standard.

Spare Parts

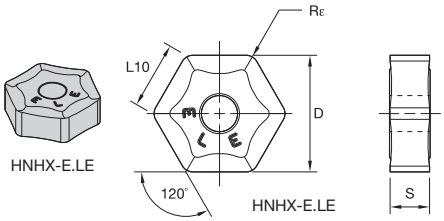
D1	clamp wedge	wrench screw	Nm	wrench 3mm
80	**12748358200**	**12748600900**	7,0	**12148044900**
100	**12748358200**	**12748600900**	7,0	**12148044900**
125	**12748358200**	**12748600900**	7,0	**12148044900**
160	**12748358200**	**12748600900**	7,0	**12148044900**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LE	KCK15	**.S..GE**	**KCK15**	.S..GE	KCK15
K3	.E..LE	KCK15	**.S..GE**	**KC514M**	.S..GE	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

- For semi-finishing and light roughing operations.



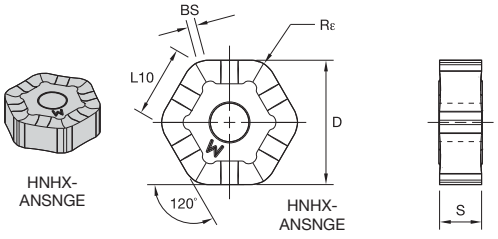
● first choice
○ alternate choice

	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
P						
M						
K	●	●	●	●	●	●
N						
S						
H						

HNHX-E.LE

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX090516ENLE	16,20	5,56	9,35	1,6	0,06	12	●	●	–	–	–	–
HNHX090520ENLE	16,20	5,56	9,35	2,0	0,06	12	●	●	–	–	–	–

- Roughing geometry with integrated wiper facet for advanced floor finish.



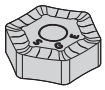
HNHX-ANSNGE

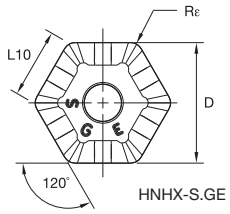
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX0905ANSNGE	16,20	5,56	8,91	1,11	1,2	0,16	12	●	●	–	–	–	–

- Roughing geometry with improved rake design for lower cutting forces.

● first choice
○ alternate choice

P							
M							
K	●	●	●	●	●	●	●
N							
S							
H							


HNHX-S.GE

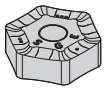


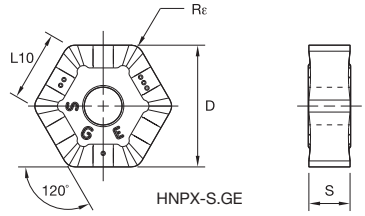
HNHX-S.GE

HNHX-S.GE

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX090516SNGE	16,20	5,56	9,35	1,6	0,16	12	●	●	–	●	–	–
HNHX090520SNGE	16,20	5,56	9,35	2,0	0,16	12	●	●	–	–	–	–
HNHX090530SNGE	16,20	5,56	9,35	3,0	0,16	12	–	●	–	–	–	–

- Heavy roughing geometry for severe machining conditions.

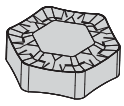

HNPX-S.GE

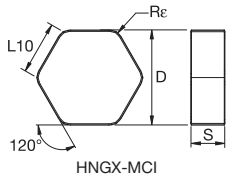


HNPX-S.GE

HNPX-S.GE

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNPX090516SNGE	16,20	5,56	9,35	1,6	0,16	12	–	●	–	–	–	–
HNPX090520SNGE	16,20	5,56	9,35	2,0	0,16	12	–	●	–	–	–	–
HNPX090530SNGE	16,20	5,56	9,35	3,0	0,16	12	–	●	–	–	–	–

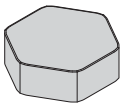

HNGX-MCI

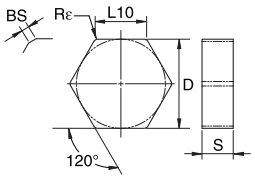


HNGX-MCI

HNGX-MCI

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNGX090530MCI	16,20	5,56	9,35	3,0	0,06	12	–	●	–	–	–	–


HNEN-SN



HNEN-SN

● first choice
○ alternate choice

P	
M	
K	● ● ● ● ● ●
N	
S	
H	

HNEN-SN

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNEN090508MSN	15,88	5,56	9,17	–	0,8	0,20	12	–	–	–	–	–	●
HNEN0905AMSN	15,88	5,65	9,17	–	–	0,20	12	–	–	–	–	–	●
HNEN0905ANSN	15,88	5,65	9,17	–	–	0,20	12	–	–	–	–	●	–
HNEN0905XNSN	16,20	5,56	9,35	1,30	–	0,20	12	–	–	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...MCI	0,25	**0,65**	1,15	0,18	**0,47**	0,82	0,14	**0,35**	0,61	0,12	**0,31**	0,54	0,11	**0,28**	0,49	...MCI
.E..LE	0,26	**0,64**	1,17	0,19	**0,46**	0,84	0,14	**0,35**	0,63	0,12	**0,30**	0,54	0,11	**0,28**	0,50	.E..LE
.S..GE	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	.S..GE
...SN	0,33	**0,84**	1,35	0,24	**0,60**	0,97	0,18	**0,45**	0,72	0,16	**0,39**	0,63	0,14	**0,36**	0,57	...SN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Adjustment Instructions

Before Being Used for the First Time

- The milling cutter must be carefully cleaned of anti-corrosive materials, dust, etc.
- The milling cutter should only be washed when all components have been dismantled.
- Only the double-threaded screws of the clamping or adjusting wedge should be lubricated with copper grease; all other components must have clean metallic surfaces.
- A torque wrench is recommended to tighten the double-threaded screws.
- When fitting indexable inserts on the milling cutter, ensure that they are inserted in the correct position in a clean insert seat and that they are held in position during clamping.

For 45° Roughing Mills without Anvils

- The double-threaded screws on the clamping wedges for the indexable inserts are first pre-tightened to approximately 2 Nm and then tightened to a final torque of 7 Nm.

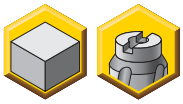
ATTENTION

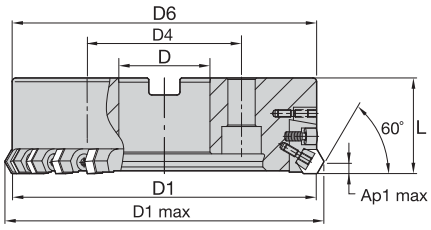
At each tool adjustment the body, indexable inserts, and spare parts must be checked and replaced, if necessary. Before each tool use the double-threaded screws of the indexable inserts and the stops must be tightened in the specified order to a torque of 7 Nm. In addition, even if the cartridges have not been adjusted, the double-threaded screws of the adjusting wedges must be checked to see if these have been tightened to a torque of 3 Nm. If not, they must be re-tightened to this torque.

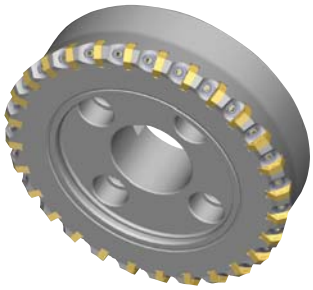
NOTE: The tools must only be used in accordance with their function. We accept no liability for their improper use. Changes of any kind and/or printing errors are not valid grounds for claims.



- Monoblock cutter design.
- High feed rates.
- CGI milling solution.
- Twelve cutting edges per insert.



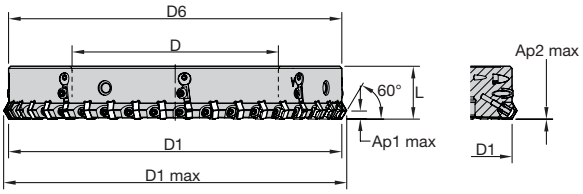




HexaCut 60° Shell Mills • Monoblock Cutter Design with Adjustable Pockets • Right Hand

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
2016165	**80A62RF60HN09C**	80	89	27	—	80	50	8,0	8	2	0,80	3900
2016167	**100B82RF60HN09C**	100	109	32	—	100	50	8,0	10	2	2,30	3400
2016169	**125B123RF60HN09C**	125	134	40	—	125	63	8,0	15	3	4,60	3000
2016171	**160C164RF60HN09C**	160	169	40	67	160	63	8,0	20	4	7,20	2600
2016193	**200C205RF60HN09C**	200	209	60	102	200	63	8,0	25	5	11,40	2300
6202331	**250C246RF60HN09C**	250	259	60	102	250	63	—	30	6	18,82	2000

NOTE: Cartridges need to be ordered separately.





HexaCut 60° Shell Mills • Split Case Design

order number	catalogue number	D1	D1 max	D	D6	L	Z	Z ADJ	kg	max RPM
6202333	**315Z328RF60HN09WSC** *	315	324	195	315	50	40	8	13,61	1800

NOTE: For carrier flange assembly order number, please see page S33.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	clamp wedge	axial adjustment wedge	screw	Nm	wrench 3mm
80	**12748358200**	**12748308500**	**12748600900**	7,0	**12148044900**
100	**12748358200**	**12748308500**	**12748600900**	7,0	**12148044900**
125	**12748358200**	**12748308500**	**12748600900**	7,0	**12148044900**
160	**12748358200**	**12748308500**	**12748600900**	7,0	**12148044900**
200	**12748358200**	**12748308500**	**12748600900**	7,0	**12148044900**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Setup for Roughing:

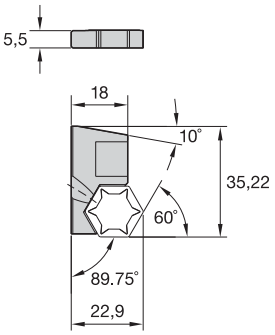
For a cutting depth of <8mm and an achievable surface finish of Ra >3,2.

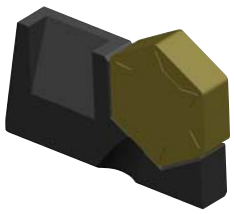
High-performance roughing:
HNHX0905ANSNGE, HNHX090516SNGE, HNHX090520SNGE, HNHX090530SNGE, HNPX090516SNGE, HNPX090520SNGE HNPX090530SNGE, HNEN0905XNSN.

Semi-finishing and light machining:
HNHX090516ENLE, HNHX090520ENLE, HNHX090530ENLE.

Same inserts to be loaded into fixed and adjustable (cartridges) pockets.

Roughing Cartridge





order number	catalogue number
2018164	12748500200

NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

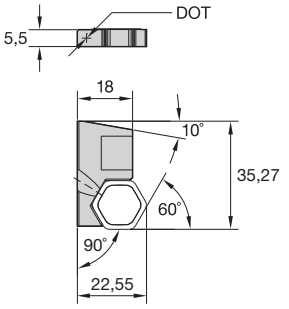
Setup for Finishing:

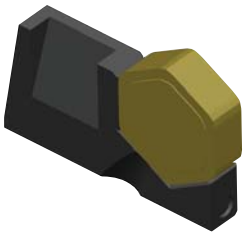
For a cutting depth of <1mm and an achievable surface finish of Ra 1,6.

Semi-finishing insert:
HNHX090520ENLE (loaded into fixed pocket seats).

Finishing wiper insert:
HNGF090504MF, HNGF090512MF (loaded into finishing cartridge).

Finishing Cartridge





order number	catalogue number
2018166	12748500400

NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

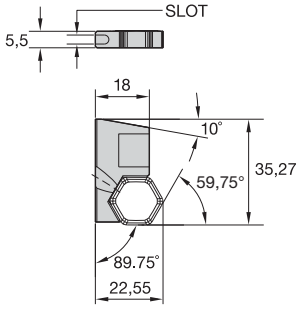
Setup for Finishing Cartridge for Low Axial Cutting Forces: (Reduced Lead Angle to Support Increased Clearance on the Wiper Edge).

For a cutting depth of <1mm and an achievable surface finish of Ra 1,6.

Semi-finishing insert:
HNHX090520ENLE (loaded into fixed pocket seats).

Finishing wiper insert:
HNGF090504MF, HNGF090512MF (loaded into finishing cartridge).

Finishing Cartridge for Low Axial Cutting Forces





order number	catalogue number
2033468	12748503400

NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

CBN Cartridge

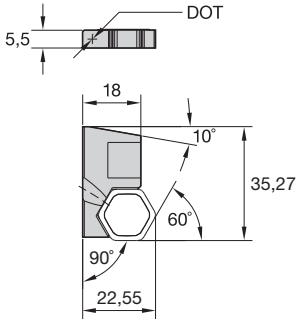
For a cutting depth of <1mm and an achievable surface finish of Ra 1,6.

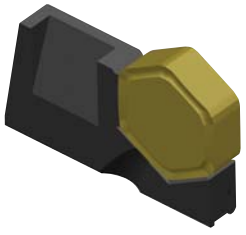
Semi-finishing insert:

HNEN0905AMSN KY3500 (loaded into fixed pocket seats).

Finishing wiper insert:

HNEN905ANSN KD200 (loaded into finishing cartridge).





order number	catalogue number
3400879	12748500500

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LE	KCK15	**.S..GE**	**KCK15**	.S..GE	KCK15
K3	.E..LE	KCK15	**.S..GE**	**KC514M**	.S..GE	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Inserts

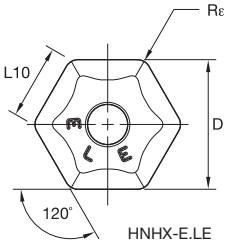
- For semi-finishing and light roughing operations.

● first choice
○ alternate choice

P						
M						
K	●	●	●	●	●	●
N						
S						
H						



HNHX-E.LE

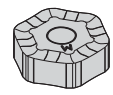


HNHX-E.LE

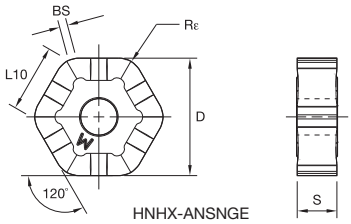
HNHX-E.LE

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX090516ENLE	16,20	5,56	9,35	1,6	0,06	12	●	●	–	–	–	–
HNHX090520ENLE	16,20	5,56	9,35	2,0	0,06	12	●	●	–	–	–	–

- Roughing geometry with integrated wiper facet for advanced floor finish.



HNHX-ANSNGE



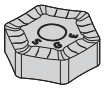
HNHX-ANSNGE

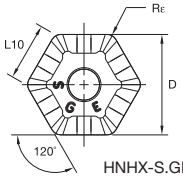
HNHX-ANSNGE

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX0905ANSNGE	16,20	5,56	8,91	1,2	0,16	12	●	●	–	–	–	–

Face Milling

- Roughing geometry with improved rake design for lower cutting forces.


HNHX-S.GE



HNHX-S.GE

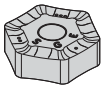
● first choice
○ alternate choice

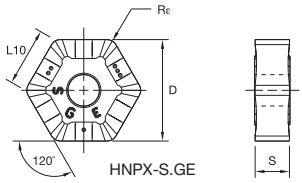
P							
M							
K	●	●	●	●	●	●	
N							
S							
H							

HNHX-S.GE

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX090516SNGE	16,20	5,56	9,35	1,6	0,16	12	●	●	–	–	–	–
HNHX090520SNGE	16,20	5,56	9,35	2,0	0,16	12	●	●	–	–	–	–
HNHX090530SNGE	16,20	5,56	9,35	3,0	0,16	12	–	●	–	–	–	–

- Heavy roughing geometry for severe machining conditions.

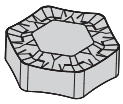

HNPX-S.GE

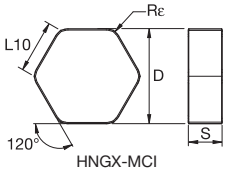


HNPX-S.GE

HNPX-S.GE

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNPX090516SNGE	16,20	5,56	9,35	1,6	0,16	12	–	●	–	–	–	–
HNPX090520SNGE	16,20	5,56	9,35	2,0	0,16	12	–	●	–	–	–	–
HNPX090530SNGE	16,20	5,56	9,35	3,0	0,16	12	–	●	–	–	–	–

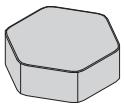

HNGX-MCI

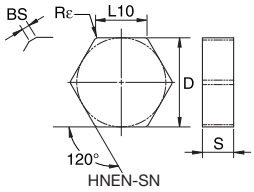


HNGX-MCI

HNGX-MCI

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNGX090530MCI	16,20	5,56	9,35	3,0	0,06	12	–	●	–	–	–	–


HNEN-SN



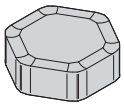
HNEN-SN

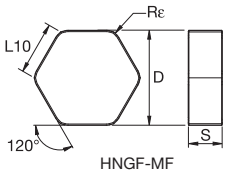
● first choice
○ alternate choice

P	
M	
K	●
N	
S	
H	

HNEN-SN

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNEN090508MSN	15,88	5,56	9,17	–	0,8	0,20	12	–	–	–	–	–	●
HNEN0905AMSN	15,88	5,65	9,17	–	–	0,20	12	–	–	–	–	–	●
HNEN0905ANSN	15,88	5,65	9,17	–	–	0,20	12	–	–	–	–	●	–
HNEN0905XNSN	16,20	5,56	9,35	1,30	–	0,20	12	–	–	–	–	–	●


HNGF-MF



HNGF-MF

HNGF-MF

catalogue number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNGF090504MF	15,88	5,56	9,16	0,4	0,04	12	●	●	●	–	–	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40%–100%			
...MCI	0,21	**0,53**	0,93	0,15	**0,38**	0,67	0,11	**0,29**	0,50	0,10	**0,25**	0,44	0,09	**0,23**	0,40	...MCI
.E..LE	0,21	**0,52**	0,95	0,15	**0,38**	0,68	0,11	**0,28**	0,51	0,10	**0,25**	0,44	0,09	**0,23**	0,41	.E..LE
.S..GE	0,27	**0,68**	1,10	0,20	**0,49**	0,79	0,15	**0,37**	0,59	0,13	**0,32**	0,51	0,12	**0,29**	0,47	.S..GE
...SN	0,27	**0,68**	1,10	0,20	**0,49**	0,79	0,15	**0,37**	0,59	0,13	**0,32**	0,51	0,12	**0,29**	0,47	...SN

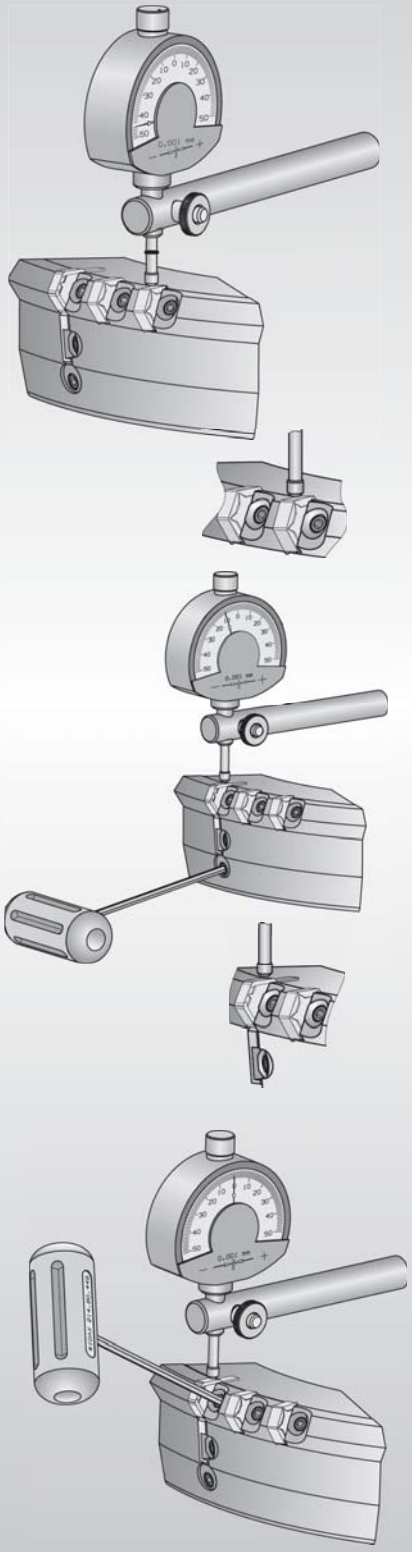
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Face Milling

Insert setting procedure

This procedure is to be used on all 60° lead roughing/finishing mills using the unmarked roughing cartridge, the finishing cartridge (marked •) and the corrected edge cartridge (marked ▬). These steps must be followed when adjusting the cutters for finishing inserts.

1. Clean all insert pockets.
2. Mount all wedges and cartridges. Torque the cartridge lock wedge screw to 3 Nm.
3. Mount all inserts, making sure they are seated properly in the pocket, and torque the insert lock wedge screws to 3 Nm.
4. Torque the wedge screws for all fixed pocket inserts to 7 Nm.
5. Loosen the cartridge insert wedge screw and the cartridge lock wedge screw.
6. Pressing the insert into the cartridge pocket, adjust the cartridge to 0,20–0,30mm below the fixed pocket inserts.
7. Torque the insert lock wedge screw and the cartridge lock wedge screw to 3 Nm.
8. Adjust the axial position to 0,03–0,04mm above the fixed pocket inserts.
9. Loosen the cartridge insert lock wedge screws and then re-torque to 3 Nm.
10. Adjust the axial position to the final dimension, 0,04–0,05mm above the highest fixed pocket insert.
11. Torque the insert lock wedge screws and the cartridge lock wedge screws to 7 Nm.
12. Conduct a final check of the axial runout and position.



The KSSR™ 84° Inserts

Primary Application

The Kennametal new line of KSSR 84º inserts are versatile, easy-to-use, and right- or *left-hand neutral, making them ideal for automotive machining operations or any other industry that relies on transfer line manufacturing. Available in carbide and ceramic grades for applications in cast and ductile irons and alloy steels, choose KSSR 84º inserts for all fine and coarse pitch styles.

*Left-hand cutters are available as non-stock standard.

Features and Benefits

KSSR 84° Features

- Available in metric and inch products, diameters from 63–200mm.
- Fine and coarse pitch styles.
- Easy-to-use and to adjust with shorter setup time.
- New wiper inserts in carbide and ceramic will provide excellent surface quality.

Improved Versatility

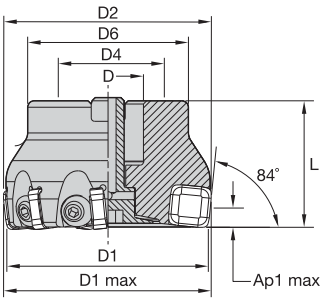
- Proven solution for the automotive segment.
- Right- and *left-hand cutters, ideal for transfer lines.
- Premium grades in carbide and ceramic for applications in cast and ductile irons and alloy steels.
- Inserts are neutral and can be used for right- or left-hand cutting.

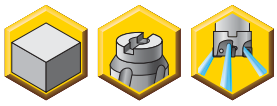


Unrivaled Benefits

- Capability: 5mm maximum depth of cut.
- Excellent accuracy:
  Radial = +/- 0,025mm
  Axial = adjustable +/- 0,002mm
- Inserts have eight true cutting edges.

- Eight cutting edges per insert.
- Fast and easy insert indexing.
- Highest feed rates.
- CGI specialist.



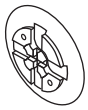




KSSR 84° • Shell Mills • Right Hand • Fixed Pockets

order number	catalogue number	D1	D1 max	D	D2	D4	D6	L	Ap1 max	Z	kg	max RPM
3331277	**63A06RF84SN12B**	63	65,0	22	62	–	50	40	5,0	6	0,61	7600
2465831	**63A09RF84SN12B**	63	65,0	22	64	–	50	40	5,0	9	0,60	7600
3331279	**80A08RF84SN12B**	80	82,0	27	79	–	60	50	5,0	8	1,26	6000
2443937	**80A12RF84SN12B**	80	82,0	27	80	–	60	50	5,0	12	1,25	6000
3120845	**100B10RF84SN12B**	100	102,0	32	99	–	78	50	5,0	10	1,78	4800
2443938	**100B15RF84SN12B**	100	102,0	32	100	–	78	50	5,0	15	1,75	4800
2465832	**125B18RF84SN12B**	125	127,0	40	125	–	89	63	5,0	18	3,10	3800
2466093	**160C24RF84SN12B**	160	162,0	40	160	67	90	63	5,0	24	3,90	3000
2466094	**200C30RF84SN12B**	200	202,0	60	200	102	130	63	5,0	30	6,40	2400

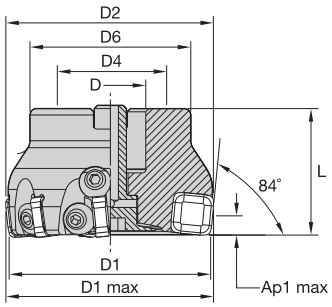
Spare Parts

D1	 clamp wedge	 wedge screw	 Nm	 wrench 3mm	 coolant screw	 coolant shower plate
63	**12748358200**	**12748600900**	7,0	**12148044900**	**420.100**	**–**
80	**12748358200**	**12748600900**	7,0	**12148044900**	**420.120**	**–**
100	**12748358200**	**12748600900**	7,0	**12148044900**	**420.163**	**–**
125	**12748358200**	**12748600900**	7,0	**12148044900**	**420.200**	**470.232**
160	**12748358200**	**12748600900**	7,0	**12148044900**	**420.200**	**470.233**
200	**12748358200**	**12748600900**	7,0	**12148044900**	**–**	**470.234**

NOTE: Coolant screw and coolant cap must be ordered separately.
2466094 and 2466095 are non-stock standard.
Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.
Left-hand cutters available as non-stock standard.

- High feed rates.
- Excellent floor finish.
- Eight cutting edges per insert.



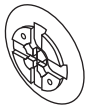




KSSR 84° • Shell Mills • Adjustable Pockets • Right Hand

order number	catalogue number	D1	D1 max	D	D2	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
4004750	**63A09RF84SN12B1W**	63	65,1	22	62	–	50	40	5,0	9	1	0,67	7600
4004751	**80A12RF84SN12B2W**	80	82,1	27	79	–	60	50	5,0	12	2	1,33	6000
4004752	**100B15RF84SN12B3W**	100	102,1	32	99	–	78	50	5,0	15	3	1,85	4800
4004793	**125B18RF84SN12B3W**	125	127,1	40	123	–	89	63	5,0	18	3	3,20	3800
4004794	**160C24RF84SN12B3W**	160	162,1	40	158	67	90	63	5,0	24	3	4,14	3000

Spare Parts

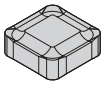
D1	 clamp wedge	 wedge screw	 Nm	 wrench	 coolant lock screw	 coolant shower plate
63	**12748358200**	**12748600900**	7,0	**12148044900**	**420.100**	**–**
80	**12748358200**	**12748600900**	7,0	**12148044900**	**420.120**	**–**
100	**12748358200**	**12748600900**	7,0	**12148044900**	**420.163**	**–**
125	**12748358200**	**12748600900**	7,0	**12148044900**	**420.200**	**470.232**
160	**12748358200**	**12748600900**	7,0	**12148044900**	**420.200**	**470.233**

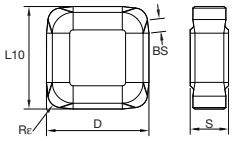
NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.
Left-hand cutters available as non-stock standard.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1 – P2	–	–	–	–	–	–
P3 – P4	–	–	–	–	–	–
P5 – P6	–	–	–	–	–	–
M1 – M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1 – K2	.E..LD	KCK15	**.S..GP**	**KCK15**	.A..SN	KY3500
K3	.E..LD	KCK20	**.S..GP**	**KCK20**	.S..HE	KCK20
N1 – N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1 – S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts • KSSR


SNXF-LD



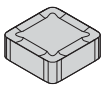
SNXF-LD

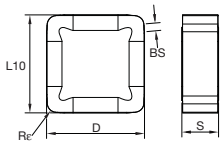
● first choice
○ alternate choice

P	
M	
K	● ● ● ● ● ●
N	
S	
H	

SNXF-LD

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF120412ENLD	12,70	4,56	12,70	–	1,2	0,06	8	●	●	●	●	●	–
SNXF1204ZNENLD	12,70	4,42	12,70	1,69	1,6	0,06	8	●	●	●	●	●	–


SNXF-GP

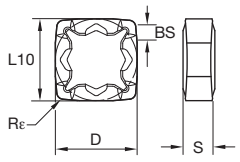


SNXF-GP

SNXF-GP

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF120412SNGP	12,70	4,68	12,70	–	1,2	0,06	8	●	●	●	●	●	–
SNXF1204ZNSNGP	12,70	4,68	12,70	1,00	1,2	0,07	8	●	●	●	●	●	–

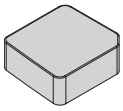

SNXF-HE

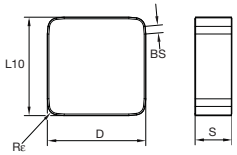


SNXF-HE

SNXF-HE

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF120412SNHE	12,70	4,66	12,70	–	1,2	0,06	8	–	●	●	●	●	–
SNXF1204ZNSNHE	12,70	4,66	12,70	1,00	1,2	0,06	8	●	–	●	●	●	–


SNXF-SN



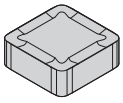
SNXF-SN

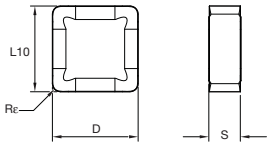
● first choice
○ alternate choice

P							
M							
K	●	●	●	●	●	●	
N							
S							
H							

SNXF-SN

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF120412AMSN	12,70	4,76	12,70	–	1,2	0,20	8	–	–	–	–	–	●
SNXF1204ZNAMSN	12,70	4,76	12,70	1,00	1,2	0,20	8	–	–	–	–	–	●

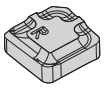

SNPF-GP

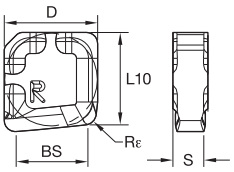


SNPF-GP

SNPF-GP

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNPF120412SNGP	12,70	4,76	12,70	–	1,2	0,07	8	–	–	●	–	–	–


XNXF-LDW



XNXF-LDW

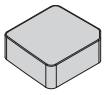
● first choice
○ alternate choice

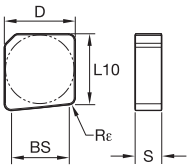
P	
M	
K	●
N	
S	
H	

XNXF-LDW

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
XNXF1204ZNENLDW	12,70	4,42	12,70	9,50	1,6	0,06	2	–	–	●	–	–	–

NOTE: Insert has one left-handed and one right-handed cutting edge.


XNXF-ENW



XNXF-ENW

XNXF-ENW

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
XNXF1204ZNENW	12,70	4,76	12,70	9,50	1,2	0,20	2	–	–	–	–	–	●

Recommended Starting Feeds • 84° Approach Angle

Face Milling

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	0,18	**0,46**	0,82	0,13	**0,33**	0,59	0,10	**0,25**	0,44	0,09	**0,22**	0,39	0,08	**0,20**	0,35	.E..LD
.S..GP	0,20	**0,50**	0,90	0,14	**0,36**	0,65	0,11	**0,27**	0,48	0,09	**0,24**	0,42	0,09	**0,22**	0,39	.S..GP
.S..HE	0,18	**0,51**	0,95	0,13	**0,37**	0,69	0,10	**0,28**	0,51	0,09	**0,24**	0,45	0,08	**0,22**	0,41	.S..HE
.A..SN	0,24	**0,59**	0,95	0,17	**0,43**	0,69	0,13	**0,32**	0,51	0,11	**0,28**	0,45	0,10	**0,26**	0,41	.A..SN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

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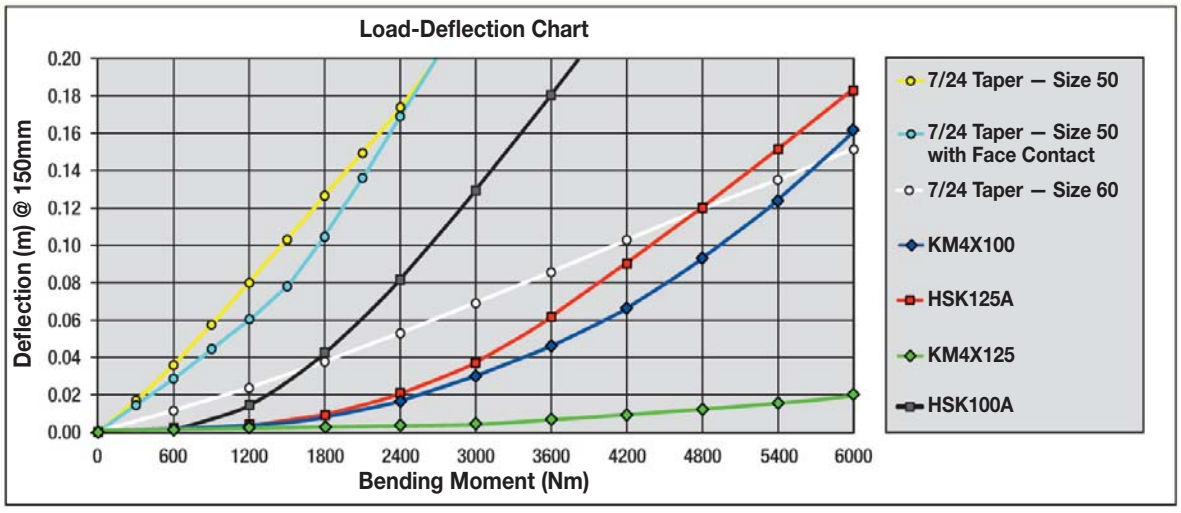
Dramatically increase your metal removal rates when machining high-temperature alloys!

- Run jobs at significantly faster feeds and speeds than what is achievable with other spindle interfaces.
- Unique use of clamping force and interference level increases clamping capability 2 to 3 times.
- Achieve lower cost of ownership, increased throughput, and superior results.



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KENNAMETAL®

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KCFM™ 45

Cast Iron Finishing Milling

KCFM 45 is the latest full-face PcBN technology for milling inserts. These inserts are available in PcBN, ceramic, and carbide grades, with a super-positive geometry available on semi-finisher and wiper style inserts.

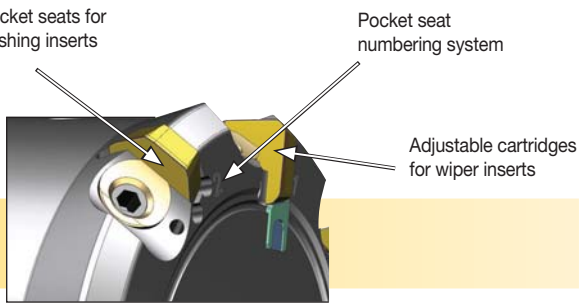
Cutter bodies feature high-precision pocket seats and a pocket seat numbering system to reduce tool setup time.

Features and Benefits

- Super-positive geometry on semi-finisher and wiper inserts.
- New PcBN milling grade KBK50 for fine-finishing cast iron.
- Fixed pocket seats for semi-finishing inserts.
- Adjustable pocket seats for wiper inserts.
- Cartridges available for semi-finishing inserts.
- Low cutting forces to manage vibrations at critical components.
- Significantly reduced machining cycle time and cost per part.
- High precision pocket seats to reduce tool setup time.
- User friendly adjustment for accurate run-out within two microns.
- Only use semi-finishing inserts for lower floor finish requirement.

First choice for easy fine finishing with low cutting forces and excellent tool life.





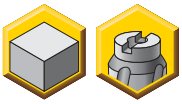
For lower requirement on surface floor finish, it's also an option to load all pocket seats with semi-finishing inserts.

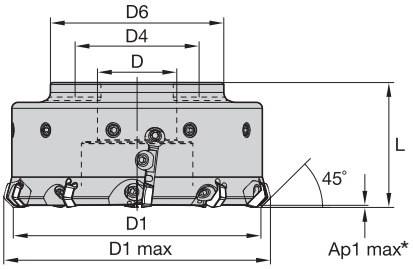
Related cartridge KCFMCA45HD07 is available as standard line item.

Configuration of Semi-Finishing and Wiper Inserts:

Semi-Finishing Insert HDHN07 	Wiper Insert SDHN12 	Dry (D)/Wet (W) Machining
PcBN (KBK50)	PcBN (KBK50)	D
Ceramic (KY3500)	PcPN (KBK50)	D
Carbide (KC514M)	Carbide (KC514M)	D/W

- Lower cutting forces due to positive hexagon inserts.
- Available in PCBN, ceramic, and carbide grades.
- Achieve higher speeds and productivity with ceramic and PCBN grades.
- *Ap1 max = 1mm with wiper finishing cartridge for SD12 inserts.
- *Ap1 max = 3mm with semi-finishing cartridge for HD07 inserts.







KCFM 45 • Shell Mill Cutter

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max*	Z	Z ADJ	kg	max RPM
6224238	**KCFM080R08HD07W2**	80	90	27	–	81	50	1	6	2	1,68	9600
6224239	**KCFM100R08HD07W2**	100	110	32	–	101	50	1	6	2	2,42	8400
6224240	**KCFM125R10HD07W2**	125	135	40	–	89	63	1	8	2	4,29	7400
6224411	**KCFM160R12HD07W4**	160	170	40	67	90	63	1	8	4	5,83	6500
6224412	**KCFM200R16HD07W4**	200	210	60	102	130	63	1	12	4	8,80	5700
6224413	**KCFM250R24HD07W6**	250	260	60	102	130	63	1	18	6	10,89	5100

NOTE: Cutter bodies only; cartridges need to be ordered separately.
Z = Total number of inserts in the cutter body.
Z ADJ = Number of adjustable cartridges.

Spare Parts

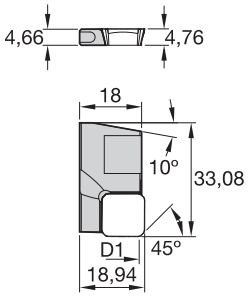


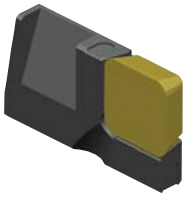




D1	socket-head cap screw	Nm	wrench	wedge	flat point socket set screw
80	**MS1198**	7,0	**12148044900**	**12748358200**	**193.461**
100	**–**	7,0	**12148044900**	**12748358200**	**193.461**
125	**–**	7,0	**12148044900**	**12748358200**	**193.461**
160	**–**	7,0	**12148044900**	**12748358200**	**193.461**
200	**–**	7,0	**12148044900**	**12748358200**	**193.461**
250	**–**	7,0	**12148044900**	**12748358200**	**193.461**

- Lower cutting forces due to positive hexagon inserts.
- Available in PCBN, ceramic, and carbide grades.
- Achieve higher speeds and productivity with ceramic and PCBN grades.
- *Ap1 max = 1mm with wiper finishing cartridge for SD12 inserts.
- *Ap1 max = 3mm with semi-finishing cartridge for HD07 inserts.

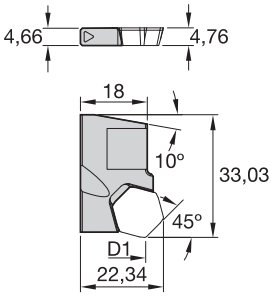


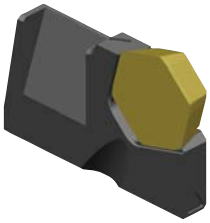


KCFM • Wiper Finishing Cartridge for SD12 Insert

order number	catalogue number	kg
6210836	KCFMCA45SD12C	0,01

NOTE: SD12 can be mounted for fine finishing operations, Ap1 max is 1mm.
Cartridges to be order separately. Number of adjustable pockets (Z ADJ) is related to cutting diameter.





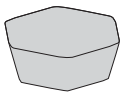
KCFM • Semi-Finishing Cartridge for HD07 insert

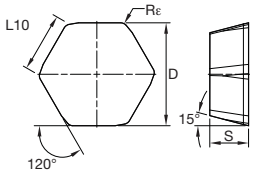
order number	catalogue number	kg
6210837	KCFMCA45HD07	0,02

NOTE: HD07 only inserts can be mounted without the wiper for semi-finishing operations, Ap1 max is 3mm.
Cartridges to be order separately. Number of adjustable pockets (Z ADJ) is related to cutting diameter.

Insert Selection Guide

Material Group	Fine Finishing		Semi-Finishing		Roughing	
	Option 1: CBN	Option 2: Coated Carbide	Option 1: Advanced Material	Option 2: Coated Carbide		
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.S..R KBK50	.E..R KC514M	**.S..R KY3500/KBK50**	**.E..R KC514M**	–	–
K3	–	.E..R KC514M	–	**.E..R KC514M**	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

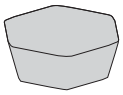


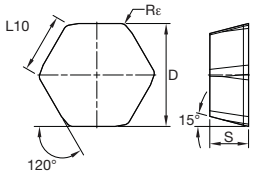


P			
M			
K	●	●	●
N			
S			
H			

KCFM • HDHN07-ER

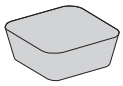
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KBK50	KY3500
HDHN070408ER	12,70	4,76	5,20	–	0,8	0,1	6	●	–	–

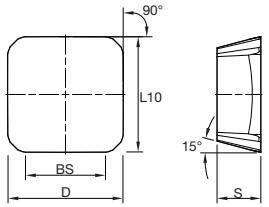




KCFM • HDHN07-SR

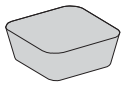
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KBK50	KY3500
HDHN070408SR	12,70	4,76	5,20	–	0,8	0,1	6	–	●	●

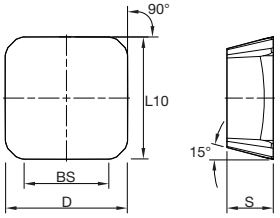




KCFM • SDHN12-EN4W

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KBK50	KY3500
SDHN1204ZZEN4W	12,70	4,76	12,60	8,70	–	0,1	4	●	–	–





KCFM • SDHN12-SN4W

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KBK50	KY3500
SDHN1204ZZSN4W	12,70	4,76	12,58	8,70	–	0,1	4	–	●	–

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Fine Finishing	Semi-Finishing	Roughing

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
-SR													0,06	**0,12**		-SR
-ER													0,10	**0,18**		-ER

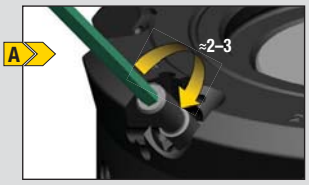
NOTE: Please see pages X22–X37 for recommended starting speeds.

Safety Notes					
					
Read all instructions	Wear eye protection	Inspect and tighten fasteners regularly	Warning: Cutting hazard	Warning: Hot surfaces	Do not exceed Max. RPM



Customer Information Sheet

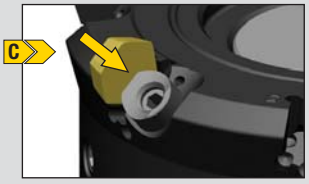
Hexagon Insert Installation



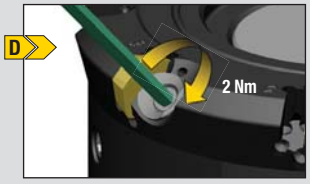
Position the differential screw in the pocket and turn it to approx. 2 to 3 turns with 3mm hex wrench.



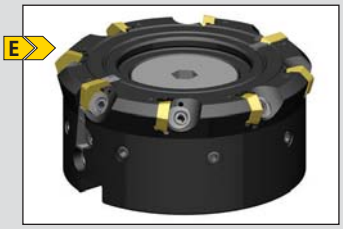
Place the wedge on the screw and fasten it into the cutter body.



Push the insert into the pocket seat by hand in the direction shown.



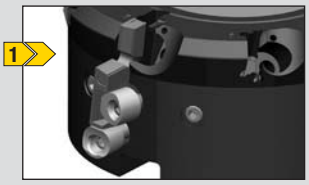
Tighten the screw with a clamping torque of 2 Nm (18 in/lbs). The differential screw must not stick out of wedge.



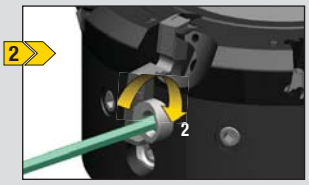
- Repeat steps A–D for all inserts. Max. axial and radial runout must be within 0.03mm (0.0012") and 0.035mm (0.0014").
- **Tighten all the differential screws with a clamping torque of 7 Nm (62 in/lbs).**

NOTE: The cutter comes preloaded with screw and wedge. Steps A and B are only required when it is necessary to change the screw and/or clamp after wear and tear or an accident. Insert changing process starts at step C in normal circumstances.

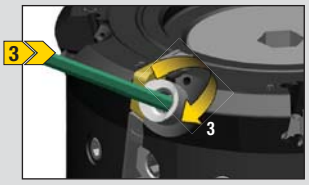
Wiper Insert Installation



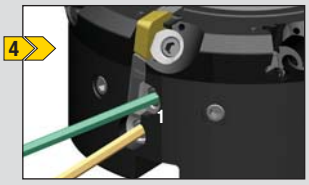
Mount the cartridge in its pocket, similar to steps A and B as shown previously.



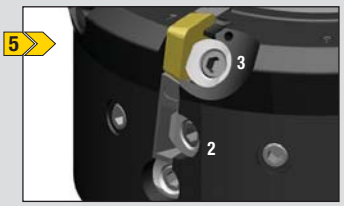
Begin tightening the screw ❷ of the cartridge locking wedge to clamp the cartridge with minimum torque.



Place the insert on the cartridge and begin tightening the screw ❸ to clamp the insert with minimum torque.



Release the height adjusting screw ❶ slightly and adjust the wiper insert's position so that it is 0.03mm (0.0012") above the highest semi-finishing insert.



- The wiper inserts should be clamped in the same way as the hexagon inserts.
- **Tighten the insert screws ❸ and cartridge screw ❷ of wiper pockets to 2 Nm (18 in/lbs) and then to 7 Nm (62 in/lbs).**
- Axial runout measured at the highest point on wiper insert should be ≤ 0.003mm.

NOTE: When the cutter comes preloaded with the screw, wedge, and cartridge, skip steps 1 and 2.
To order a cartridge, use the following numbers:
#6210836 for finishing cartridge SD12.
#6210837 for semi-finishing cartridge HD07.
Number of cartridges will vary based on the diameter of the cutter.

KCFM Do's and Dont's

1



Ap1 ≤ 1mm (0.039")

NOTE: Ap1 max (For wiper insert SDHN12)

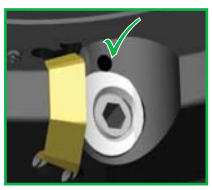


Ap1 > 1mm (0.039")

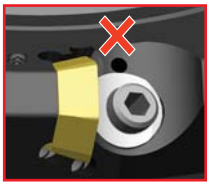
Do not exceed the depth of cut of 1mm (0.039") when the cutter is used with wiper insert.

2









Wedge/screw projecting out of the pocket would reduce the performance.

MEGA 45°

Superior Heavy-Duty Milling

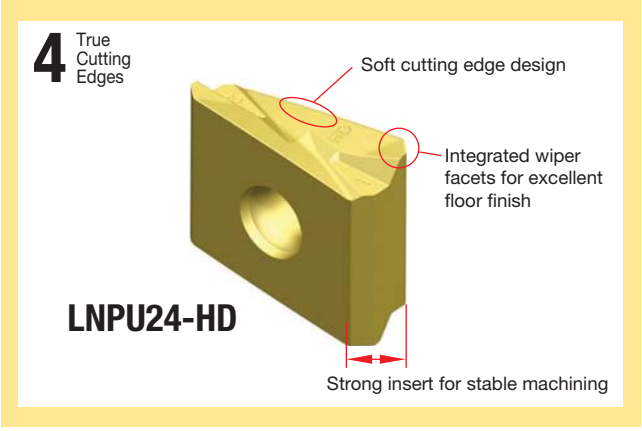
Primary Application

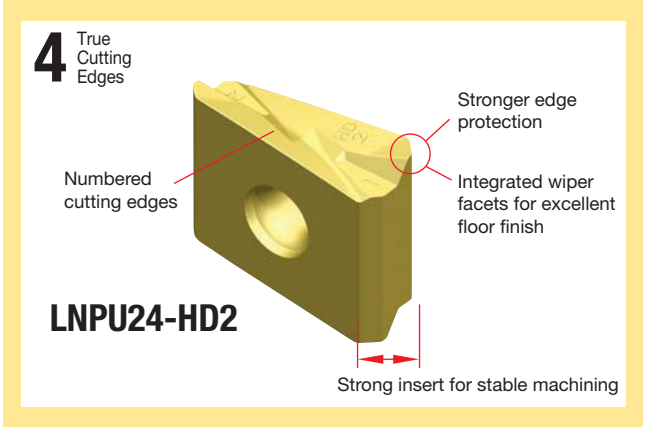
With four true cutting edges per heavy-duty MEGA 45° insert, you are getting the low cost per edge and high productivity you need and have come to expect from Kennametal. The soft cutting edge design enables 30% lower cutting forces, and the carbide shim provides protection to the cutter body. Choose MEGA 45° inserts for all steel and cast iron indexable milling needs.

Features and Benefits

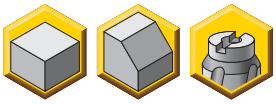
Features	Benefits
• Four true cutting edges per heavy-duty MEGA 45° insert.	• Low cost per edge and high productivity.
• Soft cutting edge design.	• 30% lower cutting forces.
• Up to 30% increased Metal Removal Rates (MRR).	• Performance leader in steel and cast iron materials.
• Carbide pocket shims.	• Excellent cutter body protection.
• Cutting edge numbering system.	• Improved runout for better tool life and floor finish.
• HD2 geometry.	• Stronger edge protection to handle the toughest milling jobs, especially with scale and surfaces with varying thicknesses.

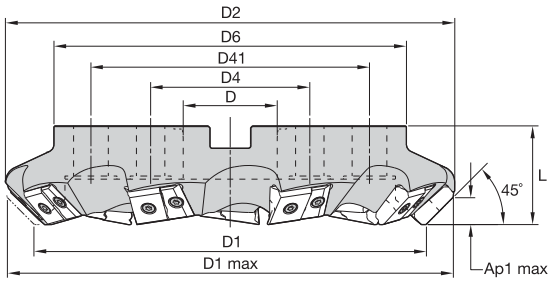


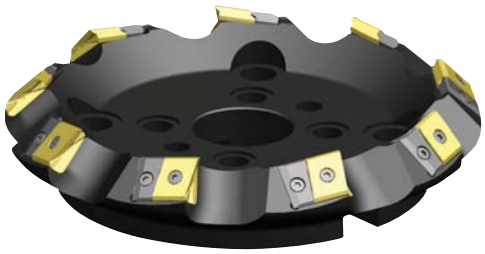

4 True Cutting Edges
Soft cutting edge design
Integrated wiper facets for excellent floor finish
LNPU24-HD
Strong insert for stable machining


4 True Cutting Edges
Stronger edge protection
Numbered cutting edges
Integrated wiper facets for excellent floor finish
LNPU24-HD2
Strong insert for stable machining

- Up to 30% higher Metal Removal Rate (MRR).
- Cutter body protection with carbide shims.





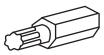


MEGA 45 • Shell Mills

order number	catalogue number	D1	D1 max	D	D2	D4	D41	D6	L	Ap1 max	Z	kg	max RPM
4040931	**MEGA45D125B06LN24**	125	160,3	40	169	–	–	90	63	17,2	6	4,40	12620
4040932	**MEGA45D160C07LN24**	160	195,4	40	201	66,7	–	130	63	17,2	7	6,46	11150
4102923	**MEGA45D200C07LN24**	200	235,4	60	239	101,6	–	160	63	17,2	7	8,41	9970
4102924	**MEGA45D250C09LN24**	250	285,4	60	287	101,6	177,8	225	63	17,2	9	13,54	8920
4040954	**MEGA45D250C11LN24**	250	285,4	60	287	101,6	177,8	225	63	17,2	11	13,97	8920
4102925	**MEGA45D315C10LN24**	315	350,4	60	352	101,6	177,8	225	80	17,2	10	22,57	7950
4040955	**MEGA45D315C13LN24 ***	315	350,4	60	352	101,6	177,8	225	80	17,2	13	23,03	7950

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	 insert screw	 Nm	 shim	 universal bit torque driver	 drive bit
125	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
160	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
200	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
250	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
315	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim



catalogue number
SM-906LH

NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions.
Please refer to the Innovations 2016 Catalogue A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

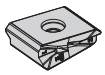
Insert Selection Guide

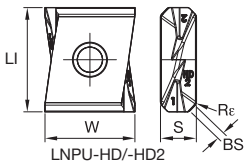
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPK30**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPK30	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
S3	.S..HD	KC725M	**.S..HD2**	**KCPM40**	.S..HD2	KCSM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	–	–	–	–

Indexable Inserts

● first choice
○ alternate choice

P		●		●	●	○
M					○	●
K	●		●	○		
N						
S						●
H						

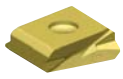

LNPU-HD/-HD2

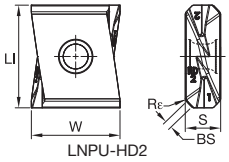


LNPU-HD/-HD2

LNPU-HD/HD2

catalogue number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU2410ANSRHD	29,00	2,25	25,02	1,2	10,00	0,23	4	–	●	●	●	–	–
LNPU2410ANSRHD2	29,00	2,25	25,04	1,2	10,00	0,23	4	–	–	–	●	●	●


LNPU-HD2



LNPU-HD2

LNPU-HD2 • Left Hand

catalogue number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU2410ANSLHD2	29,00	2,25	25,04	1,2	10,00	0,23	4	–	–	–	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	0,33	**0,83**	1,34	0,24	**0,60**	0,96	0,18	**0,45**	0,71	0,16	**0,39**	0,62	0,14	**0,36**	0,57	.S..HD
.S..HD2	0,33	**0,91**	1,53	0,24	**0,66**	1,09	0,18	**0,49**	0,81	0,16	**0,43**	0,71	0,14	**0,39**	0,65	.S..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

MEGA 60 and 90

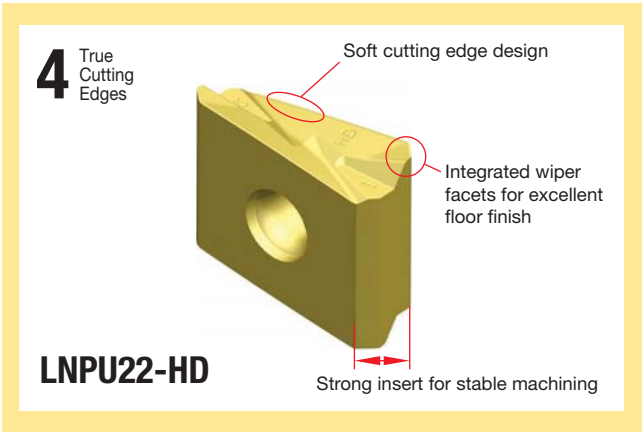
Primary Application

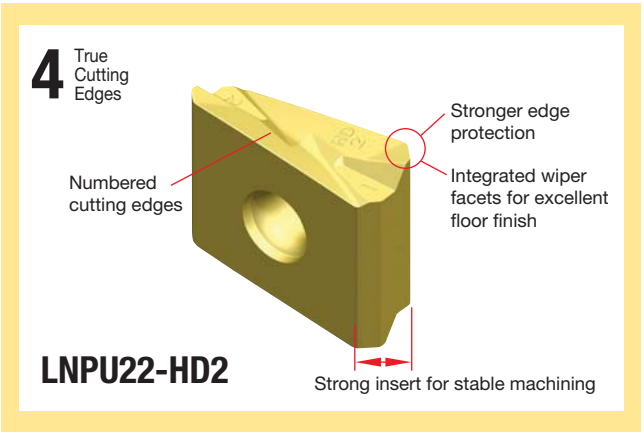
The real performance booster in heavy-duty milling. With four true cutting edges per heavy-duty insert, you are getting the low cost per edge and high productivity you need and have come to expect from Kennametal. The soft cutting edge design enables 30% lower cutting forces, and the carbide shim provides protection to the cutter body. Choose MEGA 60 and MEGA 90 for all steel and cast iron indexable milling needs.

Features and Benefits

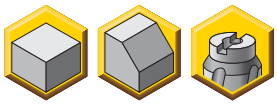
Features	Benefits
• Four true cutting edges per heavy-duty MEGA 60 and 90 insert.	• Low cost per edge and high productivity.
• Soft cutting edge design.	• 30% lower cutting forces.
• Up to 30% increased Metal Removal Rates (MRR).	• Performance leader in steel and cast iron materials.
• Carbide pocket shims.	• Excellent cutter body protection.
• Cutting edge numbering system.	• Improved runout for better tool life and floor finish.
• HD2 geometry.	• Stronger edge protection to handle the toughest milling jobs, especially with scale and surfaces with varying thicknesses.

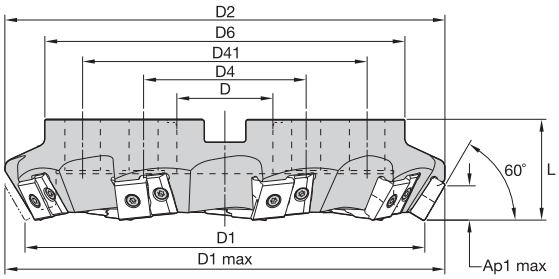



4 True Cutting Edges
Soft cutting edge design
Integrated wiper facets for excellent floor finish
LNPU22-HD
Strong insert for stable machining


4 True Cutting Edges
Stronger edge protection
Numbered cutting edges
Integrated wiper facets for excellent floor finish
LNPU22-HD2
Strong insert for stable machining

- Up to 30% higher Metal Removal Rate (MRR).
- Cutter body protection with carbide shims.



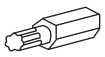




MEGA 60 • Shell Mills

order number	catalogue number	D1	D1 max	D	D2	D4	D41	D6	L	Ap1 max	Z	kg	max RPM
4147458	**MEGA60D125B06LN22**	125	150,0	40	155	–	–	90	63	21,4	6	3,76	11130
4147459	**MEGA60D160C07LN22**	160	184,9	40	190	67	–	130	63	21,4	7	5,73	9830
4147460	**MEGA60D200C07LN22**	200	224,9	60	225	102	–	160	63	21,4	7	8,17	8790
4147461	**MEGA60D200C09LN22**	200	224,9	60	225	102	–	160	63	21,4	9	8,26	8790
4147462	**MEGA60D250C09LN22**	250	274,9	60	275	102	178	225	63	21,4	9	12,93	7870
4147483	**MEGA60D250C11LN22**	250	274,9	60	275	102	178	225	63	21,4	11	13,09	7870
4147484	**MEGA60D315C10LN22**	315	339,9	60	340	102	178	225	80	21,4	10	21,29	7010
4147485	**MEGA60D315C13LN22**	315	339,9	60	340	102	178	225	80	21,4	13	21,39	7010

Spare Parts

D1	 insert screw	 Nm	 shim	 universal bit torque driver	 drive bit
125	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
160	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
200	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
250	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
315	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim



catalogue number
SM-906LH

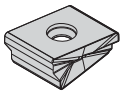
NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions.
Please refer to the Innovations 2016 Catalogue A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

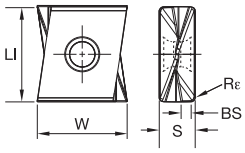
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPM40**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD**	**KC725M**	.S..HD2	KCSM40
S3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–

Inserts

beyond


LNPU-HD/-HD2



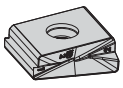
LNPU-HD/-HD2

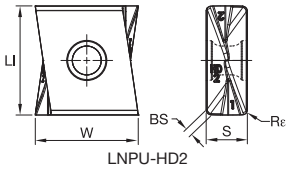
● first choice
○ alternate choice

P			●		●	●	○
M						○	●
K	●		●	○			
N							
S							●
H							

LNPU-HD/-HD2

catalogue number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU221012PNSRHD	27	2,31	25,01	1,2	10,00	0,23	4	–	●	●	●	●	–
LNPU221012PNSRHD2	27	2,31	25,00	1,2	10,00	0,23	4	–	–	–	●	●	●


LNPU-HD2



LNPU-HD2

LNPU-HD2 • Left Hand

catalogue number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU221012PNSLHD2	27	2,31	25,00	1,2	10,00	0,23	4	●	–	–	●	●	–

Recommended Starting Feeds

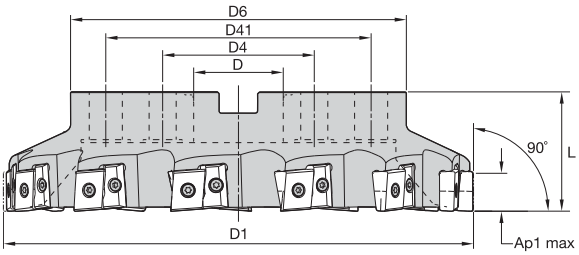
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40%–100%			
.S..HD	0,27	**0,68**	1,08	0,20	**0,49**	0,78	0,15	**0,37**	0,58	0,13	**0,32**	0,51	0,12	**0,29**	0,46	.S..HD
.S..HD2	0,27	**0,68**	1,21	0,20	**0,49**	0,87	0,15	**0,37**	0,65	0,13	**0,32**	0,56	0,12	**0,29**	0,52	.S..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Up to 30% higher Metal Removal Rate (MRR).
- Cutter body protection with carbide shims.

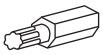




MEGA 90 • Shell Mills

order number	catalogue number	D1	D	D4	D41	D6	L	Ap1 max	Z	kg	max RPM
4129656	**MEGA90D125B06LN22**	125	40	–	–	90	63	25,5	6	3,19	10070
4129657	**MEGA90D160C07LN22**	160	40	67	–	130	63	25,5	7	4,86	8900
4129658	**MEGA90D200C07LN22**	200	60	102	–	160	63	25,5	7	6,85	7960
4129659	**MEGA90D200C09LN22**	200	60	102	–	160	63	25,5	9	6,92	7960
4129660	**MEGA90D250C09LN22**	250	60	102	–	160	63	25,5	9	9,82	7120
4129661	**MEGA90D250C11LN22**	250	60	102	–	160	63	25,5	11	9,95	7120
4129662	**MEGA90D315C10LN22**	315	60	102	178	225	80	25,5	10	17,66	6340
4129664	**MEGA90D315C13LN22**	315	60	102	178	225	80	25,5	13	17,78	6340

Spare Parts

D1	 insert screw	 Nm	 shim	 universal bit torque driver	 drive bit
125	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
160	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
200	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
250	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**
315	**MS1162**	5,0	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim

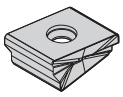


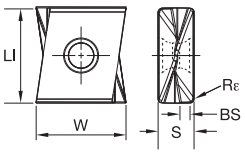
catalogue number
SM-906LH

NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions.
Please refer to the Innovations 2016 Catalogue A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPM40**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD**	**KC725M**	.S..HD2	KCSM40
S3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–


LNPU-HD/-HD2



LNPU-HD/-HD2

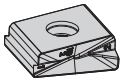
● first choice
○ alternate choice

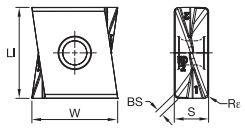
beyond

P			●		●	●	○
M						○	●
K		●		●	○		
N							
S							●
H							

LNPU-HD/-HD2

catalogue number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU221012PNSRHD	27	2,31	25,01	1,2	10,00	0,23	4	–	●	●	●	●	–
LNPU221012PNSRHD2	27	2,31	25,00	1,2	10,00	0,23	4	–	–	–	●	●	●


LNPU-HD2



LNPU-HD2

LNPU-HD2 • Left Hand

catalogue number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU221012PNSLHD2	27	2,31	25,00	1,2	10,00	0,23	4	●	–	–	●	●	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	0,23	**0,59**	0,94	0,17	**0,43**	0,67	0,13	**0,32**	0,50	0,11	**0,28**	0,44	0,10	**0,25**	0,40	.S..HD
.S..HD2	0,23	**0,59**	1,04	0,17	**0,43**	0,75	0,13	**0,32**	0,56	0,11	**0,28**	0,49	0,10	**0,25**	0,45	.S..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KBDM PCD Face Mills

Indexable Milling

Application

The new KBDM PCD milling platform is designed and engineered for aluminum face milling applications, targeting automotive requirements.

This proven design delivers consistent performance time and time again, and has done so for 20+ years. KBDM's new look, black anodized aluminum with yellow wedges, gives it a unique appearance. However, it's what is behind the cover that really matters. Performance is key, and KBDM does not disappoint.

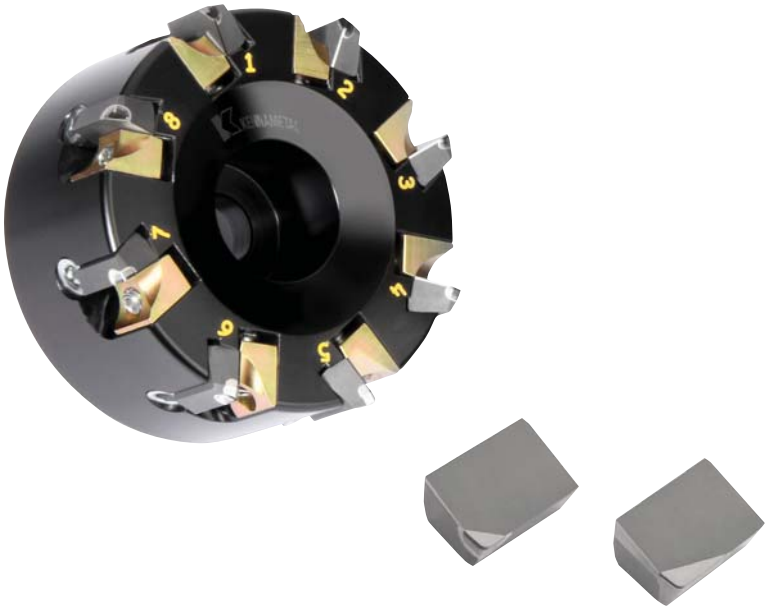


Features and Benefits

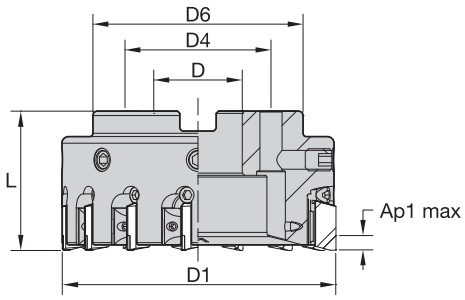
- Cutter bodies manufactured from hard anodised aluminium provide lighter weight and excellent wear and erosion resistance.
- High-density platform geared toward faster machining cycles to help lower overall costs.
- All pockets are adjustable. Very-user friendly for axial adjustment less than 0,005mm, with a total adjustment of 0,8mm.
- Two grades, KD1400™ and KD1425™, provide options in maximising efficiencies based upon application.
- Roughing, semi-finishing, and fine-finishing with one platform.
- Two corner radii — 0,8 and 2,4mm.
- Mini-tip insert for finishing applications.
- All standard inserts have a 1,5mm wiper facet for better surface qualities.
- Full face wiper available as a standard item.

Delivering Customer-Driven Performance for 20+ Years.











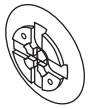
Face Mills

order number	catalogue number	D1	D	D4	D6	L	Z	Z ADJ	kg	max RPM
6044682	**KBDM063SD06**	63	22	–	62	40	6	6	0,45	20000
6044683	**KBDM080SD08**	80	27	–	50	50	8	8	0,63	20000
6044684	**KBDM100SD12**	100	32	–	78	50	12	12	1,13	17320
6044685	**KBDM125SD16**	125	40	–	89	63	16	16	2,00	15500
6044686	**KBDM160SD18**	160	40	–	89	63	18	18	3,20	14150
6044687	**KBDM200SD24**	200	60	102	130	63	24	24	4,21	12240
6207836	**KBDM250SD30**	250	60	102	165	63	30	30	7,32	11000

Spare Parts

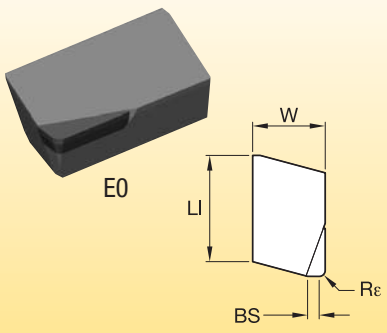




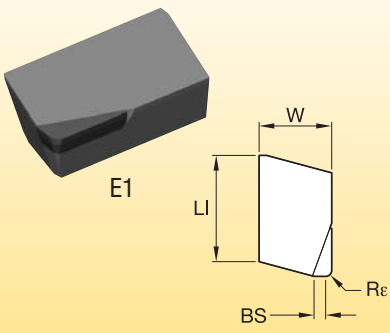


D1	screw	wedge	axial adjusting screw	coolant lock screw	coolant shower plate
63	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS063S**	–
80	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS080**	–
100	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS100**	–
125	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS125**	–
160	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS160**	–
200	**LS103**	**HDWM5EUS**	**SWSM515**	–	**SSP8**
250	**LS103**	**HDWM5EUS**	**SWSM515**	–	–

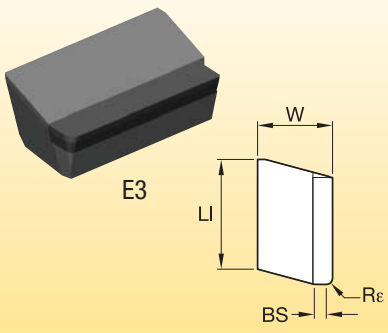
Technical Information • Ap1 max for PCD Inserts



Ap1 max 2,5mm



Ap1 max 6,3mm



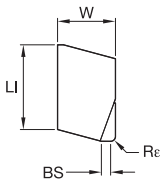
Ap1 max 12,7mm

Insert Selection Guide • KBDM • Metric

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	.KSDR.....	KD1400	**.KSDR.....**	**KD1400**	.KSDR.....	KD1400
N3	.KSDR.....	KD1400	**.KSDR.....**	**KD1425**	.KSDR.....	KD1425
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–



E0



E0

● first choice
○ alternate choice

P	
M	
K	
N	● ●
S	
H	

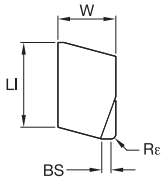
PCD Inserts • KSDR Mini-Tip • E0

catalogue number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E0W0S	15,85	9,52	—	0,8	0,02	●	●
KSDR100031E0W4S	15,88	9,52	1,52	0,8	0,02	●	●

NOTE: For Mini-tip (E0), Ap1 max = 2,5mm.



E1

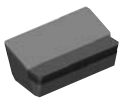


E1

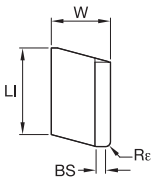
PCD Inserts • KSDR • E1

catalogue number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E1W4S	15,88	9,52	1,52	0,8	0,02	●	●
KSDR100093E1W4S	15,88	9,52	1,52	2,4	0,02	●	●

NOTE: Ap1 max for standard E1 insert is 6,3mm.



E3



E3

● first choice
○ alternate choice

P			
M			
K			
N		●	●
S			
H			

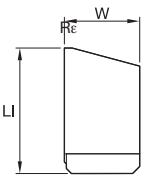
PCD Inserts • KSDR • E3

catalogue number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E3W4S	15,88	9,52	1,52	0,8	0,02	●	●

NOTE: For Full Edge (E3), Ap1 max = 12,7mm.



KSDR



KSDR

PCD Inserts • KSDR Wiper

catalogue number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR102S	15,88	9,53	0,89	–	0,02	●	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.KSDR…..	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,31	0,06	**0,16**	0,27	0,05	**0,15**	0,25	.KSDR…..

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

PCD Custom Solutions for Indexable Milling

- Diameters up to 550mm.
- Integral shank options, ie, HSK.
- Left-hand rotation.
- Internal coolant capable.
- PCD lengths up to 12,7mm.
- Specific edge preps and nose radii available.



Insert Setting and Fine Adjustment Procedure

Face Mills

- Apply a small amount of lubricant to the following areas:
  - — Pocket area where the wedge slides.
  - — Threads of the inserts locking screw.
  - — Threads of the axial adjustment screw.
- Install inserts applying light torque to the wedge assembly locking screw.
- Turn axial adjustment screw until the cartridge is 0,01–0,015mm below the final set height.
- Tighten the wedge assembly locking screw to 3,5 Nm.
  - — 170.170 — Torque Screwdriver **mm #1138787**.
  - — 170.181 — 1/4" Drive Bit — 4mm Hex **mm #1138857**.
- Repeat for all inserts/pockets before final axial setting.
- Final Setting: Turn the axial adjustment screw moving the PCD insert 0,005µm to the final set height. Repeat for all pockets.



General

- Non-contact gages are preferred.
- Contact gages can be used with the following precautions:
  - — Indicator point must be flat and parallel to the base.
  - — Always approach the PCD insert from the relief angle under the PCD segment.
  - — Do NOT let the indicator drop on the PCD segment.
- Remove all worn PCD insert.
- Clean the pockets of the cutter completely.



KBDM Wiper Setup

- Set Wiper 15–20 microns (0.0006–0.0008") higher than standard PCD inserts. The KSDR102S Wiper is designed to be used only with 0.031 corner radius standard inserts in the other pockets.
- At this setting, the wiper radius will cover 7,1mm (0.28") advancement before another wiper would be needed.
- Wiper radius is 762mm (30.0").
- Ideal setup is to use only 1 wiper to achieve best surface quality. Use when Wt is a requirement.

Example: KBDM200SD24 Face Mill
Feed per tooth: 0,2mm (0.008")
# of inserts: 24
Advancement per revolution:
Metric: 0,2 x 24 = 4,8mm
Inch: 0.008 x 24 = 0.192"
4,8mm < 7,1mm wiper length

NOTE: Large diameter cutters 250mm (10.0") & up would be candidates for more than 1 wiper. Due to more inserts in the cutter, the advancement per revolution might exceed the coverage of 1 wiper.

The KSCM™ AluMill™ System

Primary Application

The KSCM AluMill face milling programme is specifically engineered to deliver best-in-class performance in high-volume aluminium machining operations. Runs at higher speeds with no chatter while still easy to adjust. KD1420™ grade materials provide long tool life, and with the Kennametal Blue Box™ programme for reconditioning worn cartridges, you can reduce inventory costs as well!

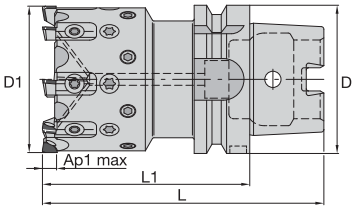
Features and Benefits

- Anti-vibration cutter design.
- Best rigidity for high feed rates.
- Unique dovetail wedge clamping design.
- No radial movement of cartridges.
- Centrifugal force protection cartridge design.
- Integrated chip gash into cartridge.
- Quick setup and easy adjust concept.
- Flexible cartridge configuration.
- No bur cartridges for fine finishing.
- Blue Box™ service.



- Productivity booster in aluminium face milling.
- Rough and finish in one operation.
- Precision balanceable cutter bodies produce mirror-finish surfaces.







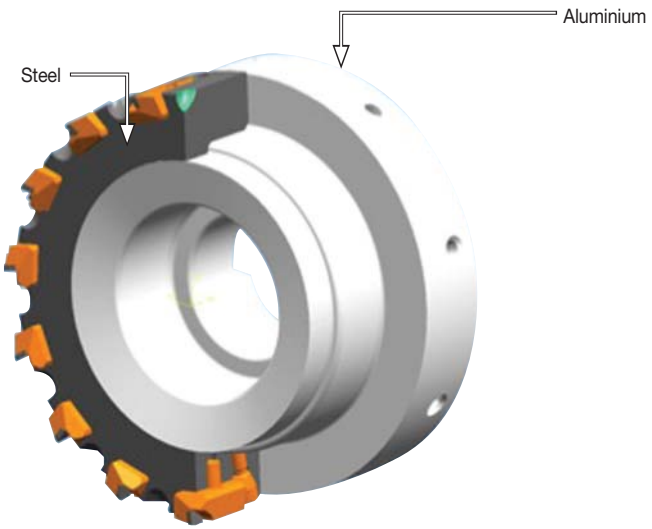
KSCM AluMill • Monoblock HSK63A

order number	catalogue number	CSMS system size	D1	D	L	L1	Ap1 max	Z	Z S	kg	max RPM
2880630	**KSCM63R08CAH63A090**	HSK63A	63	63	122	90	3,0	8	8	1,83	37900

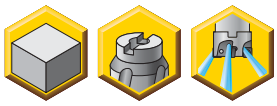
Spare Parts

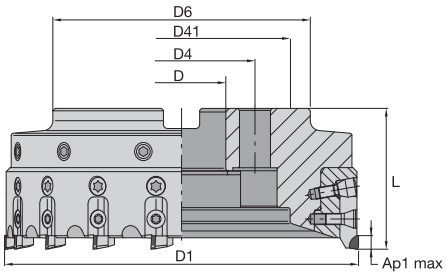
D1	adjusting screw	cartridge screw	drive bit	balancing screw
63	**193.464**	**193.465**	**170.279**	**193.461**

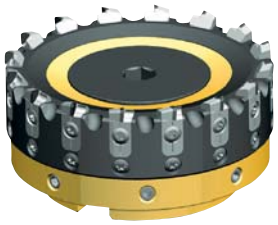
NOTE: Ap1 max is dependent on the cartridge configuration; see the values listed under the cartridges.



- PCD cartridge face mill for high production aluminium face milling.
- Rough and finish in one operation.
- Precision balanceable cutter bodies produce mirror-finish surfaces.







KSCM AluMill • Shell Mills

order number	catalogue number	D1	D	D4	D6	D41	L	Ap1 max	Z	Z ADJ	kg	max RPM
2881349	**KSCM80R10CAB27**	80	27	–	63	–	50	3,0	10	10	1,26	29900
2881352	**KSCM100R12CAB32**	100	32	–	96	–	50	3,0	12	12	1,54	23900
2881505	**KSCM125R16CAB40**	125	40	–	92	–	63	3,0	16	16	2,48	19100
2881509	**KSCM160R18CAB40**	160	40	67	116	–	63	3,0	18	18	3,74	15000
2881510	**KSCM200R24CAB60**	200	60	102	166	–	63	3,0	24	24	5,20	12000
2881511	**KSCM250R30CAB60**	250	60	102	166	–	63	3,0	30	30	7,85	9600

NOTE: Ap1 max is dependent on the cartridge configuration; see the values listed under the cartridges.

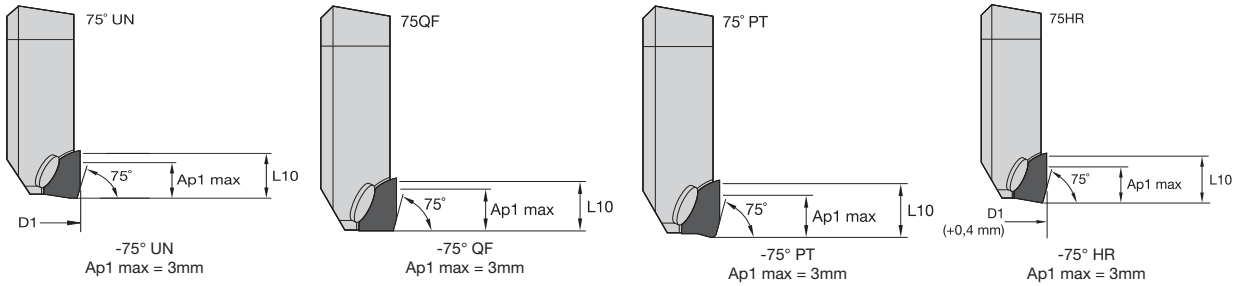
Spare Parts

D1	adjusting screw	cartridge screw	drive bit	coolant lock screw	coolant shower plate	balancing screw
80	**193.464**	**193.465**	**170.279**	**470.269**	**–**	**193.460**
100	**193.464**	**193.465**	**170.279**	**470.270**	**–**	**193.461**
125	**193.464**	**193.465**	**170.279**	**470.271**	**–**	**193.462**
160	**193.464**	**193.465**	**170.279**	**420.200**	**470.272**	**193.462**
200	**193.464**	**193.465**	**170.279**	**–**	**470.273**	**193.462**
250	**193.464**	**193.465**	**170.279**	**–**	**470.274**	**193.463**

NOTE: All cutters are bi-metallic except the 80mm diameter.
Ap1 max is dependent on the cartridge configuration; see the values listed under the cartridges.
Please order KSCM cutters bodies and cartridges separately.

Cartridge Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	KCSM…	KD1420	**KCSM…**	**KD1420**	KCSM…	KD1420
N3	KCSM…	KD1420	**KCSM…**	**KD1420**	KCSM…	KD1420
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–



cartridge combination	ratio	max ap	surface quality
UN	—	3	Rz 2–Rz4
UN + QF	3:1	3	Rz 1,5–Rz 2,5
PT + UN	X:1	3	Rz 3,2–Rz 17

● first choice
○ alternate choice

	KD1400	KD1420
P		
M		
K		
N	●	●
S		
H		

KSCM • 75° UN

catalogue number	KRI	L10	hm	KD1400	KD1420
KSCMCA75UN	75°	6,10	0,02	–	●

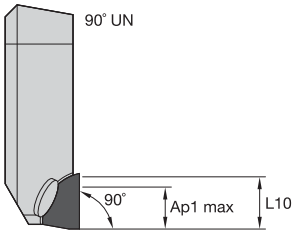
KSCM • 75° QF

catalogue number	KRI	L10	hm	KD1400	KD1420
KSCMCA75QF	75°	6,10	0,02	–	●

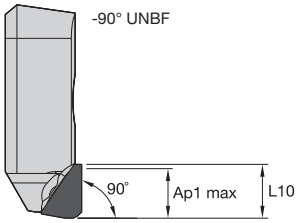
KSCM • 75° PT

catalogue number	KRI	L10	hm	KD1400	KD1420
KSCMCA75PT	75°	6,10	0,02	–	●

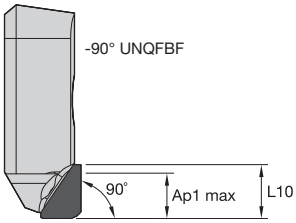
NOTE: KSCMA: Blanks without PCD segment, if cutter is not fully loaded with cartridges.
For low horsepower machines and cutter configurations with less number of effective teeth.



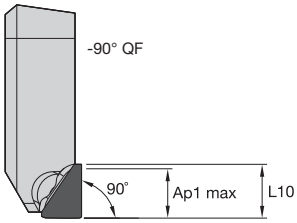
-90° UN
Ap1 MAX = 3mm



-90° UNBF (Bur free)
Ap1 max = 3mm



-90° UNQFBF (Burr free)
Ap1 max = 3mm



-90° QF
Ap1 max = 3mm

cartridge combination	ratio	max ap	surface quality
UN	–	3	Rz 2–Rz4
UN + QF	3:1	3	Rz 1,5–Rz 2,5
PT + UN	X:1	3	Rz 3,2–Rz 17

● first choice
○ alternate choice

P			
M			
K			
N		●	●
S			
H			

KSCM • 90° UN

catalogue number	KRI	L10	hm	KD1400	KD1420
KSCMCA90UN	90°	6,10	0,02	–	●

KSCM • 90° UNBF

catalogue number	KRI	L10	hm	KD1400	KD1420
KSCMA90UNBF	90°	6,20	–	●	●
KSCMCA90UNBF	90°	6,15	0,02	–	●

NOTE: KSCMA90UNBF & KSCMA90QFBF should be the 1st choice solutions for KSCM PCD milling applications.
For setup instructions reference pages S140–S141.

KSCM • 90° QF

catalogue number	KRI	L10	hm	KD1400	KD1420
KSCMCA90QF	90°	6,20	0,02	–	●

KSCM • 90° QFBF

catalogue number	KRI	L10	hm	KD1400	KD1420
KSCMA90QFBF	90°	6,20	–	●	●
KSCMCA90QFBF	90°	6,20	0,02	–	●

NOTE: KSCMA: Blanks without PCD segment, if cutter is not fully loaded with cartridges.
For low horsepower machines and cutter configurations with less number of effective teeth.

Recommended Starting Feeds

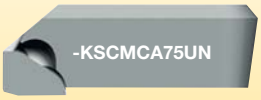
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

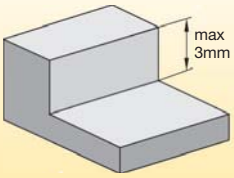
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
KCSM…	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,31	0,06	**0,16**	0,27	0,05	**0,15**	0,25	KCSM…

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Tool Configuration • Universal Cartridge

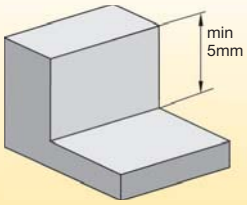


Face milling cutter fitted entirely with universal cartridges.



Depth of Cut:
max 3mm

Surface Quality:
Rz2 - Rz4

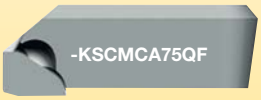


Contouring:
PCD cutting edge length = 5mm

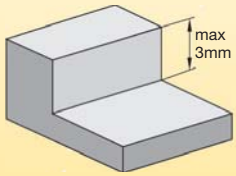
Tool Configuration • Universal Cartridge



+ Finishing Cartridge

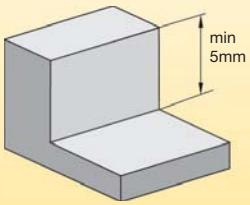


Fitting the face milling cutter with universal and finishing cartridges in a ratio of approximately 3:1.



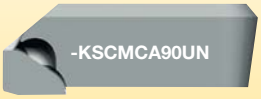
Depth of Cut:
max 3mm

Surface Quality:
Rz1,5 - Rz2,5

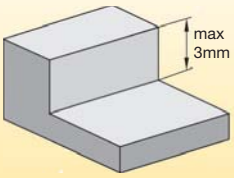


Contouring:
PCD cutting edge length = 5mm

Tool Configuration • Edge Cartridge

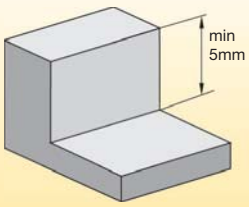


Fitting the face milling cutter entirely with edge cartridges.



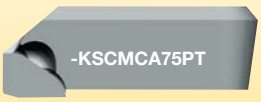
Depth of Cut:
max 3mm

Surface Quality:
Rz2 - Rz4

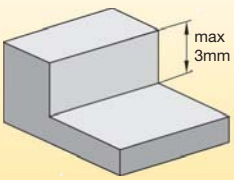


Contouring:
PCD cutting edge length = 5mm

Tool Configuration • Cartridge for Defined Surfaces

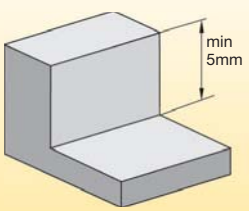


Fitting the face milling cutter entirely with cartridges for defined surfaces.



Depth of Cut:
max 3mm

Surface Quality:
Rz3,2 - Rz17



Contouring:
PCD cutting edge length = 5mm

Tool Configuration • Universal Cartridge, 75° Face Milling







1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 10 Nm.
3. Screw in the adjusting screws (RH), and tighten to 3 Nm.

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

Tool Configuration • Universal Cartridge + Finishing Cartridge (Ratio Approx. 3:1), 75°







1. Insert universal cartridges at ratio of approximately 4:1 in the body. Make sure they are evenly distributed!
2. Screw in the clamping screws (RH), and tighten to 10 Nm.
3. Screw in the adjusting screws (RH), and tighten to 3 Nm.

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

6. Insert finishing cartridges as described in Steps 1–5 but with an axial advance of 0,008 +0,002mm. Max permitted runout error of 3 µm with finishing cartridges.

Tool Configuration • Edge Cartridges, 90° Shoulder Milling







1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 10 Nm.
3. Screw in the adjusting screws (RH), and tighten to 3 Nm.

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

Tool Configuration • Cartridge for Defined Surface, 75°

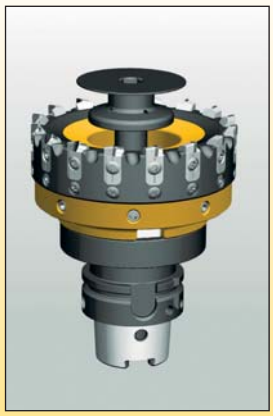


1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 10 Nm.
3. Screw in the adjusting screws (RH), and tighten to 3 Nm.



4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.



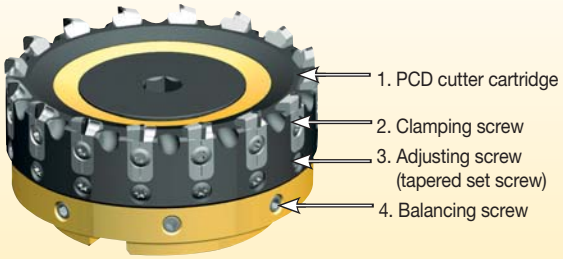


NOTE: The process must be repeated when the cartridges are changed. To dismantle, remove the adjusting element (Part 3), clamping screw (Part 2), and cartridge (Part 1).

Instruction for Mounting the Face Milling Cutter on the Appropriate Toolholder

User Information:

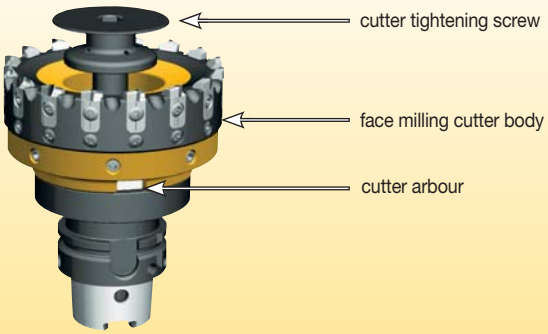
- Tools conform to EN ISO 15641.
- Absolute cleanliness must be observed when assembling the face milling cutter.
- An optimum cutting result will only be achieved by adjusting and balancing the complete tool system (face milling cutter + toolholder).
- Balancing is achieved with the aid of the balancing screws. Quality class G2.5 DIN-ISO 1940.
- The balancing screw must not protrude above the body.
- The balancing and adjustment screws have an adhesive coating according to DIN 267, Part 28. If, after repeated use, the coating is no longer adequate to secure the screws, the screws must be replaced.
- The maximum permitted operating speed (quoted on the tool) must not be exceeded.
- The maximum permitted operating speed is only permitted with clamping systems manufactured by Kennametal in accordance with DIN 69982 Form B with enlarged plane bearing surface. Reduce the operating speed if clamping systems with increased projection length or made by other manufacturers are used.
- Tools and fittings are to be serviced and repaired by Kennametal.
- Screws sealed with lacquer have been adjusted by the manufacturer, and must not be moved.



Instructions for Fitting the Cutter Cartridge • Tool Construction

When mounting the face milling cutter (dimensions similar to DIN 8030 Form B), place the body of the face milling cutter on the arbour. Ensure that the contact faces are clean. Screw in the cutter fastening bolt (RH) and tighten with the appropriate torque.

Tightening torque for the central cutter tightening screw:
M20 (adaptor diameter 40): **250 Nm**
M16 (adaptor diameter 32): **150 Nm**
M12 (adaptor diameter 27): **80 Nm**

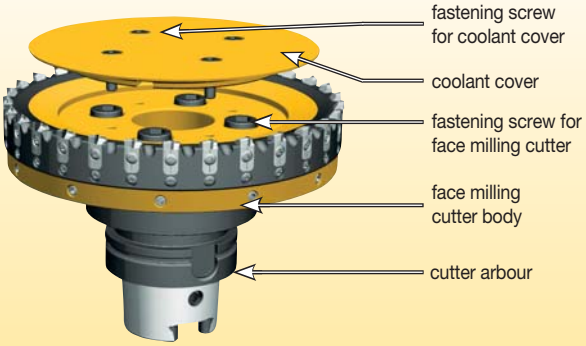


Mounting the Face Milling Cutter (Dimensions Similar to DIN 8030 Form C)

Place the body of the face milling cutter on the arbour. Ensure that the contact faces are clean. Screw in the fastening bolt (RH) and tighten with the appropriate torque. Put the aluminium coolant cover in place and fasten with the Torx fastening screws.

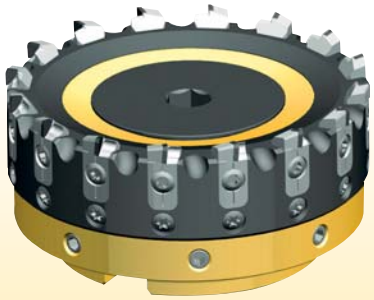
Tightening torque for the face milling cutter fastening screws:
M20: 250 Nm
M16: 110 Nm
M12: 50 Nm

Tightening torque for the coolant cover fastening screws:
M8: 18 Nm



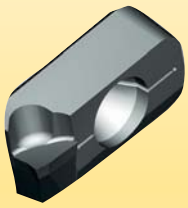
KSCM AluMill
Reconditioning Service

BLUE BOX™
Kennametal



New Supply

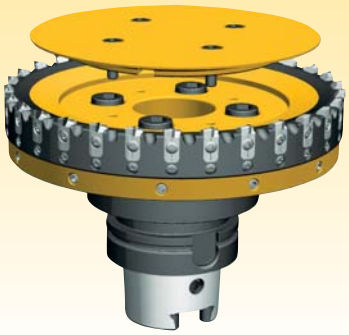
On request, the face mill will be delivered with cartridges already mounted and adjusted.



Service Level • PCD Insert Reconditioning

Reconditioning of PCD cartridges up to three times.

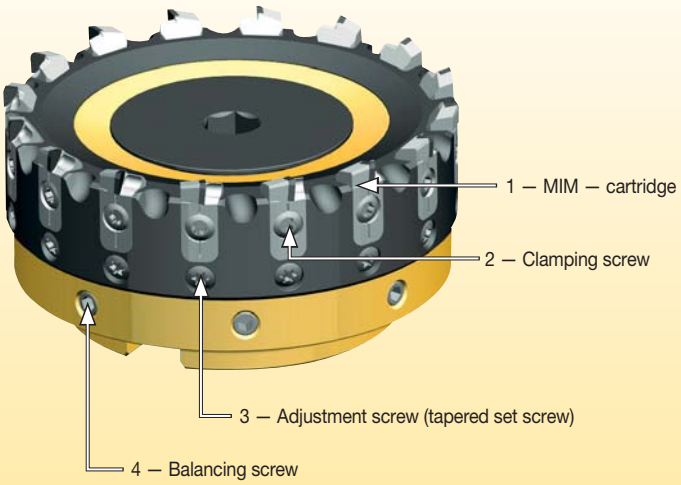
- Tool diameter and length remain constant.



Face mill will be delivered with exchanged cartridges already mounted, adjusted, and balanced.



Tool Design



Information:

- KSCM tools conform to EN ISO 15641.
- Absolute cleanliness is needed when assembling the cutter.
- For optimum results, adjust and balance the complete tool system (face milling cutter + toolholder).
- Balancing is achieved with the aid of balancing screws. Quality class G2.5 DIN-ISO 1940.
- The balancing screw must not protrude above the body. The balancing and adjustment screws have an adhesive coating according to DIN 267, Part 28. After repeated use, the coating may no longer be adequate to secure the screws; the screws must be replaced.
- Do not exceed the maximum operating speed.
- Maximum operating speed is only permitted with clamping systems manufactured by Kennametal in accordance with DIN 69982 Form B with enlarged plane bearing surface. Reduce the operating speed if clamping systems with increased projection length or made by other manufacturers are used.
- Tools and fittings are to be serviced and repaired by Kennametal.
- Screws sealed with lacquer have been adjusted by the manufacturer, and must not be moved.
- A centrifugal force test was done.
- If the tools will be used for HSC, referred to in DIN EN ISO 15641, machines have to fulfill the special safety requirements.

Assembling

1 Lubricate small cove on the MIM cartridge with copper paste of Liqui Moly.



2 Insert universal cartridges at approximate ratio 3:1 into the body. Make sure that they are distributed evenly!

3 Screw in the clamping screws (RH) and tighten to 8 Nm.

4 Screw in the adjusting screws (RH) and tighten to 3 Nm.

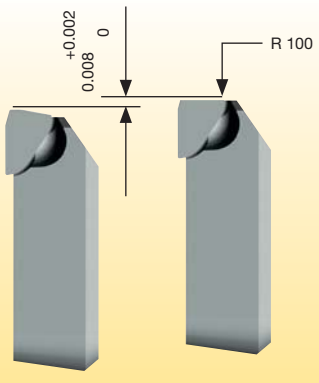


5 Determine which cartridge is in the highest axial position.

6 By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.



7 Insert finishing cartridges as described in steps 1–6 with an axial advance of 0,008 +0,002mm. Max permitted runout error of 3 µm with finishing cartridges.



NOTE:
- The process must be repeated when the cartridges are changed. To dismantle, remove the adjusting element (Part 3), clamping screw (Part 2), and cartridge (Part 1).
- For special requirements, e.g. surface quality, the configuration and the adjustment of the tool and inserts have to be done in relation with these requirements.
- If spare parts have to be ordered, reference the drawing.

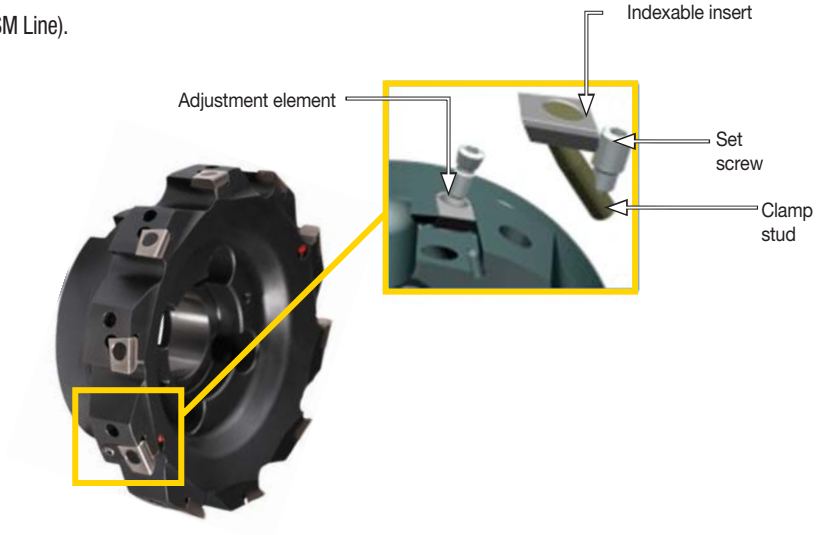
Fix-Perfect™ 90° Aluminium

Primary Application

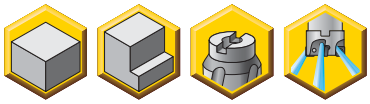
The Fix-Perfect 90° milling cutter is excellent in machining aluminium and non-ferrous materials. The 24° positive rake provides free cutting action while producing superior finishes and flatness.

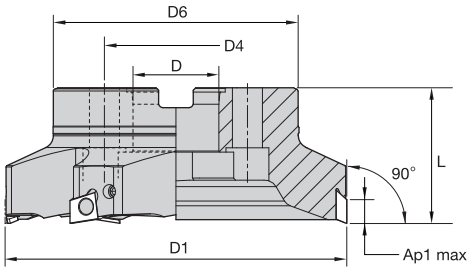
Features and Benefits

- Achieve true 90º shoulder.
- Roughing and finishing in one tool.
- Full safety first insert clamping.
- Easy adjustable pocket seats for fine finishing (PM, HPM, HSM Line).
- Achievable floor surface quality: Ra = 0.5.
- Very soft cutting action.
- Axial depth of cut Ap1 max = 9,5mm.



- Excellent for milling aluminium and non-ferrous materials.
- Good choice for thin wall or poorly fixtured workpieces.
- 24° positive rake provides free cutting action.
- Produces excellent finish and flatness.
- Maximum speed is 2000 m/min.
- All pockets are fixed pockets.





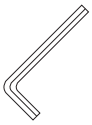


Fix-Perfect • Shell Mills • M Line • Fixed Pockets

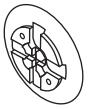
order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	kg	max RPM
2210826	**40A02RP90BG15CM**	40	16	–	35	40	9,5	2	0,20	15920
2210827	**50A03RP90BG15CM**	50	22	–	42	40	9,5	3	0,33	12730
2033774	**63A03RP90BG15CM**	63	22	–	51	40	9,5	3	0,49	10110
2210828	**80A03RP90BG15CM**	80	27	–	64	50	9,5	3	1,02	7960
2210829	**100B04RP90BG15CM**	100	32	–	84	50	9,5	4	1,55	6370
2210830	**125B05RP90BG15CM**	125	40	–	94	63	9,5	5	2,54	5090
2210831	**160C06RP90BG15CM**	160	40	66,7	114	63	9,5	6	4,11	3980

Spare Parts





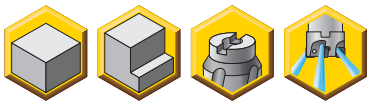


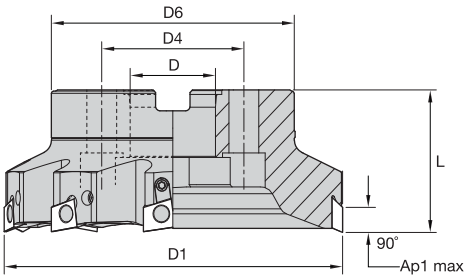


D1	clamp stud	set screw	hex wrench	Nm	socket-head cap screw	coolant lock screw	coolant shower plate
40	**410.083**	**420.060**	**170.003**	5,0	**129.830**	**420.080**	–
50	**410.083**	**420.060**	**170.003**	5,0	**125.025**	**420.100**	–
63	**410.083**	**420.060**	**170.003**	5,0	**125.025**	**420.100**	–
80	**410.083**	**420.060**	**170.003**	5,0	**125.230**	**420.120**	–
100	**410.083**	**420.060**	**170.003**	5,0	–	**420.160**	–
125	**410.083**	**420.060**	**170.003**	5,0	–	**420.200**	**470.232**
160	**410.083**	**420.060**	**170.003**	5,0	–	**420.200**	**470.233**

NOTE: Please order spare parts separately.
For 125mm and 160mm diameter milling cutters, always use the coolant lock screw and coolant cap together. Torque wrench (DTQ50140, order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

- Produces excellent surface finish and flatness.
- Fixed and adjustable pockets.
- High-speed machining.



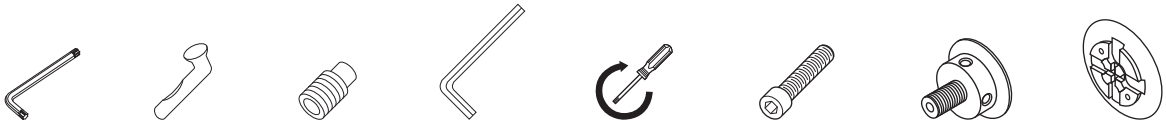




Fix-Perfect • Shell Mills • PM Line • Fixed and Adjustable Pockets

order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
1797183	**40A02RP90BG15CPM**	40	16	–	35	40	9,5	2	0	0,21	31830
1758493	**50A03RP90BG15CPM**	50	22	–	42	40	9,5	3	0	0,35	28660
1757331	**63A04RP90BG15C1WPM**	63	22	–	51	40	9,5	4	1	0,52	20210
1758495	**80A05RP90BG15C1WPM**	80	27	–	64	50	9,5	5	1	1,12	15916
1758572	**80A06RP90BG15C2WPM**	80	27	–	64	50	9,5	6	2	1,12	17910
1758496	**100B06RP90BG15C2WPM**	100	32	–	84	50	9,5	6	2	1,68	12732
1758573	**100B08RP90BG15C2WPM**	100	32	–	84	50	9,5	8	2	1,75	12732
1758497	**125B08RP90BG15C2WPM**	125	40	–	94	63	9,5	8	2	2,80	10186
1758574	**125B10RP90BG15C2WPM**	125	40	–	94	63	9,5	10	2	3,05	11460
1758498	**160C10RP90BG15C2WPM**	160	40	66,7	114	63	9,5	10	2	4,64	7958
1758499	**200C12RP90BG15C3WPM**	200	60	101,6	134	63	9,5	12	3	6,00	6366
1758500	**250C16RP90BG15C4WPM**	250	60	101,6	134	63	9,5	16	4	9,37	5093

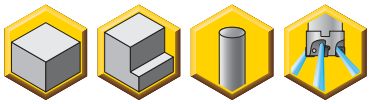
Spare Parts

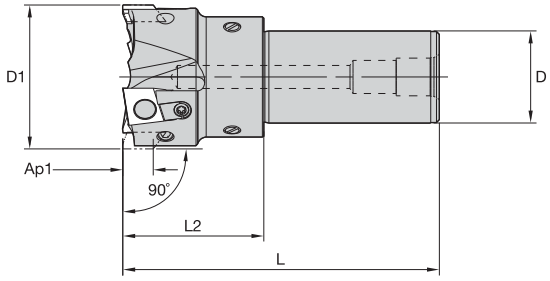


D1	Torx wrench	clamp stud	set screw	hex wrench	Nm	socket-head cap screw	coolant lock screw	coolant shower plate
40	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**129.830**	**420.080**	–
50	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**125.025**	**420.100**	–
63	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**125.025**	**420.100**	–
80	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**125.230**	**420.120**	–
100	**KT15**	**410.083**	**420.060**	**170.003**	5,0	–	**420.160**	–
125	**KT15**	**410.083**	**420.060**	**170.003**	5,0	–	**420.200**	**470.232**
160	**KT15**	**410.083**	**420.060**	**170.003**	5,0	–	**420.200**	**470.233**
200	**KT15**	**410.083**	**420.060**	**170.003**	5,0	–	–	**470.234**
250	**KT15**	**410.083**	**420.060**	**170.003**	5,0	–	–	**470.235**

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw **193.326**.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
For 125mm and 160mm diameter milling cutters, be sure to always use the coolant lock screw and coolant cap together.
Torque wrench (DTQ50140, order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

- Produces excellent finish and flatness.
- All pockets are adjustable.
- First choice for high-speed machining.







Fix-Perfect • End Mills • HPM Line • All Pockets Adjustable

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	Z ADJ	kg	max RPM
1758580	**50A03R049A32PBG15S3WHPM**	50	32	110	49	9,5	3	3	0,83	25465

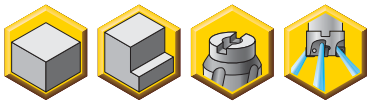
Spare Parts

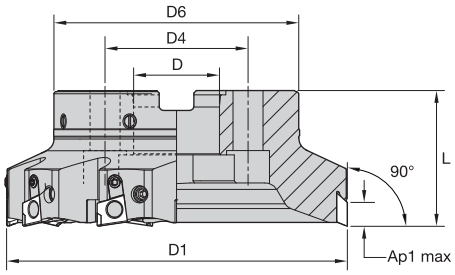


D1	Torx wrench	clamp stud	set screw	hex wrench	balancing screw	Nm
50	**KT15**	**410.083**	**420.060**	**170.003**	**193.337**	5,0

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw **193.326**.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
Torque wrench (DTQ50140, order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

- Produces excellent finish and flatness.
- All pockets are adjustable.
- First choice for high-speed machining.







Fix-Perfect • Shell Mills • HPM Line • All Pockets Adjustable

order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
1758592	**63A04RP90BG15C4WHPM**	63	22	–	51	40	9,5	4	4	0,51	20210
1758593	**80A05RP90BG15C5WHPM**	80	27	–	64	50	9,5	5	5	1,08	15916
1762369	**100B06RP90BG15C6WHPM**	100	32	–	84	50	9,5	6	6	0,70	12732
1762370	**125B08RP90BG15C8WHPM**	125	40	–	94	63	9,5	8	8	1,15	10186
1762451	**160C10RP90BG15C10WHPM**	160	40	66,7	114	63	9,5	10	10	1,77	7959
1982560	**200C12RP90BG15C12WHPM**	200	60	101,6	134	63	9,5	12	12	2,40	6400

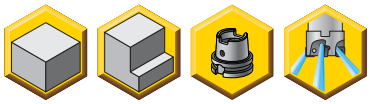
Spare Parts

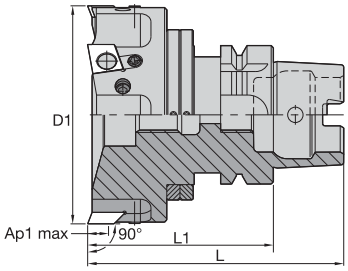


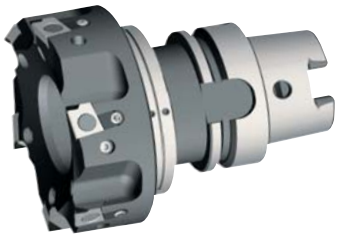
D1	Torx wrench	clamp stud	set screw	hex wrench	Nm	socket-head cap screw	coolant lock screw	coolant shower plate	balancing screw
63	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**125.025**	**420.100**	**–**	**193.337**
80	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**125.230**	**420.120**	**–**	**193.337**
100	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**–**	**420.160**	**–**	**193.337**
125	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**–**	**420.200**	**470.232**	**193.337**
160	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**–**	**420.200**	**470.233**	**193.337**
200	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**–**	**–**	**470.234**	**–**

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw **193.326**.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
Torque wrench (DTQ50140, order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

- Produces excellent finish and flatness.
- All pockets are adjustable.
- First choice for high-speed machining.



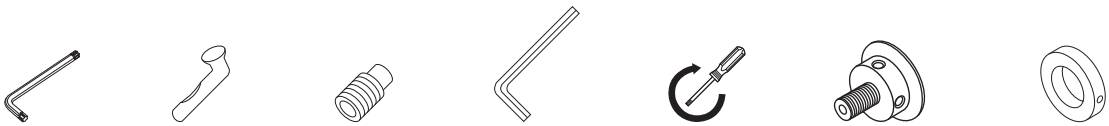




Fix-Perfect • Shell Mills • HSM Line • All Pockets Adjustable

order number	catalogue number	D1	L	L1	Ap1 max	Z	Z ADJ	CSMS system size	kg	max RPM
1782709	**50A03R060S63PBG15S3WHSM**	50	92	60	9,5	3	3	HSK63A	1,00	28660
1782711	**80A05R090S63PBG15S5WHSM**	80	122	90	9,5	5	5	HSK63A	2,12	17910

Spare Parts



D1	Torx wrench	clamp stud	set screw	hex wrench	Nm	coolant lock screw	balance ring
50	**KT15**	**410.083**	**420.060**	**170.003**	5,0	–	–
80	**KT15**	**410.083**	**420.060**	**170.003**	5,0	**420.120**	**SHVBR0635M**

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw **193.326**.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
Torque wrench (DTQ50140, order number 6197561) and 3mm hex bit (BTQSW3L90, order number 6205876) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

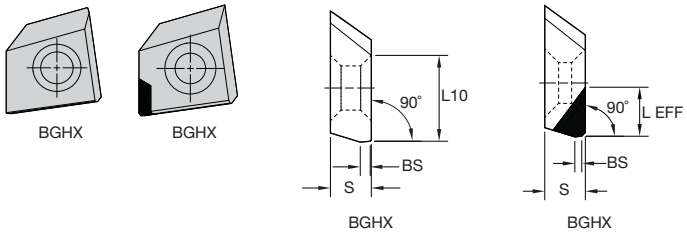
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	BGHX...	K110M	**BGHX...**	**KC510M**	BGHX...	KD1415
N3	BGHX...	K110M	**BGHX...**	**KD1410**	BGHX...	KD1410
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts • Fix-Perfect • BGHX15L5...

- Roughing Fix-Perfect inserts for aluminium and non-ferrous materials.
- 9,5mm max depth of cut.
- Two cutting edges.

● first choice
○ alternate choice

		K110M	KC510M	KD1410	KD1415
P					
M					
K					
N		●	●	●	●
S					
H					



Face Milling

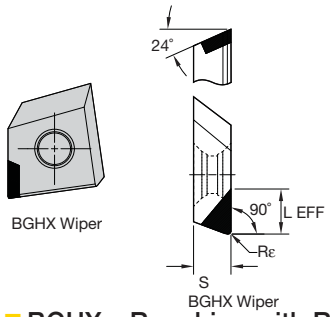
BGHX • Roughing

catalogue number	Leff	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L5PCERGGT	5,20	5,20	5,00	0,90	–	0,02	1	–	–	●	●
BGHX15L5PCSRLET	6,00	6,00	5,00	0,90	–	0,02	1	–	–	●	●
BGHX15L5PCTRHET	6,00	6,00	5,00	0,90	–	0,02	1	–	–	●	–
BGHX15L5PCFRGG	–	10,50	5,00	1,22	–	0,02	2	●	●	–	–
BGHX15L5PCTRGG	–	10,50	5,00	1,22	–	0,02	2	●	●	–	–
BGHX15L5PCERGGTM	2,50	–	5,00	1,20	–	0,02	1	–	–	●	–

- Roughing Fix-Perfect inserts for aluminium and non-ferrous materials.
- 9,5mm max depth of cut.
- Two cutting edges.

● first choice
○ alternate choice

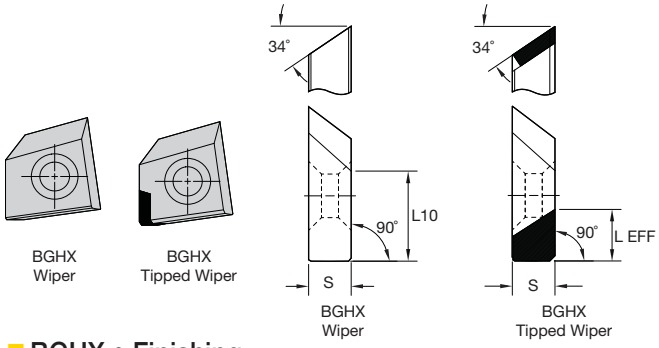
P					
M					
K					
N		●	●	●	●
S					
H					



BGHX • Roughing with Radius

catalogue number	Leff	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L504ERGET	5,20	5,20	5,00	–	0,4	0,02	1	–	–	–	●
BGHX15L504PCFRGG	–	10,50	5,00	1,20	0,4	0,02	2	●	–	–	–
BGHX15L508PCFRGG	–	10,50	5,00	1,20	0,8	0,02	2	●	●	–	–
BGHX15L515PCFRGG	–	10,50	5,00	1,20	1,5	0,02	2	●	●	–	–

- Roughing Fix-Perfect inserts for aluminium and non-ferrous materials.
- 9,5mm max depth of cut.
- Two cutting edges.



BGHX • Finishing

catalogue number	Leff	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L5PCFRGG1W	–	9,96	5,00	4,00	–	0,02	1	●	●	–	–
BGHX15L5PCTRGG1W	–	9,96	5,00	4,00	–	0,02	1	●	●	–	–
BGHX15L5PCERGGT1W	6,00	–	5,00	2,00	–	0,02	1	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

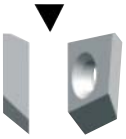
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
BGHX...	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,31	0,06	**0,16**	0,27	0,05	**0,15**	0,25	BGHX...

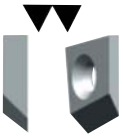
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

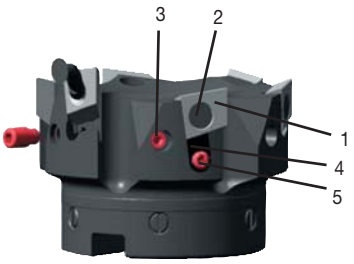
Introduction to Fitting Cutting Bodies

Roughing indexable inserts
BGHX15L5PC..GG.

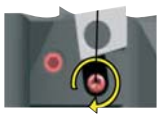
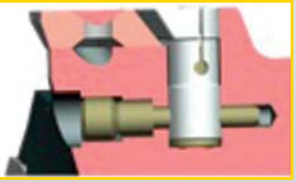
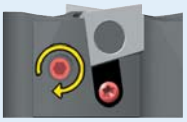


Finishing indexable inserts
BGHX15L5PC..GG.1W



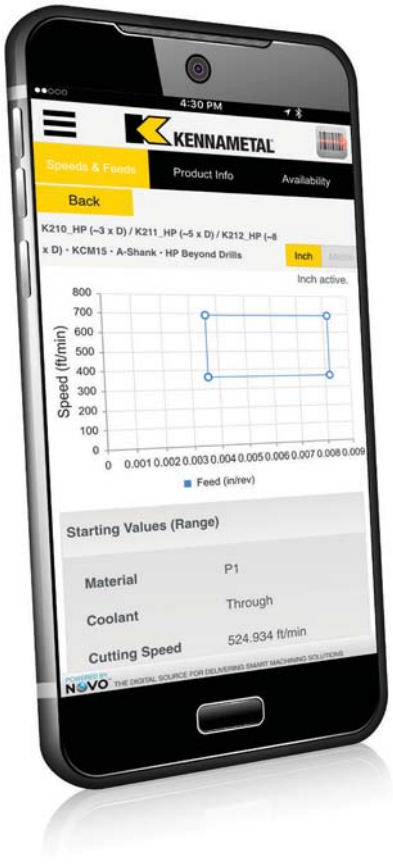


Clean dust, grease, etc., from the insert seat, insert (1), and clamp stud (2).

	PM	HPM/HSM	PM/HPM/HSM
1	Loosen the adjusting element (4).  Loosen the adjusting screw (5).	Loosen the adjusting element (4).  Loosen the adjusting screw (5).	Loosen the adjusting element (4).  Loosen the adjusting screw (5).
2	Insert the indexable inserts and tighten with the clamping screw (3) 5 Nm.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat.	Insert the indexable inserts and pre-tighten with the clamping screw (3) 1,5 Nm.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat. Determine which cutting body is the highest on the axis.	Insert the indexable inserts and pre-tighten with the clamping screw (3) 1,5 Nm.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat. Determine which cutting body is the highest on the axis.
3	Tension the adjusting element (4) by tightening the adjusting screw (5) to the specified torque of 0,5 Nm. 	Extract by 0,02mm the insert that is axially the highest by turning the adjusting screw (5).  Adjust the remaining inserts to the desired runout with maximum travel of the inserts 0,2 Nm.	Adjust the finishing indexable insert(s) to the desired projection, preferably 0,04mm by turning the adjusting screw (5).  ATTENTION: Ensure that the insert is correctly positioned in the insert seat.
4	 **Adjustment element to be replaced by Kennametal Service Center only.**	Clamp the insert by tightening the clamping screw (3) to the specified torque of 5 Nm. 	Clamp the insert by tightening the clamping screw (3) to the specified torque of 5 Nm. 

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



FEATURES

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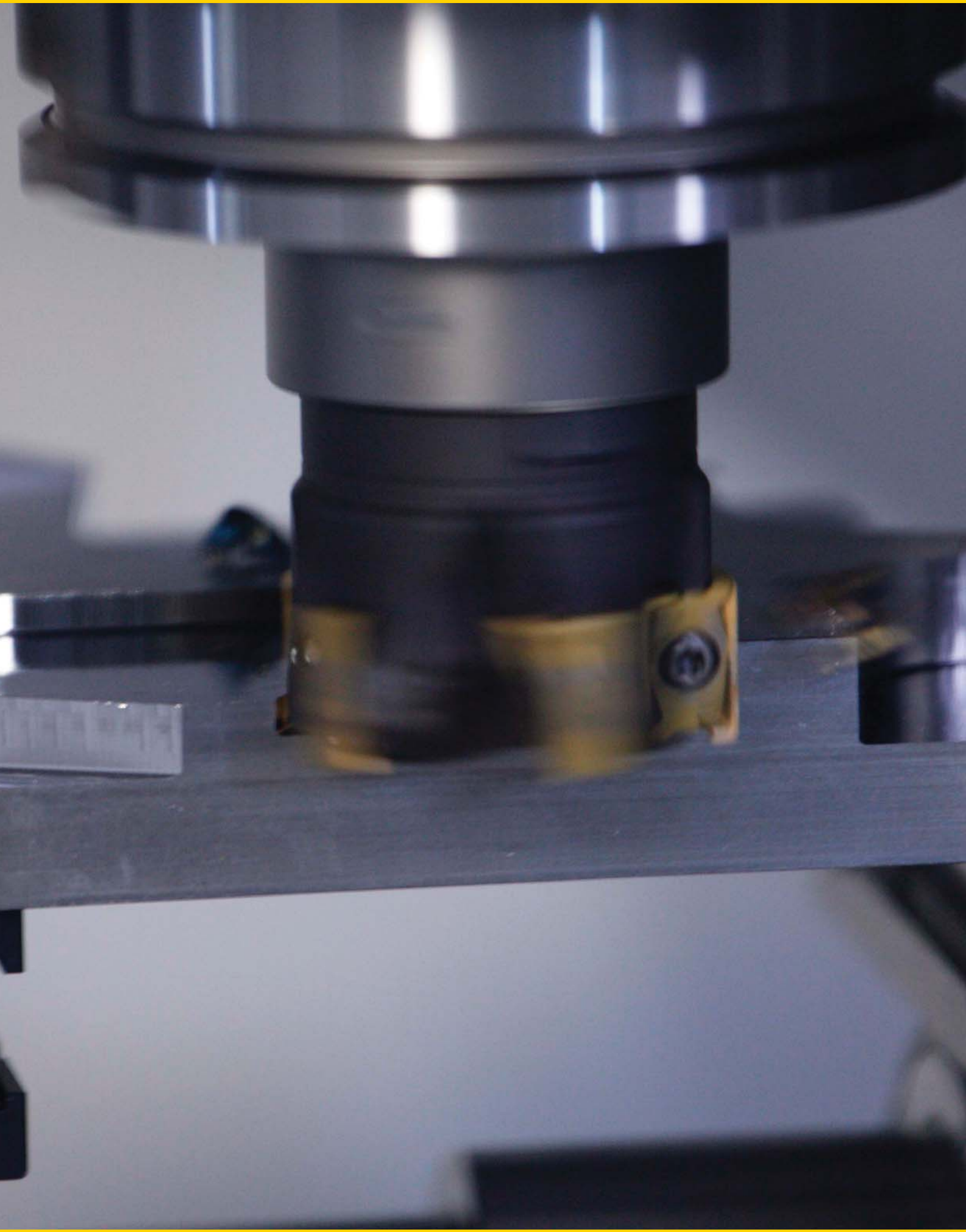


Indexable Milling • Shoulder Milling

Mill 4 • Double-Sided Shoulder Milling T2–T21

Mill 4-11 ..... T2–T11

Mill 4-15 ..... T12–T21

Mill 1 • Single-Sided Shoulder Milling T22–T83

Mill 1-7 ..... T22–T26

Mill 1-10 ..... T28–T44

Mill 1-14 ..... T46–T66

Mill 1-18 ..... T68–T76

Mill 1-25 ..... T78–T83

Stellram 5720VZ16 Series • High-Speed Aluminium Cutting T84–T94

KSSM • Square Shoulder Milling T96–T106

KSSM-KSSP • Helical Square Shoulder Milling T108–T113

Stellram 5230VS Series T114–T123

Mill 4-11™

One tool for all applications.

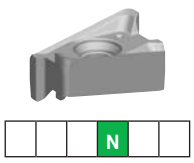
The Mill 4™ series is specially engineered to achieve excellent surface quality and higher metal removal rates in shoulder milling applications. Its unique design allows you to apply the tool in multiple passes (stepping down) with outstanding results.

From roughing to finishing operations, the Mill 4 series is applicable in a wide range of workpiece materials: steel, cast iron, stainless steel, non-ferrous materials, and high-temp alloys.

Features and Benefits

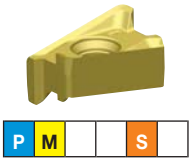
- Double-sided strong insert with 4 cutting edges.
- High positive geometry for lower cutting forces.
- Superior wall and surface finish capabilities.
- “Stepless” solution for multiple-pass operations.
- Comprehensive offering to cover all applications in all material groups.

-ELEJ



For non-ferrous materials.

-EGE



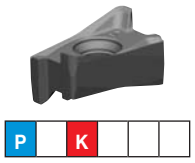
1st choice for stainless steel. Lower cutting forces.

-SGE



First choice for the Mill 4 platform, especially when machining steels.

-SGEM



1st choice for cast iron. Strongest cutting edge.

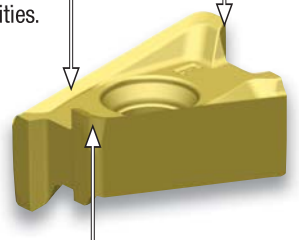
Uneven pocket spacing.

Screw-on, end mills, and shell mill cutter with internal coolant.



Integrated wiper facet for best-in-class floor finisher.

Up to 11mm Ap capabilities.

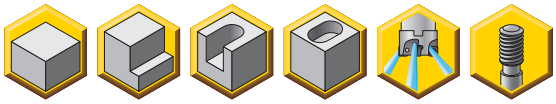


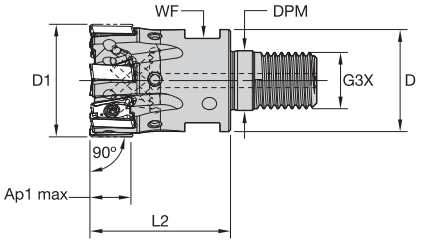
Multiple corner nose radii available from 0,4mm up to 1,6mm.

Double-sided insert with 4 cutting edges.

TP9 insert screw (M3) to provide higher reliability and safe processes.

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finishing capabilities. Best choice for stepping down operations.
- Up to 11mm depth of cut.
- Screw-on cutters provide better rigidity and stability when used with small spindles: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	kg	max RPM
6136738	**M4D016Z02M08LN11**	16	13	8,5	M8	25	10	11,0	2	0,03	48000
6131682	**M4D020Z03M10LN11**	20	18	10,5	M10	28	15	11,0	3	0,06	40200
6131686	**M4D025Z04M12LN11**	25	21	12,5	M12	40	17	11,0	4	0,10	34300
6136793	**M4D032Z05M16LN11**	32	29	17,0	M16	40	24	11,0	5	0,20	29200
6134187	**M4D032Z06M16LN11**	32	29	17,0	M16	40	24	11,0	6	0,19	29200

Spare Parts

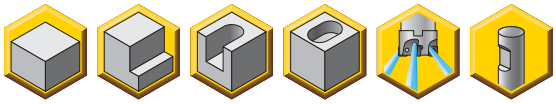


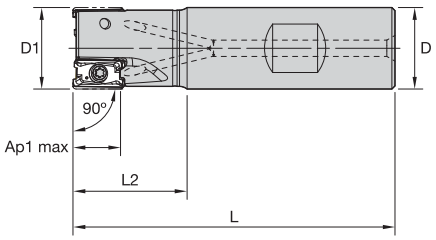




D1	insert screw	Nm	Torx Plus driver
16	**MS2263**	1,5	**DT9IP**
20	**MS2263**	1,5	**DT9IP**
25	**MS2263**	1,5	**DT9IP**
32	**MS2263**	1,5	**DT9IP**

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finishing capabilities.
- Best choice for stepping down operations.
- Up to 11mm depth of cut.







Weldon End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	kg	max RPM
6131628	**M4D016Z02B16LN11**	16	16	74	25	11,0	2	0,09	48000
6131630	**M4D020Z02B20LN11**	20	20	79	28	11,0	2	0,17	40200
6136740	**M4D020Z03B20LN11**	20	20	79	28	11,0	3	0,16	42000
6131684	**M4D025Z03B25LN11**	25	25	89	32	11,0	3	0,29	34300
6134185	**M4D032Z04B32LN11**	32	32	110	49	11,0	4	0,60	29200
6136795	**M4D040Z05B32LN11**	40	32	110	49	11,0	5	0,66	25400

Spare Parts

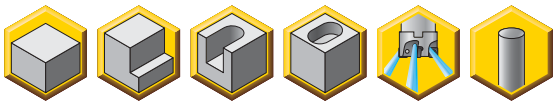


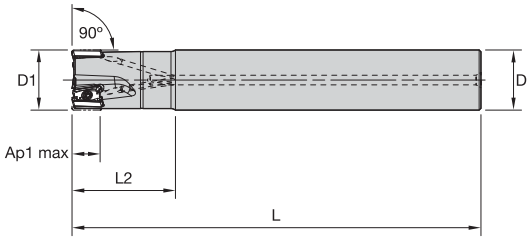




D1	insert screw	Nm	Torx Plus driver
16	**MS2263**	1,5	**DT9IP**
20	**MS2263**	1,5	**DT9IP**
25	**MS2263**	1,5	**DT9IP**
32	**MS2263**	1,5	**DT9IP**
40	**MS2263**	1,5	**DT9IP**

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finishing capabilities.
- Best choice for stepping down operations.
- Up to 11mm depth of cut.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	kg	max RPM
6131627	M4D016Z02A16LN11L090	16	16	90	25	11,0	2	0,12	48000
6136737	M4D016Z02A16LN11L150	16	16	150	25	11,0	2	0,21	48000
6131629	M4D020Z02A20LN11L150	20	20	150	28	11,0	2	0,33	40200
6131681	M4D020Z03A20LN11L090	20	20	90	28	11,0	3	0,21	40200
6136739	M4D020Z03A20LN11L150	20	20	150	28	11,0	3	0,33	40200
6131683	M4D025Z03A25LN11L170	25	25	170	43	11,0	3	0,63	34300
6131685	M4D025Z04A25LN11L100	25	25	100	43	11,0	4	0,33	34300
6136791	M4D025Z04A25LN11L170	25	25	170	43	11,0	4	0,59	34300
6134184	M4D032Z04A32LN11L200	32	32	200	49	11,0	4	1,16	29200
6134186	M4D032Z05A32LN11L110	32	32	110	49	11,0	5	0,61	29200
6136792	M4D032Z05A32LN11L200	32	32	200	49	11,0	5	1,17	29200
6136794	M4D040Z05A32LN11L200	40	32	200	49	11,0	5	1,22	25400

Spare Parts

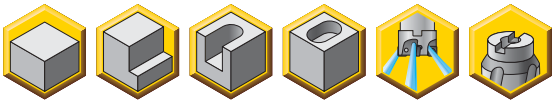


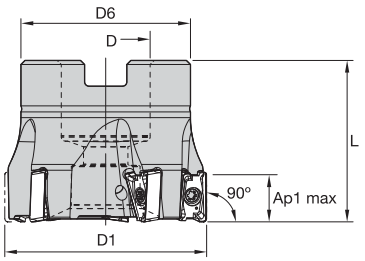


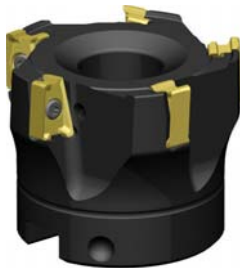


D1	insert screw	Nm	Torx Plus driver
16	MS2263	1,5	DT9IP
20	MS2263	1,5	DT9IP
25	MS2263	1,5	DT9IP
32	MS2263	1,5	DT9IP
40	MS2263	1,5	DT9IP

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finishing capabilities.
- Best choice for stepping down operations.
- Up to 11mm depth of cut.







Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	kg	max RPM
6134188	**M4D040Z04S16LN11**	40	16	37	40	11,0	4	0,23	25400
6134189	**M4D040Z06S16LN11**	40	16	37	40	11,0	6	0,22	25400
6136796	**M4D040Z07S16LN11**	40	16	37	40	11,0	7	0,23	25400
6134190	**M4D050Z05S22LN11**	50	22	42	40	11,0	5	0,31	22300
6134231	**M4D050Z07S22LN11**	50	22	42	40	11,0	7	0,32	22300
6136797	**M4D050Z09S22LN11**	50	22	42	40	11,0	9	0,32	22300
6134232	**M4D063Z06S22LN11**	63	22	50	40	11,0	6	0,56	19500
6134233	**M4D063Z09S22LN11**	63	22	50	40	11,0	9	0,56	19500
6134234	**M4D080Z08S27LN11**	80	27	60	50	11,0	8	1,12	17100
6136798	**M4D080Z10S27LN11**	80	27	60	50	11,0	10	1,11	17100

Spare Parts





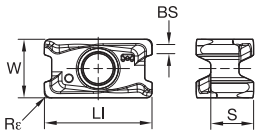

D1	insert screw	Nm	Torx Plus driver	socket-head cap screw
40	**MS2263**	1,5	**DT9IP**	**125.825**
50	**MS2263**	1,5	**DT9IP**	**125.025**
63	**MS2263**	1,5	**DT9IP**	**125.025**
80	**MS2263**	1,5	**DT9IP**	**125.230**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
P3–P4	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
P5–P6	.E..GE	KC725M	**.S..GE**	**KC725M**	.S..GEM	KCPM40
M1–M2	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GEM	KC522M
M3	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
K1–K2	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KCK15
K3	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KC520M
N1–N2	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
N3	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
S1–S2	.E..GE	KCSM40	**.S..GE**	**KC725M**	.S..GE	KCSM40
S3	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
S4	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts • Mill 4-11


LNGU11-ELEJ



LNGU11-ELEJ

● first choice
○ alternate choice

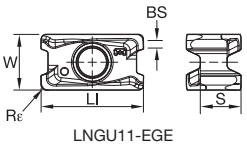
		KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	●	○	●
K			●	○		●	○			
N		●								
S				●	●			○	●	●
H										

LNGU11-ELEJ • For Aluminium and Other Non-Ferrous Alloys

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU110404ERLEJ	12,16	4,83	6,60	1,40	0,4	0,04	4	●	–	–	–	–	–	–	–	–
LNGU110408ERLEJ	12,16	4,83	6,60	1,00	0,8	0,04	4	●	–	–	–	–	–	–	–	–

- -EGE is the first choice for stainless steel and high-temp alloys.
- Use -EGE geometry for the highest finishing requirements, in light machining, for all materials.


LNGU11-EGE



LNGU11-EGE

LNGU11-EGE • Precision Ground • For Stainless Steel and High-Temp Alloys

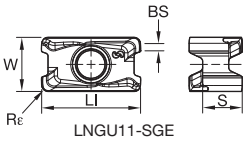
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU110404ERGE	12,16	4,83	6,60	1,40	0,4	0,08	4	–	–	●	●	–	–	●	–	–
LNGU110408ERGE	12,16	4,83	6,60	1,00	0,8	0,08	4	–	–	●	●	–	–	●	●	●
LNGU110412ERGE	12,17	4,83	6,60	0,60	1,2	0,08	4	–	–	●	–	–	–	●	–	●

- -SGE is the universal geometry for Mill 4-11. First choice when machining steel, as well as stainless steel, and high-temp alloys in heavy applications.
- Precision ground insert results in a great versatility for both roughing and finishing operations.

● first choice
○ alternate choice

P			○	●		●	●		○
M			●	●		○	●	○	●
K		●	○		●	○			
N	●								
S			●	●			○	●	●
H									


LNGU11-SGE



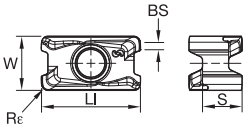
LNGU11-SGE

LNGU11-SGE • Precision Ground • Universal Geometry • General Purpose for Roughing and Finishing Operations

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU110404SRGE	12,16	4,83	6,60	1,40	0,4	0,10	4	–	–	●	–	–	–	●	–	●
LNGU110408SRGE	12,16	4,83	6,60	1,00	0,8	0,10	4	–	–	●	●	●	●	●	–	●

- -SGE is the universal geometry for Mill 4-11. First choice when machining steel, as well as stainless steel and high-temp alloys in heavy applications.
- Precision-pressed insert is a perfect choice for roughing operations with a better cost per edge and great surface quality.


LNPU11-SGE



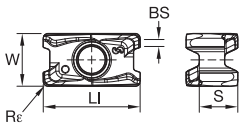
LNPU11-SGE

LNPU11-SGE • Precision Pressed • General Purpose for Roughing and Semi-Finishing Operations

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNPU110408SRGE	12,10	4,83	6,60	0,90	0,8	0,10	4	–	●	●	●	●	●	●	–	–
LNPU110412SRGE	12,10	4,83	6,60	0,50	1,2	0,10	4	–	●	●	●	●	●	●	–	–
LNPU110416SRGE	12,10	4,83	6,60	0,02	1,6	0,10	4	–	●	●	●	–	●	●	–	–

- -SGEM geometry is the first choice for cast iron machining in medium and heavy applications.
- -M stands for margins, which are used to reinforce the geometry.


LNGU11-SGEM



LNGU11-SGEM

LNGU11-SGEM • Precision Ground • For Cast Iron and Heavy Applications

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU110408SRGEM	12,16	4,83	6,60	0,90	0,8	0,10	4	–	●	●	–	●	●	●	–	–
LNGU110412SRGEM	12,16	4,83	6,60	0,60	1,2	0,10	4	–	●	–	–	●	●	●	–	–
LNGU110416SRGEM	12,16	4,83	6,60	0,10	1,6	0,10	4	–	●	–	–	●	●	●	–	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	0,13	**0,35**	0,58	0,09	**0,25**	0,42	0,07	**0,19**	0,31	0,06	**0,17**	0,27	0,06	**0,15**	0,25	.E..LEJ
.E..GE	0,23	**0,43**	0,59	0,17	**0,31**	0,43	0,13	**0,23**	0,32	0,11	**0,20**	0,28	0,10	**0,18**	0,25	.E..GE
.S..GE	0,23	**0,46**	0,65	0,17	**0,33**	0,47	0,13	**0,25**	0,35	0,11	**0,22**	0,31	0,10	**0,20**	0,28	.S..GE
.S..GEM	0,23	**0,46**	0,71	0,17	**0,33**	0,51	0,13	**0,25**	0,38	0,11	**0,22**	0,33	0,10	**0,20**	0,30	.S..GEM

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

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Mill 4-11 Starter Kits

Order one of our starting kits and test the performance of our new Mill 4™ platform. The kits are set up to serve the majority of shoulder milling applications, delivered with a cutter body as well as 20 inserts from a premium Kennametal grade.

Detailed order information can be found in the table below.

Order one Mill 4 kit and experience the next level of shoulder milling!



Mill 4-11 Starter Kits • Metric

order number	catalogue number	cutter diameter/ flutes	cutter type	material group	application range	content				
						cutter	quantity	insert	grade	quantity
6213970	M4-11KITD16Z2A16SGEKCPM40	16z2	Cylindrical	P	∇/∇∇	M4D016Z02A16LN11L090	1	LNPU110408SRGE	KCPM40	20
6214071	M4-11KITD20Z2B20SGEKCPM40	20z2	Weldon	P	∇/∇∇	M4D020Z02B20LN11	1	LNPU110408SRGE	KCPM40	20
6214072	M4-11KITD20Z3A20SGEKCPM40	20z3	Cylindrical	P	∇/∇∇	M4D020Z03A20LN11L090	1	LNPU110408SRGE	KCPM40	20
6214073	M4-11KITD25Z3B25SGEKCPM40	25z3	Weldon	P	∇/∇∇	M4D025Z03B25LN11	1	LNPU110408SRGE	KCPM40	20
6214074	M4-11KITD25Z4A25SGEKCPM40	25z4	Cylindrical	P	∇/∇∇	M4D025Z04A25LN11L100	1	LNPU110408SRGE	KCPM40	20
6214075	M4-11KITD32Z4B32SGEKCPM40	32z4	Weldon	P	∇/∇∇	M4D032Z04B32LN11	1	LNPU110408SRGE	KCPM40	20
6214076	M4-11KITD32Z5A32SGEKCPM40	32z5	Cylindrical	P	∇/∇∇	M4D032Z05A32LN11L110	1	LNPU110408SRGE	KCPM40	20
6214077	M4-11KITD40Z4S16SGEKCPM40	40z4	Shell Mill	P	∇/∇∇	M4D040Z04S16LN11	1	LNPU110408SRGE	KCPM40	20
6214078	M4-11KITD40Z6S16SGEKCPM40	40z6	Shell Mill	P	∇/∇∇	M4D040Z06S16LN11	1	LNPU110408SRGE	KCPM40	20
6214079	M4-11KITD50Z5S22SGEKCPM40	50z5	Shell Mill	P	∇/∇∇	M4D050Z05S22LN11	1	LNPU110408SRGE	KCPM40	20
6214080	M4-11KITD50Z7S22SGEKCPM40	50z7	Shell Mill	P	∇/∇∇	M4D050Z07S22LN11	1	LNPU110408SRGE	KCPM40	20
6214081	M4-11KITD63Z9S22SGEKCPM40	63z9	Shell Mill	P	∇/∇∇	M4D063Z09S22LN11	1	LNPU110408SRGE	KCPM40	20
6214082	M4-11KITD16Z2A16EGEKC725M	16z2	Cylindrical	M+S	∇∇/∇∇∇	M4D016Z02A16LN11L090	1	LNGU110408ERGE	KC725M	20
6214083	M4-11KITD20Z2B20EGEKC725M	20z2	Weldon	M+S	∇∇/∇∇∇	M4D020Z02B20LN11	1	LNGU110408ERGE	KC725M	20
6214084	M4-11KITD20Z3A20EGEKC725M	20z3	Cylindrical	M+S	∇∇/∇∇∇	M4D020Z03A20LN11L090	1	LNGU110408ERGE	KC725M	20
6214085	M4-11KITD25Z3B20EGEKC725M	25z3	Weldon	M+S	∇∇/∇∇∇	M4D025Z03B25LN11	1	LNGU110408ERGE	KC725M	20
6214086	M4-11KITD25Z4A25EGEKC725M	25z4	Cylindrical	M+S	∇∇/∇∇∇	M4D025Z04A25LN11L100	1	LNGU110408ERGE	KC725M	20
6214087	M4-11KITD32Z4B32EGEKC725M	32z4	Weldon	M+S	∇∇/∇∇∇	M4D032Z04B32LN11	1	LNGU110408ERGE	KC725M	20
6214088	M4-11KITD32Z5A32EGEKC725M	32z5	Cylindrical	M+S	∇∇/∇∇∇	M4D032Z05A32LN11L110	1	LNGU110408ERGE	KC725M	20
6214089	M4-11KITD40Z4S16EGEKC725M	40z4	Shell Mill	M+S	∇∇/∇∇∇	M4D040Z04S16LN11	1	LNGU110408ERGE	KC725M	20
6214090	M4-11KITD40Z6S16EGEKC725M	40z6	Shell Mill	M+S	∇∇/∇∇∇	M4D040Z06S16LN11	1	LNGU110408ERGE	KC725M	20
6214091	M4-11KITD50Z5S22EGEKC725M	50z5	Shell Mill	M+S	∇∇/∇∇∇	M4D050Z05S22LN11	1	LNGU110408ERGE	KC725M	20
6214092	M4-11KITD50Z7S22EGEKC725M	50z7	Shell Mill	M+S	∇∇/∇∇∇	M4D050Z07S22LN11	1	LNGU110408ERGE	KC725M	20
6214093	M4-11KITD63Z9S22EGEKC725M	63z9	Shell Mill	M+S	∇∇/∇∇∇	M4D063Z09S22LN11	1	LNGU110408ERGE	KC725M	20

∇ Heavy/Roughing
∇∇ Medium
∇∇∇ Light machining/Finishing

Mill 4-15™ • Double-Sided Shoulder Milling

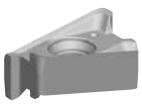
Primary Application

The Mill 4-15 series is specially engineered to achieve excellent surface quality and higher material removal rates in shoulder milling applications. Its unique design enables multiple passes (stepping down) with outstanding results. The Mill 4™ platform is applicable in a wide range of workpiece materials: steel, cast iron, stainless steel, and titanium, from roughing to finishing operations.

Features and Benefits

- Double-sided strong insert with 4 cutting edges.
- High positive geometry for lower cutting forces.
- Superior wall and surface finish capabilities.
- "Stepless" solution. No mismatch when machining walls in different steps.

-EGEJ





For non-ferrous materials.

-EGE





1st choice for stainless steel. Lower cutting forces.

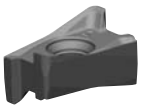
-SGE





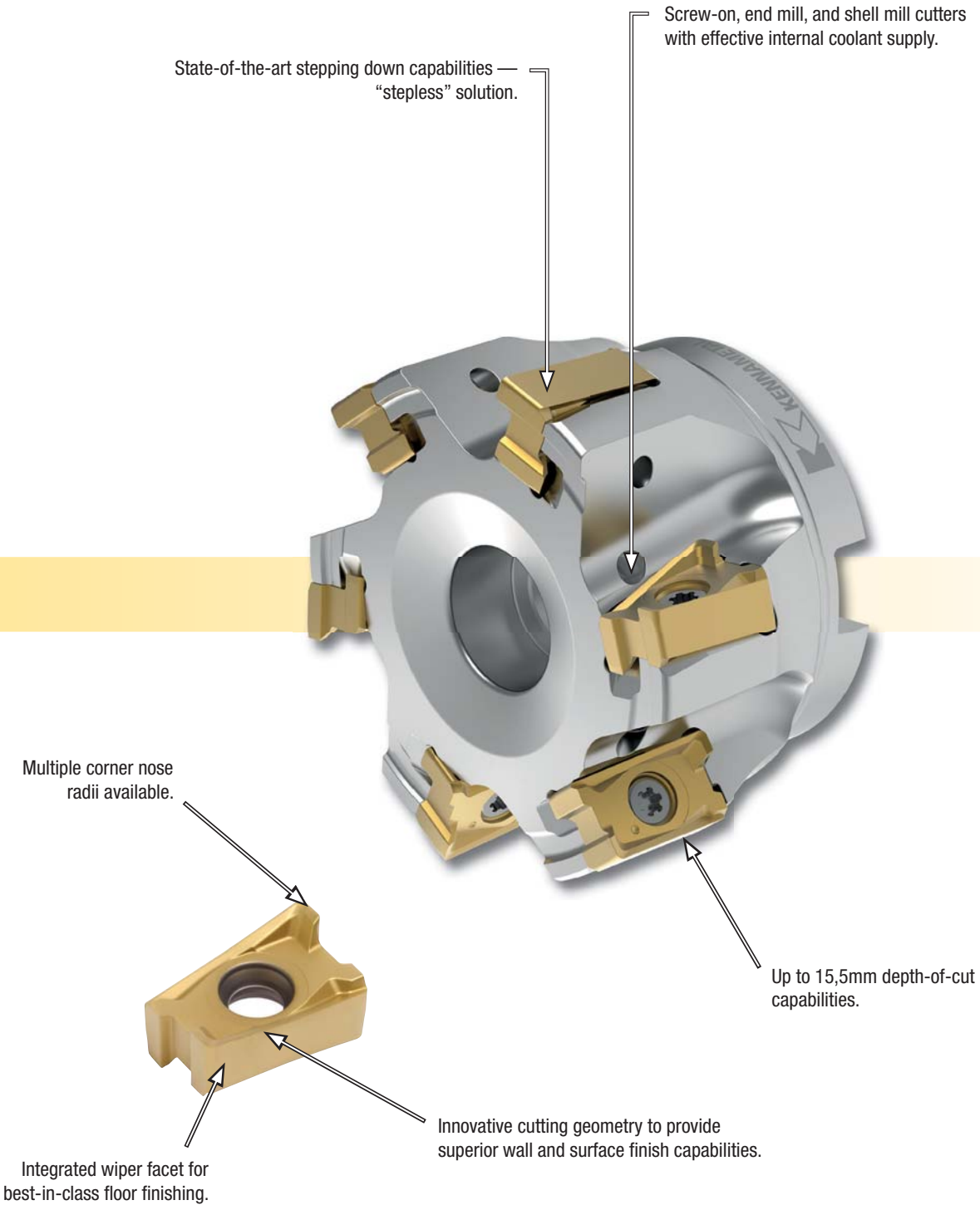
First choice for the Mill 4 platform, especially when machining steels.

-SGEM

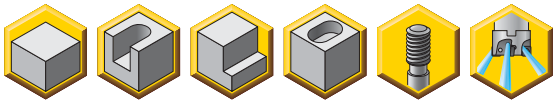


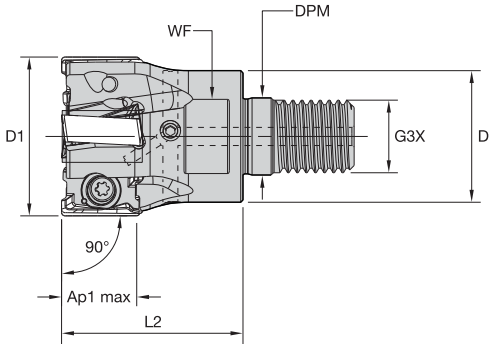


1st choice for cast iron. Strongest cutting edge.


Screw-on, end mill, and shell mill cutters with effective internal coolant supply.
State-of-the-art stepping down capabilities — "stepless" solution.
Multiple corner nose radii available.
Up to 15,5mm depth-of-cut capabilities.
Innovative cutting geometry to provide superior wall and surface finish capabilities.
Integrated wiper facet for best-in-class floor finishing.

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to 15,5mm depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	kg	max RPM
5531911	**M4D025Z02M12LN15**	25	21	12,5	M12	32	17	15,5	2	0,08	26700
5531912	**M4D032Z03M16LN15**	32	29	17,0	M16	40	24	15,5	3	0,18	22000
5555606	**M4D032Z04M16LN15**	32	29	17,0	M16	40	24	15,5	4	0,18	22000
5528599	**M4D035Z04M16LN15**	35	29	17,0	M16	40	24	15,5	4	0,19	20600
5531913	**M4D040Z05M16LN15**	40	29	17,0	M16	40	24	15,5	5	0,23	18800

Spare Parts

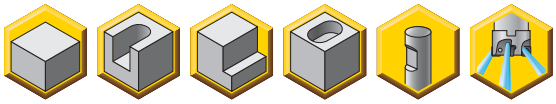


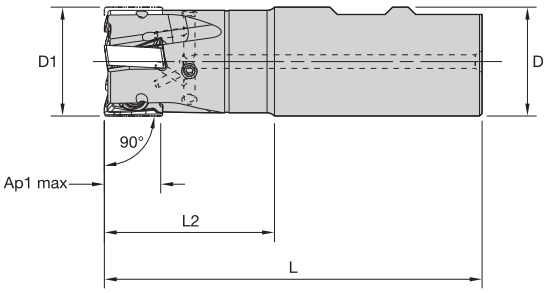




D1	insert screw	Nm	Torx Plus driver
25	**MS-2071**	3,5	**DT15IP**
32	**MS-2071**	3,5	**DT15IP**
35	**MS-2071**	3,5	**DT15IP**
40	**MS-2071**	3,5	**DT15IP**

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to 15,5mm depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







Weldon End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	kg	max RPM
5528630	**M4D025Z02B25LN15**	25	25	89	32	15,5	2	0,28	26700
5528631	**M4D032Z03B32LN15**	32	32	111	50	15,5	3	0,58	22000
5531914	**M4D040Z03B32LN15**	40	32	111	50	15,5	3	0,65	18800
5555607	**M4D040Z04B32LN15**	40	32	111	50	15,5	4	0,65	18800

Spare Parts



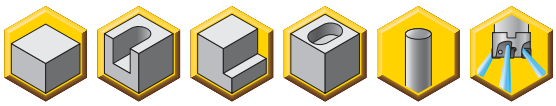


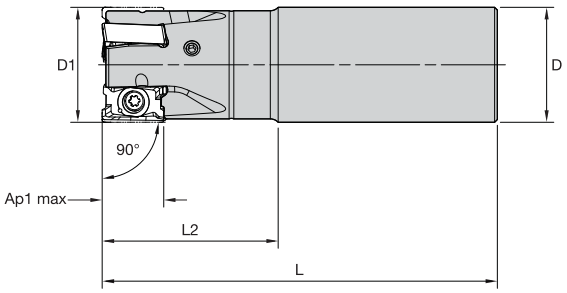


D1	insert screw	Nm	Torx Plus driver
25	**MS-2071**	3,5	**DT15IP**
32	**MS-2071**	3,5	**DT15IP**
40	**MS-2071**	3,5	**DT15IP**

NOTE: Weldon type not recommended for finishing operations.

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to 15,5mm depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	kg	max RPM
5531915	**M4D025Z02A25LN15L100**	25	25	100	43	15,5	2	0,28	26700
5531916	**M4D025Z02A25LN15L170**	25	25	170	43	15,5	2	0,58	26700
5531917	**M4D032Z03A32LN15L110**	32	32	110	49	15,5	3	0,58	22000
5531918	**M4D032Z03A32LN15L200**	32	32	200	50	15,5	3	1,14	22000
5555608	**M4D032Z04A32LN15L110**	32	32	110	49	15,5	4	0,58	22000
5555609	**M4D032Z04A32LN15L200**	32	32	200	50	15,5	4	1,14	22000
5531919	**M4D040Z03A32LN15L200**	40	32	200	50	15,5	3	1,21	18800
5555800	**M4D040Z04A32LN15L200**	40	32	200	50	15,5	4	1,20	18800

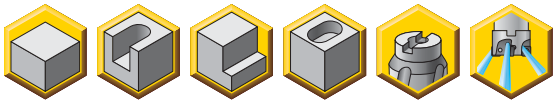
Spare Parts

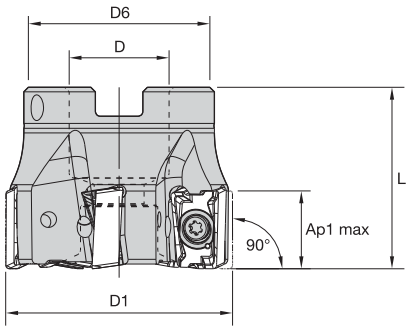


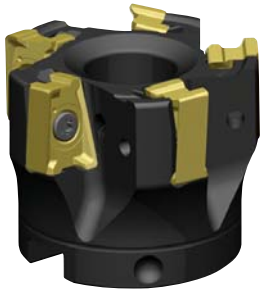


D1	insert screw	Nm	Torx Plus driver
25	**MS-2071**	3,5	**DT15IP**
32	**MS-2071**	3,5	**DT15IP**
40	**MS-2071**	3,5	**DT15IP**

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to 15,5mm depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







Shell Mills

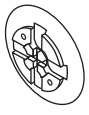
order number	catalogue number	D1	D	D6	L	Ap1 max	Z	kg	max RPM
5528632	M4D040Z04S16LN15	40	16	37	40	15,5	4	0,20	18800
5555801	M4D040Z05S16LN15	40	16	37	40	15,5	5	0,19	18800
5698436	M4D050Z04S22LN15	50	22	42	40	15,5	4	0,28	16300
5528633	M4D050Z05S22LN15	50	22	42	40	15,5	5	0,28	16300
5528634	M4D050Z06S22LN15	50	22	42	40	15,5	6	0,27	16300
5698437	M4D063Z05S22LN15	63	22	50	40	15,5	5	0,50	14200
5528635	M4D063Z06S22LN15	63	22	50	40	15,5	6	0,49	14200
5528636	M4D063Z07S22LN15	63	22	50	40	15,5	7	0,50	14200
5698438	M4D080Z05S27LN15	80	27	60	50	15,5	5	1,03	12300
5528637	M4D080Z07S27LN15	80	27	60	50	15,5	7	1,02	12300
5555802	M4D080Z09S27LN15	80	27	60	50	15,5	9	1,04	12300
5698439	M4D100Z06S32LN15	100	32	80	50	15,5	6	1,58	10900
5528638	M4D100Z08S32LN15	100	32	80	50	15,5	8	1,57	10900
5555803	M4D100Z11S32LN15	100	32	80	50	15,5	11	1,64	10900
5698490	M4D125Z07S40LN15	125	40	90	63	15,5	7	2,96	9600
5555804	M4D125Z09S40LN15	125	40	90	63	15,5	9	2,98	9600
5532000	M4D125Z12S40LN15	125	40	90	63	15,5	12	3,00	9600
5698491	M4D160Z08S40LN15	160	40	110	63	15,5	8	4,67	8400
5555805	M4D160Z12S40LN15	160	40	110	63	15,5	12	4,78	8400
5555806	M4D160Z16S40LN15	160	40	110	63	15,5	16	4,75	8400

Spare Parts









D1	insert screw	Nm	Torx Plus driver	socket-head cap screw	coolant lock screw assembly	coolant lock screw	coolant cap
40	MS-2071	3,5	DT15IP	125.825	–	–	–
50	MS-2071	3,5	DT15IP	125.025	–	–	–
63	MS-2071	3,5	DT15IP	125.025	–	–	–
80	MS-2071	3,5	DT15IP	125.230	–	–	–
100	MS-2071	3,5	DT15IP	–	MS2189C	–	–
125	MS-2071	3,5	DT15IP	–	MS2187C	–	–
160	MS-2071	3,5	DT15IP	–	–	420.200	470.233

NOTE: Coolant lock screw assembly and coolant cap must be ordered separately.

Insert Selection Guide

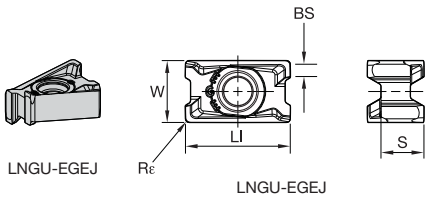
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
P3–P4	.E..GE	KCPM40	**.S..GE**	**KCPK30**	.S..GEM	KCPK30
P5–P6	.E..GE	KC725M	**.S..GE**	**KC725M**	.S..GEM	KCPK30
M1–M2	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GEM	KCPM40
M3	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
K1–K2	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KC520M
K3	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KC520M
N1–N2	.E..GEJ	KC422M	**.E..GEJ**	**KC422M**	.E..GEJ	KC422M
N3	.E..GEJ	KC422M	**.E..GEJ**	**KC422M**	.E..GEJ	KC422M
S1–S2	.E..GE	KC725M	**.S..GE**	**KC725M**	.S..GE	KC725M
S3	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
S4	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts • Mill 4-15™

- -EGEJ is the first choice for roughing and finishing of aluminium and other non-ferrous alloys.

● first choice
○ alternate choice

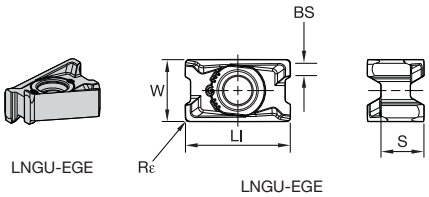
	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●		●	●		○
M			●	●		○	●	○	●
K		●	○		●	○			
N	●								
S			●	●				○	●
H									



LNGU15-EGEJ • For Aluminium and Other Non-Ferrous Alloys

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU15T604ERGEJ	17,00	6,96	10,00	2,20	0,4	0,03	4	●	–	–	–	–	–	–	–	–
LNGU15T608ERGEJ	17,00	6,96	10,00	1,80	0,8	0,03	4	●	–	–	–	–	–	–	–	–

- -EGE is the first choice for stainless steel and high-temp alloys.
- Best choice for finishing operations in steels, stainless steels, and high-temp alloys.



LNGU15-EGE • Precision Ground • For Stainless Steel and High-Temp Alloys

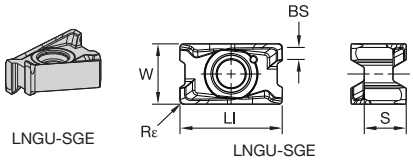
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU15T604ERGE	17,01	6,96	10,00	2,20	0,4	0,08	4	–	–	●	●	–	–	●	●	–
LNGU15T608ERGE	17,01	6,96	10,00	1,80	0,8	0,08	4	–	–	●	●	–	–	●	●	●
LNGU15T612ERGE	17,01	6,96	10,00	1,40	1,2	0,08	4	–	–	●	●	–	–	●	●	●
LNGU15T616ERGE	17,01	6,96	10,00	1,07	1,6	0,08	4	–	–	–	●	–	–	●	●	–

- -SGE is the universal geometry for Mill 4-15.
- First choice when machining steel.
- Suitable for stainless steel and high-temp alloys in medium-heavy applications.

beyond

P			○	●		●	●		○
M			●	●		○	●	○	●
K		●	○		●	○			
N	●								
S			●	●			○	●	●
H									

● first choice
○ alternate choice

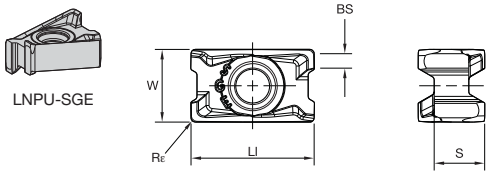


LNGU-SGE
LNGU-SGE

LNGU15-SGE • Precision Ground • For Steel Machining, Finishing, and Light Roughing

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU15T604SRGE	17,00	6,96	10,00	2,20	0,4	0,10	4	–	●	●	●	●	●	–	–	–
LNGU15T608SRGE	17,01	6,96	10,00	1,80	0,8	0,10	4	–	●	●	●	●	●	–	–	●
LNGU15T612SRGE	17,01	6,96	10,00	1,40	1,2	0,10	4	–	●	●	●	●	●	–	–	●
LNGU15T616SRGE	17,01	6,96	10,00	1,07	1,6	0,10	4	–	●	●	●	●	●	–	–	–

- -SGE is the universal geometry for Mill 4-15. First choice when machining steel, as well as stainless steel and high-temp alloys in heavy applications.

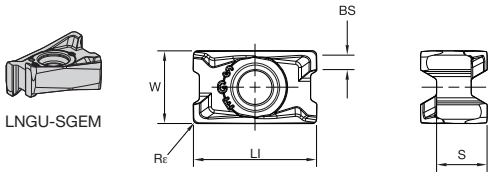


LNPU-SGE
LNPU-SGE

LNPU15-SGE • Precision Pressed • For Steel Machining in Medium-Heavy Roughing

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNPU15T604SRGE	16,90	6,96	10,00	2,20	0,4	0,10	4	–	●	●	●	●	●	–	–	–
LNPU15T608SRGE	16,90	6,96	10,00	1,80	0,8	0,10	4	–	●	●	●	●	●	●	–	–
LNPU15T612SRGE	16,90	6,96	10,00	1,50	1,2	0,10	4	–	●	●	●	–	●	●	–	–
LNPU15T616SRGE	16,90	6,96	10,00	1,10	1,6	0,10	4	–	–	–	–	–	–	●	–	–
LNPU15T620SRGE	16,92	6,96	10,00	0,70	2,0	0,10	4	–	–	●	●	●	●	●	–	–

- -SGEM geometry is the first choice for cast iron machining in medium and heavy applications.



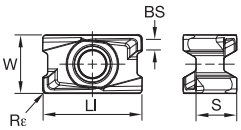
LNGU-SGEM
LNGU-SGEM

LNGU15-SGEM • For Cast Iron Machining

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU15T608SRGEM	17,01	6,96	10,00	1,70	0,8	0,10	4	–	●	–	–	●	●	●	–	–
LNGU15T612SRGEM	17,01	6,96	10,00	1,30	1,2	0,10	4	–	●	–	–	●	–	●	–	–
LNGU15T616SRGEM	17,01	6,96	10,00	0,95	1,6	0,10	4	–	●	–	–	●	●	●	–	–
LNGU15T620SRGEM	17,01	6,96	10,00	0,34	2,0	0,10	4	–	●	–	–	●	●	●	–	–

- H stands for helical.
- Insert specially design to fit in helical cutters (porcupine).


LNGU15-SGEH



LNGU15-SGEH

● first choice
○ alternate choice

		KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	●	○	●
K			●	○		●	○			
N		●								
S				●	●			○	●	●
H										

LNGU15-SGEH • For Mill 4-15 Helical Cutters (Porcupine Style)

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU15T608SRGEH	17,01	6,96	10,00	1,80	0,8	0,10	4	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GEJ	0,12	**0,47**	0,84	0,08	**0,34**	0,60	0,06	**0,26**	0,45	0,06	**0,22**	0,39	0,05	**0,20**	0,36	.E..GEJ
.E..GE	0,23	**0,54**	0,93	0,17	**0,39**	0,67	0,13	**0,29**	0,50	0,11	**0,25**	0,44	0,10	**0,23**	0,40	.E..GE
.S..GE	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GE
.S..GEM	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GEM

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Mill 4-15 Starter Kits

Order one of our starting kits and test the performance of our new Mill 4 platform. The kits are set up to serve the majority of shoulder milling applications and workpiece materials, delivered with a cutter body as well as 20 inserts from a premium Kennametal grade.



Order one Mill 4™ kit, and experience the next level of shoulder milling!



Detailed order information can be found in the table below:

Mill 4-15 Metric Starter Kits

material group	order number	catalogue number	cutter kit	application range	content				
					cutter	qty	insert	grade	qty
P	5956817	M4KITD25Z02A25SGEKCPM40	D25z2	∇∇	M4D025Z02A25LN15L100	1	LNPU15T608SRGE	KCPM40	20
P	5956818	M4KITD32Z03A32SGEKCPM40	D32z3	∇∇	M4D032Z03A32LN15L110	1	LNPU15T608SRGE	KCPM40	20
P	5956819	M4KITD40Z04S16SGEKCPM40	D40z4	∇∇	M4D040Z04S16LN15	1	LNPU15T608SRGE	KCPM40	20
P	5956820	M4KITD50Z05S22SGEKCPM40	D50z5	∇∇	M4D050Z05S22LN15	1	LNPU15T608SRGE	KCPM40	20
P	5956872	M4KITD50Z06S22SGEKCPM40	D50z6	∇∇	M4D050Z06S22LN15	1	LNPU15T608SRGE	KCPM40	20
P	5956873	M4KITD63Z06S22SGEKCPM40	D63z6	∇∇	M4D063Z06S22LN15	1	LNPU15T608SRGE	KCPM40	20
P	5956874	M4KITD80Z07S27SGEKCPM40	D80z7	∇∇	M4D080Z07S27LN15	1	LNPU15T608SRGE	KCPM40	20
P	5956875	M4KITD100Z08S32SGEKCPM40	D100z8	∇∇	M4D100Z08S32LN15	1	LNPU15T608SRGE	KCPM40	20
M + S	5956876	M4KITD25Z02A25EGEKC725M	D25z2	∇∇∇	M4D025Z02A25LN15L100	1	LNGU15T608ERGE	KC725M	20
M + S	5956877	M4KITD32Z03A32EGEKC725M	D32z3	∇∇∇	M4D032Z03A32LN15L110	1	LNGU15T608ERGE	KC725M	20
M + S	5956878	M4KITD40Z04S16EGEKC725M	D40z4	∇∇∇	M4D040Z04S16LN15	1	LNGU15T608ERGE	KC725M	20
M + S	5956879	M4KITD50Z05S22EGEKC725M	D50z5	∇∇∇	M4D050Z05S22LN15	1	LNGU15T608ERGE	KC725M	20
M + S	5956880	M4KITD50Z06S22EGEKC725M	D50z6	∇∇∇	M4D050Z06S22LN15	1	LNGU15T608ERGE	KC725M	20
M + S	5956891	M4KITD63Z06S22EGEKC725M	D63z6	∇∇∇	M4D063Z06S22LN15	1	LNGU15T608ERGE	KC725M	20
M + S	5956892	M4KITD80Z07S27EGEKC725M	D80z7	∇∇∇	M4D080Z07S27LN15	1	LNGU15T608ERGE	KC725M	20
K	5956893	M4KITD25Z02A25SGEMKC520M	D25z2	∇	M4D025Z02A25LN15L100	1	LNGU15T608SRGEM	KC520M	20
K	5956894	M4KITD32Z03A32SGEMKC520M	D32z3	∇	M4D032Z03A32LN15L110	1	LNGU15T608SRGEM	KC520M	20
K	5956896	M4KITD40Z04S16SGEMKC520M	D40z4	∇	M4D040Z04S16LN15	1	LNGU15T608SRGEM	KC520M	20
K	5956897	M4KITD50Z05S22SGEMKC520M	D50z5	∇	M4D050Z05S22LN15	1	LNGU15T608SRGEM	KC520M	20
K	5956898	M4KITD50Z06S22SGEMKC520M	D50z6	∇	M4D050Z06S22LN15	1	LNGU15T608SRGEM	KC520M	20
K	5956899	M4KITD63Z07S22SGEMKC520M	D63z7	∇	M4D063Z07S22LN15	1	LNGU15T608SRGEM	KC520M	20
K	5956900	M4KITD80Z09S27SGEMKC520M	D80z9	∇	M4D080Z09S27LN15	1	LNGU15T608SRGEM	KC520M	20
K	5956901	M4KITD100Z11S32SGEMKC520M	D100z11	∇	M4D100Z11S32LN15	1	LNGU15T608SRGEM	KC520M	20

∇ Heavy/Roughing
∇∇ Medium
∇∇∇ Light machining/Finishing

Mill 1-7™

Primary Application

Mill 1-7 is engineered for small-component machining and covers multiple applications, including ramping, slotting, and plunging. Mill 1-7 tools provide solutions for roughing and finishing operations in energy, aerospace, and general engineering, where small-diameter end mills are required.



Features and Benefits

- Mill 1-7 inserts enable the use of higher density cutters, providing greater feed and higher metal removal rates.
- Super positive rake provides soft action and low cutting forces for smooth entry and exit from the component. Run at higher feed rates while using less power.
- Inserts are designed with elliptical cutting edges and are optimised for a straight 90° wall.
- Inserts are available in five grades: KC725M™, KCSM30™, KCPM40™, KCPK30™, and KC522M™.
- Ramping, slotting, and plunging capabilities in one platform.



High-Performance Shoulder Mill



20º rake face angle and 13º clearance angle for soft cutting action and reduced cutting forces.

Internal coolant/air supply.

All pockets are machined into heat-treated material, which guarantees runout and pocket strength.

Elliptical edge generates 90º wall.

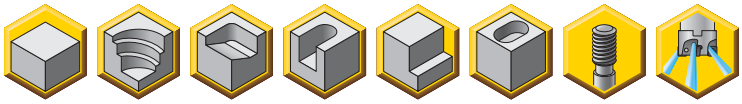
Chip gash designed for excellent chip evacuation.

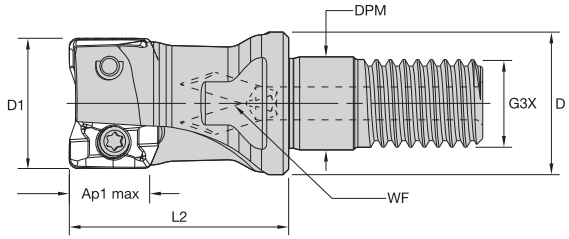
Margin along the main cutting edge and wiper facet for extra strength.

Insert screw: Torx 6.

Increase ramping capability up to 5.5º.

- Mill 90° walls.
- Aggressive ramping rates.
- High-speed machining.
- Ramp, slot, plunge, face, and shoulder milling.







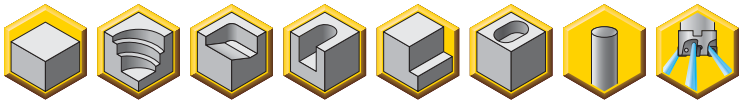
Screw-On End Mills

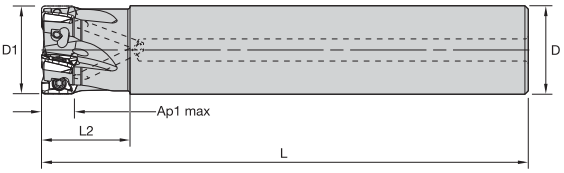
order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	kg	max RPM
5190197	**12A02R020M08ED07**	12	13	8,5	M8	20	10	7,0	2	5.2°	0,02	64510

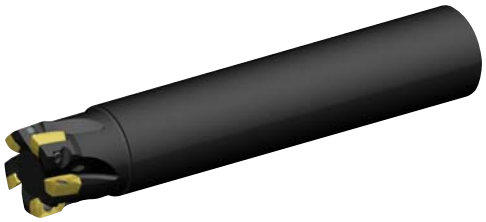
Spare Parts

D1	insert screw	Nm	Torx wrench
12	**12148006000**	0,5	**FT6**

- Mill 90° walls.
- Aggressive ramping rates.
- High-speed machining.
- Ramp, slot, plunge, face, and shoulder milling.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
5190190	**12A02R018A12ED07**	12	12	100	18	7,0	2	5.2°	0,08	64510
5190191	**16A03R020A16ED07**	16	16	100	20	7,0	3	2.9°	0,14	55790
5190192	**20A05R020A20ED07**	20	20	110	20	6,9	5	2.0°	0,24	49860

Spare Parts

D1	insert screw	Nm	Torx wrench
12	**12148006000**	0,5	**FT6**
16	**12148006000**	0,5	**FT6**
20	**12148006000**	0,5	**FT6**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
P3–P4	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
P5–P6	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
M1–M2	.S..GE	KC522M	**.S..GE**	**KC725M**	.S..GE	KCPM40
M3	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
K1–K2	.S..GE	KCPK30	**.S..GE**	**KCPK30**	.S..GE	KCPK30
K3	.S..GE	KCPK30	**.S..GE**	**KCPK30**	.S..GE	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GE	KC522M	**.S..GE**	**KC725M**	.S..GE	KC725M
S3	.S..GE	KC725M	**.S..GE**	**KC725M**	.S..GE	KCPM40
S4	.S..GE	KC522M	**.S..GE**	**KC725M**	.S..GE	KC725M
H1	–	–	**–**	**–**	–	–

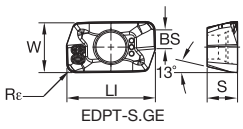
Indexable Inserts

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 7mm.

● first choice
○ alternate choice

		KC522M	KC725M	KCPK30	KCSM30	KCPM40
P		○	●	●		●
M		●	●	○	○	○
K		○		○		
N						
S		●	●		●	
H		●				


EDPT-S.GE



EDPT-S.GE

EDPT-S.GE

catalogue number	Ll	S	W	BS	Rε	hm	cutting edges	KC522M	KC725M	KCPK30	KCSM30	KCPM40
EDPT070308PDSRGE	8,19	2,80	4,69	1,70	0,8	0,09	2	●	●	●	●	●

Recommended Starting Feeds

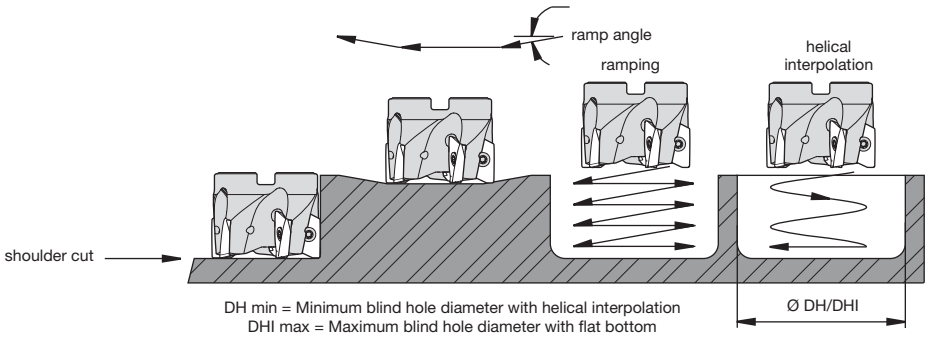
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..GE	0,23	**0,47**	0,69	0,17	**0,34**	0,50	0,13	**0,26**	0,37	0,11	**0,22**	0,32	0,10	**0,20**	0,30	.S..GE

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples



cutting diameter	max ramp angle to non-cutting corner tangent	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
12	5,49°	14,62	21,43	24
16	2,92°	22,52	28,04	32
20	2,01°	30,51	36,49	40

Mill 1-7	
max ADOC	6,98
fz	0,10–0,68
hm	0,09

Titanium and Stainless Steel Machining with New Milling Grade KCSM40™



Achieving maximum metal removal rates with highly engineering solutions from Kennametal.

- Ideal for roughing and semi-finishing operations.
- Available for the following milling series:
  - Mill 1™
  - Mill 4™
  - Dodeka™
  - MEGA™
  - KSOM™
  - NGE
  - KSSM™
  - KSSM8+™
  - Rodeka™
  - 5230 Series
  - 7713 Series
  - 7792 Series
- This new carbide substrate provides toughness and fatigue resistance, minimising the tendency for thermal cracking.
- The new coating provides high hot hardness and high abrasive resistance for unmatched tool life.
- KCSM40 milling grade is the first choice for high metal removal jobs in titanium structural aerospace components.
- Proven solution for various stainless steel applications, like machining automotive turbo chargers.

Visit kennametal.com or contact your local Authorised Kennametal Distributor.

KENNAMETAL®

kennametal.com

Mill 1-10™

High-Performance Shoulder Milling Platform

Primary Application

The multifunctional Mill 1-10 platform works with all tool materials in shoulder, ramp, slot, plunge, and helical milling with one insert style to improve productivity and reduce inventory and machining costs. The super positive cutting rake, soft cutting action, and low cutting forces enable higher feed rates and spindle protection. Innovative insert and cutter body designs offer improved ramping capabilities.



Features and Benefits

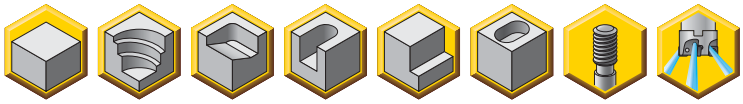
Versatility

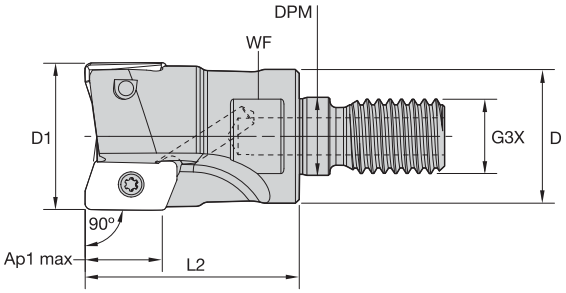
- Works with all tool materials.
- Capable of shoulder, ramp, plunge, and helical milling.
- Internal coolant and air supply.

Advantages

- Optimised soft cutting edge.
- Elliptical edge generates 90° wall.
- Increased ramping capability due to state of the art insert and cutter body design.
- Innovative chip gash design for excellent chip evacuation and perfect cutter body stability.
- All pockets are machined into heat-treated materials, guaranteeing best-in-class runout and pocket strength.
- Inserts feature innovative margin along the main cutting edge, corner nose radius, and wiper facet for perfect edge stability.

- Ramping capable for all Mill 1-10.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	kg	max RPM
3745708	**16A02R025M08ED10**	16	13	8,5	M8	25	10	10,1	2	9.5°	0,02	50100
3745709	**20A02R028M10ED10**	20	18	10,5	M10	28	15	10,1	2	6.0°	0,04	44800
3745710	**20A03R028M10ED10**	20	18	10,5	M10	28	15	10,1	3	6.0°	0,05	44800
3745711	**25A03R032M12ED10**	25	21	12,5	M12	32	17	10,0	3	4.0°	0,09	40000
3745712	**25A04R032M12ED10**	25	21	12,5	M12	32	17	10,0	4	4.0°	0,08	40000
3745723	**32A04R040M16ED10**	32	29	17,0	M16	40	24	10,0	4	2.8°	0,19	35400
3745724	**32A05R040M16ED10**	32	29	17,0	M16	40	24	10,0	5	2.8°	0,19	35400
3745725	**40A06R040M16ED10**	40	29	17,0	M16	40	24	9,9	6	2.0°	0,23	31600
3745726	**42A06R040M16ED10**	42	29	17,0	M16	40	24	9,9	6	1.8°	0,23	30900

Spare Parts



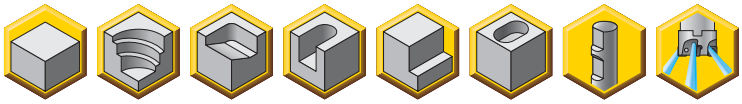


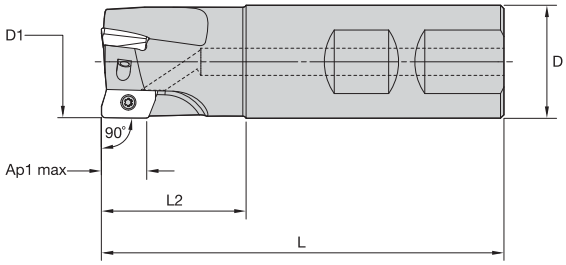


D1	insert screw	Nm	Torx wrench
16	**MS2205**	1,0	**F7IP**
20	**MS2205**	1,0	**F7IP**
25	**MS2205**	1,0	**F7IP**
32	**MS2205**	1,0	**F7IP**
40	**MS2205**	1,0	**F7IP**
42	**MS2205**	1,0	**F7IP**

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
3744633	**16A02R025B16ED10**	16	16	74	25	10,1	2	9.5°	0,09	50100
3744634	**20A02R028B20ED10**	20	20	79	28	10,1	2	6.0°	0,15	44800
3744635	**20A03R028B20ED10**	20	20	79	28	10,1	3	6.0°	0,15	44800
3744636	**25A03R032B25ED10**	25	25	89	32	10,0	3	4.0°	0,28	40000
3744637	**25A04R032B25ED10**	25	25	89	32	10,0	4	4.0°	0,28	40000
3744638	**32A04R040B32ED10**	32	32	101	40	10,0	4	2.8°	0,53	35400
3744639	**32A05R040B32ED10**	32	32	101	40	10,0	5	2.8°	0,53	35400

Spare Parts



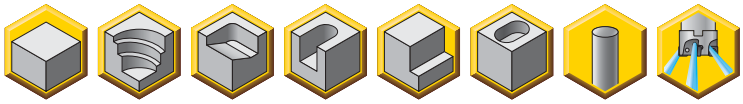


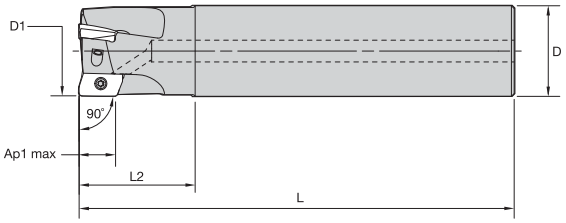


D1	insert screw	Nm	Torx Plus driver
16	**MS2205**	1,0	**DT7IP**
20	**MS2205**	1,0	**DT7IP**
25	**MS2205**	1,0	**DT7IP**
32	**MS2205**	1,0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
3744538	**12A01R020A16ED10**	12	16	90	20	10,3	1	11.5°	0,12	57800
3744539	**16A02R025A16ED10**	16	16	100	25	10,1	2	9.5°	0,13	50100
3744540	**20A02R028A20ED10**	20	20	110	28	10,1	2	6.0°	0,23	44800
3744541	**20A03R028A20ED10**	20	20	110	28	10,1	3	6.0°	0,22	44800
3744542	**25A03R032A25ED10**	25	25	120	32	10,0	3	4.0°	0,40	40000
3744613	**25A04R032A25ED10**	25	25	120	32	10,0	4	4.0°	0,40	40000
3744614	**32A04R040A32ED10**	32	32	130	40	10,0	4	2.8°	0,72	35400
3744615	**32A05R040A32ED10**	32	32	130	40	10,0	5	2.8°	0,71	35400

Spare Parts



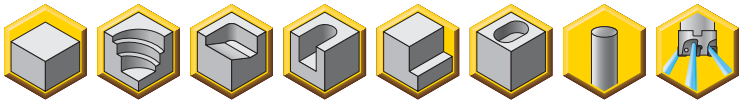


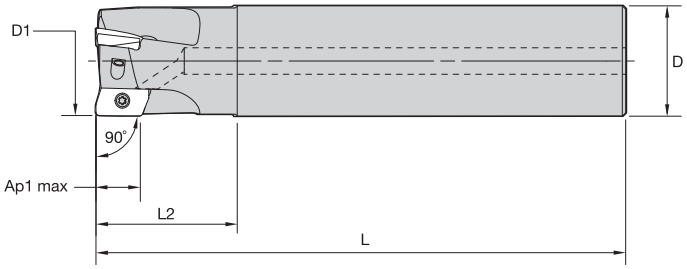


D1	insert screw	Nm	Torx Plus driver
12	**MS2205**	1,0	**DT7IP**
16	**MS2205**	1,0	**DT7IP**
20	**MS2205**	1,0	**DT7IP**
25	**MS2205**	1,0	**DT7IP**
32	**MS2205**	1,0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Cylindrical End Mills • Long Length

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
3744616	**16A02R025A16ED10-170**	16	16	170	25	10,1	2	9.5°	0,23	50100
3744617	**16A02R025A16ED10R31-170**	16	16	170	25	9,7	2	8.0°	0,23	50100
3744618	**18A02R028A16ED10-170**	18	16	170	28	10,1	2	7.5°	0,24	47200
3744619	**20A02R032A20ED10-170**	20	20	170	32	10,1	2	6.0°	0,37	44800
3744620	**20A02R032A20ED10R31-170**	20	20	170	32	9,8	2	4.5°	0,37	44800
3744621	**20A03R032A20ED10-170**	20	20	170	32	10,1	3	6.0°	0,36	44800
3744622	**20A03R032A20ED10R31-170**	20	20	170	32	9,8	3	4.5°	0,36	44800
3744623	**22A03R032A20ED10-170**	22	20	170	32	10,1	3	5.0°	0,37	42700
3744624	**25A03R040A25ED10-200**	25	25	200	40	10,0	3	4.0°	0,69	40000
3744625	**25A03R040A25ED10R31-200**	25	25	200	40	9,8	3	3.0°	0,69	40000
3744626	**25A04R040A25ED10-200**	25	25	200	40	10,0	4	4.0°	0,68	40000
3744627	**25A04R040A25ED10R31-200**	25	25	200	40	9,8	4	3.0°	0,68	40000
3744628	**28A04R040A25ED10-200**	28	25	200	40	10,0	4	3.3°	0,71	37800
3744629	**32A04R048A32ED10-200**	32	32	200	48	10,0	4	2.8°	1,14	35400
3744630	**32A04R048A32ED10R31-200**	32	32	200	48	9,7	4	2.0°	1,13	35400
3744631	**32A05R048A32ED10-200**	32	32	200	48	10,0	5	2.8°	1,13	35400
3744632	**32A05R048A32ED10R31-200**	32	32	200	48	9,7	5	2.0°	1,13	35400

Spare Parts



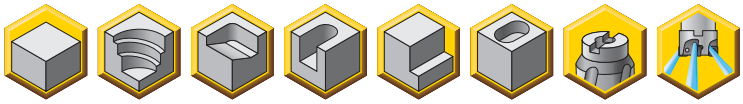


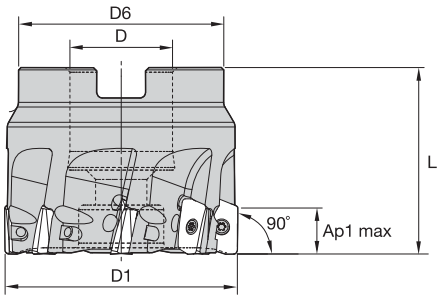


D1	insert screw	Nm	Torx Plus driver
16	**MS2205**	1,0	**DT7IP**
18	**MS2205**	1,0	**DT7IP**
20	**MS2205**	1,0	**DT7IP**
22	**MS2205**	1,0	**DT7IP**
25	**MS2205**	1,0	**DT7IP**
28	**MS2205**	1,0	**DT7IP**
32	**MS2205**	1,0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.
"R31" in catalogue number designates factory-relieved tool which accepts inserts with nose radii > 2mm.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM
3745674	**40A04RS90ED10D**	40	16	37	40	9,9	4	2.0°	0,25	31600
3745675	**40A06RS90ED10D**	40	16	37	40	9,9	6	2.0°	0,24	31600
3745676	**50A05RS90ED10D**	50	22	44	40	9,9	5	1.5°	0,38	28300
3745677	**50A08RS90ED10D**	50	22	44	40	9,9	8	1.5°	0,36	28300
3745678	**63A06RS90ED10D**	63	22	44	40	9,9	6	1.0°	0,54	25200
3745679	**63A09RS90ED10D**	63	22	44	40	9,9	9	1.0°	0,53	25200
3745680	**80A08RS90ED10D**	80	27	60	50	9,9	8	.8°	1,26	22400
3745681	**80A10RS90ED10D**	80	27	60	50	9,9	10	.8°	1,25	22400
3745682	**100B08RS90ED10D**	100	32	80	50	9,9	8	.5°	1,88	20000
3745703	**100B12RS90ED10D**	100	32	80	50	9,9	12	.5°	1,85	20000

Spare Parts






D1	insert screw	Nm	Torx Plus driver	socket-head cap screw
40	**MS2205**	1,0	**DT7IP**	**–**
50	**MS2205**	1,0	**DT7IP**	**–**
63	**MS2205**	1,0	**DT7IP**	**MS1234**
80	**MS2205**	1,0	**DT7IP**	**MS2038**
100	**MS2205**	1,0	**DT7IP**	**–**

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.E..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KC725M**	.E..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCPM40**	.E..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.E..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.E..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.E..LDJ**	**KC422M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
S3	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
H1	.E..LD	KC510M	–	–	–	–

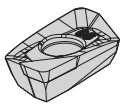
Indexable Inserts

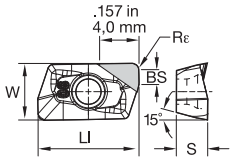
- Roughing and finishing of aluminium and non-ferrous alloys.
- Suitable for wet and dry machining.
- High precision.
- PCD inserts for long tool life.
- Ap1 max = 10mm.

● first choice
○ alternate choice

beyond

	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
P				○		○	●		●	●		○	
M						●	●		○	○	○	●	
K				●	●	○		●	○				
N	●	●	●	○									●
S						●	●				●	●	
H													


EDCT-PCD



EDCT-PCD

EDCT-PCD

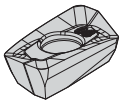
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EDCT10T304PDFR-PCD	12,04	3,75	6,75	2,10	0,4	0,02	1	–	–	–	–	–	–	–	–	–	–	–	–	●
EDCT10T308PDFR-PCD	12,05	3,75	6,74	1,71	0,8	0,02	1	–	–	–	–	–	–	–	–	–	–	–	–	●

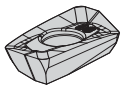
- Roughing and finishing of aluminium alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 10mm.

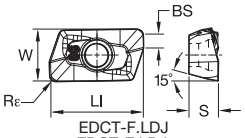
● first choice
○ alternate choice

beyond

P				○		○	●		●	●		○		
M						●	●		○	○	○	●		
K				●	●	○		●	○					
N	●	●	●	○									●	
S						●	●				●	●		
H														


EDCT-F.LDJ


EDCT-E.LDJ



EDCT-F.LDJ
EDCT-E.LDJ

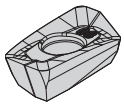
EDCT-F.LDJ

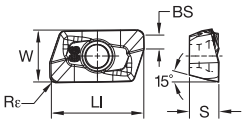
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EDCT10T302PDFRLDJ	12,05	3,75	6,75	2,29	0,2	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–	–
EDCT10T304PDFRLDJ	12,05	3,75	6,75	1,98	0,4	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–	–
EDCT10T308PDFRLDJ	12,05	3,75	6,74	1,70	0,8	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–	–
EDCT10T312PDFRLDJ	12,06	3,75	6,74	1,30	1,2	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–	–
EDCT10T316PDFRLDJ	12,06	3,75	6,74	0,90	1,6	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–	–
EDCT10T320PDFRLDJ	12,06	3,75	6,73	0,49	2,0	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–	–
EDCT10T331PDFRLDJ	11,52	3,75	6,71	–	3,1	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–	–

EDCT-E.LDJ

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EDCT10T304PDERLDJ	12,05	3,75	6,75	1,98	0,4	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T308PDERLDJ	12,05	3,75	6,74	1,70	0,8	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T316PDERLDJ	12,06	3,75	6,74	0,90	1,6	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T320PDERLDJ	12,06	3,75	6,73	0,49	2,0	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T324PDERLDJ	12,06	3,75	6,73	0,11	2,4	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–	–

- Finishing and high-precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 10mm.


EDCT-LD

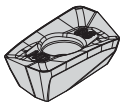


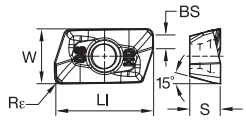
EDCT-LD

EDCT-LD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EDCT10T302PDERLD	12,04	3,75	6,75	2,29	0,2	0,04	2	–	–	–	–	–	–	●	–	●	–	–	–	–
EDCT10T304PDERLD	12,05	3,75	6,75	1,98	0,4	0,04	2	–	–	–	–	●	●	●	–	●	–	–	–	–
EDCT10T308PDERLD	12,05	3,75	6,74	1,70	0,8	0,04	2	–	–	–	●	●	●	●	●	●	●	–	●	–
EDCT10T312PDERLD	12,06	3,75	6,74	1,30	1,2	0,04	2	–	–	–	–	–	●	●	–	–	–	–	●	–
EDCT10T316PDERLD	12,06	3,75	6,74	0,90	1,6	0,04	2	–	–	–	–	–	●	●	–	●	–	–	●	–
EDCT10T320PDERLD	12,06	3,75	6,73	0,49	2,0	0,04	2	–	–	–	–	–	–	●	–	●	–	–	–	–
EDCT10T324PDERLD	12,06	3,75	6,73	0,11	2,4	0,04	2	–	–	–	–	–	●	●	–	–	–	–	●	–
EDCT10T331PDERLD	11,52	3,75	6,71	–	3,1	0,04	2	–	–	–	–	–	–	●	–	●	–	–	●	–

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 10mm.


EDPT-E.HD



EDPT-E.HD

● first choice
○ alternate choice

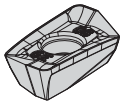
beyond

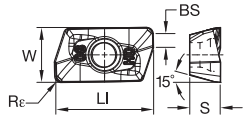
P					○		○	●		●	●		○		
M							●	●		○	○	○	●		
K					●	●	○		●	○					
N	●	●	●	○											●
S							●	●				●	●		
H															

EDPT-E..HD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EDPT10T304PDERHD	12,05	3,75	6,75	2,07	0,4	0,08	2	–	–	–	–	●	●	●	●	●	●	–	–	–
EDPT10T308PDERHD	12,05	3,75	6,74	1,70	0,8	0,08	2	–	–	–	–	●	●	●	●	●	●	–	●	–
EDPT10T310PDERHD	12,05	3,75	6,74	1,49	1,0	0,08	2	–	–	–	–	–	●	●	●	●	–	–	–	–
EDPT10T312PDERHD	12,06	3,75	6,74	1,30	1,2	0,08	2	–	–	–	–	●	●	●	–	●	●	–	●	–
EDPT10T316PDERHD	12,06	3,75	6,74	0,90	1,6	0,08	2	–	–	–	–	–	●	●	–	●	●	●	●	–
EDPT10T320PDERHD	12,06	3,75	6,74	0,49	2,0	0,08	2	–	–	–	–	–	–	●	–	●	●	–	●	–
EDPT10T324PDERHD	12,06	3,75	6,74	0,11	2,4	0,08	2	–	–	–	–	–	–	●	–	●	–	–	●	–
EDPT10T331PDERHD	11,52	3,75	6,71	–	3,1	0,08	2	–	–	–	–	–	●	●	–	●	–	–	●	–

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 10mm.


EDPT-S.GE

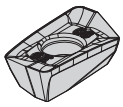


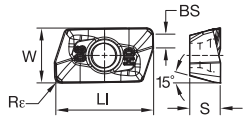
EDPT-S.GE

EDPT-S.GE

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EDPT10T304PDSRGE	12,04	3,75	6,75	2,08	0,4	0,14	2	–	–	–	–	–	●	●	–	●	●	–	–	–
EDPT10T308PDSRGE	12,05	3,75	6,74	1,70	0,8	0,14	2	–	–	–	–	–	●	●	–	●	●	–	●	–
EDPT10T312PDSRGE	12,05	3,75	6,74	1,30	1,2	0,14	2	–	–	–	–	–	●	●	–	●	–	–	●	–
EDPT10T316PDSRGE	12,06	3,75	6,74	0,90	1,6	0,14	2	–	–	–	–	–	●	●	–	●	–	–	●	–
EDPT10T331PDSRGE	11,51	3,75	6,71	–	3,1	0,14	2	–	–	–	–	–	●	●	–	●	–	–	●	–

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 10mm.


EDPT-S.GD



EDPT-S.GD

EDPT-S.GD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EDPT10T304PDSRGD	12,05	3,75	6,75	2,07	0,4	0,13	2	–	–	–	–	–	–	●	●	●	–	–	–	–
EDPT10T308PDSRGD	12,05	3,75	6,74	1,70	0,8	0,13	2	–	–	–	–	●	–	●	●	●	●	–	–	–
EDPT10T312PDSRGD	12,06	3,75	6,74	1,30	1,2	0,13	2	–	–	–	–	●	–	●	●	●	–	–	–	–
EDPT10T316PDSRGD	12,06	3,75	6,74	0,90	1,6	0,13	2	–	–	–	–	–	–	●	–	●	–	–	–	–

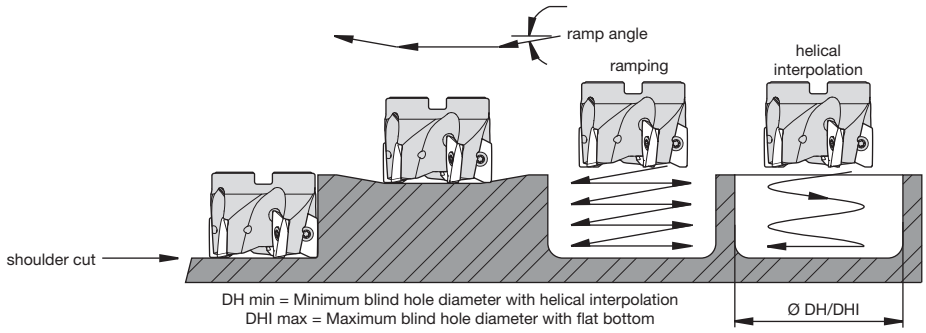
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,31	0,06	**0,16**	0,27	0,05	**0,15**	0,25	.F..LDJ
.F..-PCD	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,31	0,06	**0,16**	0,27	0,05	**0,15**	0,25	.F..-PCD
.E..LDJ	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,32	0,06	**0,16**	0,28	0,05	**0,15**	0,25	.E..LDJ
.E..LD	0,12	**0,35**	0,57	0,09	**0,25**	0,41	0,07	**0,19**	0,31	0,06	**0,17**	0,27	0,05	**0,15**	0,25	.E..LD
.S..GE	0,23	**0,46**	0,70	0,17	**0,33**	0,51	0,13	**0,25**	0,38	0,11	**0,22**	0,33	0,10	**0,20**	0,30	.S..GE
.S..GD	0,23	**0,47**	0,71	0,17	**0,34**	0,51	0,13	**0,25**	0,38	0,11	**0,22**	0,33	0,10	**0,20**	0,30	.S..GD
.E..HD	0,23	**0,51**	0,82	0,17	**0,37**	0,59	0,13	**0,28**	0,44	0,11	**0,24**	0,38	0,10	**0,22**	0,35	.E..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Data

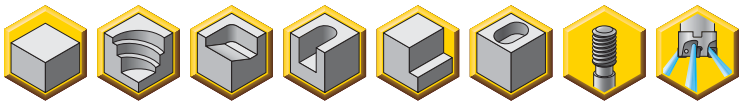


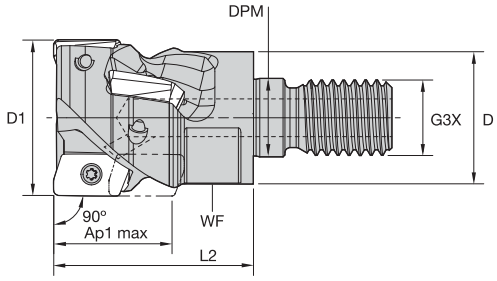
Application Examples

insert style	cutting diameter	max ramp angle to non-cutting corner tangent	max ramp angle to steel body interference	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
Mill-1, 10mm	12	not recommended	not recommended	not recommended	not recommended	not recommended
Mill-1, 10mm	16	9,7°	12,3°	19,50	28,73	32
Mill-1, 10mm	18	7,6°	9,6°	23,29	32,68	63
Mill-1, 10mm	20	6,2°	8,6°	27,25	36,63	40
Mill-1, 10mm	22	5,2°	7,0°	31,25	40,63	44
Mill-1, 10mm	25	4,2°	5,3°	37,26	46,62	50
Mill-1, 10mm	28	3,5°	4,3°	43,26	52,62	56
Mill-1, 10mm	32	2,8°	3,3°	51,27	60,62	64
Mill-1, 10mm	40	2,0°	2,3°	67,30	76,61	80
Mill-1, 10mm	42	1,9°	2,1°	71,32	80,60	82
Mill-1, 10mm	50	1,5°	1,6°	87,53	96,86	100
Mill-1, 10mm	63	1,2°	1,2°	113,54	122,86	126
Mill-1, 10mm	80	0,9°	0,9°	147,54	156,85	160
Mill-1, 10mm	100	0,7°	0,7°	187,54	196,85	200

NOTE: Max ramp angle decreases as nose radius increases.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.







Screw-On Helical End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
3773810	**M1H20J02R28M10ED10C4**	20	18	10,5	M10	32	15	18,9	4	2	6.0°	0,49	37100
3773811	**M1H25J02R32M12ED10C4**	25	21	12,5	M12	32	17	18,8	4	2	4.0°	0,07	33200
3773813	**M1H32J03R40M16ED10C6**	32	29	17,0	M16	40	24	18,7	6	3	2.8°	0,18	29300

Spare Parts



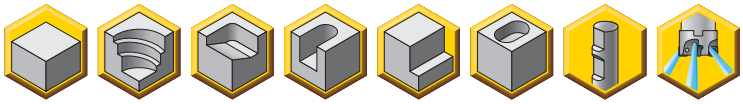


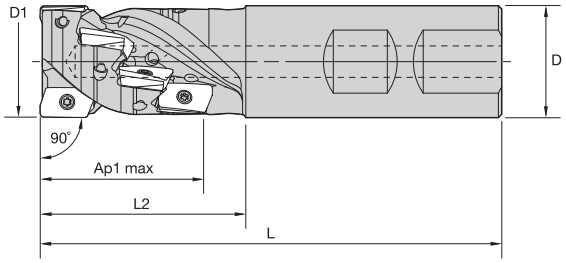


D1	insert screw	Nm	Torx wrench
20	**MS2205**	1,0	**F7IP**
25	**MS2205**	1,0	**F7IP**
32	**MS2205**	1,0	**F7IP**

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.







Weldon® Helical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
3773118	**M1H20J02R36B20ED10C6**	20	20	87	36	27,7	6	2	6.0°	0,34	37100
3773119	**M1H25J02R46B25ED10C8**	25	25	103	46	36,4	8	2	4.0°	0,31	33200
3773120	**M1H32J02R54B32ED10C10**	32	32	115	54	44,8	10	2	2.8°	0,56	29300
3773121	**M1H32J03R54B32ED10C15**	32	32	115	54	44,8	15	3	2.8°	0,53	29300

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts

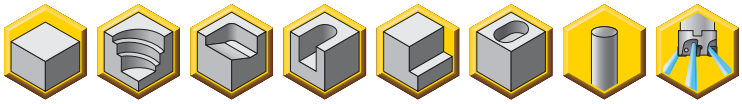


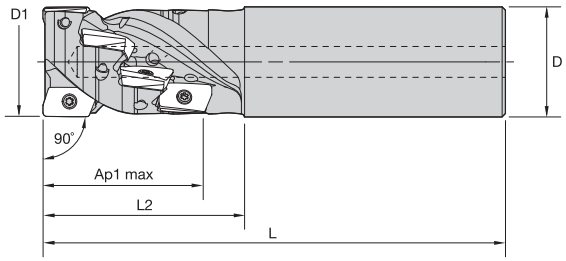




D1	insert screw	Nm	Torx Plus driver
20	**MS2205**	1,0	**DT7IP**
25	**MS2205**	1,0	**DT7IP**
32	**MS2205**	1,0	**DT7IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.







Cylindrical Helical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
3773806	**M1H20J02R28A20ED10C4**	20	20	110	28	18,9	4	2	6.0°	0,48	37100
3773122	**M1H20J02R36A20ED10C6**	20	20	90	36	27,7	6	2	6.0°	0,36	37100
3773807	**M1H25J02R28A25ED10C4**	25	25	120	28	18,8	4	2	4.0°	0,38	33200
3773803	**M1H25J02R46A25ED10C8**	25	25	105	46	36,4	8	2	4.0°	0,30	33200
3773808	**M1H32J02R28A32ED10C4**	32	32	130	28	18,7	4	2	2.8°	0,72	29300
3773809	**M1H32J03R28A32ED10C6**	32	32	130	28	18,7	6	3	2.8°	0,71	29300
3773805	**M1H32J03R54A32ED10C15**	32	32	115	54	44,8	15	3	2.8°	0,53	29300

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts

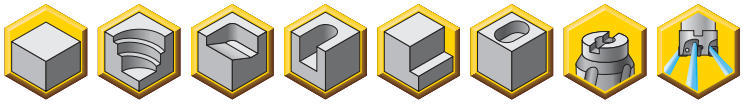


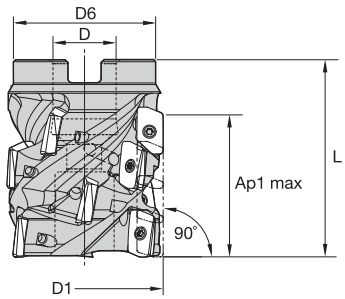




D1	insert screw	Nm	Torx Plus driver
20	**MS2205**	1,0	**DT7IP**
25	**MS2205**	1,0	**DT7IP**
32	**MS2205**	1,0	**DT7IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.







Helical Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
3773814	**M1H40T03R50A16ED10C12**	40	16	37	50	35,9	12	3	2.0°	0,27	26200
3773815	**M1H40T05R50A16ED10C20**	40	16	37	50	35,9	20	5	2.0°	0,26	26200
3773816	**M1H50T03R60A22ED10C15**	50	22	44	60	44,3	15	3	1.5°	0,62	23400
3773817	**M1H50T05R60A22ED10C25**	50	22	44	60	44,3	25	5	1.5°	0,55	23400

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts





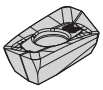

D1	insert screw	Nm	Torx Plus driver	socket-head cap screw
40	**MS2205**	1,0	**DT7IP**	**MS1340**
50	**MS2205**	1,0	**DT7IP**	**MS1558**

Insert Selection Guide

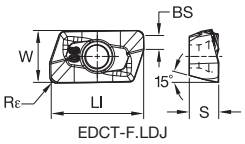
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.E..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KC725M**	.E..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCPM40**	.E..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.E..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.E..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.E..LDJ**	**KC422M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
S3	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
H1	.E..LD	KC510M	–	–	–	–

Indexable Inserts

- Periphery ground and polished rake face.
- Roughing and finishing of aluminium alloys.
- Perfect floor surface finish.



EDCT-F.LDJ



EDCT-F.LDJ

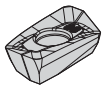
● first choice
○ alternate choice

	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○		○	●		●	●		○
M						●	●		○	○	○	●
K				●	●	○		●	○			
N	●	●	●	○								
S						●	●				●	●
H												

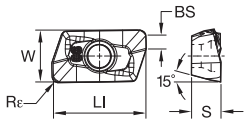
EDCT-F.LDJ

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT10T302PDFRLDJ	12,05	3,75	6,75	2,29	0,2	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T304PDFRLDJ	12,05	3,75	6,75	1,98	0,4	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T308PDFRLDJ	12,05	3,75	6,74	1,70	0,8	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T312PDFRLDJ	12,06	3,75	6,74	1,30	1,2	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T316PDFRLDJ	12,06	3,75	6,74	0,90	1,6	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T320PDFRLDJ	12,06	3,75	6,73	0,49	2,0	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–
EDCT10T331PDFRLDJ	11,52	3,75	6,71	—	3,1	0,02	2	–	●	–	–	–	–	–	–	–	–	–	–

- Periphery ground.
- Roughing and finishing.
- Perfect floor surface finish.



EDCT-E.LDJ



EDCT-E.LDJ

beyond

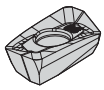
P				○		○	●		●	●		○
M						●	●		○	○	○	●
K				●	●	○		●	○			
N	●	●	●	○								
S						●	●				●	●
H												

● first choice
○ alternate choice

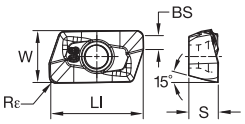
EDCT-E.LDJ

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT10T304PDERLDJ	12,05	3,75	6,75	1,98	0,4	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–
EDCT10T308PDERLDJ	12,05	3,75	6,74	1,70	0,8	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–
EDCT10T316PDERLDJ	12,06	3,75	6,74	0,90	1,6	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–
EDCT10T320PDERLDJ	12,06	3,75	6,73	0,49	2,0	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–
EDCT10T324PDERLDJ	12,06	3,75	6,73	0,11	2,4	0,03	2	–	–	●	–	–	–	–	–	–	–	–	–

- Finishing and high precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 10mm.



EDCT-LD

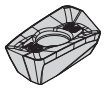


EDCT-LD

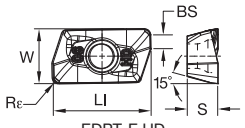
EDCT-LD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT10T302PDERLD	12,04	3,75	6,75	2,29	0,2	0,04	2	–	–	–	–	–	–	●	–	●	–	–	–
EDCT10T304PDERLD	12,05	3,75	6,75	1,98	0,4	0,04	2	–	–	–	–	●	●	●	–	●	–	–	–
EDCT10T308PDERLD	12,05	3,75	6,74	1,70	0,8	0,04	2	–	–	–	●	●	●	●	●	●	–	–	–
EDCT10T312PDERLD	12,06	3,75	6,74	1,30	1,2	0,04	2	–	–	–	–	–	●	●	–	–	–	–	–
EDCT10T316PDERLD	12,06	3,75	6,74	0,90	1,6	0,04	2	–	–	–	–	–	●	●	–	●	–	–	–
EDCT10T320PDERLD	12,06	3,75	6,73	0,49	2,0	0,04	2	–	–	–	–	–	●	●	–	●	–	–	–
EDCT10T324PDERLD	12,06	3,75	6,73	0,11	2,4	0,04	2	–	–	–	–	–	●	●	–	–	–	–	–
EDCT10T331PDERLD	11,52	3,75	6,71	–	3,1	0,04	2	–	–	–	–	–	–	–	–	●	–	–	–

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 10mm.



EDPT-E.HD



EDPT-E.HD

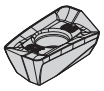
EDPT-E.HD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT10T304PDERHD	12,05	3,75	6,75	2,07	0,4	0,08	2	–	–	–	–	●	●	●	●	●	–	–	–
EDPT10T308PDERHD	12,05	3,75	6,74	1,70	0,8	0,08	2	–	–	–	–	●	●	●	●	●	–	–	–
EDPT10T310PDERHD	12,05	3,75	6,74	1,49	1,0	0,08	2	–	–	–	–	–	●	●	●	●	–	–	–
EDPT10T312PDERHD	12,06	3,75	6,74	1,30	1,2	0,08	2	–	–	–	–	●	●	●	–	●	–	–	–
EDPT10T316PDERHD	12,06	3,75	6,74	0,90	1,6	0,08	2	–	–	–	–	–	●	●	–	●	–	–	–
EDPT10T320PDERHD	12,06	3,75	6,74	0,49	2,0	0,08	2	–	–	–	–	–	–	●	–	●	–	–	–
EDPT10T324PDERHD	12,06	3,75	6,74	0,11	2,4	0,08	2	–	–	–	–	–	–	●	–	●	–	–	–
EDPT10T331PDERHD	11,52	3,75	6,71	–	3,1	0,08	2	–	–	–	–	–	●	●	–	●	–	–	–

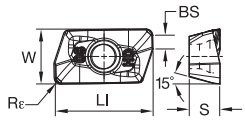
- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 10mm.

● first choice
○ alternate choice

		K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○		○	●		●	●		○
M							●	●		○	○	○	●
K					●	●	○		●	○			
N		●	●	●	○								
S							●	●				●	●
H													



EDPT-S.GE

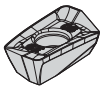


EDPT-S.GE

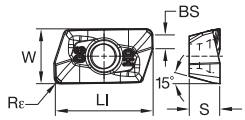
EDPT-S.GE

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT10T304PDSRGE	12,04	3,75	6,75	2,08	0,4	0,14	2	–	–	–	–	–	●	●	–	●	–	–	–
EDPT10T308PDSRGE	12,05	3,75	6,74	1,70	0,8	0,14	2	–	–	–	–	–	●	●	–	●	–	–	–
EDPT10T312PDSRGE	12,05	3,75	6,74	1,30	1,2	0,14	2	–	–	–	–	–	●	●	–	●	–	–	–
EDPT10T316PDSRGE	12,06	3,75	6,74	0,90	1,6	0,14	2	–	–	–	–	–	●	●	–	●	–	–	–
EDPT10T331PDSRGE	11,51	3,75	6,71	–	3,1	0,14	2	–	–	–	–	–	●	●	–	●	–	–	–

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 10mm.



EDPT-S.GD



EDPT-S.GD

EDPT-S.GD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT10T304PDSRGD	12,05	3,75	6,75	2,07	0,4	0,13	2	–	–	–	–	–	–	●	●	●	–	–	–
EDPT10T308PDSRGD	12,05	3,75	6,74	1,70	0,8	0,13	2	–	–	–	–	●	–	●	●	●	●	–	–
EDPT10T312PDSRGD	12,06	3,75	6,74	1,30	1,2	0,13	2	–	–	–	–	●	–	●	●	●	–	–	–
EDPT10T316PDSRGD	12,06	3,75	6,74	0,90	1,6	0,13	2	–	–	–	–	–	–	●	–	●	–	–	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,31	0,06	**0,16**	0,27	0,05	**0,15**	0,25	.F..LDJ
.F..-PCD	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,31	0,06	**0,16**	0,27	0,05	**0,15**	0,25	.F..-PCD
.E..LDJ	0,12	**0,35**	0,58	0,08	**0,25**	0,42	0,06	**0,19**	0,32	0,06	**0,16**	0,28	0,05	**0,15**	0,25	.E..LDJ
.E..LD	0,12	**0,35**	0,57	0,09	**0,25**	0,41	0,07	**0,19**	0,31	0,06	**0,17**	0,27	0,05	**0,15**	0,25	.E..LD
.S..GE	0,23	**0,46**	0,70	0,17	**0,33**	0,51	0,13	**0,25**	0,38	0,11	**0,22**	0,33	0,10	**0,20**	0,30	.S..GE
.S..GD	0,23	**0,47**	0,71	0,17	**0,34**	0,51	0,13	**0,25**	0,38	0,11	**0,22**	0,33	0,10	**0,20**	0,30	.S..GD
.E..HD	0,23	**0,51**	0,82	0,17	**0,37**	0,59	0,13	**0,28**	0,44	0,11	**0,24**	0,38	0,10	**0,22**	0,35	.E..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Flange Mount Adaptors



For HARVI™ Ultra Helical Cutters

HARVI ultra helical cutters can be used with our flange mount adaptors to create a powerful combination on nearly all spindle connections on the market.

Our flange mount adaptors enable the same cutting tool to be easily adapted to different machine spindle connections.

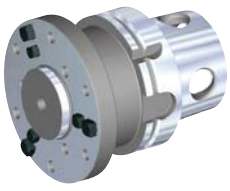
The Portfolio Features:


CV


DV


BT


HSK


KM4X™

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KENNAMETAL®

kennametal.com

Mill 1-14™

Primary Application

The Mill 1-14 series is a versatile, functional cutter system for a range of cutting tasks. Mill 1-14 cutters can be used for profiling, slotting, ramping, helical interpolation, circular interpolation, and other milling applications. It's a single tool with multi-functional benefits. Mill 1-14 inserts are specially designed to add cutting versatility. Innovative micro-geometry features contribute greatly to enhanced performance, various rake angles, negative T-land, and small hone. Results include significantly reduced cycle times and lower cutting forces. Test results in producing 90º walls have proven excellent with the GD2 geometry.



Features and Benefits

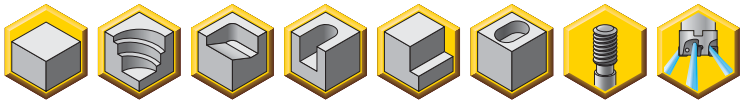
Features

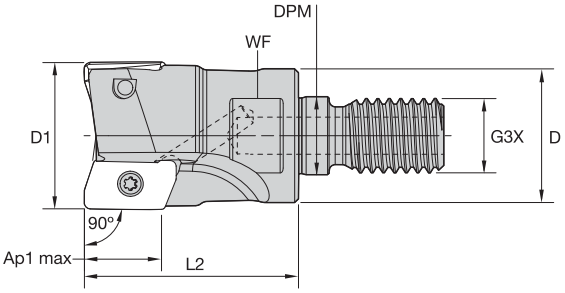
- Insert geometries and grades for most workpiece materials.
- Insert radii from 0,15mm up to 4mm.
- Axial depth of cut up to 14mm.
- Beyond™ grade technology.

Benefits

- Easy cutting action, even on entry and exiting the workpiece.
- Polished geometry for aluminium machining.
- Slotting, profiling, ramping, helical interpolation, and plunging.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	kg	max RPM
2968370	**20A02R035M10SED14**	20	18	10,5	M10	35	15	14,6	2	16.6°	0,05	47500
2968371	**25A02R035M12SED14**	25	21	12,5	M12	35	17	14,5	2	10.5°	0,08	39700
3345679	**25A03R035M12SED14**	25	21	12,5	M12	35	17	14,5	3	10.5°	0,08	39700
2968372	**32A03R040M16SED14**	32	29	17,0	M16	40	22	14,4	3	6.8°	0,17	33300
3345680	**32A04R040M16SED14**	32	29	17,0	M16	40	22	14,4	4	6.8°	0,18	33300
2968373	**40A04R040M16SED14**	40	29	17,0	M16	40	22	14,3	4	4.8°	0,23	28700
3345681	**40A05R040M16SED14**	40	29	17,0	M16	40	22	14,3	5	4.8°	0,23	28700

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

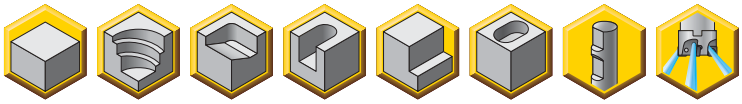
Spare Parts

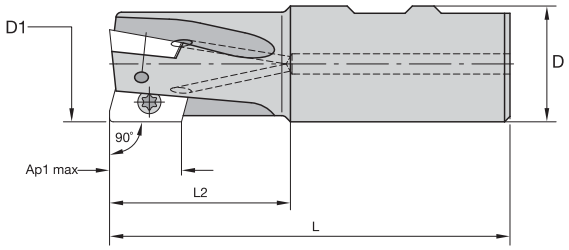




D1	insert screw	Nm	Torx Plus driver
20	**MS2167**	2,3	**DT9IP**
25	**MS2166**	2,3	**DT9IP**
32	**MS2166**	2,3	**DT9IP**
40	**MS2166**	2,3	**DT9IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
2622232	**20A02R039B20SED14**	20	20	90	39	14,7	2	16.6°	0,17	47500
2623937	**25A02R044B25SED14**	25	25	101	44	14,6	2	10.7°	0,31	39700
2478640	**25A03R044B25SED14**	25	25	101	44	14,6	3	10.5°	0,30	39700
2623938	**32A03R050B32SED14**	32	32	111	50	14,5	3	6.8°	0,55	33300
2478642	**32A04R050B32SED14**	32	32	111	50	14,5	4	6.8°	0,56	33300
2623939	**40A04R050B32SED14**	40	32	111	50	14,3	4	4.8°	0,71	28700
2623933	**40A05R050B32SED14**	40	32	111	50	14,3	5	4.8°	0,71	28700

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts

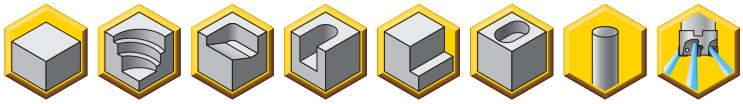


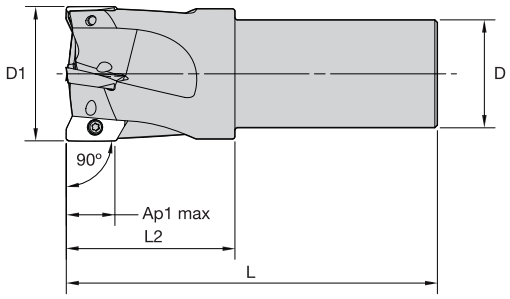




D1	insert screw	Nm	Torx Plus driver
20	**MS2167**	2,3	**DT9IP**
25	**MS2166**	2,3	**DT9IP**
32	**MS2166**	2,3	**DT9IP**
40	**MS2166**	2,3	**DT9IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
3345674	**20A02R039A20SED14**	20	20	90	39	14,7	2	16.6°	0,17	47500
2968363	**20A02R050A20SED14-170**	20	20	170	50	14,7	2	16.6°	0,34	47500
3345675	**25A02R044A25SED14**	25	25	100	44	14,6	2	10.5°	0,31	39700
2968367	**25A02R050A25SED14-170**	25	25	170	50	14,6	2	10.5°	0,56	39700
3345676	**25A03R044A25SED14**	25	25	100	44	14,6	3	10.5°	0,31	39700
2968364	**25A03R050A25SED14-170**	25	25	170	50	14,6	3	10.5°	0,56	39700
3345677	**32A03R050A25SED14**	32	25	107	50	14,6	3	6.8°	0,39	33300
3345678	**32A04R050A25SED14**	32	25	107	50	14,6	4	6.8°	0,41	33300
3348765	**32A03R050A32SED14**	32	32	110	50	14,5	3	6.8°	0,55	33300
2968368	**32A03R050A32SED14-200**	32	32	200	50	14,6	3	6.8°	1,10	33300
3348766	**32A04R050A32SED14**	32	32	110	50	14,5	4	6.8°	0,56	33300
2968365	**32A04R050A32SED14-200**	32	32	200	50	14,6	4	6.8°	1,11	33300
3348767	**40A04R050A32SED14**	40	32	110	50	14,5	4	4.8°	0,71	28700
2968369	**40A04R050A32SED14-200**	40	32	200	50	14,4	4	4.8°	1,26	28700
3348768	**40A05R050A32SED14**	40	32	110	50	14,5	5	4.8°	0,70	28700
2968366	**40A05R050A32SED14-200**	40	32	200	50	14,4	5	4.8°	1,25	28700

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.
"R" in catalogue number designates factory-relieved tool for insert radii greater than 2mm.

Spare Parts

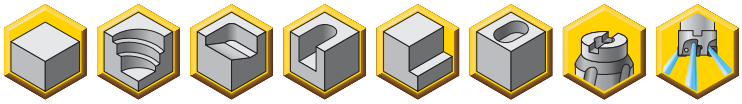


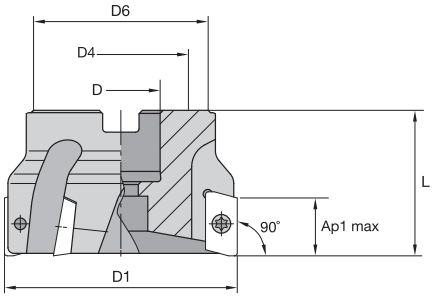


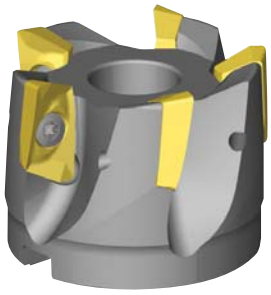


D1	insert screw	Nm	Torx Plus driver
20	**MS2167**	2,3	**DT9IP**
25	**MS2166**	2,3	**DT9IP**
32	**MS2166**	2,3	**DT9IP**
40	**MS2166**	2,3	**DT9IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Shell Mills

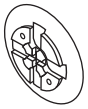
order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM
2623940	**40A04RS90ED14D**	40	16	–	37	40	14,3	4	4.8°	0,21	28700
2623934	**40A05RS90ED14D**	40	16	–	37	40	14,3	5	4.8°	0,21	28700
2623941	**50A05RS90ED14D**	50	22	–	45	40	14,0	5	3.5°	0,30	25000
2478686	**50A06RS90ED14D**	50	22	–	45	40	14,0	6	3.5°	0,29	25000
2623942	**63A06RS90ED14D**	63	22	–	50	40	14,0	6	2.5°	0,49	21800
2478689	**63A07RS90ED14D**	63	22	–	50	40	14,0	7	2.5°	0,48	21800
2623963	**80A07RS90ED14D**	80	27	–	60	50	14,0	7	1.9°	1,00	19000
2478690	**80A09RS90ED14D**	80	27	–	60	50	14,0	9	1.9°	1,00	19000
2623964	**100A08RS90ED14D**	100	32	–	80	50	14,2	8	1.5°	1,80	16800
2623935	**100A10RS90ED14D**	100	32	–	80	50	14,2	10	1.5°	1,81	16800
2510390	**125B09RS90ED14D**	125	40	–	90	63	14,1	9	1.2°	2,64	14900
2623936	**125B12RS90ED14D**	125	40	–	90	63	14,1	12	1.2°	2,66	14900
2623965	**160C11RS90ED14D**	160	40	66,7	100	63	14,1	11	.9°	3,64	13100

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts





D1	insert screw	Nm	Torx Plus driver	mounting screw	lock screw	coolant shower plate
40	**MS2166**	2,3	**DT9IP**	**MS1294**	–	–
50	**MS2166**	2,3	**DT9IP**	–	–	–
63	**MS2166**	2,3	**DT9IP**	–	–	–
80	**MS2166**	2,3	**DT9IP**	**MS2038**	–	–
100	**MS2166**	2,3	**DT9IP**	**MS1559**	–	–
125	**MS2166**	2,3	**DT9IP**	–	**420.200**	**470.232**
160	**MS2166**	2,3	**DT9IP**	–	**420.200**	**470.233**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
P3–P4	.E..GD	KCPM40	**.S..GD2**	**KCPK30**	.E..HD2	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD2**	**KC725M**	.E..HD2	KC725M
M1–M2	.E..LD	KC522M	**.E..GD**	**KCSM40**	.E..HD2	KC522M
M3	.E..GD	KCSM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
K1–K2	.S..GD2	KC520M	**.E..HD2**	**KC520M**	.E..HD2	KCK15
K3	.S..GD2	KC520M	**.E..HD2**	**KC520M**	.E..HD2	KCK15
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LDJ	KC422M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..GD	KC725M	**.S..GD2**	**KC725M**	.E..HD2	KC725M
S3	.E..GD	KCSM40	**.S..GD2**	**KC725M**	.E..HD2	KC725M
S4	.E..GD	KCSM40	**.S..GD2**	**KC725M**	.E..HD2	KC522M
H1	–	–	**–**	**–**	–	–

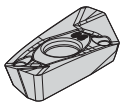
Indexable Inserts

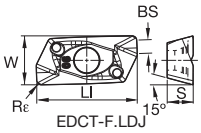
- Roughing and finishing of aluminium alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 14mm.

beyond

● first choice
○ alternate choice

	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N	●	●								
S				●	●				●	●
H										


EDCT-F.LDJ



EDCT-F.LDJ

EDCT-F.LDJ

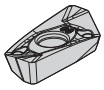
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140402PDFRLDJ	17,46	4,50	8,49	3,14	0,2	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140404PDFRLDJ	17,46	4,50	8,49	2,95	0,4	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140408PDFRLDJ	17,47	4,50	8,48	2,56	0,8	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140412PDFRLDJ	17,47	4,50	8,46	2,17	1,2	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140416PDFRLDJ	17,49	4,50	8,45	1,77	1,6	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140431PDFRLDJ	17,50	4,50	8,40	0,26	3,1	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140440PDFRLDJ	16,53	4,50	8,34	–	4,0	0,02	2	●	–	–	–	–	–	–	–	–	–

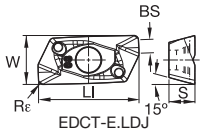
- Roughing and finishing of aluminium alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 14mm.

● first choice
○ alternate choice

beyond

		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											


EDCT-E.LDJ

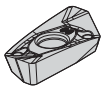


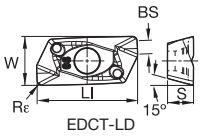
EDCT-E.LDJ

EDCT-E.LDJ

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140404PDERLDJ	17,46	4,50	8,49	2,95	0,4	0,03	2	–	●	–	–	–	–	–	–	–	–
EDCT140408PDERLDJ	17,47	4,50	8,48	2,56	0,8	0,03	2	–	●	–	–	–	–	–	–	–	–
EDCT140424PDERLDJ	17,50	4,50	8,42	0,99	2,4	0,03	2	–	●	–	–	–	–	–	–	–	–

- Finishing and high-precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 14mm.


EDCT-LD

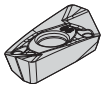


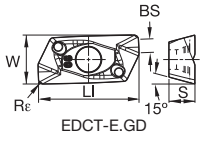
EDCT-LD

EDCT-LD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140404PDERLD	17,46	4,50	8,49	2,95	0,4	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140408PDERLD	17,47	4,50	8,48	2,56	0,8	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140412PDERLD	17,48	4,50	8,46	2,17	1,2	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140416PDERLD	17,49	4,50	8,45	1,77	1,6	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140431PDERLD	17,50	4,50	8,40	0,26	3,1	0,04	2	–	–	–	●	–	–	–	–	–	–

- Light machining and finishing applications.
- Periphery ground for high-precision machining.
- Medium hone for increased edge protection.
- Ap1 max = 14mm.


EDCT-E.GD



EDCT-E.GD

EDCT-E.GD

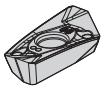
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140404PDERGD	17,46	4,50	8,49	2,95	0,4	0,05	2	–	–	–	–	●	–	–	●	–	–
EDCT140408PDERGD	17,47	4,50	8,48	2,56	0,8	0,05	2	–	–	–	–	●	–	–	●	–	●
EDCT140412PDERGD	17,48	4,50	8,46	2,17	1,2	0,05	2	–	–	–	–	●	–	–	–	–	●
EDCT140416PDERGD	17,49	4,50	8,45	1,77	1,6	0,05	2	–	–	–	–	●	–	–	–	–	●
EDCT140431PDERGD	17,50	4,50	8,40	0,26	3,1	0,05	2	–	–	–	–	●	–	–	–	–	●

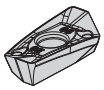
- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.

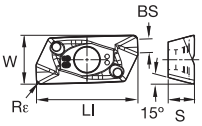
beyond

P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N	●	●								
S				●	●				●	●
H										

● first choice
○ alternate choice


EDPT-E.HD


EDPT-E.HD2



EDPT-E.HD
EDPT-E.HD2

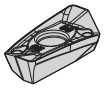
EDPT-E.HD

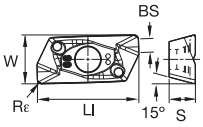
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140404PDERHD	17,46	4,50	8,39	2,95	0,4	0,08	2	–	–	●	●	●	●	●	●	–	–
EDPT140408PDERHD	17,47	4,50	8,38	2,56	0,8	0,08	2	–	–	●	●	●	●	●	●	–	●
EDPT140412PDERHD	17,48	4,50	8,36	2,16	1,2	0,08	2	–	–	●	●	●	●	●	●	–	●
EDPT140416PDERHD	17,49	4,50	8,36	1,77	1,6	0,08	2	–	–	–	●	●	●	●	●	●	●
EDPT140420PDERHD	17,49	4,50	8,35	1,37	2,0	0,08	2	–	–	–	●	●	–	●	–	–	●
EDPT140424PDERHD	17,50	4,50	8,32	0,99	2,4	0,08	2	–	–	–	●	●	–	●	●	–	●
EDPT140431PDERHD	17,51	4,50	8,30	0,26	3,1	0,08	2	–	–	–	●	●	–	●	–	●	●
EDPT140440PDERHD	16,53	4,50	8,26	–	4,0	0,08	2	–	–	–	●	●	–	●	–	●	●

EDPT-E.HD2

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140408PDERHD2	17,47	4,50	8,38	2,56	0,8	0,06	2	–	–	–	●	●	●	●	●	–	–

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.


EDPT-S.GE



EDPT-S.GE

EDPT-S.GE

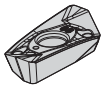
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140404PDSRGE	17,43	4,45	8,20	2,80	0,4	0,14	2	–	–	–	●	●	–	●	–	–	–
EDPT140408PDSRGE	17,44	4,45	8,17	2,39	0,8	0,14	2	–	–	–	●	●	–	●	●	–	●
EDPT140412PDSRGE	17,44	4,45	8,14	1,98	1,2	0,14	2	–	–	–	●	●	–	●	–	–	●
EDPT140416PDSRGE	17,45	4,45	8,12	1,58	1,6	0,14	2	–	–	–	●	●	–	●	–	–	●
EDPT140431PDSRGE	17,46	4,45	8,07	0,13	3,1	0,14	2	–	–	–	–	●	–	●	–	–	●

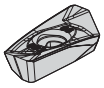
- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.

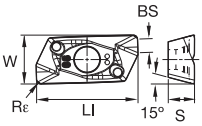
● first choice
○ alternate choice

beyond

P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N	●	●									
S					●	●				●	●
H											


EDPT-S.GD


EDPT-S.GD2



EDPT-S.GD
EDPT-S.GD2

EDPT-S.GD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140408PDSRGD	17,47	4,50	8,37	2,55	0,8	0,11	2	–	–	●	–	●	–	●	●	–	●
EDPT140412PDSRGD	17,48	4,50	8,36	2,17	1,2	0,11	2	–	–	●	–	●	–	●	●	–	●
EDPT140416PDSRGD	17,49	4,50	8,35	1,77	1,6	0,11	2	–	–	●	–	●	–	●	●	–	●

EDPT-S.GD2

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140408PDSRGD2	17,47	4,50	8,37	2,61	0,8	0,11	2	–	–	●	–	●	–	●	●	–	–

Recommended Starting Feeds

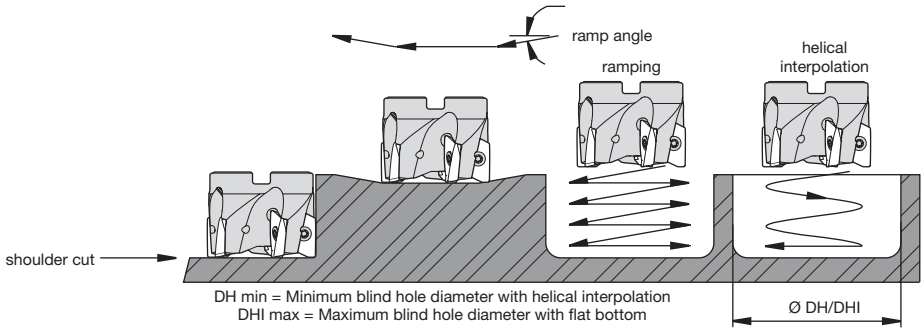
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,12	**0,46**	0,82	0,08	**0,33**	0,59	0,06	**0,25**	0,44	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.F..LDJ
.E..LDJ	0,12	**0,47**	0,82	0,08	**0,34**	0,59	0,06	**0,26**	0,44	0,06	**0,22**	0,39	0,05	**0,20**	0,35	.E..LDJ
.E..LD	0,12	**0,46**	0,81	0,09	**0,33**	0,58	0,07	**0,25**	0,43	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..LD
.E..GD	0,17	**0,52**	0,89	0,12	**0,38**	0,64	0,09	**0,28**	0,48	0,08	**0,24**	0,42	0,07	**0,22**	0,38	.E..GD
.S..GE	0,23	**0,51**	0,89	0,17	**0,37**	0,64	0,13	**0,27**	0,48	0,11	**0,24**	0,42	0,10	**0,22**	0,38	.S..GE
.S..GD	0,23	**0,50**	0,88	0,17	**0,36**	0,63	0,13	**0,27**	0,47	0,11	**0,24**	0,41	0,10	**0,22**	0,38	.S..GD
.S..GD2	0,23	**0,50**	0,88	0,17	**0,36**	0,63	0,13	**0,27**	0,47	0,11	**0,24**	0,41	0,10	**0,22**	0,38	.S..GD2
.E..HD	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.E..HD
.E..HD2	0,21	**0,59**	0,95	0,15	**0,43**	0,68	0,11	**0,32**	0,51	0,10	**0,28**	0,44	0,09	**0,25**	0,41	.E..HD2

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples



insert style	cutting diameter	max ramp angle	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter
Mill 1-14	20	16°	23,74	35,62	40
Mill 1-14	25	11°	33,75	44,44	50
Mill 1-14	32	7°	47,80	59,79	64
Mill 1-14	40	5°	63,76	75,22	80
Mill 1-14	40	5°	64,00	75,47	80
Mill 1-14	50	4°	83,96	96,05	100
Mill 1-14	63	3°	109,93	121,47	126
Mill 1-14	80	2°	143,91	155,47	160
Mill 1-14	100	1°	183,89	199,47	200
Mill 1-14	125	1°	233,88	245,47	250
Mill 1-14	160	1°	303,88	315,47	320

NOTE: Max ramp angle decreases as nose radius increases.

Mill 1-14™
Helical Cutters

Primary Application

Mill 1-14 helical cutters will increase axial depth of cut. Designed with axial support pins for added stability, the Mill 1-14 helical cutters feature essential Load-Optimised Insert Spacing™ (LOIS) technology. LOIS dramatically minimises unwanted vibrations and fluctuations in power requirements, resulting in a much smoother-sounding cut. Up to nine different coolant nozzle diameters enable tailoring to suit each machine tool, providing remarkably consistent, focused coolant flow.



Features and Benefits

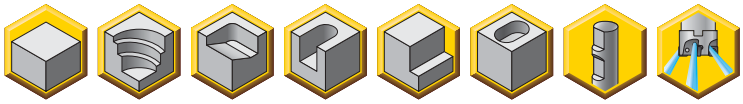
Functions

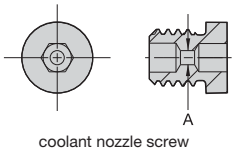
- Improves axial depth of cut better than standard end mills due to the positioning of inserts in helical configuration.
- Up to nine different coolant nozzle diameters tailored to suit each machine tool.
- One tool that offers features common to end mills, but rarely seen on a helical cutter: Helical ramping from solid, slotting, contouring, ramping, and plunging.

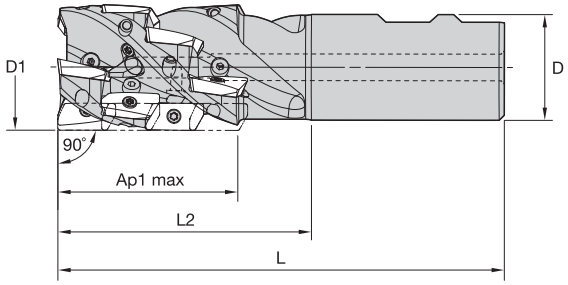
Benefits

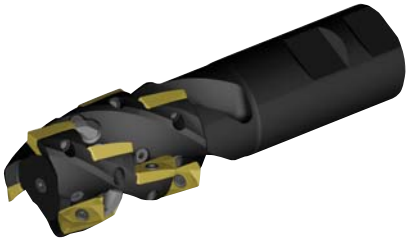
- Increases depth of cut.
- Consistent, focused coolant flow.
- Built for performance, accuracy, and versatility.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- Axial support pins.
- Unique coolant nozzles.









Helical Weldon® End Mills • Slot and Profile

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
3742932	**M1H32J2R50B32S90ED14C4**	32	32	111	50	27,8	4	2	6.8°	0,52	31100
3743033	**M1H40J3R50B32S90ED14C6**	40	32	111	50	27,5	6	3	4.8°	0,59	28400
3743034	**M1H40J3R65B32S90ED14C9**	40	32	126	65	40,8	9	3	4.8°	0,66	28400
3743035	**M1H40J3R80B32S90ED14C12**	40	32	141	80	54,0	12	3	4.8°	0,73	28400
3743038	**M1H50J3R80B40S90ED14C12**	50	40	151	80	53,5	12	3	3.5°	1,30	24600

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts







D1	insert screw	Nm	Torx Plus driver	pin	coolant nozzle screw
32	**MS2148**	2,3	**DT9IP**	**ASPM07001802**	**MS2191C20**
40	**MS2148**	2,3	**DT9IP**	**ASPM07001802**	**MS2191C20**
50	**MS2148**	2,3	**DT9IP**	**ASPM07001802**	**MS2191C20**

Helical Weldon Mills • Profile Only

order number	catalogue number	D1	D	L	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
5085631	**M1H40J4R80B32S90ED14C12**	40	32	141	40,8	12	4	4.8°	0,75	28400

Spare Parts







D1	insert screw	Nm	Torx Plus driver	pin	coolant nozzle screw
40	**MS2148**	2,3	**DT9IP**	**ASPM07001802**	**MS2191C20**

Optional Coolant Nozzle Screw



order number	catalogue number	A
3400611	MS2191C00	–
3400612	MS2191C06	0,6
3400613	MS2191C08	0,8
3400616	MS2191C12	1,2
3400617	MS2191C14	1,4
3400618	MS2191C16	1,6
3400619	MS2191C18	1,8
3400620	MS2191C20	2,0

Coolant Nozzle Key

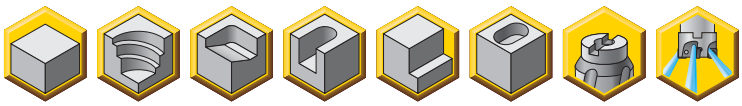


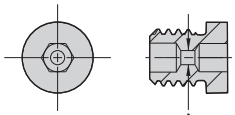


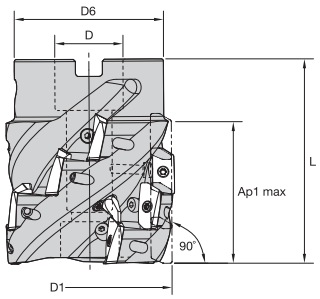
order number	catalogue number	drive size
1993552	THW2M	2 MM

NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a 1,20mm hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter.
This gives flexibility with coolant flow.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- Axial support pins.
- Unique coolant nozzles.









Helical Shell Mills • Slot and Profile

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
3743036	M1H50T3R50A22S90ED14C6	50	22	46	50	27,3	6	3	3.5°	0,43	24600
3743037	M1H50T3R65A22S90ED14C9	50	22	46	65	40,4	9	3	3.5°	0,57	24600
3743039	M1H63T3R50A27S90ED14C6	63	27	60	50	26,9	6	3	2.5°	0,76	22000
3743040	M1H63T3R65A27S90ED14C9	63	27	60	65	39,9	9	3	2.5°	1,00	22000
3743042	M1H63T3R75A27S90ED14C12	63	27	60	75	52,8	12	3	2.5°	1,16	22000
3743041	M1H63T4R65A27S90ED14C12	63	27	60	65	39,9	12	4	2.5°	0,97	22000

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts



order number	D1	insert screw	Nm	Torx Plus driver	pin	socket-head cap screw	coolant nozzle screw
3743036	50	MS2148	2,3	DT9IP	ASPM07001802	MS1235	MS2191C20
3743037	50	MS2148	2,3	DT9IP	ASPM07001802	MS1233	MS2191C16
3743039	63	MS2148	2,3	DT9IP	ASPM07001802	MS1198	MS2191C20
3743040	63	MS2148	2,3	DT9IP	ASPM07001802	MS1238	MS2191C20
3743042	63	MS2148	2,3	DT9IP	ASPM07001802	MS1433	MS2191C16
3743041	63	MS2148	2,3	DT9IP	ASPM07001802	MS1238	MS2191C16

Helical Shell Mills • Profile Only

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	Z U	max ramp angle	kg	max RPM
3831819	**M1H63T5R75A27S90ED14C20**	63	27	60	75	52,8	20	5	2.0°	1,06	22000

Spare Parts

D1	insert screw	Nm	Torx Plus driver	pin	socket-head cap screw	coolant nozzle screw
63	**MS2148**	2,3	**DT9IP**	**ASPM07001802**	**MS1433**	**MS2191C12**

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Optional Coolant Nozzle Screw



order number	catalogue number	A
3400611	**MS2191C00**	–
3400612	**MS2191C06**	0,6
3400613	**MS2191C08**	0,8
3400616	**MS2191C12**	1,2
3400617	**MS2191C14**	1,4
3400618	**MS2191C16**	1,6
3400619	**MS2191C18**	1,8
3400620	**MS2191C20**	2,0

Coolant Nozzle Key





order number	catalogue number	drive size
1993552	**THW2M**	2 MM

NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a 1,20m m hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter.
This gives flexibility with coolant flow.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
P3–P4	.E..GD	KCPM40	**.S..GD2**	**KCPK30**	.E..HD2	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD2**	**KC725M**	.E..HD2	KC725M
M1–M2	.E..LD	KC522M	**.E..GD**	**KCSM40**	.E..HD2	KC522M
M3	.E..GD	KCSM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
K1–K2	.S..GD2	KC520M	**.E..HD2**	**KC520M**	.E..HD2	KCK15
K3	.S..GD2	KC520M	**.E..HD2**	**KC520M**	.E..HD2	KCK15
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LDJ	KC422M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..GD	KC725M	**.S..GD2**	**KC725M**	.E..HD2	KC725M
S3	.E..GD	KCSM40	**.S..GD2**	**KC725M**	.E..HD2	KC725M
S4	.E..GD	KCSM40	**.S..GD2**	**KC725M**	.E..HD2	KC522M
H1	–	–	**–**	**–**	–	–

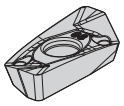
Indexable Inserts

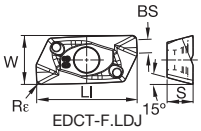
- Roughing and finishing of aluminium alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 14mm.

beyond

● first choice
○ alternate choice

		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											


EDCT-F.LDJ



EDCT-F.LDJ

EDCT-F.LDJ

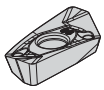
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140402PDFRLDJ	17,46	4,50	8,49	3,14	0,2	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140404PDFRLDJ	17,46	4,50	8,49	2,95	0,4	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140408PDFRLDJ	17,47	4,50	8,48	2,56	0,8	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140412PDFRLDJ	17,47	4,50	8,46	2,17	1,2	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140416PDFRLDJ	17,49	4,50	8,45	1,77	1,6	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140431PDFRLDJ	17,50	4,50	8,40	0,26	3,1	0,02	2	●	–	–	–	–	–	–	–	–	–
EDCT140440PDFRLDJ	16,53	4,50	8,34	–	4,0	0,02	2	●	–	–	–	–	–	–	–	–	–

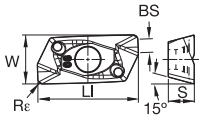
- Roughing and finishing of aluminium alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 14mm.

beyond

● first choice
○ alternate choice

P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N	●	●									
S					●	●				●	●
H											


EDCT-E.LDJ

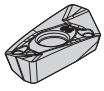


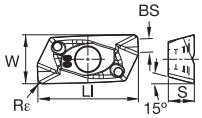
EDCT-E.LDJ

EDCT-E.LDJ

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140404PDERLDJ	17,46	4,50	8,49	2,95	0,4	0,03	2	–	●	–	–	–	–	–	–	–	–
EDCT140408PDERLDJ	17,47	4,50	8,48	2,56	0,8	0,03	2	–	●	–	–	–	–	–	–	–	–
EDCT140424PDERLDJ	17,50	4,50	8,42	0,99	2,4	0,03	2	–	●	–	–	–	–	–	–	–	–

- Finishing and high-precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 14mm.


EDCT-LD

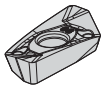


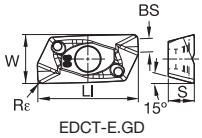
EDCT-LD

EDCT-LD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140404PDERLD	17,46	4,50	8,49	2,95	0,4	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140408PDERLD	17,47	4,50	8,48	2,56	0,8	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140412PDERLD	17,48	4,50	8,46	2,17	1,2	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140416PDERLD	17,49	4,50	8,45	1,77	1,6	0,04	2	–	–	–	●	–	–	–	–	–	–
EDCT140431PDERLD	17,50	4,50	8,40	0,26	3,1	0,04	2	–	–	–	●	–	–	–	–	–	–

- Light machining and finishing applications.
- Periphery ground for high-precision machining.
- Medium hone for increased edge protection.
- Ap1 max = 14mm.


EDCT-E.GD

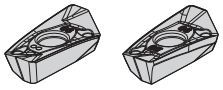


EDCT-E.GD

EDCT-E.GD

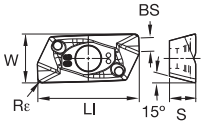
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT140404PDERGD	17,46	4,50	8,49	2,95	0,4	0,05	2	–	–	–	–	●	–	–	●	–	–
EDCT140408PDERGD	17,47	4,50	8,48	2,56	0,8	0,05	2	–	–	–	–	●	–	–	●	–	●
EDCT140412PDERGD	17,48	4,50	8,46	2,17	1,2	0,05	2	–	–	–	–	●	–	–	–	–	●
EDCT140416PDERGD	17,49	4,50	8,45	1,77	1,6	0,05	2	–	–	–	–	●	–	–	–	–	●
EDCT140431PDERGD	17,50	4,50	8,40	0,26	3,1	0,05	2	–	–	–	–	●	–	–	–	–	●

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.



EDPT-E.HD

EDPT-E.HD2



EDPT-E.HD
EDPT-E.HD2

● first choice
○ alternate choice

beyond

		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											

EDPT-E.HD

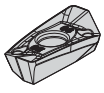
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140404PDERHD	17,46	4,50	8,39	2,95	0,4	0,08	2	–	–	●	●	●	●	●	●	–	–
EDPT140408PDERHD	17,47	4,50	8,38	2,56	0,8	0,08	2	–	–	●	●	●	●	●	●	–	●
EDPT140412PDERHD	17,48	4,50	8,36	2,16	1,2	0,08	2	–	–	●	●	●	●	●	●	–	●
EDPT140416PDERHD	17,49	4,50	8,36	1,77	1,6	0,08	2	–	–	–	●	●	●	●	●	●	●
EDPT140420PDERHD	17,49	4,50	8,35	1,37	2,0	0,08	2	–	–	–	●	●	–	●	–	–	●
EDPT140424PDERHD	17,50	4,50	8,32	0,99	2,4	0,08	2	–	–	–	●	●	–	●	●	–	●
EDPT140431PDERHD	17,51	4,50	8,30	0,26	3,1	0,08	2	–	–	–	●	●	–	●	–	●	●
EDPT140440PDERHD	16,53	4,50	8,26	—	4,0	0,08	2	–	–	–	●	●	–	●	–	●	●

- For improved 90° wall capabilities.

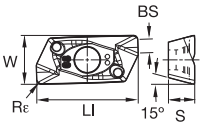
EDPT-E.HD2

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140408PDERHD2	17,47	4,50	8,38	2,56	0,8	0,06	2	–	–	–	●	●	●	●	●	–	–

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.



EDPT-S.GE



EDPT-S.GE

EDPT-S.GE

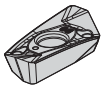
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140404PDSRGE	17,43	4,45	8,20	2,80	0,4	0,14	2	–	–	–	●	●	–	●	–	–	–
EDPT140408PDSRGE	17,44	4,45	8,17	2,39	0,8	0,14	2	–	–	–	●	●	–	●	●	–	●
EDPT140412PDSRGE	17,44	4,45	8,14	1,98	1,2	0,14	2	–	–	–	●	●	–	●	–	–	●
EDPT140416PDSRGE	17,45	4,45	8,12	1,58	1,6	0,14	2	–	–	–	●	●	–	●	–	–	●
EDPT140431PDSRGE	17,46	4,45	8,07	0,13	3,1	0,14	2	–	–	–	–	●	–	●	–	–	●

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.

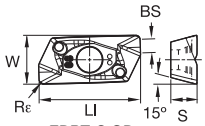
beyond

● first choice
○ alternate choice

		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											



EDPT-S.GD

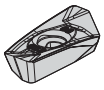


EDPT-S.GD

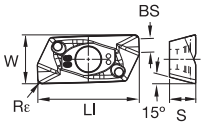
EDPT-S.GD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140408PDSRGD	17,47	4,50	8,37	2,55	0,8	0,11	2	–	–	●	–	●	–	●	●	–	●
EDPT140412PDSRGD	17,48	4,50	8,36	2,17	1,2	0,11	2	–	–	●	–	●	–	●	●	–	●
EDPT140416PDSRGD	17,49	4,50	8,35	1,77	1,6	0,11	2	–	–	●	–	●	–	●	●	–	●

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.



EDPT-S.GD2



EDPT-S.GD2

EDPT-S.GD2

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT140408PDSRGD2	17,47	4,50	8,37	2,61	0,8	0,11	2	–	–	●	–	●	–	●	●	–	–

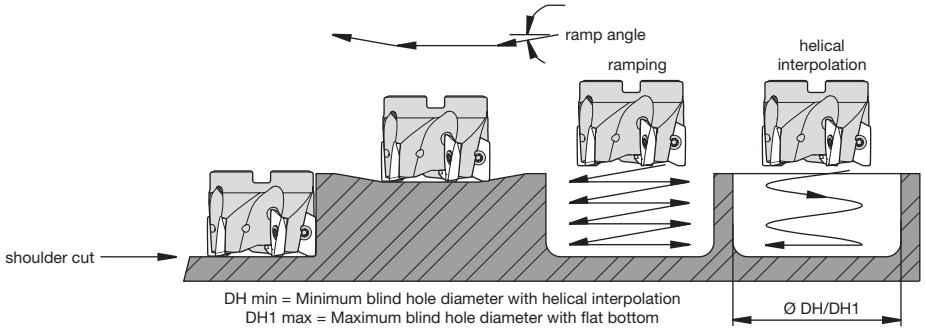
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,12	**0,46**	0,82	0,08	**0,33**	0,59	0,06	**0,25**	0,44	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.F..LDJ
.E..LDJ	0,12	**0,47**	0,82	0,08	**0,34**	0,59	0,06	**0,26**	0,44	0,06	**0,22**	0,39	0,05	**0,20**	0,35	.E..LDJ
.E..LD	0,12	**0,46**	0,81	0,09	**0,33**	0,58	0,07	**0,25**	0,43	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..LD
.E..GD	0,17	**0,52**	0,89	0,12	**0,38**	0,64	0,09	**0,28**	0,48	0,08	**0,24**	0,42	0,07	**0,22**	0,38	.E..GD
.S..GE	0,23	**0,51**	0,89	0,17	**0,37**	0,64	0,13	**0,27**	0,48	0,11	**0,24**	0,42	0,10	**0,22**	0,38	.S..GE
.S..GD	0,23	**0,50**	0,88	0,17	**0,36**	0,63	0,13	**0,27**	0,47	0,11	**0,24**	0,41	0,10	**0,22**	0,38	.S..GD
.S..GD2	0,23	**0,50**	0,88	0,17	**0,36**	0,63	0,13	**0,27**	0,47	0,11	**0,24**	0,41	0,10	**0,22**	0,38	.S..GD2
.E..HD	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.E..HD
.E..HD2	0,21	**0,59**	0,95	0,15	**0,43**	0,68	0,11	**0,32**	0,51	0,10	**0,28**	0,44	0,09	**0,25**	0,41	.E..HD2

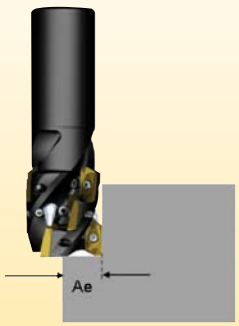
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples

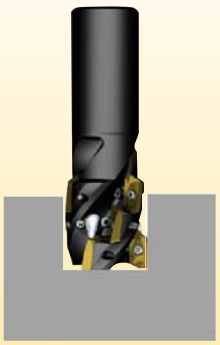


insert style	cutting diameter	max ramp angle	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	max diameter
Mill 1-14	32	5.4°	47,80	59,79	64
Mill 1-14	40	3.8°	64,00	75,47	80
Mill 1-14	50	2.7°	83,96	96,05	100
Mill 1-14	63	1.9°	109,93	121,47	126

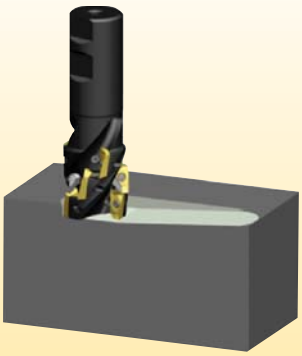
Best Machining Practices



Contouring/Profiling
ae = up to 50% of cutter Ø. This can be used with or without coolant/air blast, depending on materials being machined.



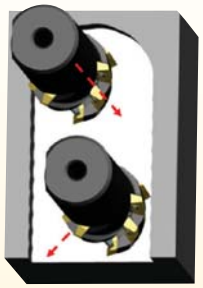
Slotting
Full width cutting or profiling over 50% of the cutter Ø. It is suggested to use coolant or air blast to evacuate chips. If necessary, reduce coolant nozzle hole size, which adds more pressure, and the chip is forced out of the chip gash.



Ramping
Only machine to the depth of the first insert. Observe the ramping angles given in the catalogue.

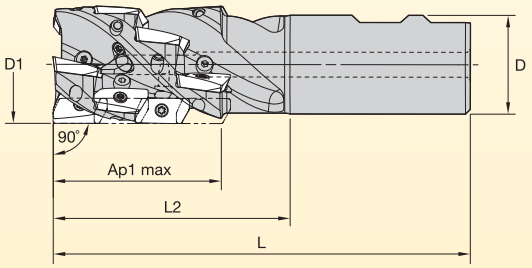
Slotting by Plunging

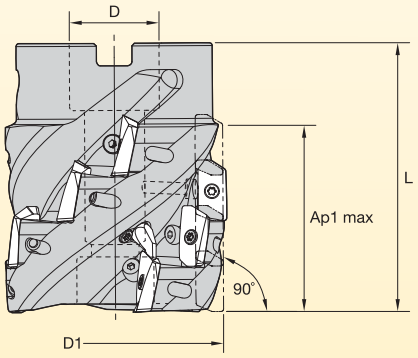
Slot with the alternate side method, alternating the cuts from side to side. This will enable the cutter to move away from the material prior to moving back up in the Z-axis. The cutter will not be in contact with the workpiece. Follow the direction of the arrows. Move 3 axes simultaneously into the centre of the slot. Maximum step over 8,0mm (0.315").



With multiple Z-axis passes, when the final depth is achieved, move straight back up in the Z-axis, then repeat at the next step over.







	catalogue number	order number	D1	ZU[1]	Z	Mtg.[2]	D	L2	L	Ap1 max	max Ra[3]	max CR[4]	max RPM
Inch Cutters	M1HR125E14W125Z2L200C4	3732889	1.25	2	4	W	1.25	2.00	4.28	1.09	5.4°	0.094	31100
	M1HR150E14W125Z3L200C6	3732890	1.50	3	6	W	1.25	2.00	4.28	1.09	4.0°	0.094	28400
	M1HR150E14W125Z3L250C9	3732891	1.50	3	9	W	1.25	2.50	4.78	1.61	4.0°	0.094	28400
	M1HR150E14W125Z3L300C12	3732892	1.50	3	12	W	1.25	3.00	5.28	2.13	4.0°	0.094	28400
	M1HR200E14S075Z3L200C6	3732933	2.00	3	6	S	0.75	–	2.00	1.07	2.6°	0.094	24600
	M1HR200E14S075Z3L250C9	3732934	2.00	3	9	S	0.75	–	2.50	1.59	2.6°	0.094	24600
	M1HR200E14W150Z3L300C12	3732935	2.00	3	12	W	1.50	3.00	5.69	2.10	2.6°	0.094	24600
	M1HR250E14S100Z3L250C9	3732937	2.50	3	9	S	1.00	–	2.50	1.57	1.9°	0.062	22000
	M1HR250E14S100Z4L250C12	3732938	2.50	4	12	S	1.00	–	2.50	1.57	1.9°	0.062	22000
	[5] M1HR250E14S100Z3L300C12	3732939	2.50	3	12	S	1.00	–	3.00	2.07	1.9°	0.062	22000

Metric Cutters	M1H32J2R50B32S90ED14C4	3742932	32	2	4	W	32	50	111	27,8	5,4°	2,4	31100
	M1H40J3R50B32S90ED14C6	3743033	40	3	6	W	32	50	111	27,6	3,8°	2,4	28400
	M1H40J3R65B32S90ED14C9	3743034	40	3	9	W	32	65	126	40,8	3,8°	2,4	28400
	M1H40J4R80B32S90ED14C12	5085631	40	4	12	W	32	80	141	40,8	3,8°	2,5	28400
	M1H40J3R80B32S90ED14C12	3743035	40	3	12	W	32	80	141	54,0	3,8°	2,4	28400
	M1H50T3R50A22S90ED14C6	3743036	50	3	6	S	22	–	50	27,3	2,7°	2,4	24600
	M1H50T3R65A22S90ED14C9	3743037	50	3	9	S	22	–	65	40,4	2,7°	2,4	24600
	M1H50J3R80B40S90ED14C12	3743038	63	3	12	W	40	80	151	53,5	1,9°	2,4	24600
	M1H63T3R50A27S90ED14C6	3743039	63	3	6	S	27	–	50	27,0	1,9°	1,6	22000
	M1H63T3R65A27S90ED14C9	3743040	63	3	9	S	27	–	65	39,9	1,9°	1,6	22000
	M1H63T4R65A27S90ED14C12	3743041	63	4	12	S	27	–	65	39,9	1,9°	1,6	22000
	M1H63T3R75A27S90ED14C12	3743042	63	3	12	S	27	–	75	52,8	1,9°	1,6	22000
	[5] M1H63T5R75A27S90ED14C20	3831819	63	5	20	S	27	–	75	52,8	1,9°	1,6	22000

[1] Number of effective flutes.
[2] Mounting style: W = Weldon®; S = Shell Mill.
[3] Max ramp angle when radial depth of cut exceeds 8mm (.31")
[4] Max insert corner radius allowed in first row without cutter body modification.
[5] Recommended for profiling applications only.

Profile, Slot, and Ramp

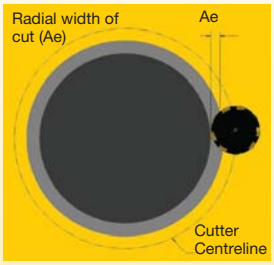
When taking a cut that equals up to 50% of the cutter diameter, you can operate without coolant, unless your material is coolant-dependent. When using more than 50% of the cutter diameter, there is a need to have coolant through the nozzles, or an air blast through the nozzles. This will assist with chip evacuation. Please use the feed table when taking a small percentage of the cutter diameter. This will improve the volume of material removed. To achieve a superior surface finish on the base, adjust the feed to suit the finish required.

When using this cutter for plunging, the maximum suggested step over is 3,30mm (.130"). Always try to move the cutter and insert away from the material when retracting in the Z-axis. This can be done when employing the alternate cut method (zig zag method). Use a 3-axis move to get all axes moving at the same time, suggest 0,25mm (.010").

When machining a conventional slot, you have to move straight up in the Z-axis.

Circular and Helical Interpolation

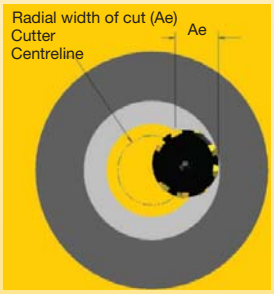
External



When profiling around the external part of a component, it is important to increase the feed rate. This will maintain the chip thickness value.
The programmed feed rate needs to be calculated at the cutter centreline.

For external profiling, adjust the feed rate for feed at the cutter centreline.
Increase the feed rate for external profiling.

Internal



When machining inside a component profile, the area of contact is larger.
The feed rate needs to be at the centreline, and the feed rate needs to be slower.

For internal profiling, adjust the feed rate for feed at the cutter centreline.
This will effectively reduce the feed rate as the distance traveled is less than the peripheral distance.

Cutting Data

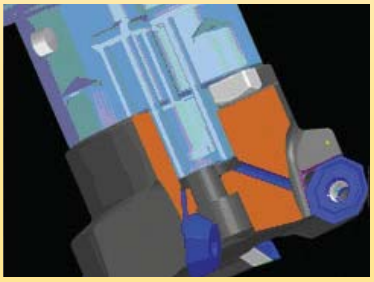
Reference pages X22–X37 for speed tables. Reference platform pages for feed data.
Each insert has an average chip thickness value that will enable you to determine the feed per tooth.

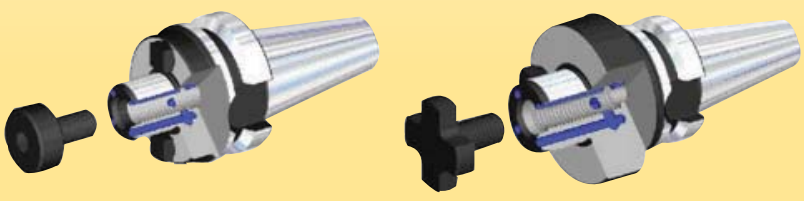
Please remember when using less than 50% of the cutter diameter, the feed rate will need to be increased.
Failure to do so will result in premature insert failure. Running too slowly will reduce tool life.

Spare Parts

Please make sure all the spare parts in the cutters are fully tightened prior to using the product. Shell mill cutters no longer have coolant grooved bolts. We now have adaptors that will enable the coolant to be fed through the adaptor pilot diameter.

True Through Coolant Shell Mill Adaptors





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Mill 1-18™

Primary Application

The Mill 1-18 series is a versatile, functional cutter system for a range of cutting tasks. Mill 1-18 cutters can be used for profiling, slotting, ramping, helical interpolation, plunging, and other milling applications. It's a single tool with multi-functional benefits. Mill 1-18 inserts are specially designed to add cutting versatility, especially for larger axial depths of cut. Results include significantly reduced cycle times and lower cutting forces.



Features and Benefits

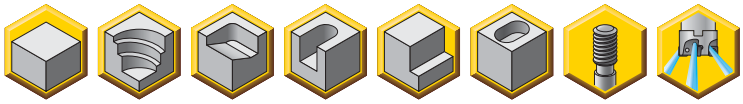
Features

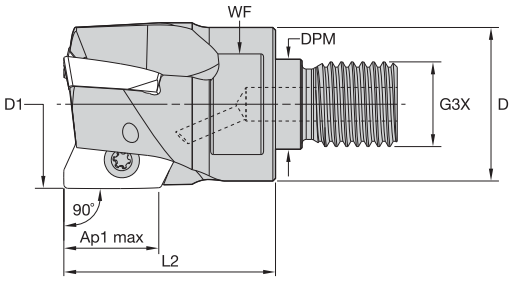
- Inserts for larger axial depth of cut.
- Inserts radii up to 6,35mm.
- Axial depth of cut up to 18mm.
- Cutter diameters up to 160mm.
- Beyond™ grade technology.

Benefits

- Slotting, profiling, ramping, helical interpolation, and plunging.
- Angled screw for insert retention.
- Insert geometries and grades for most workpiece materials.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	kg	max RPM
3349690	**25A02R035M12SED18**	25	21	12,5	M12	35	17	18,0	2	17.3°	0,08	37380
3349691	**32A02R040M16SED18**	32	29	17,0	M16	40	24	18,0	2	10.8°	0,17	32140
3349692	**32A03R040M16SED18**	32	29	17,0	M16	40	24	18,0	3	10.8°	0,16	32140
3349773	**40A03R040M16SED18**	40	29	17,0	M16	40	24	17,8	3	7.4°	0,21	28220
3349774	**40A04R040M16SED18**	40	29	17,0	M16	40	24	17,8	4	7.4°	0,20	28220

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

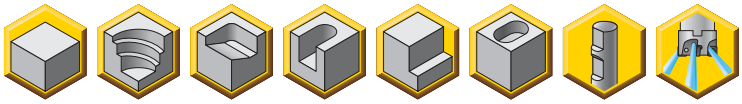
Spare Parts

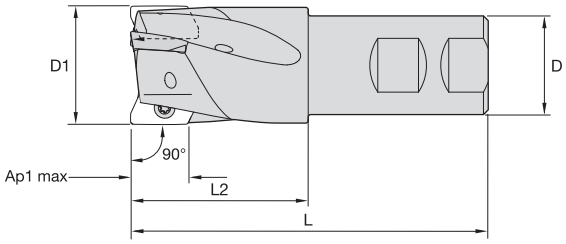




D1	insert screw	Nm	Torx Plus driver
25	**MS2126**	4,0	**DT15IP**
32	**MS2126**	4,0	**DT15IP**
40	**MS2126**	4,0	**DT15IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
2390446	**25A02R044B25SED18**	25	25	100	44	18,0	2	17.3°	0,29	37380
2390448	**32A03R050B32SED18**	32	32	110	50	18,0	3	10.8°	0,52	32140
2417191	**40A03R050B32SED18**	40	32	110	50	17,8	3	7.4°	0,66	28220
2390450	**40A04R050B32SED18**	40	32	110	50	17,4	4	7.4°	0,63	28220

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

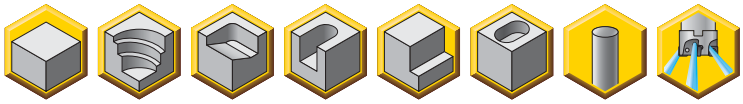
Spare Parts

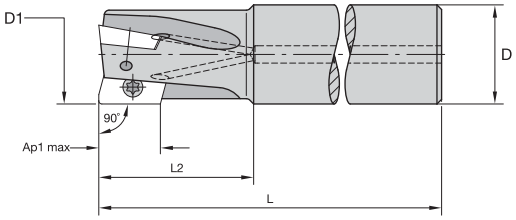




D1	insert screw	Nm	Torx Plus driver
25	**MS2126**	4,0	**DT15IP**
32	**MS2126**	4,0	**DT15IP**
40	**MS2126**	4,0	**DT15IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
3349685	**25A02R044A25SED18**	25	25	100	44	18,0	2	17.3°	0,29	37380
2963873	**25A02R044A25SED18-150**	25	25	150	44	18,0	2	17.3°	0,47	37380
2613785	**25A02R050A25SED18-170**	25	25	170	50	18,0	2	17.3°	0,54	37380
3349689	**32A03R050A25SED18**	32	25	107	50	18,0	3	10.8°	0,37	32140
2613788	**32A02R050A32SED18-200**	32	32	200	50	17,0	2	10.8°	1,10	32140
3349686	**32A03R050A32SED18**	32	32	110	50	17,0	3	10.8°	0,52	32140
2613786	**32A03R050A32SED18-200**	32	32	200	50	17,0	3	10.8°	1,07	32140
2963874	**34A03R050A32SED18-250**	34	32	250	50	18,0	3	9.8°	1,40	31210
2613789	**40A03R050A32SED18-200**	40	32	200	50	17,4	3	7.4°	1,20	28220
2963875	**40A03R050A32SED18-250**	40	32	250	50	17,4	3	7.4°	1,50	28220
3349688	**40A04R050A32SED18**	40	32	110	50	17,4	4	7.4°	0,64	28220
2613787	**40A04R050A32SED18-200**	40	32	200	50	17,4	4	7.4°	1,18	28220
2963876	**40A04R050A32SED18-250**	40	32	250	50	17,4	4	7.4°	1,48	28220

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

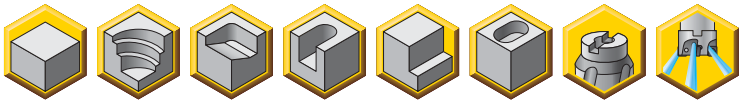
Spare Parts

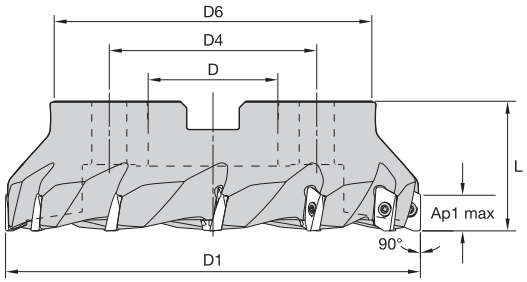




D1	insert screw	Nm	Torx Plus driver
25	**MS2126**	4,0	**DT15IP**
25	**MS2126**	4,0	**DT15IP**
32	**MS2126**	4,0	**DT15IP**
40	**MS2126**	4,0	**DT15IP**
40	**MS2126**	4,0	**DT15IP**

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 90° walls.
- High RPM capabilities.







Shell Mills

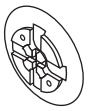
order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM
2417185	**50A04RS90ED18D**	50	22	–	45	40	17,7	4	5.3°	0,27	24890
2417183	**50A05RS90ED18D**	50	22	–	45	40	17,7	5	5.3°	0,28	24890
2417186	**63A05RS90ED18D**	63	22	–	50	40	17,6	5	3.8°	0,45	21910
2390483	**63A06RS90ED18D**	63	22	–	50	40	17,6	6	3.8°	0,48	21910
2417187	**80A06RS90ED18D**	80	27	–	60	50	17,4	6	2.8°	0,96	19270
2417184	**80A07RS90ED18D**	80	27	–	60	50	17,4	7	2.8°	0,99	19270
2417188	**100A07RS90ED18D**	100	32	–	80	50	17,4	7	2.1°	1,75	17120
2390485	**100A08RS90ED18D**	100	32	–	80	50	17,4	8	2.1°	1,77	17120
2417189	**125B08RS90ED18D**	125	40	–	90	63	17,4	8	1.7°	2,57	15230
2390486	**125B09RS90ED18D**	125	40	–	90	63	17,4	9	1.7°	2,61	15230
2417190	**160C10RS90ED18D**	160	40	66,7	100	63	17,4	10	1.3°	3,90	13400
2390487	**160C12RS90ED18D**	160	40	66,7	100	63	17,4	12	1.3°	3,90	13400

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts





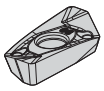
D1	insert screw	Nm	Torx Plus wrench	mounting screw	mill cutter lock screw	coolant cap
50	**MS2126**	4,0	**DT15IP**	–	–	–
63	**MS2126**	4,0	**DT15IP**	–	–	–
80	**MS2126**	4,0	**DT15IP**	**MS2038**	–	–
100	**MS2126**	4,0	**DT15IP**	**MS1559**	–	–
125	**MS2126**	4,0	**DT15IP**	–	**420.200**	**470.232**
160	**MS2126**	4,0	**DT15IP**	–	**420.200**	**470.233**

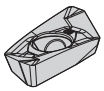
Insert Selection Guide

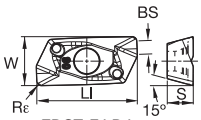
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
P3–P4	.E..GD	KCPK30	**.S..GD**	**KCPK30**	.E..HD	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
M1–M2	.E..GD	KCSM40	**.S..GD**	**KCSM40**	.E..HD	KCSM40
M3	.E..GD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
K1–K2	.E..GD	KC520M	**.E..GD**	**KC520M**	.S..GD	KCK15
K3	.E..GD	KC520M	**.S..GD**	**KCK15**	.E..HD	KCPK30
N1–N2	.F..LDJ	KC410M	**.E..LDJ**	**KC422M**	.E..LDJ	KC422M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..GD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
S3	.E..GD	KCSM40	**.S..GD**	**KCSM40**	.E..HD	KCSM40
S4	.E..GD	KCSM40	**.S..GD**	**KCSM40**	.E..HD	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- Light edge prep for reduced cutting forces.
- Periphery ground for high-precision machining.
- Light machining and finish applications.
- Ap1 max = 18mm.


EDCT-F.LDJ


EDCT-E.LDJ



EDCT-F.LDJ
EDCT-E.LDJ

● first choice
○ alternate choice

beyond

	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○		●		●	●		○
M				●	●	●		○	○	○	●
K			●	○			●	○			
N	●	●									
S				●	●	●				●	●
H											

EDCT-F.LDJ

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT180504PDFRLDJ	21,75	5,50	10,98	3,07	0,4	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180508PDFLLDJ	21,76	5,50	10,97	2,69	0,8	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180508PDFRLDJ	21,76	5,50	10,97	2,69	0,8	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180512PDFRLDJ	21,77	5,50	10,97	2,29	1,2	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180516PDFRLDJ	21,78	5,50	10,96	1,90	1,6	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180520PDFRLDJ	21,79	5,50	10,95	1,49	2,0	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180524PDFRLDJ	21,79	5,50	10,93	1,11	2,4	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180532PDFRLDJ	21,79	5,50	10,91	0,32	3,2	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180540PDFRLDJ	20,78	5,50	10,87	–	4,0	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180548PDFRLDJ	20,20	5,50	10,83	–	4,8	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180550PDFRLDJ	19,95	5,50	10,81	–	5,0	0,02	2	●	–	–	–	–	–	–	–	–	–	–
EDCT180564PDFRLDJ	18,72	5,50	10,73	–	6,4	0,02	2	●	–	–	–	–	–	–	–	–	–	–

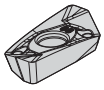
EDCT-E.LDJ

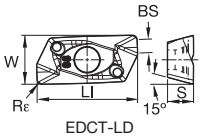
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT180508PDERLDJ	21,76	5,50	10,97	2,69	0,8	0,03	2	–	●	–	–	–	–	–	–	–	–	–
EDCT180512PDERLDJ	21,77	5,50	10,97	2,29	1,2	0,03	2	–	●	–	–	–	–	–	–	–	–	–
EDCT180516PDERLDJ	21,78	5,50	10,96	1,90	1,6	0,03	2	–	●	–	–	–	–	–	–	–	–	–
EDCT180524PDERLDJ	21,79	5,50	10,93	1,11	2,4	0,03	2	–	●	–	–	–	–	–	–	–	–	–
EDCT180532PDERLDJ	21,79	5,50	10,91	0,32	3,2	0,03	2	–	●	–	–	–	–	–	–	–	–	–
EDCT180564PDERLDJ	18,72	5,50	10,73	–	6,4	0,03	2	–	●	–	–	–	–	–	–	–	–	–

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 14mm.

● first choice
○ alternate choice

P				○		●		●	●		○		
M				●	●	●		○	○	○	●		
K			●	○			●	○					
N	●	●											
S				●	●	●				●	●		
H													

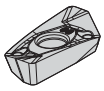

EDCT-LD

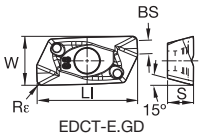


EDCT-LD

EDCT-LD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT180508PDERLD	21,76	5,50	10,97	2,69	0,8	0,05	2	–	–	–	●	–	–	–	–	–	–	–
EDCT180516PDERLD	21,78	5,50	10,96	1,90	1,6	0,05	2	–	–	–	●	–	–	–	–	–	–	–
EDCT180532PDERLD	21,79	5,50	10,91	0,32	3,2	0,05	2	–	–	–	●	–	–	–	–	–	–	–
EDCT180540PDERLD	20,78	5,50	10,87	–	4,0	0,05	2	–	–	–	●	–	–	–	–	–	–	–
EDCT180548PDERLD	20,20	5,50	10,83	–	4,8	0,05	2	–	–	–	●	–	–	–	–	–	–	–
EDCT180564PDERLD	18,72	5,50	10,73	–	6,4	0,05	2	–	–	–	●	–	–	–	–	–	–	–


EDCT-E.GD

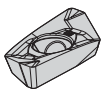


EDCT-E.GD

EDCT-E.GD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDCT180504PDERGD	21,75	5,50	10,98	3,07	0,4	0,09	2	–	–	–	–	–	●	–	–	●	–	–
EDCT180508PDERGD	21,76	5,50	10,97	2,69	0,8	0,09	2	–	–	–	–	–	●	–	–	●	–	–
EDCT180512PDERGD	21,77	5,50	10,97	2,29	1,2	0,09	2	–	–	–	–	–	●	–	–	●	–	–

- PSTS — Precision Pressed and Sintered to Size.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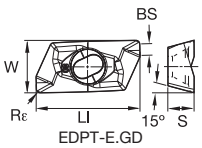
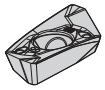


EDPT-E.GD

EDPT-E.GD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT180508PDERGD	21,76	5,50	10,97	2,69	0,8	0,09	2	–	–	●	–	–	●	–	●	●	–	●
EDPT180512PDERGD	21,77	5,50	11,00	2,29	1,2	0,09	2	–	–	–	–	–	●	–	–	●	–	–
EDPT180516PDERGD	21,78	5,50	10,94	1,90	1,6	0,09	2	–	–	–	●	–	●	–	●	●	–	●
EDPT180524PDERGD	21,79	5,50	10,93	1,11	2,4	0,09	2	–	–	–	–	–	●	–	–	–	–	–
EDPT180532PDERGD	21,79	5,50	10,91	0,32	3,2	0,09	2	–	–	●	●	–	●	–	●	–	–	●
EDPT180548PDERGD	20,20	5,50	10,83	–	4,8	0,09	2	–	–	–	–	–	●	–	–	–	–	●
EDPT180564PDERGD	18,79	5,50	10,73	–	6,4	0,09	2	–	–	–	●	–	●	–	●	–	–	●

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 18mm.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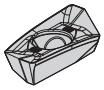
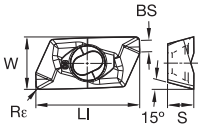

EDPT-S.GE



EDPT-E.HD
EDPT-S.GE

● first choice
○ alternate choice

beyond

P				○		●		●	●		○		
M				●	●	●		○	○	○	●		
K			●	○			●	○					
N	●	●											
S				●	●	●				●	●		
H													

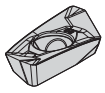
EDPT-E.HD

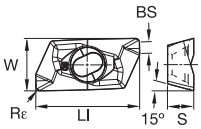
catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT180508PDERHD	21,77	5,50	10,89	2,69	0,8	0,08	2	–	–	–	–	–	●	–	●	●	–	●
EDPT180512PDERHD	21,77	5,50	10,88	2,29	1,2	0,08	2	–	–	–	–	–	●	–	●	–	–	●
EDPT180516PDERHD	21,78	5,50	10,87	1,90	1,6	0,08	2	–	–	–	–	–	●	–	●	●	–	●
EDPT180532PDERHD	21,79	5,50	10,83	0,31	3,2	0,08	2	–	–	–	–	–	●	–	●	●	–	●
EDPT180540PDERHD	20,92	5,50	10,77	–	4,0	0,08	2	–	–	–	–	–	●	–	–	–	–	●
EDPT180548PDERHD	20,16	5,50	10,75	–	4,8	0,08	2	–	–	–	–	–	●	–	●	–	–	●
EDPT180564PDERHD	18,79	5,50	10,66	–	6,4	0,08	2	–	–	–	–	–	●	–	●	–	–	–

EDPT-S.GE

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT180508PDSRGE	21,73	5,45	10,70	2,42	0,8	0,14	2	–	–	–	●	–	●	–	●	–	–	●
EDPT180512PDSRGE	21,77	5,45	10,68	2,00	1,2	0,14	2	–	–	–	●	–	–	–	●	–	–	●
EDPT180516PDSRGE	21,74	5,45	10,66	1,59	1,6	0,14	2	–	–	–	–	–	–	–	–	–	–	●
EDPT180532PDSRGE	21,75	5,45	10,62	0,07	3,2	0,14	2	–	–	–	–	–	–	–	●	–	–	●

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 18mm.


EDPT-S.GD



EDPT-S.GD

EDPT-S.GD

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EDPT180508PDSRGD	21,76	5,50	10,90	2,69	0,8	0,15	2	–	–	–	–	–	●	●	●	●	–	●
EDPT180512PDSRGD	21,77	5,50	10,89	2,29	1,2	0,15	2	–	–	–	–	–	●	●	●	●	–	●
EDPT180516PDSRGD	21,78	5,50	10,88	1,90	1,6	0,15	2	–	–	–	–	–	●	–	●	●	–	●
EDPT180532PDSRGD	21,79	5,50	10,83	0,32	3,2	0,15	2	–	–	–	–	–	●	–	●	–	–	●
EDPT180548PDSRGD	20,20	5,49	10,75	–	4,8	0,13	2	–	–	–	–	–	–	–	–	–	–	●
EDPT180564PDSRGD	18,77	5,50	10,64	–	6,4	0,13	2	–	–	–	–	–	●	–	–	–	–	●

Recommended Starting Feeds [mm]

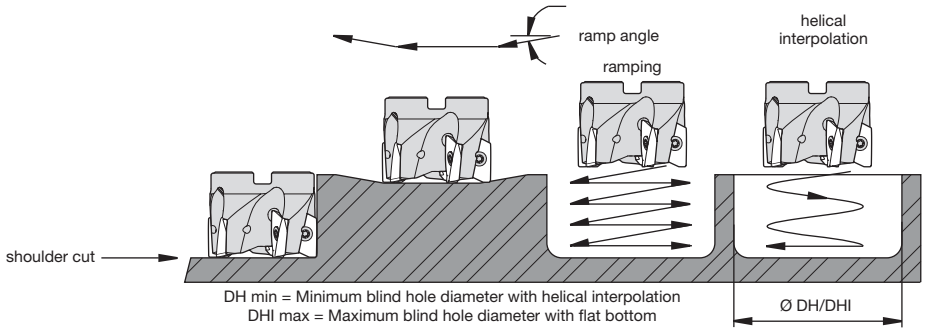
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,12	**0,46**	0,82	0,08	**0,33**	0,59	0,06	**0,25**	0,44	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.F..LDJ
.E..LDJ	0,12	**0,45**	0,80	0,08	**0,33**	0,58	0,06	**0,24**	0,43	0,06	**0,21**	0,38	0,05	**0,20**	0,35	.E..LDJ
.E..LD	0,17	**0,47**	0,82	0,12	**0,34**	0,59	0,09	**0,26**	0,44	0,08	**0,22**	0,38	0,07	**0,20**	0,35	.E..LD
.E..GD	0,23	**0,52**	0,89	0,17	**0,37**	0,64	0,13	**0,28**	0,48	0,11	**0,24**	0,42	0,10	**0,22**	0,38	.E..GD
.S..GE	0,23	**0,51**	0,89	0,17	**0,37**	0,64	0,13	**0,27**	0,48	0,11	**0,24**	0,42	0,10	**0,22**	0,38	.S..GE
.S..GD	0,23	**0,51**	0,89	0,17	**0,37**	0,64	0,13	**0,28**	0,48	0,11	**0,24**	0,41	0,10	**0,22**	0,38	.S..GD
.E..HD	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.E..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Data

Application Examples



insert style	cutting diameter	max ramp angle	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
Mill-1, 18mm	25	17°	29,24	45,84	50
Mill-1, 18mm	32	11°	42,98	59,84	64
Mill-1, 18mm	40	8°	58,92	75,84	80
Mill-1, 18mm	50	5°	78,88	95,84	100
Mill-1, 18mm	63	4°	104,86	121,84	126
Mill-1, 18mm	80	3°	139,02	156,5	160
Mill-1, 18mm	100	2°	179,00	196,5	200
Mill-1, 18mm	125	2°	228,98	246,5	250
Mill-1, 18mm	160	1°	298,98	316,5	320

NOTE: Max ramp angle decreases as nose radius increases.



Carbide Recycling

Help preserve and protect our planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Programme.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly. Kennametal accepts any coated or non-coated carbide items, including inserts, drills, reamers, and taps.

By using the Kennametal Carbide Recycling Programme, you will receive:

- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

Programme is not currently available in all geographical areas.
For more information, please visit **kennametal.com/carbiderecycling**.

KENNAMETAL®

kennametal.com

Mill 1-25™

Primary Application

Also known as Mill1 Max, the Mill 1-25 cutter is made specifically for aluminium machining, but can also be used when machining cast iron. High-feed capabilities enable routing applications with an axial depth of cut of up to 25mm.



Features and Benefits

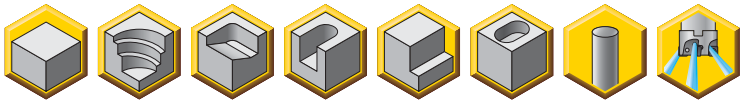
Functions

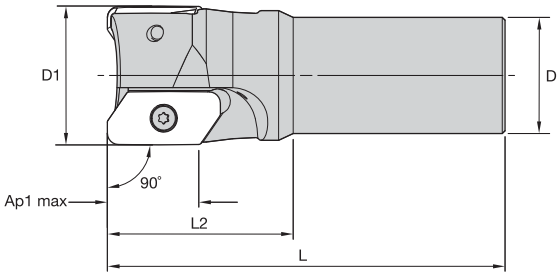
- Strong, thick inserts over 5,2mm thick.
- Axial depth of cut up to 25mm.
- Cylindrical, monoblock/HSK63A, and shell mills.

Benefits

- Made for machining aluminium, but also used for machining cast iron.
- High-feed capability for routing applications.
- Balanced-by-design — if running over 10,000 RPM, balance the cutter assembly.

- Roughing and finishing of aluminium alloys.
- Aggressive ramping angles.
- High-speed capability.
- Ap1 max = 25mm.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
2649569	**40A02R50A32SKE25**	40	32	111	50	25,0	2	15.0°	0,61	24300
2479504	**40A02R80A32SKE25**	40	32	141	80	25,0	2	15.0°	0,86	24300
2649571	**50A02R100A32SKE25**	50	32	161	100	24,9	2	10.0°	1,43	20600
2500741	**50A03R80A32SKE25**	50	32	141	80	24,9	3	10.0°	1,10	20600

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

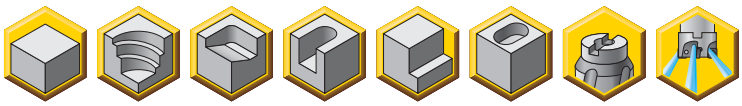
Spare Parts

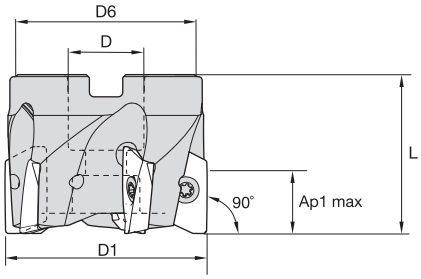


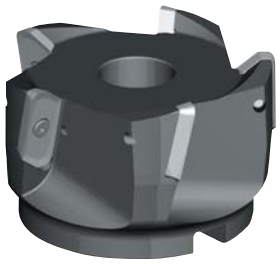


D1	insert screw	Nm	Torx driver
40	**MS1374**	3,9	**DT15**
50	**MS1374**	3,9	**DT15**

- Roughing and finishing of aluminium alloys.
- Aggressive ramping angles.
- High-speed capability.
- Ap1 max = 25mm.
- Insert screws should be changed when inserts are changed.







Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM
2878139	**52A02RS90KE25**	52	22	49	58	24,8	2	9.5°	0,50	20000
2954527	**63A02RS90KE25**	63	22	50	55	24,7	2	7.0°	0,69	17600
2954528	**63A03RS90KE25**	63	22	50	55	24,7	3	7.0°	0,59	17600

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

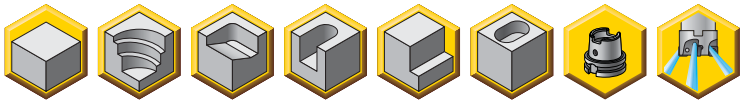
Spare Parts

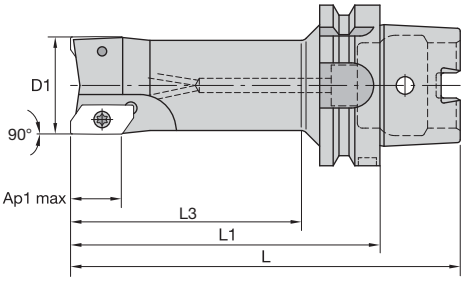





D1	insert screw	Nm	Torx driver	socket-head cap screw with coolant groove
52	**MS1374**	3,9	**DT15**	**MS1235CG**
63	**MS1374**	3,9	**DT15**	**MS1242CG**

- Roughing and finishing of aluminium alloys.
- Aggressive ramping angles.
- All integral shank tools are balanced to G2.5 at 10.000 RPM.
- High-speed capability.
- Ap1 max = 25mm.
- Replace insert screws when inserts are changed.







Monoblocks • HSK63A

order number	catalogue number	shank taper	D1	L	L1	L2	Ap1 max	Z	max ramp angle	kg	max RPM
2880434	**40A02R110S63SKE25**	HSK63A	40	142	110	77,65	25,0	2	15.0°	1,17	24300
2880439	**50A03R140S63SKE25**	HSK63A	50	172	140	114,00	24,9	3	10.0°	1,81	20600

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts






D1	insert screw	Nm	Torx driver	balancing screw
40	**MS1374**	3,9	**DT15**	**KUAM27**
50	**MS1374**	3,9	**DT15**	**KUAM27**

Insert Selection Guide

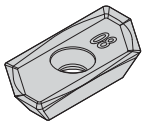
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	.E..LDJ	KC410M	**.E..LDJ**	**KC410M**	.E..LDJ	KC410M
N3	.E..LDJ	KC410M	**.E..LDJ**	**KC410M**	.E..LDJ	KC410M
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

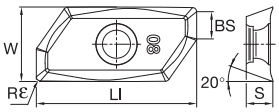
Indexable Inserts • KE...25L5

- Roughing and finishing of aluminium alloys.
- Periphery ground for accuracy and consistency.
- Radiused cutting edge minimises lap lines.
- Wiper facet with large radius for better floor surface finish.
- Ap1 max = 25mm.

● first choice
○ alternate choice

P	
M	
K	
N	●
S	
H	


KEGT-LDJ

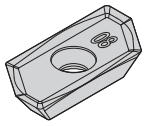


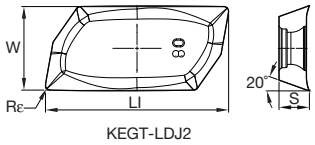
KEGT-LDJ

KEGT-LDJ

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M
KEGT25L508PEERLDJ	31,39	5,21	14,59	5,34	0,8	0,03	2	●
KEGT25L512PEERLDJ	31,47	5,21	14,60	4,94	1,2	0,03	2	●
KEGT25L516PEERLDJ	31,47	5,21	14,60	4,55	1,6	0,03	2	●
KEGT25L520PEERLDJ	31,47	5,21	14,60	4,15	2,0	0,03	2	●
KEGT25L531PEERLDJ	31,47	5,21	14,60	3,06	3,1	0,03	2	●
KEGT25L540PEERLDJ	31,47	5,21	14,60	2,16	4,0	0,03	2	●
KEGT25L550PEERLDJ	31,47	5,21	14,60	1,14	5,0	0,03	2	●
KEGT25L564PEERLDJ	29,99	5,21	14,60	–	6,4	0,03	2	●

- -LDJ specifically designed for machining aluminium.
- Corner radii range 0,80–6,40mm.


KEGT-LDJ2



KEGT-LDJ2

● first choice
○ alternate choice

P	
M	
K	
N	●
S	
H	

KEGT-LDJ2

catalogue number	LI	S	W	BS	Rε	hm	cutting edges	KC410M
KEGT25L516PEERLDJ2	31,39	5,21	14,59	–	1,6	0,03	2	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	0,12	**0,56**	1,05	0,08	**0,40**	0,76	0,06	**0,30**	0,56	0,06	**0,26**	0,49	0,05	**0,24**	0,45	.E..LDJ
.E..LDJ2	0,12	**0,56**	1,05	0,08	**0,40**	0,76	0,06	**0,30**	0,56	0,06	**0,26**	0,49	0,05	**0,24**	0,45	.E..LDJ2

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Stellram® 5720VZ16 Series

Taking extreme high-speed aluminium machining to the highest level.



Features and Benefits

- Specially designed for machining pockets and profiles on aluminium and aluminium alloys.
- The 5720VZ16 series is designed, manufactured, and tested in accordance with EN ISO 15641:2001 to ensure maximum stability in high-speed applications.
- The internal coolant enables better chip evacuation and higher feed rates.
- The pockets are reinforced to enable for heavy feeding and safe ramping during machining. These features increase tool life and productivity.
- Excellent tools for thin-walled machining due to very low cutting pressure.
- Twelve different insert radii are available, each with the same cutting depth capacity of 16mm.
- Cylindrical shank and HSK63A integral shanks are designed and balanced to G6.3 at 30,000 RPM for diameters up to 50mm. Diameter larger than 50mm are balanced to G6.3 at 24,000 RPM.

Monoblock cutters with HSK63A are available as standard in diameters 25, 32, 40, and 50mm.

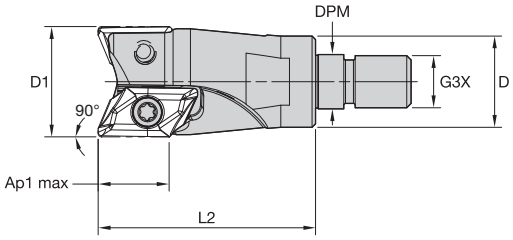
The Stellram® 5720VZ16 cutters are our latest design for high metal removal in aluminium applications.



Maximum ap = 16mm
Diameter Range = 25–80mm

- High-speed profiling and pocketing aluminium alloy components in the aerospace industry.
- Maximum stability in high-speed applications.
- Through-tool coolant allows better chip evacuation and higher feed rates.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	Ap1 max	Z	max ramp angle	kg	max RPM
5672893	**5720VZ16SA025Z2R50**	25	21	12,50	M12	50	16	2	14.5°	0,12	50000
5672894	**5720VZ16SA032Z2R50**	32	29	17,00	M16	50	16	2	11.4°	0,21	41500
5673238	**5720VZ16SA032Z3R50**	32	29	17,00	M16	50	16	3	11.4°	0,21	41500

NOTE: It is important to change the screw each time the insert is changed to ensure the highest security.
A dynamometric key and the right torque value are important, also.

Spare Parts





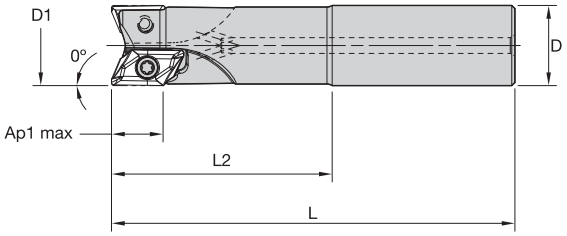


D1	insert screw	Nm	Torx driver
25	**DP5009A**	6,0	**TP20**
32	**DP5009A**	6,0	**TP20**

NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- High-speed profiling and pocketing aluminium alloy components in the aerospace industry.
- Maximum stability in high-speed applications.
- Through-tool coolant allows better chip evacuation and higher feed rates.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM
5672892	**5720VZ16CA025Z2R75**	25	25	131	75	16	2	14.5°	0,41	50000
5672271	**5720VZ16CA032Z2R75**	32	32	135	75	16	2	11.4°	0,71	41500
5681115	**5720VZ16CA032Z3R75**	32	32	135	75	16	3	11.4°	0,64	41500

NOTE: It is important to change the screw each time the insert is changed to ensure the highest security. A dynamometric key and the right torque value are important, also.

Spare Parts





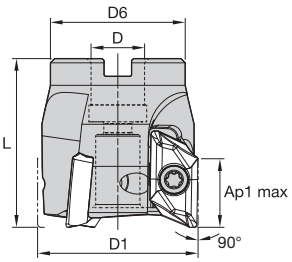


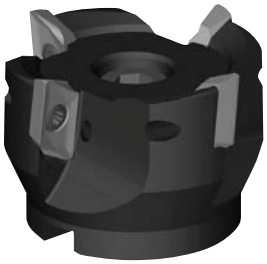
D1	insert screw	Nm	Torx driver
25	**DP5009A**	6,0	**TP20**
32	**DP5009A**	6,0	**TP20**

NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- High-speed profiling and pocketing aluminium alloy components in the aerospace industry.
- Maximum stability in high-speed applications.
- Through-tool coolant allows better chip evacuation and higher feed rates.







Shell Mills • Coarse and Medium Pitch

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM
5673490	**5720VZ16-A040Z3R**	40	16	32	45	16	3	7.6°	0,21	36500
5672869	**5720VZ16-A050Z03R**	50	22	45	45	16	3	7.9°	0,35	30000
5673174	**5720VZ16-A050Z04R**	50	22	45	45	16	4	7.9°	0,28	30000
5672870	**5720VZ16-A063Z4R**	63	22	50	45	16	4	5.9°	0,52	26000
5673528	**5720VZ16-A063Z5R**	63	22	50	45	16	5	5.9°	0,48	26000
5673616	**5720VZ16-A080Z04R**	80	27	55	50	16	4	4.4°	0,91	23000
5673316	**5720VZ16-A080Z5R**	80	27	55	50	16	5	4.4°	0,85	23000

NOTE: It is important to change the screw each time the insert is changed to ensure the highest security. A dynamometric key and the right torque value are important, also.

Spare Parts



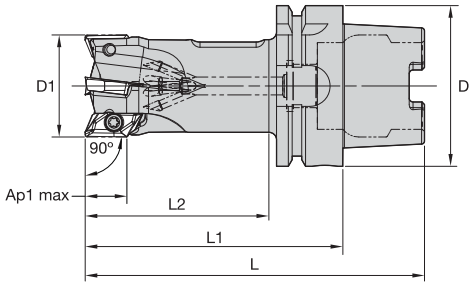



D1	insert screw	Nm	Torx driver	socket-head cap screw
40	**DP5009A**	6,0	**TP20**	**M8 1.25 X 25 SHCS**
50	**DP5009A**	6,0	**TP20**	**M10 1.5 X 25 SHCS**
63	**DP5009A**	6,0	**TP20**	**M10 1.5 X 25 SHCS**
80	**DP5009A**	6,0	**TP20**	**M12 X 1.75 X 30 SHCS**

NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- Providing solutions for the aerospace and aluminium industries' requirements for high-power and high-speed spindles.
- Specifically reinforced for highest metal removal rates for depths of cut ≤16mm.
- Locking system ensures operation safety and accuracy.
- Thin-walled machining for airframe components.







Monoblocks • HSK63A

order number	catalogue number	D1	D	L	L1	L2	Ap1 max	Z	max ramp angle	kg	max RPM*
6087904	**5720VZ16HA025Z2R75**	25	63	133	101	75	16	2	14.5°	0,81	51000
5672766	**5720VZ16HA032Z3R75**	32	63	133	101	75	16	3	11.4°	0,92	41500
5673629	**5720VZ16HA040Z4R75**	40	63	133	101	75	16	4	7.8°	1,09	35000
6160117	**5720VZ16HA050Z4R75**	50	63	133	101	75	16	4	7.9°	1,41	30000

*Max RPM as per ISO 15641
NOTE: It is important to change the screw each time the insert is changed to ensure the highest security.
A dynamometric key and the right torque value are important, also.

Spare Parts







insert screw	Nm	driver
DP5009A	6,0	**TP20**

NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

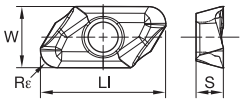
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	.F..721	GH1	**.F..721**	**GH1**	.F..721	GH1
N3	.F..721	GH1	**.F..721**	**GH1**	.F..721	GH1
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Milling Inserts


ZDET-FR721


ZDET-ER721



ZDET-FR721
ZDET-ER721

● first choice
○ alternate choice

P		
M		
K		○
N		●
S		
H		

ZDET-FR721 • Sharp edge preparation for finishing applications.

catalogue number	LI	W	S	Resultant WorkPiece Radius mm	hm	cutting edges	GH1
ZDET16M5PDFR721	22,92	11,25	5,00	0,3	0,02	2	●
ZDET16M504FR721	23,02	11,25	5,00	0,4	0,02	2	●
ZDET16M508FR721	23,02	11,25	5,00	0,8	0,02	2	●
ZDET16M512FR721	23,02	11,25	5,00	1,2	0,02	2	●
ZDET16M516FR721	23,02	11,25	5,00	1,6	0,02	2	●
ZDET16M520FR721	23,02	11,25	5,00	2,0	0,02	2	●
ZDET16M525FR721	23,02	11,25	5,00	2,5	0,02	2	●
ZDET16M530FR721	23,02	11,25	5,00	3,0	0,02	2	●
ZDET16M532FR721	23,02	11,25	5,00	3,2	0,02	2	●
ZDET16M540FR721	23,02	11,25	5,00	4,0	0,02	2	●
ZDET16M550FR721	23,02	11,25	5,00	5,0	0,02	2	●
ZDET16M560FR721	23,02	11,25	5,00	6,0	0,02	2	●

ZDET-ER721 • Honed edge preparation for roughing applications. Apply under unstable conditions.

catalogue number	LI	W	S	Resultant WorkPiece Radius mm	hm	cutting edges	GH1
ZDET16M525ER721	23,02	11,25	5,00	2,5	0,03	2	●
ZDET16M530ER721	23,02	11,25	5,00	3,0	0,03	2	●
ZDET16M540ER721	23,02	11,25	5,00	4,0	0,03	2	●

NOTE: Inserts will be delivered with two screws. Because of heavy force to the screw, it is important to change the screw when changing the insert.

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...FR721	0,12	**0,51**	0,93	0,08	**0,37**	0,67	0,06	**0,28**	0,50	0,06	0,24	0,44	0,05	**0,22**	0,40	...FR721
...ER721	0,12	**0,51**	0,93	0,08	**0,37**	0,67	0,06	**0,28**	0,50	0,06	0,24	0,44	0,05	**0,22**	0,40	...ER721

NOTE: Use “Light Machining” values as starting feed rate.
% = ae/Dc * 100 (ae = radial depth of cut, Dc = cutting diameter)
Please see pages X22–X37 for recommended starting speeds.

5720VZ16 Ramp Angle

cutter diameter	Insert ZDET16M5...721								
	PDFR–R1,20	R1,60	R2,00	R2,50	R3,00	R3,20	R4,00	R5,00	R6,00
25,0	14,50	17,30	9,40	9,60	18,80	18,90	9,00	11,20	7,30
32,0	11,40	11,90	11,90	12,20	12,40	12,40	13,10	13,80	13,40
40,0	7,60	7,80	7,80	8,00	8,10	8,10	8,50	8,80	9,10
50,0	7,90	7,20	7,30	7,90	7,60	7,60	8,90	9,00	9,25
63,0	5,90	5,40	5,50	5,80	5,60	5,60	6,90	6,60	6,65
80,0	4,40	4,00	4,10	4,30	4,20	4,20	5,10	4,80	4,90

5720VZ16 Possible Maximum ap Slotting

Possible Max ap Slotting		
diameter	number of inserts	ap max
25	2	7,50
32	2	11,00
32	3	6,00
40	3	9,00
50	3	11,00
50	4	9,00
63	4	11,00
63	5	9,00
80	4	11,00
80	5	11,00

NOTE: Ap max depending on:
Cutter diameter, rigidity of the cutter, rigidity of the machine, and size of the flute.

5720VZ16 Possible Metal Removal

Possible Metal Removal Calculated with 24,000 RPM		
cutter diameter	ZU	Q cm^3/min
25	2	1560
32	2	3226
32	3	2056
40	3	5184
50	3	7921
50	4	8641
63	4	13307
63	5	13609
80	4	16898
80	5	21123

NOTE: The chart above shows total metal removal capacity (based on 24,000 RPM) by cutter diameter and number of teeth.
The maximum RPM is engraved on the cutter bodies.

Machinability by Materials • Aluminium

Alloy Group	Alloy Designation	Chemical Composition Limits (WT%)											
		Cu	Si	Fe	Mn	Mg	Zn	Cr	Ti	Pb	Bi	Al	Others
Al	1050	0.05	0.25	0.40	0.50	0.05	0.05	–	–	–	–	99.50min	–
	1100	0.05–0.20	Si+Fe 1.00 max	–	0.05	–	0.10	–	–	–	–	99.00min	–
AlCu	2011	5.00–6.00	0.40	0.70	–	–	0.30	–	–	0.20	0.60	remaining	–
	2014	3.90–5.00	0.50–1.20	0.70	0.40–1.20	0.20–0.80	0.25	0.10	0.15	–	–	remaining	–
	2017	3.50–4.50	0.20–0.80	0.70	0.40–1.00	0.40–0.80	0.25	0.10	0.15	–	–	remaining	–
	2024	3.80–4.90	0.50	0.50	0.30–0.90	1.20–1.80	0.25	0.10	0.15	–	–	remaining	–
	2218	3.50–4.50	0.90	1	0.20	1.20–1.80	0.25	0.10	–	–	–	remaining	Ni1.7–2.3
	2224	3.80–4.40	0.12	0.15	0.30–0.90	1.20–1.80	0.25	0.10	0.15	–	–	remaining	–
AlMn	3003	0.05–0.20	0.60	0.70	1.00–1.50	–	0.10	–	–	–	–	remaining	–
AlSi	4032	0.50–1.30	11.00–13.50	1	–	0.80–1.30	0.25	0.10	–	–	–	remaining	Ni0.5–1.3
AlMg	5052	0.10	0.25	0.40	0.10	2.20–2.80	0.10	0.15–0.35	–	–	–	remaining	–
	–	–	–	–	–	–	–	–	–	–	–	–	H34
	5056	0.10	0.30	0.40	0.05–0.20	4.50–5.60	0.10	0.05–0.20	–	–	–	remaining	–
	–	–	–	–	–	–	–	–	–	–	–	–	H32
	5083	0.10	0.40	0.40	0.40–1.00	4.00–4.90	0.25	0.05–0.25	0.15	–	–	remaining	–
	5086	0.10	0.40	0.50	0.20–0.70	3.50–4.50	0.25	0.05–0.25	0.15	–	–	remaining	–
	–	–	–	–	–	–	–	–	–	–	–	–	H116
AlMgSi	6061	0.15–0.40	0.40–0.80	0.70	0.15	0.80–1.20	0.25	0.04–0.35	0.15	–	–	remaining	–
	6063	0.10	0.20–0.60	0.35	0.10	0.45–0.90	0.10	0.10	0.10	–	–	remaining	–
	6070	0.15–0.40	1.00–1.70	0.50	0.40–1.00	0.50–1.20	0.25	0.10	0.15	–	–	remaining	–
	6151	0.35	0.60–1.20	1	0.20	0.45–0.80	0.25	0.15–0.35	0.15	–	–	remaining	–
	6262	0.15–0.40	0.40–0.80	0.70	0.15	0.80–1.20	0.25	0.04–0.14	0.15	0.40	0.70	remaining	–
	6351	0.10	0.70–1.30	0.50	0.40–0.80	0.40–0.80	0.20	–	0.20	–	–	remaining	–
	6463	0.20	0.20–0.60	0.15	0.05	0.45–0.90	0.05	–	–	–	–	remaining	–
AlZn	7001	1.60–2.60	0.35	0.40	0.20	2.60–3.40	6.80–8.00	0.18–0.35	0.20	–	–	remaining	–
	7003	0.20	0.30	0.35	0.30	0.50–1.00	5.00–6.50	0.20	0.20	–	–	remaining	Zr0.05–0.25
	7050	2.00–2.60	0.12	0.15	0.10	1.90–2.60	5.70–6.70	0.04	0.06	–	–	remaining	Zr0.08–0.15
	7075	1.20–2.00	0.40	0.50	0.30	2.10–2.90	5.10–6.10	0.18–0.28	0.20	–	–	remaining	–
	7178	1.60–2.40	0.40	0.50	0.30	2.40–3.10	6.30–7.30	0.18–0.35	0.20	–	–	remaining	–
	7475	1.20–1.90	0.10	0.12	0.06	1.90–2.60	5.20–6.20	0.18–0.25	0.06	–	–	remaining	–

(continued)

Machinability

A Excellent
B Good-to-Excellent
C Good
D Not Good

$Vc = \pi \times D \times n/1000$ m/min = mm x RPM

D: Tool diameter, N: RPM, Vc: Cutting speed, $\pi = 3.1416$

Choose a cutting speed in the range of values, compatible with the cutter max rotation capacity (engraved on the body) and your spindle stability.

(Machinability by Materials • Aluminium — continued)

	Typical Tremper	Rm (Mpa)	Machinability Chip Formation	Machinability	Typical Applications	vc m/min min–max	fz mm/Z max
	H14	105	D	A	• Chemical equipment. • Sheet metal work. • Coiled tube.	600–3000	0,2
	H14	90	D	A			
	T3	310	A	A	• Screw machine products. • Tuck frame. • Aircraft structure. • Jet engine impellers. • Aircraft engine • Cylinder heads.	400–2500	0,25
	T6	430	B	A			
	T4	390	B	A			
	T4	465	B	A			
	T72	331	B	B			
	–	–	A	A			
	H14	140	D	B	• Cooking utensils. • Chemical equipment.	200–2500	0,20
	T6	379	B	D	• Pistons.	200–1000	0,18
	H14	260	C	A	• Architectural. • Cable sheeting. • Welded pressure vessels. • Hydraulic tubes. • Transportation equipment.	400–3000	0,25
	–	–	–	–			
	H12	300	C	A			
	–	–	–	–			
	H112	335	C	A			
	H32	300	C	A			
	–	–	–	–			
	T6	300	C	B	• Heavy-duty structure. • Furniture. • Architectural. • Heavy-duty welded structure. • Pipeline. • Heat sink.	400–2500	0,20
	T5	200	C	B			
	T6	379	C	C			
	T6	–	C	C			
	T9	400	B	B			
	T6	310	D	C			
	T6	241	C	B			
	O	–	B	A	• High-strength structure. • Aircraft structure.	400–3000	0,25
	T5	400	B	A			
	T73	530	B	A			
	T6	570	B	A			
	T6	600	B	A			
	T61	565	B	A			

Recommendations for High Speed Machining at 8,000 RPM or above

- Check spindle condition:
  - Runout
  - Clamping of the attachment in traction
  - Marking and cleanliness
- Check that the tool is suitable for the required use.
- Inserts must be locked positively in the pocket and secured using the torx screw provided. The screw must be torqued to the correct value as indicated in the charts on the product pages.
- Because of heavy force to the screw, it is important to change the screw when changing the insert.
- Check the balancing of the assembled tool: cutter body, inserts, and attachment.
- Before start up, note the maximum RPM engraved on the tool. The maximum RPM is linked to a precise balancing value.
- Ensure that the field of application of the tool shown in our technical documents and technological parameters is observed:

A_e (mm)	width of cut, lateral engagement (radial)
a_p (mm)	Axial depth of cut
f_z (mm/tooth)	Feed per tooth
n (RPM)	revolutions per minute

Kennametal cannot accept responsibility for misuse of this product due to:

- Non-observance of the above instructions
- Machine without casing
- Incorrect clamping of workpieces
- No safety device on the machine
- Any misuse or incorrect clamping

The optimum rotation must be determined by condition of the spindle.
The spindle must be rigid to run at these higher RPMs.

Under no circumstances must any attempt be made to repair this tool.
The only permitted maintenance is the indexing or replacement of the inserts.

When assembling the cutter to a Shrink Fit holder, the maximum protrusion cannot exceed 10% of the reach of tool.

Balancing:

- Cylindrical shank and HSK63A integral shanks are designed and balanced to G6.3 at 30,000 RPM for diameters up to 50mm. Diameter larger than 50mm are balanced to G6.3 at 24,000 RPM.
- Cylindrical shank tools mounted in a Shrink Fit holder or any other chuck mill holder + inserts + screws must be re-inspected for balance as an assembly by the end-user when at or exceeding 8,000 RPM. End-user must balance the assembly at a G6.3 at 30,000 RPM maximum.
- Shell mill and modular head cutters are not balanced. These tools must be re-inspected for balance as an assembly, cutter + inserts + screws, by the end-user for high speed machining at 8,000 RPM or above. End-user must balance the assembly at a G6.3 value minimum.
- Balancing requires removing some material by drilling or milling operations. To avoid making modular heads weaker, limit these operations by avoiding high RPM. It is not recommended to remove material by drilling operation.
- For each new modular head added to the same extension, re-balance the assembly. For each new shell mill installed on the same toolholder, re-balance the assembly.

Tighten the modular head to the extension; with lubricant, apply the torque value of:

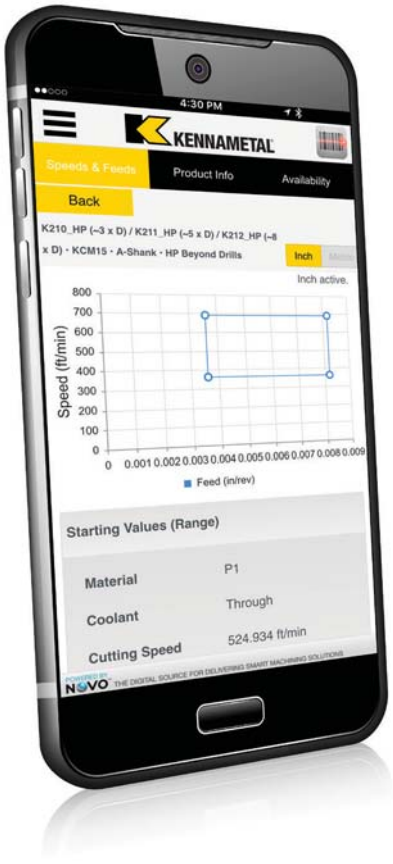
Thread sizes (mm)	Torque Values Nm
M6	10
M8	30
M10	50
M12	80
M16	110

Tighten the bolt between the shell mill and toolholder; with lubricant, apply the torque value of:

Thread sizes (mm)	Cutter Bore Size (mm)	Torque Values Nm
M6	13	10
M8	16	30
M10	22	50
M12	27	80
M16	32	110
M20	40	120

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



FEATURES

Scan a Kennametal tool package barcode or search a product catalogue number to access complete product information.

Product information includes tool image, dimensions, grades, and product highlights.

View product availability at global locations.

Get speed and feed information in inch and metric values for all metalcutting products.

View tech tips for helpful solutions to common machining questions.

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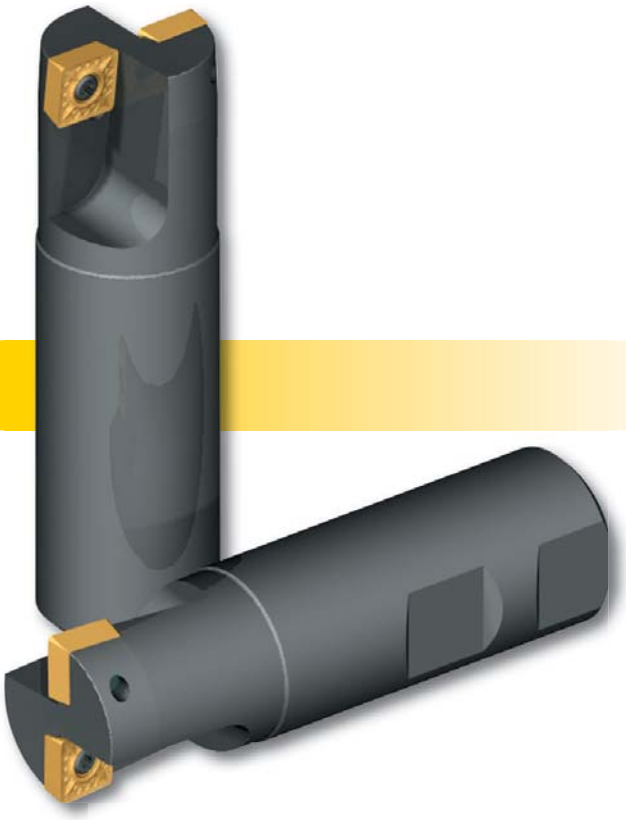
KSSM™ Platform

Primary Application

The Kennametal KSSM platform is a versatile solution providing three insert sizes that cover a wide range of applications: face milling, shoulder milling, slotting, profiling, and Z-axis (plunge milling).



Features and Benefits

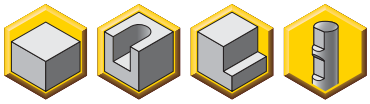
KSSM IC 10 Inserts

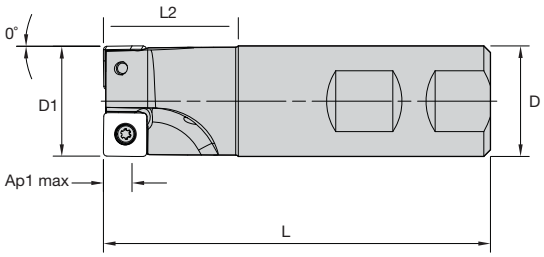
- Four cutting edges.
- Excellent surface finishes.
- Low power requirements.

KSSM IC 12 Inserts

- Four cutting edges.
- Excellent surface finishes.
- Low power requirements.
- Increased depth of cut.

- Mill 90° walls.
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges per insert.







Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	kg	max RPM
1981679	**25A02R039B25SSP10G**	25	25	96	39	6,6	2	0,30	37100
1981788	**32A03R039B32SSP10G**	32	32	100	39	6,6	3	0,50	33200
1981790	**40A04R049B32SSP10G**	40	32	110	49	6,6	4	0,70	30300

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts

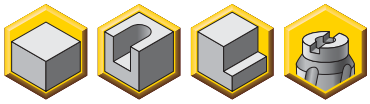


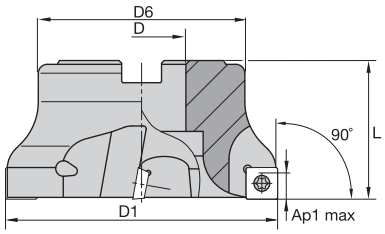




D1	insert screw	Nm	Torx Plus driver
25	**MS2148**	1,5	**DT9IP**
32	**MS2148**	1,5	**DT9IP**
40	**MS2148**	1,5	**DT9IP**

- Mill 90° walls.
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges per insert.







Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	kg	max RPM
1981677	**50A05RS90SP10DG**	50	22	47	40	6,6	5	0,40	26300
1981678	**63A06RS90SP10DG**	63	22	50	40	6,6	6	0,50	23500
1981853	**80A08RS90SP10DG**	80	27	60	50	6,6	8	1,10	21450
1981854	**100B10RS90SP10DG**	100	32	80	50	6,6	10	1,70	18600

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts






D1	insert screw	Nm	Torx Plus driver	mounting screw
50	**MS2148**	1,5	**DT9IP**	**–**
63	**MS2148**	1,5	**DT9IP**	**–**
80	**MS2148**	1,5	**DT9IP**	**MS1556**
100	**MS2148**	1,5	**DT9IP**	**–**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPK30
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LD	KC510M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
S4	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
H1	.F..LD	KC510M	–	–	–	–

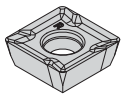
Indexable Inserts • SP.T10T3

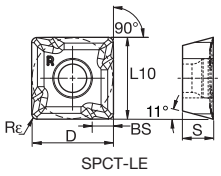
- Aluminium workpiece materials.
- Precision ground.
- 20° rake face.
- Four cutting edges.

beyond

● first choice
○ alternate choice

	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
P			○	●		●	●		○		
M			●	●		○	○	○	●		
K		●	○		●	○				●	●
N	●		○								
S			●	●				●	●		
H			○								


SPCT-LE

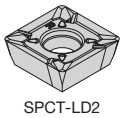


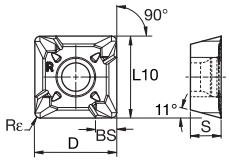
SPCT-LE

SPCT-LE

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPCT10T304PPFLLE	10,00	3,97	10,00	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–	–	–
SPCT10T304PPFRLE	10,00	3,97	10,00	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–	–	–
SPCT10T3PPFLLE	10,00	3,97	10,00	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–	–	–
SPCT10T3PPFRLE	10,00	3,97	10,00	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–	–	–
SPCT10T312PPFRLE	10,00	3,97	10,00	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–	–	–	–
SPCT10T320FNLE	10,00	3,97	10,00	–	2,0	0,02	4	●	–	–	–	–	–	–	–	–	–	–

- Light and finish machining.
- Precision ground.
- 15° rake face.
- Four cutting edges.


SPCT-LD2



SPCT-LD2

beyond

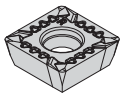
P			○	●		●	●		○			
M			●	●		○	○	○	●			
K		●	○		●	○				●	●	
N	●		○									
S			●	●				●	●			
H			○									

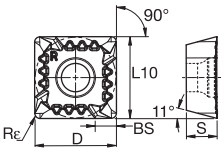
● first choice
○ alternate choice

SPCT-LD2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPCT10T304PPELLD2	10,00	3,97	10,00	2,70	0,4	0,04	4	–	–	–	●	–	–	–	–	–	–	–
SPCT10T304PPERLD2	10,00	3,97	10,00	2,70	0,4	0,04	4	–	–	–	●	–	–	–	–	–	–	–
SPCT10T3PPELLD2	10,00	3,97	10,00	2,70	0,8	0,04	4	–	–	–	●	–	–	–	–	–	–	–
SPCT10T3PPERLD2	10,00	3,97	10,00	2,70	0,8	0,04	4	–	●	–	●	–	–	●	–	–	–	–
SPCT10T312PPELLD2	10,00	3,97	10,00	2,70	1,2	0,04	4	–	–	–	●	–	–	–	–	–	–	–
SPCT10T312PPERLD2	10,00	3,97	10,00	2,70	1,2	0,04	4	–	–	–	●	–	–	–	–	–	–	–
SPCT10T316ENLD2	10,00	3,97	10,00	–	1,6	0,04	4	–	–	–	●	–	–	–	●	–	–	–
SPCT10T320ENLD2	10,00	3,97	10,00	–	2,0	0,04	4	–	–	–	●	–	–	–	–	–	–	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SPET-GB2

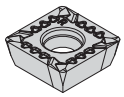


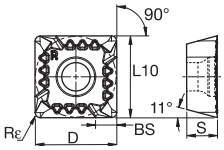
SPET-GB2

SPET-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPET10T304PPELGB2	10,00	3,97	10,00	2,70	0,4	0,08	4	–	–	–	●	●	●	–	–	–	–	–
SPET10T304PPERGB2	10,00	3,97	10,00	2,70	0,4	0,08	4	–	–	–	●	●	●	–	–	–	–	–
SPET10T3PPELGB2	10,00	3,97	10,00	2,70	0,8	0,08	4	–	●	–	●	●	●	–	–	–	–	–
SPET10T3PPERGB2	10,00	3,97	10,00	2,70	0,8	0,08	4	–	●	–	●	●	●	●	–	–	–	–
SPET10T3PPSLGB2	10,00	3,97	10,00	2,70	0,8	0,13	4	–	–	–	●	–	●	–	–	–	–	–
SPET10T3PPSRGB2	10,00	3,97	10,00	2,70	0,8	0,13	4	–	●	–	●	●	●	–	–	–	–	–

- Medium machining.
- PSTS — Precision Pressed and Sintered to Size.
- 5° rake face.
- Four cutting edges.


SPPT-GB2



SPPT-GB2

● first choice
○ alternate choice

beyond

	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
P			○	●		●	●		○		
M			●	●		○	○	○	●		
K		●	○		●	○				●	●
N	●		○								
S			●	●				●	●		
H			○								

SPPT-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPPT10T3PPERGB2	10,00	3,97	10,00	2,70	0,8	0,08	4	–	–	–	–	●	●	–	–	–	–	–
SPPT10T3PPSRGB2	10,00	3,97	10,00	2,70	0,8	0,13	4	–	–	–	–	●	●	–	–	–	●	–

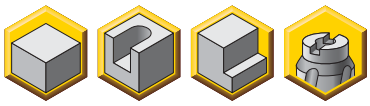
Recommended Starting Feeds [mm]

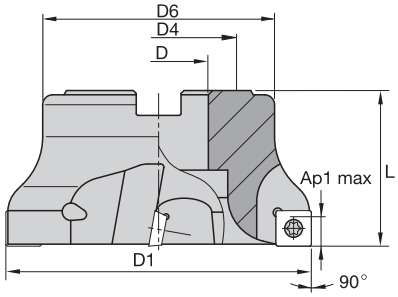
Light Machining	General Purpose	Heavy Machining

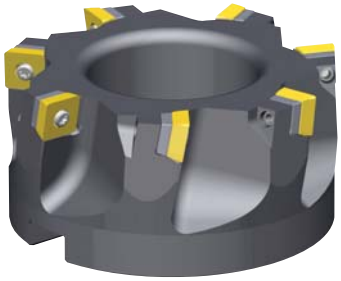
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	0,12	**0,42**	0,70	0,08	**0,30**	0,50	0,06	**0,23**	0,38	0,06	**0,20**	0,33	0,05	**0,18**	0,30	.F..LE
.F..LD	0,12	**0,42**	0,70	0,08	**0,30**	0,50	0,06	**0,23**	0,38	0,06	**0,20**	0,33	0,05	**0,18**	0,30	.F..LD
.E..LD2	0,12	**0,46**	0,81	0,09	**0,33**	0,58	0,07	**0,25**	0,43	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..LD2
.E..LD	0,17	**0,47**	0,82	0,12	**0,34**	0,59	0,09	**0,26**	0,44	0,08	**0,22**	0,38	0,07	**0,20**	0,35	.E..LD
.E..GB2	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB2
.S..GB	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB
.S..GB2	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB2
.S..GN	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Mill 90° walls.
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges per insert.







Shell Mills

order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	kg	max RPM
1926939	**50A03RS90SD12DG**	50	22	–	45	40	9,2	3	0,30	20600
1926938	**50A04RS90SD12DG**	50	22	–	46	40	9,2	4	0,30	20600
1926936	**63A04RS90SD12DG**	63	22	–	50	40	9,2	4	0,50	18300
1926933	**63A05RS90SD12DG**	63	22	–	50	40	9,2	5	0,50	18300
1926901	**80A05RS90SD12DG**	80	27	–	60	50	9,2	5	1,00	16300
1926898	**80A06RS90SD12DG**	80	27	–	60	50	9,2	6	1,00	16300
1926841	**100B06RS90SD12DG**	100	32	–	80	50	9,2	6	1,60	14600
1926840	**100B08RS90SD12DG**	100	32	–	80	50	9,2	8	1,70	14600
1926839	**125B07RS90SD12DG**	125	40	–	90	63	9,2	7	2,80	13000
1926837	**125B10RS90SD12DG**	125	40	–	90	63	9,2	10	2,90	13000
1926836	**160C08RS90SD12DG**	160	40	67	100	63	9,2	8	4,30	11500
1926983	**160C12RS90SD12DG**	160	40	67	100	63	9,2	12	4,40	11500
1926942	**200C11RS90SD12DG**	200	60	102	130	63	9,2	11	6,80	10300
1926941	**200C14RS90SD12DG**	200	60	102	130	63	9,2	14	6,83	10300

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Spare Parts










D1	insert screw	Nm	Torx Plus driver	shim	shim screw	hex driver	low-head cap screw	socket-head cap screw
50	**MS2078**	4,0	**DT15IP**	–	–	–	–	–
63	**MS2078**	4,0	**DT15IP**	–	–	–	**129.025**	–
80	**MS2078**	4,0	**DT15IP**	**SM449**	**SRS3**	**DH35M**	–	**MS2038**
100	**MS2078**	4,0	**DT15IP**	**SM449**	**SRS3**	**DH35M**	–	–
125	**MS2078**	4,0	**DT15IP**	**SM449**	**SRS3**	**DH35M**	–	–
160	**MS2078**	4,0	**DT15IP**	**SM449**	**SRS3**	**DH35M**	–	–
200	**MS2078**	4,0	**DT15IP**	**SM449**	**SRS3**	**DH35M**	–	–

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
S4	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
H1	–	–	**–**	**–**	–	–

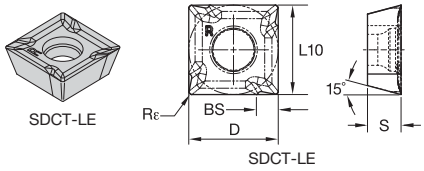
Indexable Inserts • SD.T1204

- Aluminium workpiece materials.
- Precision ground.
- 20° rake face.
- Four cutting edges.

beyond

● first choice
○ alternate choice

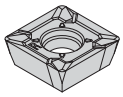
		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●				●	●	
H				○							

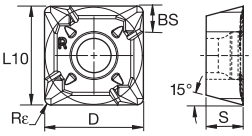


SDCT-LE

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT120404PDFLLE	12,70	4,76	12,70	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120404PDFRLE	12,70	4,76	12,70	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT1204PDFLLE	12,70	4,76	12,70	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT1204PDFRLE	12,70	4,76	12,70	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120412PDFLLE	12,70	4,76	12,70	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120412PDFRLE	12,70	4,76	12,70	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120416FNLE	12,70	4,76	12,70	–	1,6	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120420FNLE	12,70	4,76	12,70	–	2,0	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120424FNLE	12,70	4,76	12,70	–	2,4	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120432FNLE	12,70	4,76	12,70	–	3,2	0,02	4	●	–	–	–	–	–	–	–	–	–

- Light and finish machining.
- Precision ground.
- 15° rake face.
- Four cutting edges.


SDCT-LD2



SDCT-LD2

● first choice
○ alternate choice

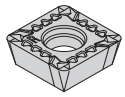
beyond

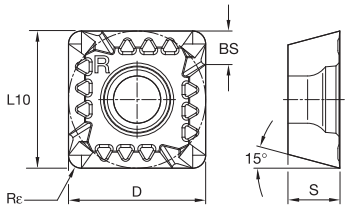
P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●					●	●
H				○							

SDCT-LD2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT120404PDELLD2	12,70	4,76	12,70	2,70	0,4	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120404PDERLD2	12,70	4,76	12,70	2,93	0,4	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT1204PDELLD2	12,70	4,76	12,70	3,32	0,8	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT1204PDERLD2	12,70	4,76	12,70	3,32	0,8	0,04	4	–	●	–	●	–	–	●	–	●	–
SDCT120412PDELLD2	12,70	4,76	12,70	3,05	1,2	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120412PDERLD2	12,70	4,76	12,70	3,05	1,2	0,04	4	–	–	–	●	–	–	–	–	●	–
SDCT120416ENLD2	12,70	4,76	12,70	–	1,6	0,04	4	–	–	–	●	–	–	–	–	●	–
SDCT120420ENLD2	12,70	4,76	12,70	–	2,0	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120424ENLD2	12,70	4,76	12,70	–	2,4	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120432ENLD2	12,70	4,76	12,70	–	3,2	0,04	4	–	–	●	●	–	–	–	●	●	–
SDCT120464ENLD2	12,70	4,76	12,70	–	6,3	0,04	2	–	–	–	●	–	–	–	–	●	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDET-GB2



SDET-GB2

SDET-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET1204PDELGB2	12,70	4,76	12,70	3,32	0,8	0,08	4	–	●	–	●	●	●	–	–	–	–
SDET1204PDERGB2	12,70	4,76	12,70	3,32	0,8	0,08	4	–	●	–	●	●	●	●	–	●	–
SDET1204PDSLGB2	12,70	4,76	12,70	3,32	0,8	0,13	4	–	–	–	●	–	●	–	–	–	–
SDET1204PDSRGB2	12,70	4,76	12,70	3,32	0,8	0,13	4	–	●	–	●	●	●	●	–	–	–
SDET120412PDELGB2	12,70	4,76	12,70	3,05	1,2	0,08	4	–	●	–	●	●	–	–	–	–	–
SDET120412PDERGB2	12,70	4,76	12,70	3,05	1,2	0,08	4	–	●	–	●	●	●	●	–	–	–
SDET120416SNGB2	12,70	4,76	12,70	–	1,6	0,13	4	–	●	–	●	●	●	–	–	–	–
SDET120420SNGB2	12,70	4,76	12,70	–	2,0	0,13	4	–	●	–	●	●	●	●	–	–	–
SDET120424SNGB2	12,70	4,76	12,70	–	2,4	0,13	4	–	–	–	●	●	●	–	–	–	–
SDET120432SNGB2	12,70	4,76	12,70	–	3,2	0,13	4	–	●	–	●	●	●	–	–	–	–
SDET120432XENGB2	12,70	4,76	12,70	–	3,2	0,08	2	–	–	–	●	–	–	–	–	–	–
SDET120464SNGB2	12,70	4,76	12,70	–	6,4	0,13	2	–	–	–	–	–	●	–	–	–	–

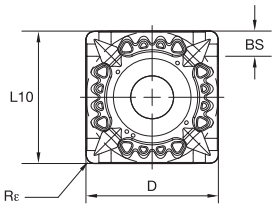
- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.

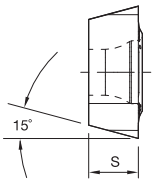
● first choice
○ alternate choice

beyond

P				○	●		●	●		○		
M				●	●		○	○	○	●		
K			●	○		●	○					●
N	●			○								
S				●	●					●	●	
H				○								


SDET-GB

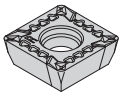


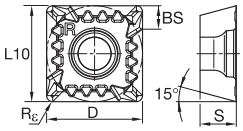


SDET-GB

SDET-GB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET1204PDERGB	12,70	4,76	12,70	2,56	0,8	0,08	4	–	●	–	–	–	–	–	–	●	–
SDET1204PDSRGB	12,70	4,76	12,70	2,56	0,8	0,15	4	–	–	–	●	–	●	●	●	●	–
SDET120412PDERGB	12,70	4,76	12,70	2,19	1,2	0,08	4	–	–	–	●	–	–	●	–	●	–
SDET120412PDSRGB	12,70	4,76	12,70	2,16	1,2	0,15	4	–	–	–	●	–	–	–	–	●	–
SDET120416ENGB	12,70	4,76	12,70	–	1,6	0,08	4	–	–	–	–	–	–	–	–	●	–
SDET120416SNGB	12,70	4,76	12,70	–	1,6	0,15	4	–	–	–	●	–	–	–	–	●	–
SDET120424ENGB	12,70	4,76	12,70	–	2,4	0,08	4	–	–	–	●	–	–	–	–	●	–
SDET120424SNGB	12,70	4,76	12,70	–	2,4	0,15	4	–	–	–	●	–	–	–	–	●	–
SDET120432ENGB	12,70	4,76	12,70	–	3,2	0,08	4	–	–	–	●	–	–	–	–	●	–
SDET120432SNGB	12,70	4,76	12,70	–	3,2	0,15	4	–	–	–	–	–	–	–	–	●	–
SDET120448ENGB	12,70	4,76	12,70	–	4,8	0,08	2	–	–	–	●	–	–	–	–	●	–
SDET120448SNGB	12,70	4,76	12,70	–	4,8	0,15	2	–	–	–	●	–	–	–	–	●	–
SDET120464ENGB	12,70	4,76	12,70	–	6,4	0,08	2	–	–	–	●	–	–	–	–	●	–
SDET120464SNGB	12,70	4,76	12,70	–	6,4	0,15	2	–	–	–	●	–	●	–	●	●	–


SDPT-GB2



SDPT-GB2

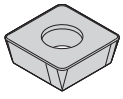
SDPT-GB2

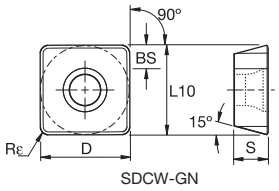
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDPT1204PDERGB2	12,70	4,76	12,70	2,70	0,8	0,08	4	–	–	–	●	●	●	●	–	●	–
SDPT1204PDSRGB2	12,70	4,76	12,70	2,70	0,8	0,13	4	–	–	–	●	●	●	●	–	●	–

- Heavy machining.
- Precision ground.
- 0° rake face flat top.
- Four cutting edges.

● first choice
○ alternate choice

		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●				●	●	
H				○							


SDCW-GN



SDCW-GN

SDCW-GN

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCW1204PDSRGN	12,70	4,76	12,70	2,53	0,8	0,16	4	–	–	–	–	–	–	–	–	–	●
SDCW120412PDSRGN	12,70	4,76	12,70	3,05	1,2	0,16	4	–	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	0,12	**0,42**	0,74	0,08	**0,30**	0,54	0,06	**0,23**	0,40	0,06	**0,20**	0,35	0,05	**0,18**	0,32	.F..LE
.E..LD	0,17	**0,47**	0,82	0,12	**0,34**	0,59	0,09	**0,26**	0,44	0,08	**0,22**	0,38	0,07	**0,20**	0,35	.E..LD
.E..LD2	0,12	**0,46**	0,81	0,09	**0,33**	0,58	0,07	**0,25**	0,43	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..LD2
.E..GB	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB
.E..GB2	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB2
.S..GB	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB
.S..GB2	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB2
.S..GN	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Leader in Advanced Face Milling Applications

Dodeka™ Mini



The Dodeka Mini series is the most comprehensive face milling booster on the market today and offers fast, accurate indexing — with only one screw!

It is the first choice for long-reach face milling applications, or light fixtures with up to 40% shorter machining cycle time. With a standard offering of 15°, 45°, and 60° in combination with Beyond™ premium milling grades, expect up to 35% better tool life in light to heavy machining.

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KSSM-KSSP Helical

Primary Application

KSSM-KSSP helical cutters were originally developed and proven for the aerospace industry, but are now available for all industries. The proprietary variable rake design minimises vibration and chatter.



Features and Benefits

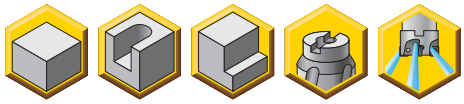
Features

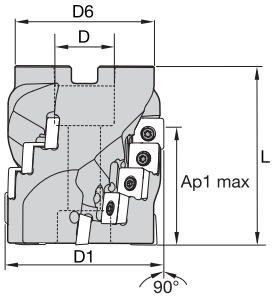
- Patented HARVI™ technology.
- Progressive helical rakes.
- Unique coolant supply.

Benefits

- Increased tool life in titanium.
- Increased metal removal rates.
- Lower power consumption.
- Ensures chip evacuation, even on exotic materials.

- Patented HARVI™ technology.
- Progressive helical rakes.
- Increased Metal Removal Rates (MRR).
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges per insert.







Shell Mills • Standard Pitch

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	Z U	kg	max RPM
2400693	**50A3RS90SD12L32**	50	22	44	55	32,4	9	3	0,46	16400
2400694	**63A3RS90SD12L50**	63	27	55	70	51,2	15	3	1,00	14600
2400695	**80A4RS90SD12L61**	80	32	70	80	61,6	24	4	2,13	12950

Spare Parts






D1	insert screw	Nm	socket-head cap screw	Torx wrench
50	**MS1273**	4,0	**MS1235**	**TT15**
63	**MS1273**	4,0	**MS1238**	**TT15**
80	**MS1273**	4,0	**MS1241**	**TT15**

NOTE: Maximum nose radii of lead insert is 2,4mm for 50mm diameter cutter.
All subsequent inserts up the flutes should have a maximum nose radius of 0,8mm to avoid lap lines.
Standard milling cutters will accept insert nose radii up to 2mm without modification.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
S4	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
H1	–	–	**–**	**–**	–	–

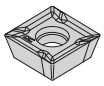
Indexable Inserts • SD.T1204

- Aluminium workpiece materials.
- Precision ground.
- 20° rake face.
- Four cutting edges.

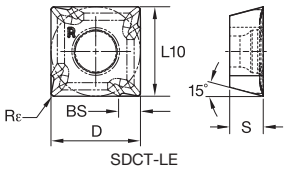
beyond

		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●				●	●	
H				○							

● first choice
○ alternate choice



SDCT-LE



SDCT-LE

SDCT-LE

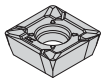
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT120404PDFLLE	12,70	4,76	12,70	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120404PDFRLE	12,70	4,76	12,70	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT1204PDFLLE	12,70	4,76	12,70	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT1204PDFRLE	12,70	4,76	12,70	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120412PDFLLE	12,70	4,76	12,70	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120412PDFRLE	12,70	4,76	12,70	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120416FNLE	12,70	4,76	12,70	–	1,6	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120420FNLE	12,70	4,76	12,70	–	2,0	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120424FNLE	12,70	4,76	12,70	–	2,4	0,02	4	●	–	–	–	–	–	–	–	–	–
SDCT120432FNLE	12,70	4,76	12,70	–	3,2	0,02	4	●	–	–	–	–	–	–	–	–	–

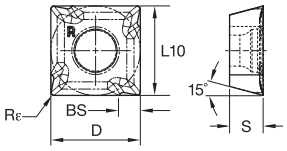
- Light and finish machining.
- Precision ground.
- 15° rake face.
- Four cutting edges.

beyond

P			○	●		●	●		○	
M			●	●		○	○	○	●	
K		●	○		●	○				●
N	●		○							
S			●	●				●	●	
H			○							

● first choice
○ alternate choice


SDCT-LD2

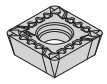


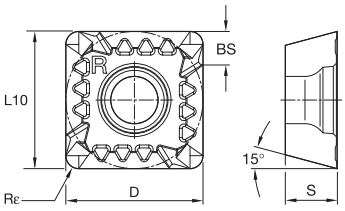
SDCT-LD2

SDCT-LD2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT120404PDELLD2	12,70	4,76	12,70	2,70	0,4	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120404PDERLD2	12,70	4,76	12,70	2,93	0,4	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT1204PDELLD2	12,70	4,76	12,70	3,32	0,8	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT1204PDERLD2	12,70	4,76	12,70	3,32	0,8	0,04	4	–	●	–	●	–	–	●	–	●	–
SDCT120412PDELLD2	12,70	4,76	12,70	3,05	1,2	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120412PDERLD2	12,70	4,76	12,70	3,05	1,2	0,04	4	–	–	–	●	–	–	–	–	●	–
SDCT120416ENLD2	12,70	4,76	12,70	–	1,6	0,04	4	–	–	–	●	–	–	–	–	●	–
SDCT120420ENLD2	12,70	4,76	12,70	–	2,0	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120424ENLD2	12,70	4,76	12,70	–	2,4	0,04	4	–	–	–	●	–	–	–	–	–	–
SDCT120432ENLD2	12,70	4,76	12,70	–	3,2	0,04	4	–	–	●	●	–	–	–	●	●	–
SDCT120464ENLD2	12,70	4,76	12,70	–	6,3	0,04	2	–	–	–	●	–	–	–	–	●	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDET-GB2

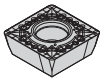


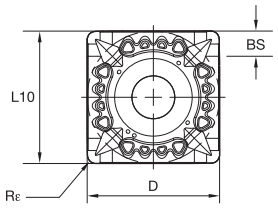
SDET-GB2

SDET-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET1204PDELGB2	12,70	4,76	12,70	3,32	0,8	0,08	4	–	●	–	●	●	●	–	–	–	–
SDET1204PDERGB2	12,70	4,76	12,70	3,32	0,8	0,08	4	–	●	–	●	●	●	●	–	●	–
SDET1204PDSLGB2	12,70	4,76	12,70	3,32	0,8	0,13	4	–	–	–	●	–	●	–	–	–	–
SDET1204PDSRGB2	12,70	4,76	12,70	3,32	0,8	0,13	4	–	●	–	●	●	●	●	–	–	–
SDET120412PDELGB2	12,70	4,76	12,70	3,05	1,2	0,08	4	–	●	–	●	●	–	–	–	–	–
SDET120412PDERGB2	12,70	4,76	12,70	3,05	1,2	0,08	4	–	●	–	●	●	●	●	–	–	–
SDET120416SNGB2	12,70	4,76	12,70	–	1,6	0,13	4	–	●	–	●	●	●	–	–	–	–
SDET120420SNGB2	12,70	4,76	12,70	–	2,0	0,13	4	–	●	–	●	●	●	●	–	–	–
SDET120424SNGB2	12,70	4,76	12,70	–	2,4	0,13	4	–	–	–	●	●	●	–	–	–	–
SDET120432SNGB2	12,70	4,76	12,70	–	3,2	0,13	4	–	●	–	●	●	●	–	–	–	–
SDET120432XENGB2	12,70	4,76	12,70	–	3,2	0,08	2	–	–	–	●	–	–	–	–	–	–
SDET120464SNGB2	12,70	4,76	12,70	–	6,4	0,13	2	–	–	–	–	–	●	–	–	–	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDET-GB



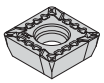
SDET-GB

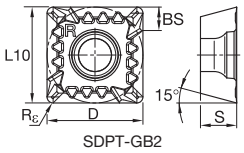
● first choice
○ alternate choice

P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●					●	●
H				○							

SDET-GB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET1204PDERGB	12,70	4,76	12,70	2,56	0,8	0,08	4	–	●	–	–	–	–	–	–	●	–
SDET1204PDSRGB	12,70	4,76	12,70	2,56	0,8	0,15	4	–	–	–	●	–	●	●	●	●	–
SDET120412PDERGB	12,70	4,76	12,70	2,19	1,2	0,08	4	–	–	–	●	–	–	●	–	●	–
SDET120412PDSRGB	12,70	4,76	12,70	2,16	1,2	0,15	4	–	–	–	●	–	–	–	–	●	–
SDET120416ENGB	12,70	4,76	12,70	–	1,6	0,08	4	–	–	–	–	–	–	–	–	●	–
SDET120416SNGB	12,70	4,76	12,70	–	1,6	0,15	4	–	–	–	●	–	–	–	–	●	–
SDET120424ENGB	12,70	4,76	12,70	–	2,4	0,08	4	–	–	–	●	–	–	–	–	●	–
SDET120424SNGB	12,70	4,76	12,70	–	2,4	0,15	4	–	–	–	●	–	–	–	–	●	–
SDET120432ENGB	12,70	4,76	12,70	–	3,2	0,08	4	–	–	–	●	–	–	–	–	●	–
SDET120432SNGB	12,70	4,76	12,70	–	3,2	0,15	4	–	–	–	–	–	–	–	–	●	–
SDET120448ENGB	12,70	4,76	12,70	–	4,8	0,08	2	–	–	–	●	–	–	–	–	●	–
SDET120448SNGB	12,70	4,76	12,70	–	4,8	0,15	2	–	–	–	●	–	–	–	–	●	–
SDET120464ENGB	12,70	4,76	12,70	–	6,4	0,08	2	–	–	–	●	–	–	–	–	●	–
SDET120464SNGB	12,70	4,76	12,70	–	6,4	0,15	2	–	–	–	●	–	●	–	●	●	–


SDPT-GB2

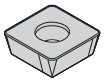


SDPT-GB2

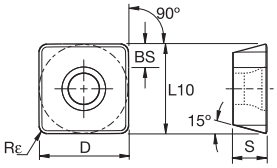
SDPT-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDPT1204PDERGB2	12,70	4,76	12,70	2,70	0,8	0,08	4	–	–	–	●	●	●	●	–	●	–
SDPT1204PDSRGB2	12,70	4,76	12,70	2,70	0,8	0,13	4	–	–	–	●	●	●	●	–	●	–

- Heavy machining.
- Precision ground.
- 0° rake face flat top.
- Four cutting edges.



SDCW-GN



SDCW-GN

● first choice
○ alternate choice

		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●				●	●	
H				○							

SDCW-GN

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCW1204PDSRGN	12,70	4,76	12,70	2,53	0,8	0,16	4	–	–	–	–	–	–	–	–	–	●
SDCW120412PDSRGN	12,70	4,76	12,70	3,05	1,2	0,16	4	–	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	0,12	**0,42**	0,74	0,08	**0,30**	0,54	0,06	**0,23**	0,40	0,06	**0,20**	0,35	0,05	**0,18**	0,32	.F..LE
.E..LD	0,17	**0,47**	0,82	0,12	**0,34**	0,59	0,09	**0,26**	0,44	0,08	**0,22**	0,38	0,07	**0,20**	0,35	.E..LD
.E..LD2	0,12	**0,46**	0,81	0,09	**0,33**	0,58	0,07	**0,25**	0,43	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..LD2
.E..GB	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB
.E..GB2	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB2
.S..GB	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB
.S..GB2	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB2
.S..GN	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

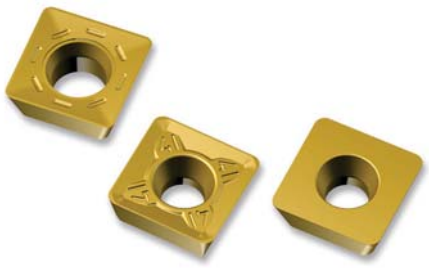
5230VS • High Performance Long-Edge Milling Cutters

The Stellram® **5230VS09** and **5230VS12** cutter series is perfectly suited for profiling and full slotting. Designed for high material removal rates in titanium and high-temperature alloys. Several applications have achieved metal removal rates of up to two times greater than the previous operating cutting parameters. The advanced chevron design ensures that one cutting point is always in contact with the material during entrance and exit. This provides optimum harmonic stability resulting in maximum tool life and a 30% improvement in surface finish. A generous flute capacity, coupled with each cutting edge having its own coolant jet, ensures excellent chip evacuation. This works to enhance surface finish and increases metal removal rates for a higher level of productivity.

The advanced 5230VS series is ideal for rough machining of steel, alloyed steel, stainless steel, and particularly for titanium and high-temperature alloys.

Features and Benefits

- Insert positioning provides smooth, progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provides constant chip evacuation and temperature stability in the cutting zone.
- The advanced chevron design improves stability and lowers power consumption, increasing tool life up to two times greater than comparable cutter in today's market.
- Proven versatility in wide application area in titanium and high-temperature alloys increasing productivity.



5230VS

5230VS09:

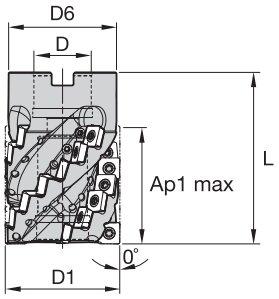
(a_p max is determined by selection of cutter diameter)
Diameter range and maximum a_p= 50mm diameter with a_p 51mm or 80mm

5230VS12:

(a_p max is determined by selection of cutter diameter)
Diameter range and maximum a_p= 63mm diameter with a_p 57mm or 94mm
80mm diameter with a_p 65mm or 110mm
100mm diameter with a_p 76mm or 133mm

- High material removal rates in titanium and high-temperature alloys.
- Chevron design improves stability and lowers power consumption.
- Insert positioning provide smooth progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provide constant chip evacuation and temperature stability in the cutting zone.





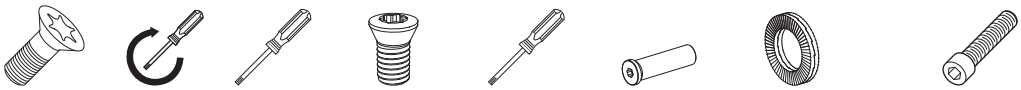


Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Ap2 max	Z	Z U
5672876	**5230VS09-A050Z4R51**	50	27	48	76	51	44	28	4
5673801	**5230VS09-A050Z4R80**	50	27	48	106	80	—	44	4

NOTE: Ap2 max is the max Ap for slotting.

Spare Parts

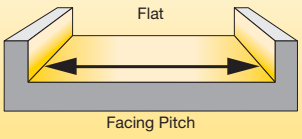


order number	D1	insert screw	Nm	Torx driver	coolant control screw	Torx driver	steel coolant plug	nord lock washer	socket-head cap screw
5672876	50	**F3508T**	2,1	**T15**	**F3006T**	**T9**	**SB3413**	**NLW-0.375**	**M12 X 1.75 X 30 SHCS**
5673801	50	**F3508T**	2,1	**T15**	**F3006T**	**T9**	**SB3621**	**NLW-0.375**	**M12 X 1.75 X 30 SHCS**

NOTE: 59–74 ft. lbs. change to 80–100 Nm.
25 ft. lbs. change to 34 Nm.

5230VS09 Technical Information (mm)

Product		Dimension					
EDP	**Item Description**	Facing Pitch	Ramping Angle°	Helical Hole min.–max.		a_p max Helical/Linear	Max RPM
031419	**5230VS09-A050Z4R51**	50	–	–	–	–	32500
031603	**5230VS09-A050Z4R80**	50	–	–	–	–	32500



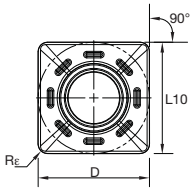
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..422	SP6519	**.E..423**	**SP6519**	.E..41	SP6519
P3–P4	.E..423	SP6519	**.E..41**	**MP91M**	...TN	MP91M
P5–P6	.E..423	SP6519	**.E..41**	**SP6519**	...TN	SP6519
M1–M2	.E..422	KCSM40	**.E..423**	**KCSM40**	.E..41	KCSM40
M3	.E..423	KCSM40	**.E..41**	**KCSM40**	...TN	KCSM40
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..422	X500	**.E..423**	**X500**	.E..41	X500
S3	.E..422	KCSM40	**.E..423**	**KCSM40**	.E..41	KCSM40
S4	.E..423	X500	**.E..41**	**X500**	...TN	X500
H1	–	–	–	–	–	–

Milling Inserts



SDHT09-422



SDHT09-422

● first choice
○ alternate choice

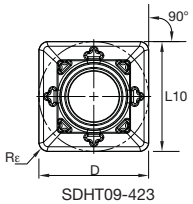
P	○	●	○	○	
M	●		●	●	
K		●	○		
N					
S	●		●	●	
H		○			

SDHT09-422

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT09T308EN422	9,53	9,53	3,97	0,8	0,03	4	●	–	●	●
SDHT09T3AEEN422	9,53	9,53	3,97	—	0,05	4	–	–	●	–



SDHT09-423



SDHT09-423

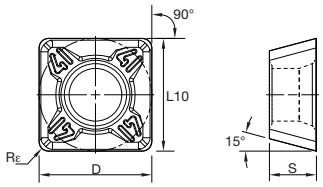
SDHT09-423

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT09T308EN423	9,53	9,53	3,97	0,8	0,04	4	●	–	●	●

Shoulder Milling



SDMT09-41



SDMT09-41

● first choice
○ alternate choice

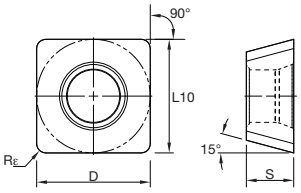
		KCSM40	MP91M	SP6519	X500
P		○	●	○	○
M		●		●	●
K			●	○	
N					
S		●		●	●
H			○		

SDMT09-41

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMT09T308EN41	9,52	9,52	3,97	0,8	0,05	4	●	●	●	●



SDMW09-TN



SDMW09-TN

SDMW09-TN

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMW09T308TN	9,53	9,53	3,96	0,8	0,11	4	●	–	–	–

Recommended Starting Feeds [mm]

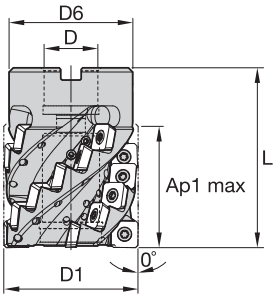
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..422	0,12	**0,47**	0,75	0,08	**0,34**	0,54	0,06	**0,26**	0,41	0,06	**0,22**	0,35	0,05	**0,20**	0,32	.E..422
.E..423	0,13	**0,46**	0,74	0,09	**0,33**	0,54	0,07	**0,25**	0,40	0,06	**0,22**	0,35	0,06	**0,20**	0,32	.E..423
.E..41	0,16	**0,52**	0,82	0,12	**0,38**	0,59	0,09	**0,28**	0,44	0,08	**0,25**	0,38	0,07	**0,23**	0,35	.E..41
...TN	0,23	**0,59**	0,89	0,17	**0,43**	0,64	0,13	**0,32**	0,48	0,11	**0,28**	0,41	0,10	**0,25**	0,38	...TN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- High material removal rates in titanium and high-temperature alloys.
- Chevron design improves stability and lowers power consumption.
- Insert positioning provides smooth progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provides constant chip evacuation and temperature stability in the cutting zone.





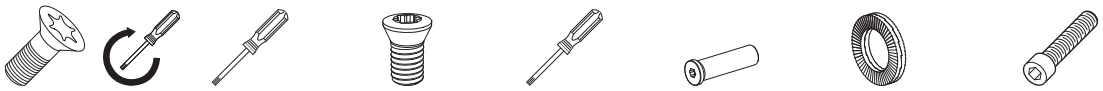


Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Ap2 max	Z	Z U
5672864	**5230VS12-A063Z4R57**	63	27	58	85	57	52	24	4
5673167	**5230VS12-A063Z4R94**	63	27	58	124	94	—	40	4
5672883	**5230VS12-A080Z5R65**	80	32	74	95	65	60	35	5
5673236	**5230VS12-A080Z5R110**	80	32	74	143	110	—	60	5
5673742	**5230VS12-A100Z6R76**	100	40	94	106	76	70	48	6
5673169	**5230VS12-A100Z6R133**	100	40	94	165	133	—	84	6

NOTE: Ap2 max is the max Ap for slotting.

Spare Parts

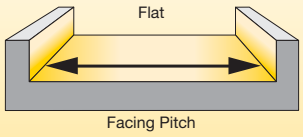


D1	Z	insert screw	Nm	Torx driver	coolant control screw	Torx driver	steel coolant plug	nord lock washer	socket-head cap screw
63	24	**F4011T**	3,1	**T20**	**F3006T**	**T9**	**SB3229**	**NLW-0.375**	**M12 X 1.75 X 30 SHCS**
63	40	**F4011T**	3,1	**T20**	**F3006T**	**T9**	**SB3230**	**NLW-0.375**	**M12 X 1.75 X 30 SHCS**
80	35	**F4011T**	3,1	**T20**	**F3006T**	**T9**	**SB3231**	**NLW12SP**	**M16 X 2 X 40 SHCS**
80	60	**F4011T**	3,1	**T20**	**F3006T**	**T9**	**SB3232**	**NLW12SP**	**M16 X 2 X 40 SHCS**
100	48	**F4011T**	3,1	**T20**	**F3006T**	**T9**	**SB3233**	**NLW-16SP**	**M20 X 2.5 X 50 SHCS**
100	84	**F4011T**	3,1	**T20**	**F3006T**	**T9**	**SB3234**	**NLW-16SP**	**M20 X 2.5 X 50 SHCS**

NOTE: Tighten mounting bolt on 63mm cutters to 80–100 Nm, 80mm cutters to 110–150 Nm, and 100mm cutters to 120–180 Nm.
Tighten steel coolant plug to 34 Nm for 63mm cutters and 61 Nm for 80 and 100mm cutters.

5230VS12 Technical Information (mm)

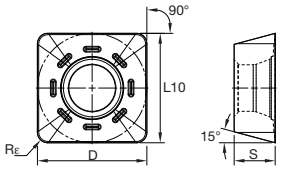
Product		Dimension					
EDP	**Item Description**	Facing Pitch	Ramping Angle°	Helical Hole min.–max.		a_p max Helical/Linear	Max RPM
31228	**5230VS12-A063Z4R57**	63	–	–	–	–	21000
31229	**5230VS12-A063Z4R94**	63	–	–	–	–	21000
31604	**5230VS12-A080Z5R65**	80	–	–	–	–	18500
31605	**5230VS12-A080Z5R110**	80	–	–	–	–	18500
31232	**5230VS12-A100Z6R76**	100	–	–	–	–	16000
31233	**5230VS12-A100Z6R133**	100	–	–	–	–	16000



Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..422	SP6519	**.E..41**	**SP6519**	.E..423	SP6519
P3–P4	.E..41	MP91M	**.E..423**	**SP6519**	...TN	SP6519
P5–P6	.E..41	SP6519	**.E..423**	**SP6519**	...TN	SP6519
M1–M2	.E..422	KCSM40	**.E..41**	**KCSM40**	.E..423	KCSM40
M3	.E..41	KCSM40	**.E..423**	**KCSM40**	...TN	KCSM40
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..422	KCSM40	**.E..41**	**KCSM40**	.E..423	KCSM40
S3	.E..41	KCSM40	**.E..423**	**KCSM40**	...TN	KCSM40
S4	.E..41	X500	**.E..423**	**X500**	...TN	X500
H1	–	–	–	–	–	–


SDHT12-422



SDHT12-422

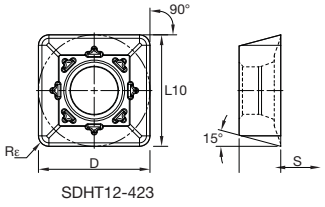
● first choice
○ alternate choice

P	○	●	○	○	
M	●		●	●	
K		●	○		
N					
S	●		●	●	
H		○			

SDHT12-422

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT120412EN422	12,70	12,70	4,75	1,2	0,05	4	●	–	●	●


SDHT12-423

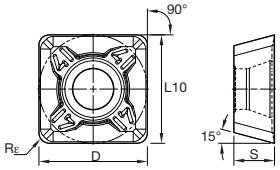


SDHT12-423

SDHT12-423

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT120412EN423	12,70	12,70	4,75	1,2	0,06	4	●	–	●	●


SDMT12-41



SDMT12-41

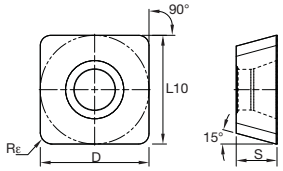
● first choice
○ alternate choice

		KCSM40	MP91M	SP6519	X500
P		○	●	○	○
M		●		●	●
K			●	○	
N					
S		●		●	●
H			○		

SDMT12-41

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMT120412EN41	12,70	12,70	4,75	1,2	0,05	4	●	●	●	●


SDMW12-TN



SDMW12-TN

SDMW12-TN

catalogue number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMW120412TN	12,70	12,70	4,76	1,2	0,06	4	●	–	●	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..422	0,16	**0,52**	0,87	0,12	**0,38**	0,63	0,09	**0,28**	0,47	0,08	**0,25**	0,41	0,07	**0,23**	0,38	.E..422
.E..41	0,16	**0,52**	0,87	0,12	**0,38**	0,63	0,09	**0,28**	0,47	0,08	**0,25**	0,41	0,07	**0,23**	0,38	.E..41
.E..423	0,20	**0,59**	0,95	0,14	**0,43**	0,68	0,11	**0,32**	0,51	0,09	**0,28**	0,44	0,08	**0,25**	0,41	.E..423
...TN	0,20	**0,59**	0,95	0,14	**0,43**	0,68	0,11	**0,32**	0,51	0,09	**0,28**	0,44	0,08	**0,25**	0,41	...TN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of diameter.

Formula: Programme Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

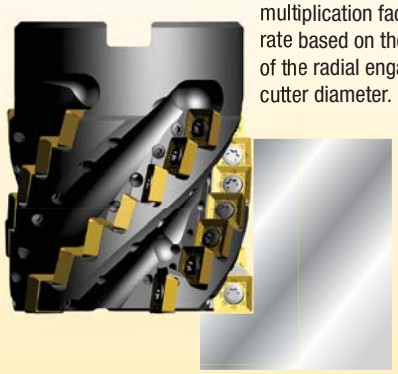
Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

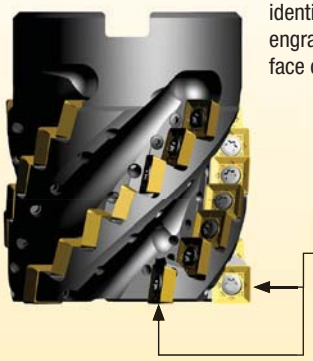
h_m Correction Coefficient Chart

Cutter Ø 50mm			Cutter Ø 63mm			Cutter Ø 80mm			Cutter Ø 100mm		
ae%	ae (mm)	Coefficient Factor	ae%	ae (mm)	Coefficient Factor	ae%	ae (mm)	Coefficient Factor	ae%	ae (mm)	Coefficient Factor
5	2,50	2,30	5	3,15	2,30	5	4,00	2,30	5	5,00	2,30
10	5,00	1,66	10	6,30	1,66	10	8,00	1,66	10	10,00	1,66
15	7,5	1,40	15	9,45	1,40	15	12,00	1,40	15	15,00	1,40
20	10,00	1,25	20	12,60	1,25	20	16,00	1,25	20	20,00	1,25
25	12,50	1,16	25	15,75	1,16	25	20,00	1,16	25	25,00	1,16
35	17,50	1,05	35	22,05	1,05	35	28,00	1,05	35	35,00	1,05
50–100	25,00–50,00	1,00	50–100	31,50–63,00	1,00	50–100	40,00–80,00	1,00	50–100	50,00–100,00	1,00

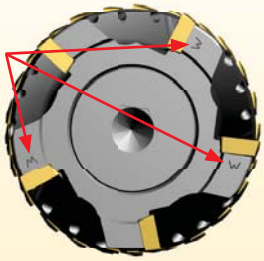
Example: A 50mm diameter cutter using 5,00mm radial engagement (a_e) = 10% of the cutter diameter. At 10%, your coefficient is 1,66 (see above table); therefore you must multiply your feed rate by 1,66 for correcting the feed for profiling.



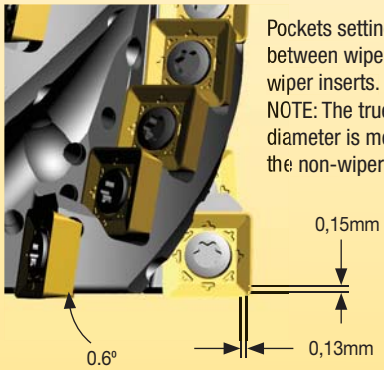
The chart above shows the multiplication factor for the feed rate based on the percentage of the radial engagement of the cutter diameter.



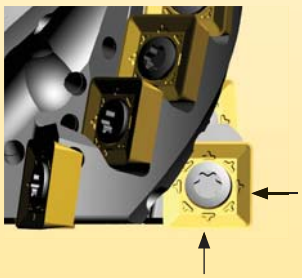
Wiper pockets are identified with a W engraved on the face of the body.



The 5230VS cutter series is designed with wiper pockets which provide a much better face surface finish. The non-wiper pockets generate the 90° corner. The same inserts can be utilised in all pockets.



Pockets setting difference between wiper and non-wiper inserts.
NOTE: The true cutter diameter is measured at the non-wiper pockets.



Non-wiper pocket positions are set back and square to axis to give a true 90° approach.

Wiper pocket positions are in front and angled to allow facing.

Cutter diameter (mm)	Number of Wiper Inserts
50	2
63	2
80	3
100	3

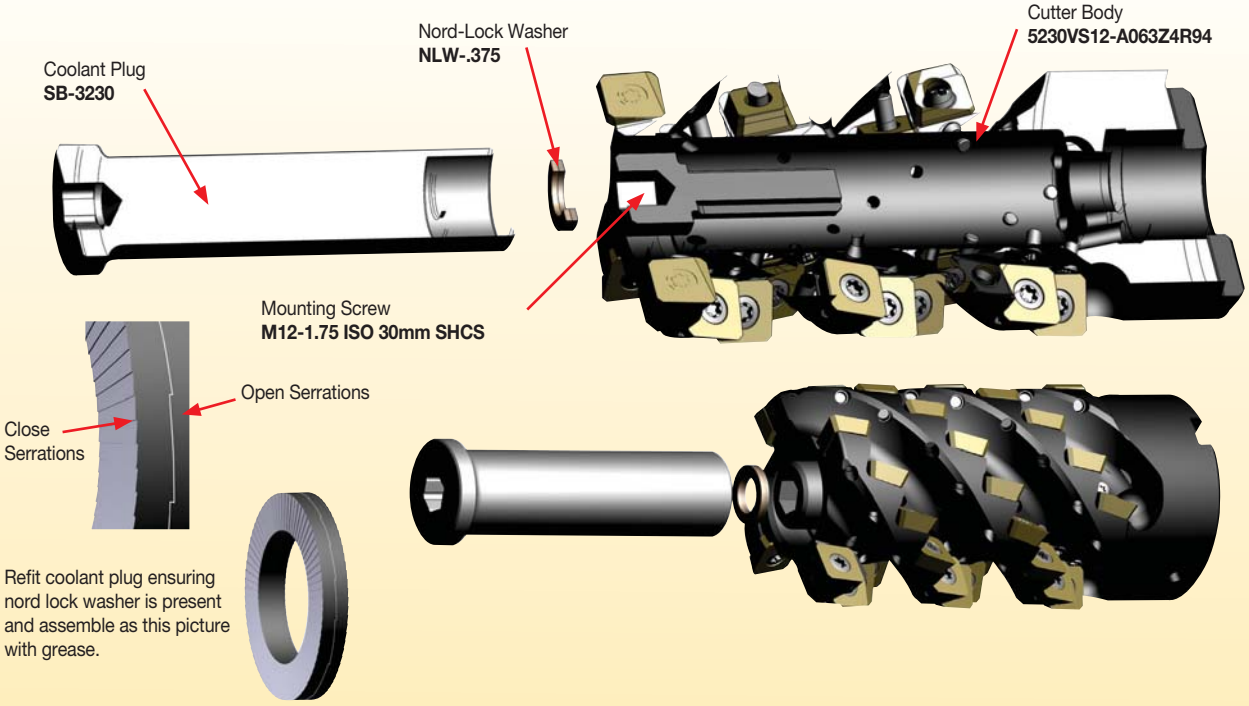
5230VS09 and 5230VS12 Fitting Instructions for Shell Mill Cutters

NOTE: All Shell Mill 5230VS09 and 5230VS12 chevron porcupine cutters are supplied assembled with mounting bolt, nord-lock washer, and steel coolant plug.



Please follow the instructions below to disassemble the cutter, attach the cutter to a shell mill adaptor, and reassemble coolant plug. It is very important to use the proper torque when reassembling the cutter with the mounting bolt, nord-lock washer, and coolant plug.

Example of cutter: 5230VS12-A063Z4R94 assembly



1. Remove coolant plug. *(NOTE: Ensure the nord-lock washer is retained to the bottom of the coolant plug.)*
2. Fit the cutter body to the shell mill adaptor and secure using the mounting bolt supplied with the cutter.
   NOTE: The mounting bolt must be properly torqued to the specific torque setting shown in Detail 1 on page T123.
3. Refit coolant plug ensuring nord-lock washer is present and in the proper location on the bottom of the coolant plug. A small amount of grease can be used to hold the nord-lock washer in place.
4. Tighten coolant plug with specific torque setting shown in Detail 2 on page T123.
5. NOTE: If axial depth of cut (a_p) is less then maximum a_p of cutter, then **F3006T** coolant control screws supplied separately can be used to block coolant holes forcing more coolant to the front of the cutter. If these screws are used, please secure with loctite or similar product.

Torque values for mounting bolts

Excessive condition is when long reach extensions are required or when cutting parameters are elevated to extreme parameters.

5230VS09	Detail 1			Detail 2	
Cutter	Mounting Bolt Description	Torque Values in Nm for Mounting Bolt		Coolant Plug Description	Coolant Plug tightening Nm
		Normal Condition	Excessive Condition		
5230VS09-A050Z4R51	M12-1.75 ISO x 30mm SHCS	80	100	SB-3413	34
5230VS09-A050Z4R80				SB-3621	

5230VS12	Detail 1			Detail 2	
Cutter	Mounting Bolt Description	Torque Values in Nm for Mounting Bolt		Coolant Plug Description	Coolant Plug tightening Nm
		Normal Condition	Excessive Condition		
5230VS12-A063Z4R57	M12-1.75 ISO x 30mm SHCS	80	100	SB-3229	34
5230VS12-A063Z4R94				SB-3230	
5230VS12-A080Z5R65	M16-2 ISO x 40mm SHCS	110	150	SB-3231	61
5230VS12-A080Z5R110				SB-3232	
5230VS12-A100Z6R76	M20-2.5 ISO x 50mm SHCS	120	180	SB-3233	61
5230VS12-A100Z6R133				SB-3234	

Mounting Bolt Hex Keys

M12 = Hex Key Size 10
M16 = Hex Key Size 14
M20 = Hex Key Size 17



Indexable Milling • Slot Milling

KTMS • T-Slot Platform U2–U5

KVNS • Very-Narrow Slotting Platform U6–U10

SN • Popular Square Inserted Cutter U12–U15

LN • Adjustable Width Cutter System U16–U22

KSSM10 • Neutral, Right-, and Left-Hand Cutters, 10mm IC U24–U37

KSSM12 • Neutral, Right-, and Left-Hand Cutters, 12mm IC U38–U53

KTMS™ Slotting Cutter

Primary Application

KTMS slotting cutters produce “T” slots in machine beds as well as small radial depths of cut for machining shallow radial slots. There is always a need to prepare the slot before using this type of cutter — preparation is the key to success.

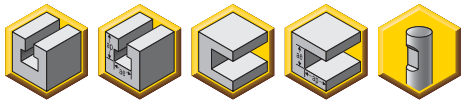
See the technical information for information about the pre-machining on page U5.

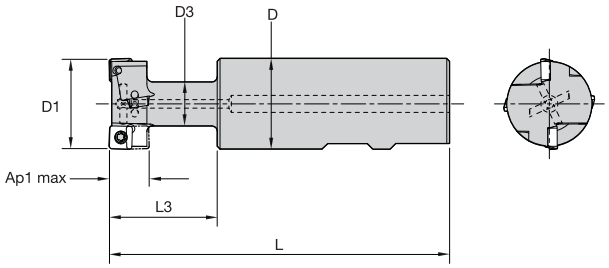


Features and Benefits

- Only available in metric dimensions.
- Slot widths from 9–22mm.
- Three different insert sizes.
- Preparing the component before slotting is the key to success.
- Prepare workpiece with a slot.
- Honed insert edges.
- Feed rates between 0,10–0,15mm; lower feed rates will induce vibration.
- Use air flow to evacuate chips.
- Always start the cutting process with a new cutting edge.

- Prepare workpiece with a slot.
- Honed insert edges.
- Feed rates between 0,10–0,15mm; lower feed rates will induce vibration.
- Use air flow to evacuate chips.
- Always start the cutting process with a new cutting edge.





KTMS • T-Slot Cutter with Through Coolant • Metric

order number	catalogue number	D1	D	D3	L	L3	Ap1 max	Z	Z U	insert 1	kg
3577119	**KTMS21S25SD06H**	21	25	11	109	29	9,0	2	1	SDMT060304EGG	0,35
3577121	**KTMS25S25SD06H**	25	25	13	112	32	11,0	4	2	SDMT060304EGG	0,36
3577133	**KTMS32S32SD08H**	32	32	16	120	38	14,0	4	2	SDMT080308EGG	0,60
3577135	**KTMS40S32SD12H**	40	32	21	130	50	18,0	4	2	SDMT120408EGG	0,66
3577137	**KTMS50S32SD12H**	50	32	27	140	60	22,0	4	2	SDMT120408EGG	0,85

Spare Parts





D1	insert screw	Nm	Torx driver
21	**MS2206**	1,2	**DT8**
25	**MS2206**	1,2	**DT8**
32	**MS2207**	2,0	**DT10**
40	**MS2208**	3,5	**DT15**
50	**MS2208**	3,5	**DT15**

Insert Selection Guide

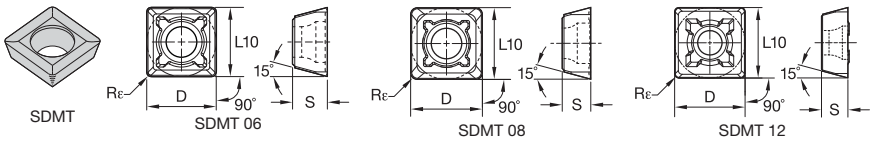
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	..EGG	KC735M	..EGG	**KC735M**	..EGG	KC735M
P3–P4	..EGG	KC735M	..EGG	**KC735M**	..EGG	KC735M
P5–P6	..EGG	KC735M	..EGG	**KC735M**	..EGG	KC735M
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	..EGG	KC505M	**..EGG**	**KC505M**	..EGG	KC505M
K3	..EGG	KC505M	**..EGG**	**KC505M**	..EGG	KC505M
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Insert • T-Slot Cutters SDMT • EGG

- Honed insert edges.
- Four cutting edges.

● first choice
○ alternate choice

P		●	●
M			
K	●		
N			
S			
H			



SDMT-EGG

catalogue number	D	S	L10	Rε	hm	cutting edges	KC505M	KC730M	KC735M
SDMT060304EGG	6,35	3,18	6,35	0,4	0,06	4	–	●	●
SDMT080308EGG	8,00	3,18	8,00	0,8	0,06	4	●	●	●
SDMT120408EGG	12,70	4,76	12,70	0,8	0,06	4	●	●	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.06..EGG	0,20	**0,46**	0,70	0,14	**0,33**	0,50	0,11	**0,25**	0,38	0,09	**0,22**	0,33	0,08	**0,20**	0,30	.06..EGG
.08..EGG	0,20	**0,53**	0,82	0,14	**0,38**	0,59	0,11	**0,29**	0,44	0,09	**0,25**	0,39	0,08	**0,23**	0,35	.08..EGG
.12..EGG	0,20	**0,59**	0,92	0,14	**0,43**	0,66	0,11	**0,32**	0,50	0,09	**0,28**	0,43	0,08	**0,25**	0,40	.12..EGG

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

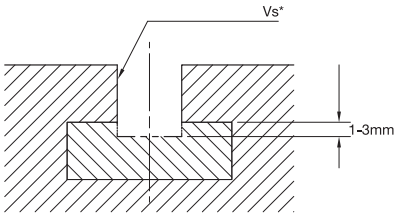


Fig. 1

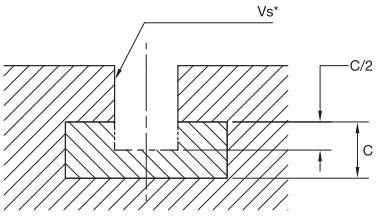


Fig. 2

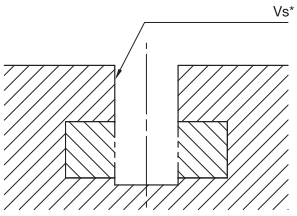
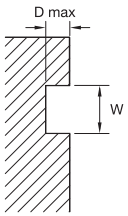


Fig. 3



Side Slotting

Steel

- Machining a vertical slot, depth to be kept at a minimum as shown in Figure 1.
- If the depth is greater than Figure 1, chip evacuation problems could occur.
- Vibrations could occur when the T-slot cutter diameter increases; use Figure 1 as the starting point.
- If chattering is a concern, adopt the Figure 2 solution.

Cast Iron

- Fewer problems with chip evacuation and reduced cutting forces enable deeper vertical slots as shown in Figures 2 and 3.
- Air blast is recommended to disperse the chips; this can be used for steel and cast iron.

Cutting Data Table • Slotting

	material type	catalogue number	cutting conditions vc (m/min)	feed per tooth (mm)	Vs*
P	carbon steel/ alloy steel	KTMS21S25SD06H	120	0,10	Figure 1
		KTMS25S25SD06H	120	0,10	Figure 1
		KTMS32S32SD08H	100	0,10	Figure 1
		KTMS40S32SD12H	80	0,15	Figure 2
		KTMS50S32SD12H	not recommended due to frequent chattering		
K	cast iron	KTMS21S25SD06H	120	0,12	Figure 1, 2, 3
		KTMS25S25SD06H	120	0,12	Figure 1, 2, 3
		KTMS32S32SD08H	120	0,12	Figure 1, 2, 3
		KTMS40S32SD12H	120	0,12	Figure 2,3
		KTMS50S32SD12H	120	0,15	Figure 3

* Vs = Vertical slot preparation for T-slot.

Side Slot Machining

side slot dimension catalogue number	W -0.1 / -0.3 mm	D max mm
KTMS21S25SD06H	9	4,4
KTMS25S25SD06H	11	5,4
KTMS32S32SD08H	14	6,9
KTMS40S32SD12H	18	8,9
KTMS50S32SD12H	22	10,9

NOTE: KTMS T-slot is available to side slot as per drawing.

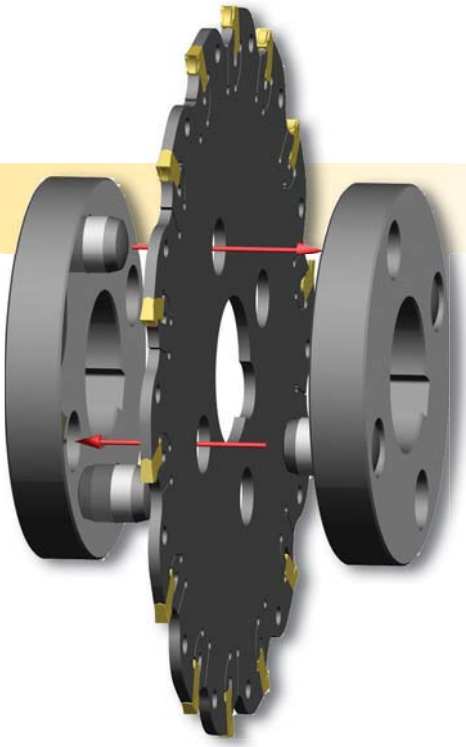
Cutting Data • Side Machining

	material type	catalogue number	cutting conditions vc (m/min)	n (RPM)	feed per tooth (mm)
P	carbon steel/ alloy steel	KTMS21S25SD06H	120	1820	0,10
		KTMS25S25SD06H	120	1530	0,10
		KTMS32S32SD08H	120	1190	0,10
		KTMS40S32SD12H	120	960	0,10
		KTMS50S32SD12H	120	760	0,10
K	cast iron	KTMS21S25SD06H	150	2270	0,12
		KTMS25S25SD06H	150	1910	0,12
		KTMS32S32SD08H	150	1490	0,12
		KTMS40S32SD12H	150	1190	0,15
		KTMS50S32SD12H	150	960	0,15

KVNS™ Slotting Cutter

Primary Application

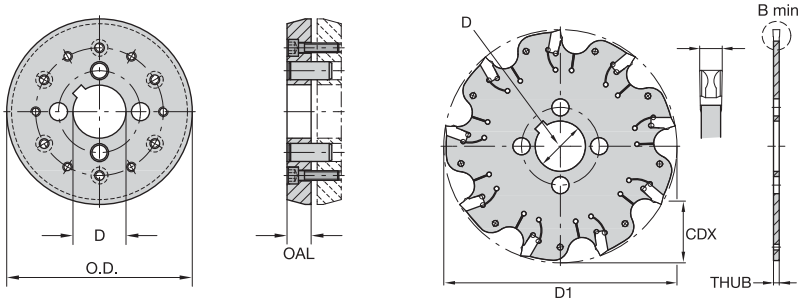
The KVNS slotting cutter enables diameters from 63–250mm and insert widths from 1,6–4mm. It is a perfect solution for small groove widths, grades, and geometries and suits most materials. Drive rings and support rings are available; use these items to get the maximum support for the cutter body.



Features and Benefits

- Slot widths from 1,6–4mm.
- Grades and geometries to suit most workpiece materials.
- Positive chipforming inserts are standard.
- Self-clamping inserts.
- Self-clamping insert seat with fixed stop.
- Excellent for all flat-bottom slotting and cut-off operations.
- Two drive hubs are required for each cutter body, except when using two drive supports.
- Drive rings and support rings available, must be ordered separately (in pairs).

- Positive chip forming inserts are standard.
- Self-clamping insert seat with fixed stop.
- Excellent for all flat-bottom slotting and cut-off operations.
- Two drive rings required for each cutter body (must be ordered separately, in pairs).





A2 • Cutting Width 1,6mm



order number	catalogue number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	kg
1246114	**4.97060116**	63	16	1,6	15,0	1,3	5	5100	3.90016___	**1177888**	0,03
1246122	**4.97080116**	80	16	1,6	21,0	1,3	7	4000	3.90016___	**1247091**	0,04
1246131	**4.97101116**	100	22	1,6	27,0	1,3	9	3200	3.90016___	**1247085**	0,07
1246138	**4.97123116**	125	32	1,6	35,0	1,3	11	2600	3.90016___	**1247087**	0,10

A2 • Cutting Width 2,2mm



order number	catalogue number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	kg
1246124	**4.97080122**	80	16	2,2	21,0	1,8	7	4000	3.90022___	**1247091**	**0,05**
1246132	**4.97101122**	100	22	2,2	27,0	1,8	9	3200	3.90022___	**1247085**	**0,08**
1246140	**4.97123122**	125	32	2,2	35,0	1,8	11	2600	3.90022___	**1247087**	**0,12**
1246147	**4.97164122**	160	40	2,2	40,0	1,8	14	2000	3.90022___	**1247082**	**0,30**

A2 • Cutting Width 3mm

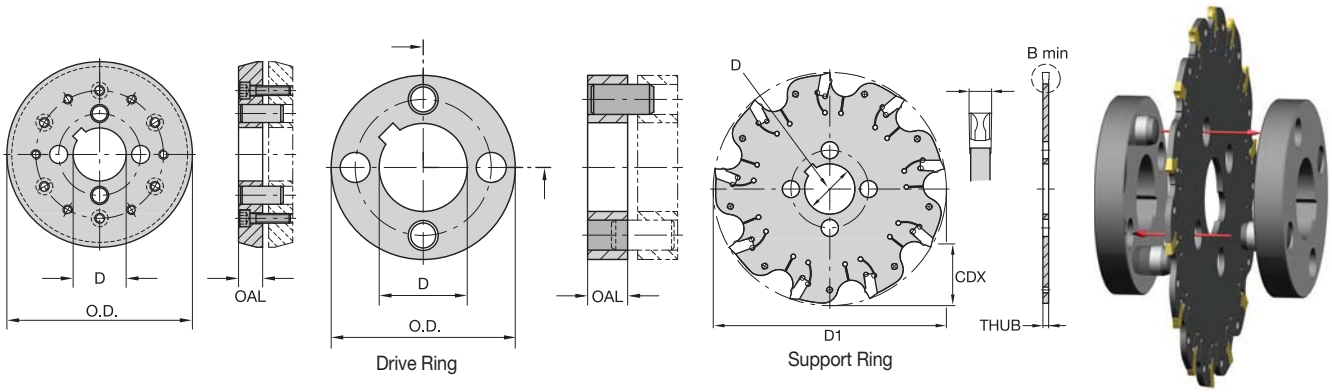


order number	catalogue number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	kg
1246118	**4.97060130**	63	16	3,0	15,0	2,4	4	5100	3.90030___	**1247088**	0,05
1246126	**4.97080130**	80	16	3,0	21,0	2,4	6	4000	3.90030___	**1247091**	0,08
1246134	**4.97101130**	100	22	3,0	27,0	2,4	9	3200	3.90030___	**1247085**	0,13
1246142	**4.97123130**	125	32	3,0	35,0	2,4	11	2600	3.90030___	**1247087**	0,20
1246149	**4.97164130**	160	40	3,0	40,0	2,4	14	2000	3.90030___	**1247082**	0,35
1246153	**4.97204130**	200	40	3,0	60,0	2,4	19	1600	3.90030___	**1247082**	0,50
1246157	**4.97254130**	250	40	3,0	85,0	2,4	24	1300	3.90030___	**1247082**	0,80

A2 • Cutting Width 4mm



order number	catalogue number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	kg
1246120	**4.97060140**	63	16	4,0	15,0	3,4	4	5100	3.90040___	**1247088**	0,06
1246129	**4.97080140**	80	16	4,0	21,0	3,4	6	4000	3.90040___	**1247091**	0,10
1246136	**4.97101140**	100	22	4,0	27,0	3,4	9	3200	3.90040___	**1247085**	0,15
1246145	**4.97123140**	125	32	4,0	35,0	3,4	11	2600	3.90040___	**1247087**	0,25
1246150	**4.97164140**	160	40	4,0	40,0	3,4	14	2000	3.90040___	**1247082**	0,40
1246154	**4.97204140**	200	40	4,0	60,0	3,4	19	1600	3.90040___	**1247082**	0,65



Drive Rings



order number	D1	O.D.	OAL	bore size	drive ring	kg
1177888	63	32	8	16	**460.889**	0,03
1247088	63	32	8	16	**460.898**	0,04
1247091	80	38	8	16	**460.899**	0,06
1247085	100	46	10	22	**460.890**	0,10
1247087	125	55	10	32	**460.897**	0,12
1247082	160	80	12	40	**460.888**	0,34
1247082	200	80	12	40	**460.888**	0,34
1247082	250	80	12	40	**460.888**	0,34

Support Rings



D1	order number	support ring	bore size	CDX	O.D.	OAL	clamp screw	Allen key	Allen key size	kg
200	**1247080**	**460.887**	40	30	140	12	**125.616**	**170.005**	5mm	1,15
250	**1247080**	**460.887**	40	55	140	12	**125.616**	**170.005**	5mm	1,15
250	**1247078**	**460.886**	40	30	190	12	**125.616**	**170.005**	5mm	2,35

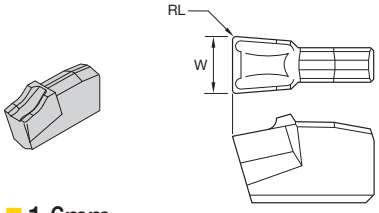
NOTE: For CDX value, refer to drive ring and support ring tables.
Insert wrench 170.183 (order code 1124601) must be ordered separately

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GD	KC735M	**.S..GD**	**KCPK30**	.S..GB	KCPK30
P3–P4	.S..GD	KC735M	**.S..GD**	**KCPK30**	.S..GB	KCPK30
P5–P6	.S..GD	KC735M	**.S..GB**	**KCPK30**	.S..GB	KCPK30
M1–M2	.S..GD	KC735M	**.S..GD**	**KCPK30**	.S..GB	KCPK30
M3	.S..GD	KCPK30	**.S..GB**	**KCPK30**	.S..GB	KCPK30
K1–K2	.S..GD	KCPK30	**.S..GD**	**KCPK30**	.S..GB	KCPK30
K3	.S..GD	KCPK30	**.S..GD**	**KCPK30**	.S..GB	KCPK30
N1–N2	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
N3	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
S1–S2	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
S3	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
S4	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
H1	–	–	**–**	**–**	–	–

Indexable Inserts • KVNS A2

- Very narrow slotting/slitting operations.
- Positive chipforming insert geometry.



● first choice
○ alternate choice

	KC735M	KCPK30	KMF
P	○	●	
M	●	○	
K		○	
N			●
S	●		●
H			

1,6mm

catalogue number	W	RL	hm	KC735M	KCPK30	KMF
3.90016ECGD	1,60	0,15	0,08	–	–	●
3.90016SNGB	1,60	0,15	0,08	●	●	–
3.90016SNGD	1,60	0,15	0,08	●	●	–

2,2mm

catalogue number	W	RL	hm	KC735M	KCPK30	KMF
3.90022ECGD	2,20	0,20	0,08	–	–	●
3.90022SNGB	2,20	0,20	0,08	●	●	–
3.90022SNGD	2,25	0,20	0,08	●	●	–

3mm

catalogue number	W	RL	hm	KC735M	KCPK30	KMF
3.90030ECGD	3,05	0,20	0,08	–	–	●
3.90030SNGB	3,05	0,20	0,08	●	●	–
3.90030SNGD	3,05	0,20	0,08	●	●	–

4mm

catalogue number	W	RL	hm	KC735M	KCPK30	KMF
3.90040ECGD	4,05	0,20	0,08	–	–	●
3.90040SNGB	4,05	0,20	0,08	●	●	–
3.90040SNGD	4,05	0,20	0,08	●	●	–

Recommended Starting Feeds [mm]

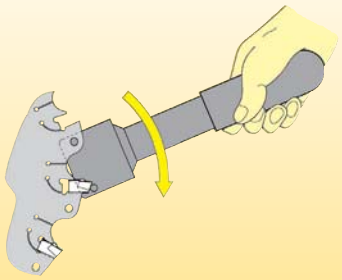
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GD	0,23	**0,41**	0,63	0,17	**0,29**	0,46	0,13	**0,22**	0,34	0,11	**0,19**	0,30	0,10	**0,18**	0,27	.E..GD
.S..GD	0,23	**0,46**	0,71	0,17	**0,33**	0,51	0,13	**0,25**	0,38	0,11	**0,22**	0,33	0,10	**0,20**	0,30	.S..GD
.S..GB	0,23	**0,46**	0,74	0,17	**0,33**	0,54	0,13	**0,25**	0,40	0,11	**0,22**	0,35	0,10	**0,20**	0,32	.S..GB

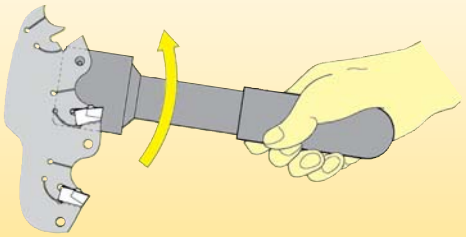
NOTE: Use “Light Machining” values as starting feed rate.
% = ae/Dc * 100 (ae = radial depth of cut, Dc = cutting diameter)
Please see pages X22–X37 for recommended starting speeds.

Slotting Cutters • Technical Information

Secure clamping self-clamping insert seat for maximum machining safety



Using the assembly wrench:
Fitting the insert



Removing the insert

- Exact position of the insert guaranteed by the positive stop.
- Maximum possible insert repeatability with dual positive prism clamping.
- Powerful, secure clamping guarantees high peripheral speeds.

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SN Slotting Cutter

Primary Application

SN slotting cutters are perfect for deeper applications that require the cutting load to be shared from one insert to the other. Provides groove widths from 4–14mm and cutter diameters from 80–250mm as well as an economical way to achieve balanced cutting.

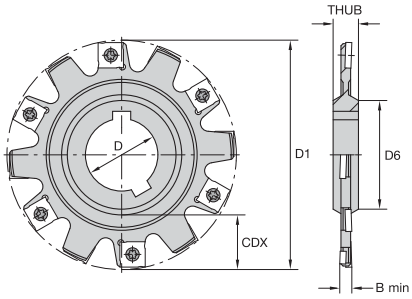


Features and Benefits

- Cutters available in arbour mount.
- Inserts with four indexes.
- Staggered key ways in mounting bore, used for multiple ganged cutters.
- Slot width 4–14mm.
- Three insert geometries available: -GP, -GE, and -T.
- Requires only one spare part.

- 4–14mm slot widths range.
- Four indexes per insert.
- Three chip formers available.
- Two keyways for staggered mounting.
- Requires only one spare part.







SN • Arbour Mount • Full-Side Cutting

order number	catalogue number	D1	D	D6	B min	CDX	THUB	Z	Z S	insert 1	kg
1244389	**4.96082-204**	80	27	45	4,0	15	12,0	10	5	SNHX1102___	0,30
1191306	**4.96102-204**	100	27	45	4,0	25	12,0	12	6	SNHX1102___	0,40
1244398	**4.96102-205**	100	27	45	5,0	25	12,0	12	6	SNHX11T3___	0,40
1244368	**4.96102-206**	100	27	45	6,0	25	12,0	10	5	SNHX1203___	0,40
1244370	**4.96124-204**	125	40	58	4,0	30	12,0	14	7	SNHX1102___	0,50
1244371	**4.96124-205**	125	40	58	5,0	30	12,0	14	7	SNHX11T3___	0,60
1244374	**4.96124-210**	125	40	58	10,0	30	12,0	12	6	SNHX12L5___	0,80
1244375	**4.96124-212**	125	40	58	12,0	30	12,0	12	4	SNHX12L5___	0,90
1244394	**4.96164-204**	160	40	68	4,0	44	12,0	18	9	SNHX1102___	0,90
1244376	**4.96164-205**	160	40	68	5,0	44	12,0	18	9	SNHX11T3___	0,90
1244379	**4.96164-210**	160	40	68	10,0	44	12,0	16	8	SNHX12L5___	1,40
1244395	**4.96205-208**	200	50	72	8,0	62	12,0	18	6	SNHX1203___	1,80
1244385	**4.96255-206**	250	50	72	6,0	86	12,0	24	12	SNHX1203___	4,20
1244386	**4.96255-208**	250	50	72	8,0	86	12,0	24	8	SNHX1203___	4,50

Spare Parts







order number	D1	B min	insert screw	Nm	Torx driver
1244389	80	4	**192.529**	1,0	**170.023**
1191306	100	4	**192.529**	1,0	**170.023**
1244398	100	5	**192.530**	1,0	**170.023**
1244368	100	6	**192.531**	3,0	**170.025**
1244370	125	4	**192.529**	1,0	**170.023**
1244371	125	5	**192.530**	1,0	**170.023**
1244374	125	10	**192.532**	3,0	**170.025**
1244375	125	12	**192.532**	3,0	**170.025**
1244394	160	4	**192.529**	1,0	**170.023**
1244376	160	5	**192.530**	1,0	**170.023**
1244379	160	10	**192.532**	3,0	**170.025**
1244395	200	8	**192.531**	3,0	**170.025**
1244385	250	6	**192.531**	3,0	**170.025**
1244386	250	8	**192.531**	3,0	**170.025**

Insert Selection Guide

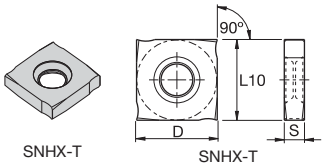
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.T..GP	KCPM40	**.T..GP**	**KCPM40**	..T	KCPM40
P3–P4	.T..GP	KCPK30	**.T..GP**	**KCPM40**	..T	KCPM40
P5–P6	.T..GP	KCPK30	**..T**	**KCPK30**	..T	KCPM40
M1–M2	.T..GP	KC725M	**.T..GP**	**KC725M**	..T	KC725M
M3	.T..GP	KCPM40	**.T..GP**	**KCPM40**	..T	KCPM40
K1–K2	..T	KC520M	**..T**	**KC520M**	..T	KC520M
K3	.T..GP	KCPK30	**.T..GP**	**KCPK30**	..T	KCPK30
N1–N2	.F..GE	KC510M	**.F..GE**	**KC510M**	.T..GP	K110M
N3	.T..GP	K110M	**.T..GP**	**K110M**	.T..GP	K110M
S1–S2	.T..GP	KC725M	**.T..GP**	**KC725M**	..T	KC725M
S3	.T..GP	KCPM40	**.T..GP**	**KCPM40**	..T	KCPM40
S4	.T..GP	KC725M	**..T**	**KC725M**	..T	KC725M
H1	.F..GE	KC510M	**–**	**–**	–	–

Indexable Inserts • SNHX-T • SNHX-NGE

- Medium to heavy machining.
- With T-land geometry.
- Four cutting edges.

● first choice
○ alternate choice

P			●		●	●	●
M					●	○	○
K		○	●	●		○	
N		●	○				
S					●		
H							

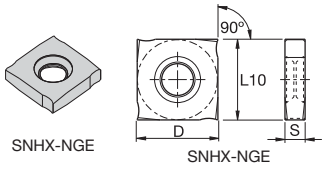


SNHX-T SNHX-T

SNHX-T

catalogue number	D	S	L10	hm	cutting edges	K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
SNHX1102T	11,00	2,30	11,00	0,16	4	–	–	–	●	–	●
SNHX1103T	11,00	2,70	11,00	0,16	4	–	–	–	●	●	●
SNHX1203T	12,70	3,20	12,70	0,16	4	–	–	–	●	–	●
SNHX1204T	12,70	4,00	12,70	0,11	4	–	–	–	●	–	–
SNHX12045T	12,70	4,50	12,70	0,11	4	–	–	–	●	–	–
SNHX1205T	12,70	5,40	12,70	0,11	4	–	–	–	●	–	–

- Positive geometry for lighter machining.
- Four cutting edges.



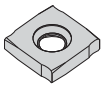
SNHX-NGE SNHX-NGE

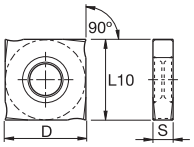
SNHX-NGE

catalogue number	D	S	L10	hm	cutting edges	K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
SNHX11T3PZFNGE	11,00	2,70	11,00	0,05	4	–	●	–	–	–	–
SNHX1203PZFNGE	12,70	3,20	12,70	0,04	4	–	●	–	–	–	–
SNHX12L5PZFNGE	12,70	5,40	12,70	0,04	4	●	●	–	–	–	–

Slot Milling

- Four cutting edges.
- High-feed capabilities up to 55 HRC.


SNHX-NGP



SNHX-NGP

● first choice
○ alternate choice

		K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
P		●		●		●	●	●
M						●	○	○
K		○	●	●		○	
N		●	○				
S						●		
H								

SNHX-NGP

catalogue number	D	S	L10	hm	cutting edges	K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
SNHX1102PZTNGP	11,00	2,30	11,00	0,14	4	●	–	–	●	●	●
SNHX11T3PZTNGP	11,00	2,70	11,00	0,14	4	–	–	–	●	–	●
SNHX1203PZTNGP	12,70	3,20	12,70	0,14	4	●	–	–	●	●	●
SNHX12L4PZTNGP	12,70	4,00	12,70	0,14	4	–	–	–	–	●	–
SNHX12L5PZTNGP	12,70	5,40	12,70	0,14	4	●	–	–	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..GE	0,13	**0,42**	0,70	0,09	**0,30**	0,50	0,07	**0,23**	0,38	0,06	**0,20**	0,33	0,06	**0,18**	0,30	.F..GE
.T..GP	0,23	**0,47**	0,70	0,17	**0,34**	0,50	0,13	**0,25**	0,38	0,11	**0,22**	0,33	0,10	**0,20**	0,30	.T..GP
..T	0,23	**0,56**	0,82	0,17	**0,40**	0,59	0,13	**0,30**	0,44	0,11	**0,26**	0,38	0,10	**0,24**	0,35	..T

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

LN Slotting Cutter

Primary Application

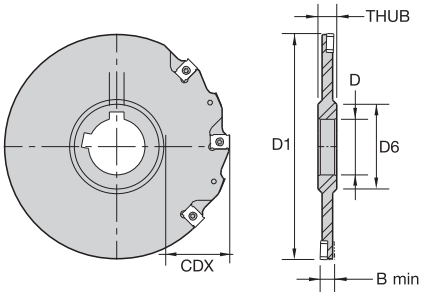
LN slotting cutters offer arbour and shell mill cutter options, groove widths from 6–13mm, and cutter diameters from 80–160mm. Easy to adjust radially in 0,50mm increments.



Features and Benefits

- Cutter available in arbour and shell mounts.
- Groove width 6–13mm.
- Groove width can be increased by 0,5mm or 1mm. Please consult the chart “Technical Information: Possible Insert Combinations”.
  NOTE: This involves changing inserts and insert screws.
- Easy width adjustment through insert thickness.
- Staggered internal keys.
- Positive chip grooves.
- Full side cutting.
- Neutral and positive chip forming inserts are standard.
- Four insert cutting edges.
- Requires only one spare part.

- 6–13mm slot width range.
- Easy width adjustment through insert thickness.
- Full side cutting.
- Neutral and positive chip forming inserts are standard.
- Four insert cutting edges.
- Two keyways for staggered mounting.
- Requires only one spare part.
- Base slot angle: 2°
- Maximum slot width tolerance: +/- 0,05mm



Side Two Insert



LN • Arbour Mount • Full-Side Cutting

order number	catalogue number	D1	D	D6	B min	CDX	THUB	Z	Z S	insert 1	kg
1131438	**80F08NS90LN12N06**	80	27	44	6	16	12,0	8	4	LNE_1235___	0,30
1131447	**80F08NS90LN12N08**	80	27	44	8	16	12,0	8	4	LNE_1245___	0,35
1150508	**100G10NS90LN12N06**	100	32	52	6	22	12,0	10	5	LNE_1235___	0,40
1130249	**100G10NS90LN12N08**	100	32	52	8	22	12,0	10	5	LNE_1245___	0,50
1130477	**125H12NS90LN12N06**	125	40	63	6	30	12,0	12	6	LN__1235	0,70
1130615	**160H16NS90LN12N06**	160	40	63	6	46	12,0	16	8	LNE_1235___	1,10
1130595	**160H15NS90LN12N10**	160	40	63	10	46	12,0	15	5	LNE_1245	1,60
1130608	**160H15NS90LN12N12**	160	40	63	12	46	12,0	15	5	LNE_1255___	1,60
1150527	**200J18NS90LN12N08 ***	200	50	75	8	60	12,0	18	9	LNE_1245___	2,00

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

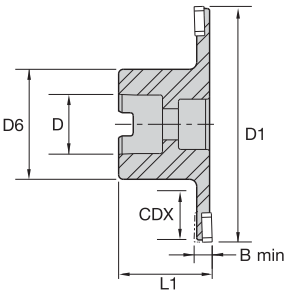
Spare Parts

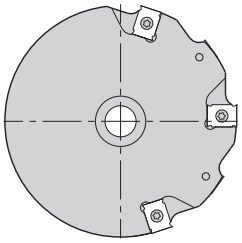




order number	D1	B min	insert screw	Nm	Torx driver
1131438	80	6	**MS1280**	3,0	**DT15**
1131447	80	8	**MS1282**	3,0	**DT15**
1150508	100	6	**MS1280**	3,0	**DT15**
1130249	100	8	**MS1282**	3,0	**DT15**
1130477	125	6	**MS1280**	3,0	**DT15**
1130615	160	6	**MS1280**	3,0	**DT15**
1130595	160	10	**MS1282**	3,0	**DT15**
1130608	160	12	**MS1284**	3,0	**DT15**
1150527	200	8	**MS1282**	3,0	**DT15**

- 6–11mm slot width range.
- Easy width adjustment through insert thickness.
- Right-hand and full-side cutting versions.
- Neutral and positive chip forming inserts are standard.
- Four insert cutting edges.
- Requires only one spare part.
- Base slot angle: 2°.
- Maximum slot width tolerance: +/- 0,05mm.







LN • Shell Mount • Full-Side Cutting

order number	catalogue number	D1	D	D6	B min	CDX	L1	Z	Z U	insert 1	kg
1131463	**80Y08RS90LN12N06**	80	22	40	6	16,00	50,0	8	4	LNE_1235___	0,65
1131472	**80Y08RS90LN12N08**	80	22	40	8	16,00	50,0	8	4	LNE_1245___	0,75
1130277	**100Y10RS90LN12N06**	100	27	50	6	22,00	50,0	10	5	LNE_1235___	1,00
1130283	**100Y10RS90LN12N08**	100	27	50	8	22,00	50,0	10	5	LNE_1245___	1,20
1130506	**125Y12RS90LN12N10**	125	40	70	10	26,00	50,0	12	4	LNE_1245___	1,50
1150511	**160Y16RS90LN12N06**	160	40	70	6	43,00	50,0	16	8	LNE_1235___	1,85
1150513	**160Y16RS90LN12N08**	160	40	70	8	43,00	50,0	16	8	LNE_1245___	2,15
1150524	**160Y15RS90LN12N10**	160	40	70	10	43,00	50,0	15	5	LNE_1245___	2,45

Spare Parts







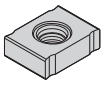
order number	D1	B min	insert screw	Nm	Torx driver
1131463	80	6	**MS1280**	3,0	**DT15**
1131472	80	8	**MS1282**	3,0	**DT15**
1130277	100	6	**MS1280**	3,0	**DT15**
1130283	100	8	**MS1282**	3,0	**DT15**
1130506	125	10	**MS1282**	3,0	**DT15**
1150511	160	6	**MS1280**	3,0	**DT15**
1150513	160	8	**MS1282**	3,0	**DT15**
1150524	160	10	**MS1282**	3,0	**DT15**

Insert Selection Guide

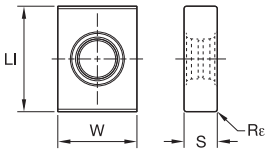
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	LNE..	KCPM40	**LNE..**	**KCPM40**	.S..GP	KCPM40
P3–P4	LNE..	KCPK30	**LNE..**	**KCPM40**	.S..GP	KCPM40
P5–P6	LNE..	KC725M	**.S..GP**	**KC725M**	.S..GP	KCPM40
M1–M2	LNE..	KC725M	**LNE..**	**KC725M**	.S..GP	KC725M
M3	LNE..	KC725M	**LNE..**	**KCPM40**	.S..GP	KCPM40
K1–K2	LNE..	KC520M	**LNE..**	**KCK15**	LNE..	KCK15
K3	LNE..	KC520M	**LNE..**	**KCK15**	LNE..	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	LNE..	KC725M	**LNE..**	**KC725M**	.S..GP	KC725M
S3	LNE..	KC725M	**LNE..**	**KCPM40**	.S..GP	KCPM40
S4	LNE..	KC725M	**.S..GP**	**KC725M**	.S..GP	KC725M
H1	–	–	**–**	**–**	–	–

Slotting Mills • 90° LN Slot LNEU

- Light machining.
- Four cutting edges.



LNEU-R



LNEU-R

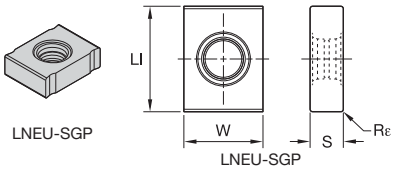
● first choice
○ alternate choice

P			●		●	●
M			●		○	○
K		●		●	○	
N						
S			●			
H						

LNEU-R

catalogue number	LI	W	S	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40
LNEU1235R03 4	12,70	9,52	3,50	0,3	0,05	4	●	●	–	–	●
LNEU1240R03 4	12,70	9,52	4,00	0,3	0,05	4	●	●	–	–	●
LNEU1245R04	12,70	9,52	4,50	0,4	0,05	4	●	●	–	●	●
LNEU1250R04	12,70	9,52	5,00	0,4	0,04	4	–	●	–	–	–
LNEU1250R04	12,70	9,52	5,00	0,4	0,05	4	–	–	–	–	●
LNEU1255R04	12,70	9,52	5,50	0,4	0,04	4	–	●	–	–	●
LNEU1260R04	12,70	9,52	6,00	0,4	0,04	4	–	●	–	–	●
LNEU1240R08 4	12,70	9,52	4,00	0,8	0,04	4	●	●	–	–	●
LNEU1245R08	12,70	9,52	4,50	0,8	0,04	4	●	●	–	–	●
LNEU1250R08	12,70	9,52	5,00	0,8	0,04	4	–	●	–	–	–
LNEU1250R08	12,70	9,52	5,00	0,8	0,05	4	–	–	–	–	●
LNEU1255R08	12,70	9,52	5,50	0,8	0,04	4	●	●	–	–	●
LNEU1240R16 4	12,70	9,52	4,00	1,6	0,04	4	–	●	–	–	–
LNEU1245R16	12,70	9,52	4,50	1,6	0,04	4	●	●	–	–	–
LNEU1255R16	12,70	9,52	5,50	1,6	0,04	4	–	●	–	–	–
LNEU1245R32	12,70	9,52	4,50	3,2	0,04	4	●	●	–	–	–
LNEU1255R32	12,70	9,52	5,50	3,2	0,04	4	–	●	–	–	–

- Four cutting edges.
- Medium machining with chip groover.



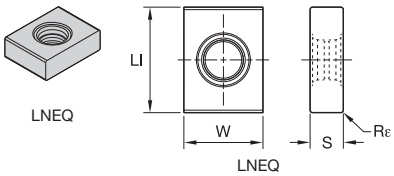
● first choice
○ alternate choice

P			●		●	●
M			●		○	○
K		●		●	○	
N						
S			●			
H						

LNEU-SGP

catalogue number	LI	W	S	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40
LNEU1235R03SGP 4	12,70	9,52	3,50	0,3	0,09	4	–	●	–	–	–
LNEU1240R03SGP 4	12,70	9,52	4,00	0,3	0,09	4	–	●	–	–	–
LNEU1245R04SGP	12,70	9,52	4,50	0,4	0,09	4	–	●	–	–	–
LNEU1250R04SGP	12,70	9,52	5,00	0,4	0,09	4	–	●	–	–	–
LNEU1245R08SGP	12,70	9,52	4,50	0,8	0,09	4	–	●	–	–	●
LNEU1250R08SGP	12,70	9,52	5,00	0,8	0,09	4	–	●	–	–	–
LNEU1245R16SGP	12,70	9,52	4,50	1,6	0,09	4	–	●	–	–	–

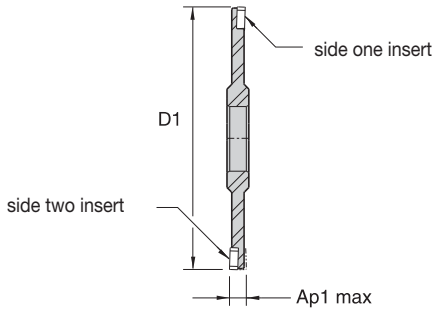
- Very strong geometry for roughing application.
- Four cutting edges.



LNEQ

catalogue number	LI	W	S	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40
LNEQ1235R03 4	12,70	9,52	3,50	0,3	0,05	4	–	●	●	–	–
LNEQ1240R03 4	12,70	9,52	4,00	0,3	0,05	4	–	●	–	●	–
LNEQ1245R04	12,70	9,52	4,50	0,4	0,05	4	●	●	●	●	–
LNEQ1250R04	12,70	9,52	5,00	0,4	0,05	4	–	–	●	–	–
LNEQ1255R04	12,70	9,52	5,50	0,4	0,05	4	–	●	●	–	–
LNEQ1260R04	12,70	9,52	6,00	0,4	0,05	4	–	●	●	–	●

- LNEx narrow slotting 6–13mm slot width.
- Utilises wider inserts in standard cutters.
- Cutting width of this unique LNEx insert style for narrow slotting cutters can be adjusted.
- The width can be increased in increments of 0,5mm or 1mm.
- Refer to the insert combination in the table below for insert and screw selection.

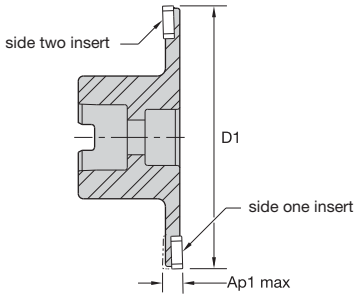


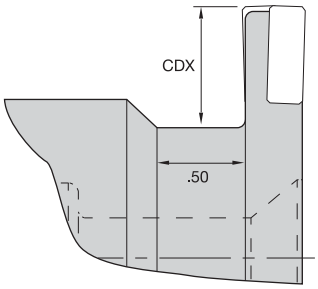
LN Slotting Cutter Widths: Adjust Width by Changing Inserts and Screws • Arbour Mount

catalogue number	D1	Ap1 max	Ap1 max (new)	side one insert*	screw**	side two insert*	screw**
80F08NS90LN12NO6	80	6	6.5	LNE1235	MS-1281	LNE1240	MS-2267
80F08NS90LN12NO6	80	6	7	LNE1240	MS-2267	LNE1240	MS-2267
80F08NS90LN12NO8	80	8	8.5	LNE1245	MS-1282	LNE1250	MS-1283
80F08NS90LN12NO8	80	8	9	LNE1250	MS-1283	LNE1250	MS-1283
100G10NS90LN12N06	100	6	6.5	LNE1235	MS-1281	LNE1240	MS-2267
100G10NS90LN12N06	100	6	7	LNE1240	MS-2267	LNE1240	MS-2267
100G10NS90LN12N08	100	8	8.5	LNE1245	MS-1282	LNE1250	MS-1283
100G10NS90LN12N08	100	8	9	LNE1250	MS-1283	LNE1250	MS-1283
125H12NS90LN12N06	125	6	6.5	LNE1235	MS-1281	LNE1240	MS-2267
125H12NS90LN12N06	125	6	7	LNE1240	MS-2267	LNE1240	MS-2267
125H12NS90LN12N10	125	10	10.5	LNE1245	MS-1282	LNE1250	MS-1283
125H12NS90LN12N10	125	10	11	LNE1250	MS-1283	LNE1250	MS-1283
160H16NS90LN12N06	160	6	6.5	LNE1235	MS-1281	LNE1240	MS-2267
160H16NS90LN12N06	160	6	7	LNE1240	MS-2267	LNE1240	MS-2267
160H16NS90LN12N08	160	8	8.5	LNE1245	MS-1282	LNE1250	MS-1283
160H16NS90LN12N08	160	8	9	LNE1250	MS-1283	LNE1250	MS-1283
160H15NS90LN12N10	160	10	10.5	LNE1245	MS-1282	LNE1250	MS-1283
160H15NS90LN12N10	160	10	11	LNE1250	MS-1283	LNE1250	MS-1283
160H15NS90LN12N12	160	12	12.5	LNE1255	MS-1284	LNE1260	MS-1285
160H15NS90LN12N12	160	12	13	LNE1260	MS-1285	LNE1260	MS-1285
200J18NS90LN12N06	200	6	6.5	LNE1235	MS-1281	LNE1240	MS-2267
200J18NS90LN12N06	200	6	7	LNE1240	MS-2267	LNE1240	MS-2267
200J18NS90LN12N08	200	8	8.5	LNE1245	MS-1282	LNE1250	MS-1283
200J18NS90LN12N08	200	8	9	LNE1250	MS-1283	LNE1250	MS-1283
200J18NS90LN12N10	200	10	10.5	LNE1245	MS-1282	LNE1250	MS-1283
200J18NS90LN12N10	200	10	11	LNE1250	MS-1283	LNE1250	MS-1283
200J18NS90LN12N12	200	12	12.5	LNE1255	MS-1284	LNE1260	MS-1285
200J18NS90LN12N12	200	12	13	LNE1260	MS-1285	LNE1260	MS-1285

* Caution: Variation in cutting width range limited to one size (thickness) greater than the standard insert thickness.
** When changing to a wider insert thickness, use the necessary longer screw; see chart for detail.
NOTE: When cutters have 3 rows of inserts, the above table only refers to the outer insert on both sides of the cutter.
When using inserts with a radius of 2,40mm or greater there is a need to modify the insert pocket; modify to 2.50 x 45° chamfer.

- LNEx narrow slotting 6–11mm slot width.
- Utilises wider inserts in standard cutters.
- Cutting width of this unique LNEx insert style for narrow slotting cutters can be adjusted.
- The width can be increased in increments of 0,5mm or 1mm.
- Refer to the insert combinations in the table below for insert selection.





LN Slotting Cutter Widths: Adjust Width by Changing Inserts and Screws • Shell Mill

catalogue number	D1	Ap1 max	Ap1 max (new)	side one insert*	screw**	side two insert*	screw**
80Y08RS90LN12N06	80	6	6.5	LNE1235	MS-1280	LNE1240	MS-1281
80Y08RS90LN12N06	80	6	7	LNE1240	MS-1281	LNE1240	MS-1281
80Y08RS90LN12N08	80	8	8.5	LNE1245	MS-1282	LNE1250	MS-1283
80Y08RS90LN12N08	80	8	9	LNE1250	MS-1283	LNE1250	MS-1283
100Y10RS90LN12N06	100	6	6.5	LNE1235	MS-1280	LNE1240	MS-1281
100Y10RS90LN12N06	100	6	7	LNE1240	MS-1281	LNE1240	MS-1281
100Y10RS90LN12N08	100	8	8.5	LNE1245	MS-1282	LNE1250	MS-1283
100Y10RS90LN12N08	100	8	9	LNE1250	MS-1283	LNE1250	MS-1283
125Y12RS90LN12N10	125	10	10.5	LNE1245	MS-1282	LNE1250	MS-1283
125Y12RS90LN12N10	125	10	11	LNE1250	MS-1283	LNE1250	MS-1283
160Y16RS90LN12N06	160	6	6.5	LNE1235	MS-1280	LNE1240	MS-1281
160Y16RS90LN12N06	160	6	7	LNE1240	MS-1281	LNE1240	MS-1281
160Y16RS90LN12N08	160	8	8.5	LNE1245	MS-1282	LNE1250	MS-1283
160Y16RS90LN12N08	160	8	9	LNE1250	MS-1283	LNE1250	MS-1283
160Y16RS90LN12N10	160	10	10.5	LNE1245	MS-1282	LNE1250	MS-1283
160Y16RS90LN12N10	160	10	11	LNE1250	MS-1283	LNE1250	MS-1283

Example: Cutting Width of 6,50mm

catalogue number	D1	Ap1 max	Ap1 max (new)	side one insert*	screw**	side two insert*	screw**
80Y08RS90LN12N06	80	6	6.5	LNE1235	MS-1280	LNE1240	MS-1281

* Caution: Variation in cutting width range limited to one size (thickness) greater than the standard insert thickness.
** When changing to a wider insert thickness, use the necessary longer screw; see chart for detail.
NOTE: When cutters have 3 rows of inserts, the above table only refers to the outer insert on both sides of the cutter.
When using inserts with a radii of 2,40mm or greater there is a need to modify the insert pocket; modify to 2.50 x 45° chamfer.

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...	0,17	**0,47**	0,70	0,12	**0,34**	0,50	0,09	**0,26**	0,38	0,08	**0,22**	0,33	0,07	**0,20**	0,30	...
.S..GP	0,23	**0,52**	0,81	0,17	**0,37**	0,58	0,13	**0,28**	0,43	0,11	**0,24**	0,38	0,10	**0,22**	0,35	.S..GP

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

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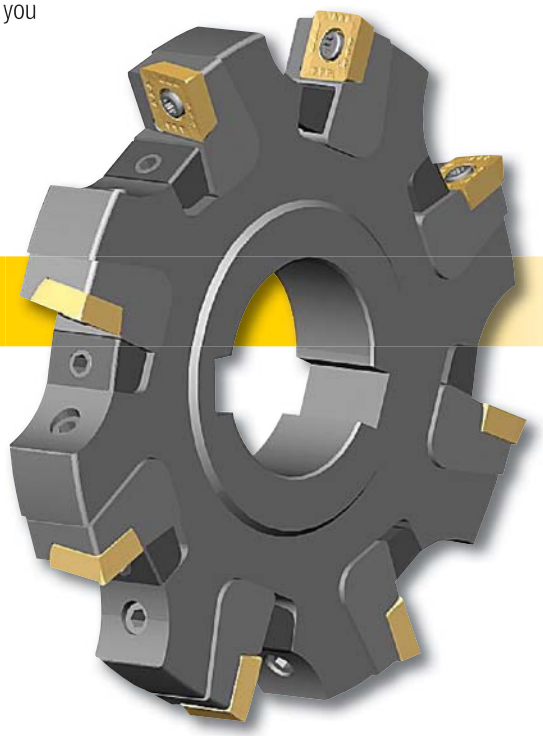
KSSM™ Slotting Cutter

Primary Application

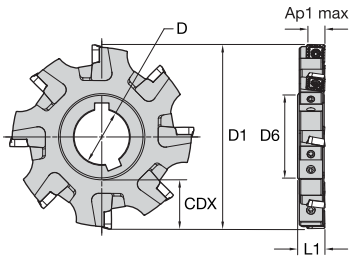
Cutters available in fixed and adjustable groove widths: Cutters available in arbour and shell mounts, as well as in fixed and adjustable groove widths, with insert grades and geometries for most materials, KSSM fixed-width slotting cutters are a cost effective solution for the general engineering market. Very precise adjustments to achieve consistent widths are possible with the variable width and enable you to change the tool from right hand to left hand with a change of cartridge.



Features and Benefits

- Cutters available in arbour and shell mounts, as well as in fixed and adjustable groove widths.
- Maximum groove widths:
  - Fixed cutters IC 10: 9,1mm and 15,8mm.
  - Fixed cutters IC 12: 11,7mm and 19,8mm.
  - Adjustable cutters IC 10: 14–18mm.
  - Adjustable cutters IC 12: 18–23,30mm.
- Rapid adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Faceted inserts for superior surface finish.
- Cutter diameter range is 100–315mm.
- Insert corner radii from 0,4–6,35mm.

- Right-hand and left-hand cutters with 9,1mm width of cut.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Various radii available.
- Faceted inserts for superior surface finishes.





Arbour Mount • 10mm IC • Right Hand

order number	catalogue number	D1	D	D6	CDX	L1	Ap1 max	Z	Z S	max RPM	kg
3330528	**100G10RP90SP10 ***	100	32	46,8	26,3	16,0	9,1	10	10	17200	0,54
3330531	**125H11RP90SP10 ***	125	40	54,8	34,8	16,0	9,1	11	11	15400	0,86
3330974	**160H11RP90SP10**	160	40	54,8	52,6	16,0	9,1	11	11	13660	1,57
3330977	**200J13RP90SP10**	200	50	68,8	65,3	16,0	9,1	13	13	12200	2,56

NOTE: For superior surface finish, use right-hand inserts.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Arbour Mount • 10mm IC • Left Hand

order number	catalogue number	D1	D	D6	CDX	L1	Ap1 max	Z	Z S	max RPM	kg
3330975	**160H11LP90SP10**	160	40	54,8	52,6	16,0	9,1	11	11	13660	1,57
3330978	**200J13LP90SP10**	200	50	68,8	65,3	16,0	9,1	13	13	12200	2,56

NOTE: For superior surface finish, use left-hand inserts.
Insert radii ≥1,6mm (.062") has no facet.

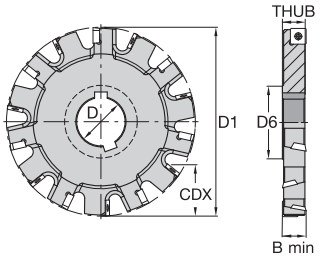
Spare Parts





D1	insert screw	Nm	Torx Plus driver
100	**MS2148**	2,0	**DT9IP**
125	**MS2148**	2,0	**DT9IP**
160	**MS2148**	2,0	**DT9IP**
200	**MS2148**	2,0	**DT9IP**

- Neutral (full slotting) cutters.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Faceted inserts for superior surface finishes.





Arbour Mount • 10mm IC • Neutral (Full Slotting)

order number	catalogue number	D1	D	D6	CDX	THUB	B min	Z	Z S	max RPM	kg
3330527	**100G10NP90SP10N16K ***	100	32	46,8	26,4	13,9	15,83	10	5	17200	0,46
3330530	**125H12NP90SP10N16K**	125	40	54,8	34,9	13,9	15,83	12	6	15400	0,76
3330973	**160H12NP90SP10N16K**	160	40	54,8	52,2	13,9	15,83	12	6	13660	1,40
3330976	**200J14NP90SP10N16K**	200	50	68,8	65,2	13,9	15,83	14	7	12200	2,26

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

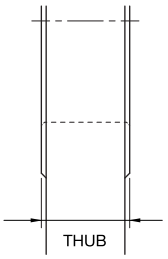


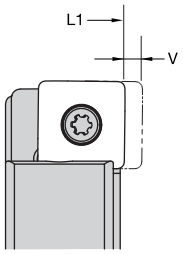


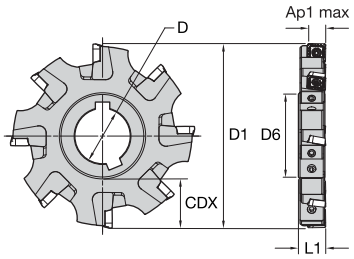
D1	insert screw	Nm	Torx Plus driver
100	**MS2148**	2,0	**DT9IP**
125	**MS2148**	2,0	**DT9IP**
160	**MS2148**	2,0	**DT9IP**
200	**MS2148**	2,0	**DT9IP**

NOTE: For superior surface finish, use right- and left-hand inserts.
Insert radii ≥1,6mm (.062") has no facet.

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.







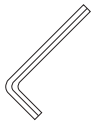


Arbour Mount • Half-Side Cutting • Right Hand

order number	catalogue number	D1	D	D6	CDX	L1	THUB	V	Ap1 max	Z	Z S	max RPM	kg
2442596	**100G06RK90SP10N14K**	100	32	46,8	25,9	13,9	13,9	1,0	9,1	6	6	17250	0,50
2442602	**125H08RK90SP10N14K**	125	40	54,8	34,4	13,9	13,9	1,0	9,1	8	8	15450	0,80
2443456	**160H10RK90SP10N14K**	160	40	54,8	51,9	13,9	13,9	1,0	9,1	10	10	13650	1,50

Spare Parts





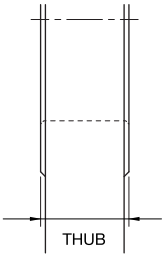


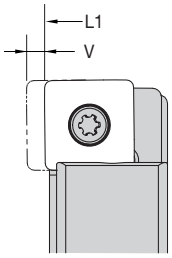


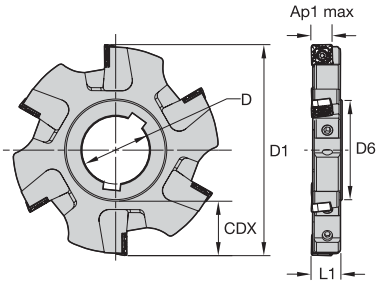


D1	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
100	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM32**
125	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**
160	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.









Arbour Mount • Half-Side Cutting • Left Hand

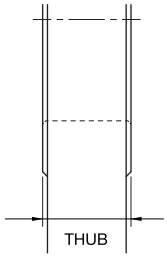
order number	catalogue number	D1	D	D6	CDX	L1	THUB	V	Ap1 max	Z	Z S	max RPM	kg
2442597	**100G06LK90SP10N14K**	100	32	46,8	25,9	13,9	13,9	1,0	9,1	6	6	17250	0,50
2443457	**160H10LK90SP10N14K**	160	40	54,8	51,9	13,9	13,9	1,0	9,1	10	10	13650	1,50

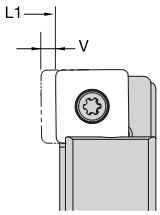
Spare Parts

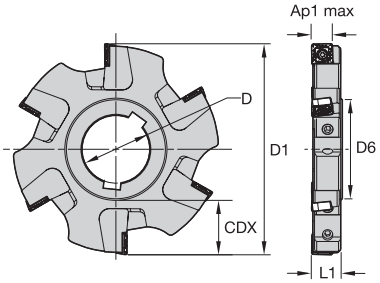


D1	cartridge left-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
100	**LK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM32**
160	**LK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.









Arbour Mount • Half-Side Cutting • Left Hand

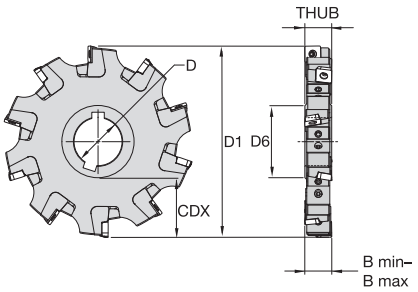
order number	catalogue number	D1	D	D6	CDX	L1	THUB	V	Ap1 max	Z	Z S	max RPM	kg
2443484	**200J14LK90SP10N16K**	200	50	68,8	64,9	15,9	15,9	1,0	9,1	14	14	12200	2,80
2443505	**250J18LK90SP10N16K**	250	50	68,8	89,9	15,9	15,9	1,0	9,1	18	18	10900	4,70

Spare Parts



D1	cartridge left-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
200	**LK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**
250	**LK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.

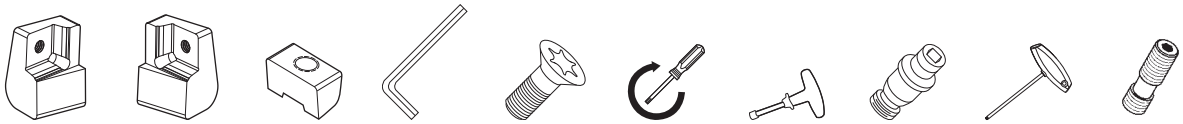




Arbour Mount Slotting Cutter • 14–16mm Adjustment Range

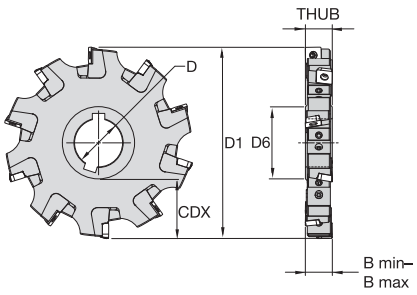
order number	catalogue number	D1	D	D6	CDX	THUB	B min	B max	Z	Z S	max RPM	kg
2442595	**100G06NK90SP10N14K**	100	32	46,8	25,9	13,9	14	16	6	3	17250	0,50
2442601	**125H08NK90SP10N14K**	125	40	54,8	34,4	13,9	14	16	8	4	15450	0,80
2443455	**160H10NK90SP10N14K**	160	40	54,8	51,9	13,9	14	16	10	5	13650	1,50
2443479	**200J14NK90SP10N14K**	200	50	68,8	64,9	13,9	14	16	14	7	12200	2,40

Spare Parts



D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
100	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM32**
125	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**
160	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**
200	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.

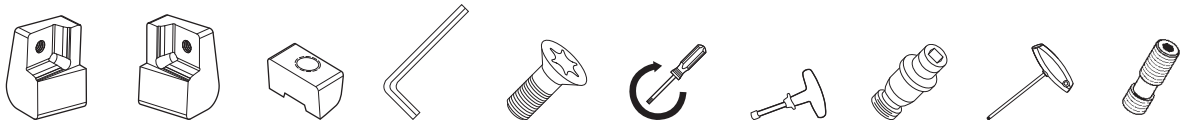




Arbour Mount Slotting Cutter • 16–18mm Adjustment Range

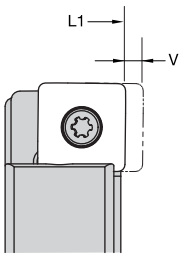
order number	catalogue number	D1	D	D6	CDX	THUB	B min	B max	Z	Z S	max RPM	kg
2443434	**125H08NK90SP10N16K**	125	40	54,8	34,4	15,9	16	18	8	4	15450	1,00
2443458	**160H10NK90SP10N16K**	160	40	54,8	51,9	15,9	16	18	10	5	13650	1,80
2443503	**250J18NK90SP10N16K**	250	50	68,8	89,9	15,9	16	18	18	9	10900	4,70
2443521	**315K20NK90SP10N16K**	315	60	83,8	114,9	15,9	16	18	20	10	9700	7,70

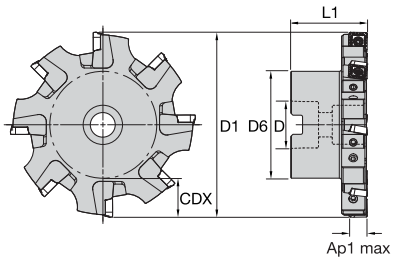
Spare Parts



D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
125	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**
160	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**
250	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**
315	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.







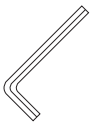
Shell Mount • Half-Side Cutting • Right Hand

order number	catalogue number	D1	D	D6	CDX	L1	V	Ap1 max	Z	Z S	max RPM	kg
2442599	**100Y06RK90SP10N14K** *	100	27	48,0	24,4	50,8	1,0	9,1	6	6	17250	0,90
2443444	**125Y08RK90SP10N14K**	125	32	58,0	31,9	50,8	1,0	9,1	8	8	15450	1,40
2443468	**160Y10RK90SP10N14K**	160	40	70,0	43,4	50,8	1,0	9,1	10	10	13650	2,00

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts





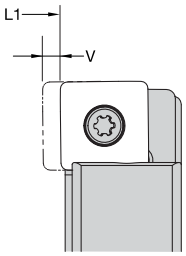


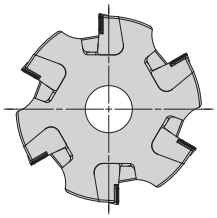


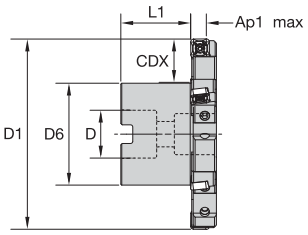



D1	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
100	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**MS1556**
125	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**MS1559**
160	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**–**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.





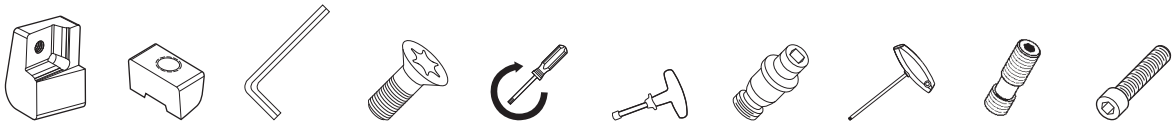




Shell Mount • Half-Side Cutting • Left Hand

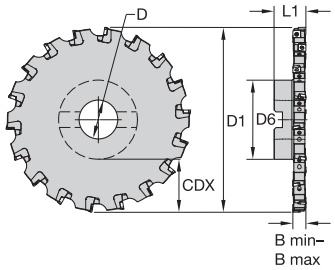
order number	catalogue number	D1	D	D6	CDX	L1	V	Ap1 max	Z	Z S	max RPM	kg
2442600	**100Y06LK90SP10N14K**	100	27	48,0	24,4	36,8	1,0	9,1	6	6	17250	0,90
2443445	**125Y08LK90SP10N14K**	125	32	58,0	31,9	36,8	1,0	9,1	8	8	15450	1,40
2443469	**160Y10LK90SP10N14K**	160	40	70,0	43,4	36,8	1,0	9,1	10	10	13650	2,00
2443493	**200Y14LK90SP10N14K**	200	40	90,0	53,4	36,8	1,0	9,1	14	14	12200	3,70

Spare Parts



D1	cartridge left-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
100	**LK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**MS1556**
125	**LK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**MS1559**
160	**LK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	–
200	**LK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	–

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.





Shell Mount Slotting Cutters • 14–16mm Adjustment Range

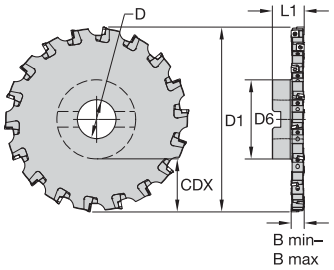
order number	catalogue number	D1	D	D6	CDX	L1	V	B min	B max	Z	Z S	max RPM	kg
2442598	**100Y06NK90SP10N14K**	100	27	48,0	24,4	50,8	1,0	14	16	6	3	17250	0,90
2443443	**125Y08NK90SP10N14K**	125	32	58,0	31,9	50,8	1,0	14	16	8	4	15450	1,40
2443467	**160Y10NK90SP10N14K**	160	40	70,0	43,4	50,8	1,0	14	16	10	5	13650	2,00
2443491	**200Y14NK90SP10N14K**	200	40	90,0	53,4	50,8	1,0	14	16	14	7	12200	3,70

Spare Parts



D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
100	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**MS1556**
125	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**MS1559**
160	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	–
200	**LK90SP1014**	**RK90SP1014**	**W14**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	–

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.



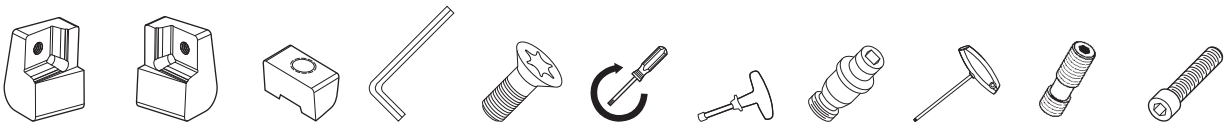


Shell Mount Slotting Cutters • 16–18mm Adjustment Range

order number	catalogue number	D1	D	D6	CDX	L1	V	B min	B max	Z	Z S	max RPM	kg
2443446	**125Y08NK90SP10N16K ***	125	32	58,0	31,9	50,8	1,0	16	18	8	4	15450	1,60
2443470	**160Y10NK90SP10N16K**	160	40	70,0	43,4	50,8	1,0	16	18	10	5	13650	2,20
2443494	**200Y14NK90SP10N16K ***	200	40	90,0	53,4	50,8	1,0	16	18	14	7	12200	4,10
2443512	**250Y18NK90SP10N16K**	250	60	130,0	58,4	50,8	1,0	16	18	18	9	10900	6,40
2443530	**315Y20NK90SP10N16K**	315	60	130,0	90,9	50,8	1,0	16	18	20	10	9700	9,50

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



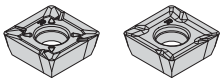
D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
125	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**MS1559**
160	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**–**
200	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**–**
250	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**–**
315	**LK90SP1016**	**RK90SP1016**	**W16**	**MW25**	**MS2148**	2,0	**TTP9**	**CP1416**	**THW3M**	**STCM11**	**–**

Insert Selection Guide

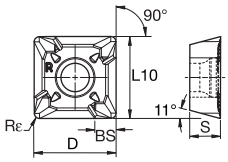
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPK30
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
S4	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
H1	–	–	**–**	**–**	–	–

Indexable Inserts for KSSM™ SP.T10T3...

- Light-duty insert.
- Four cutting edges.



SPCT-LD2 SPCT-LE



SPCT-LD2
SPCT-LE

● first choice
○ alternate choice

		KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
P				●		●	●		
M				●		○	○	○	
K			●		●	○	○		●
N		●							
S								●	
H									

SPCT-LD2

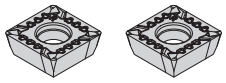
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPCT10T304PPELLD2	10	3,97	10,00	2,70	0,4	0,04	4	–	–	●	–	–	–	–	–
SPCT10T304PPERLD2	10	3,97	10,00	2,70	0,4	0,04	4	–	–	●	–	–	–	–	–
SPCT10T3PPELLD2	10	3,97	10,00	2,70	0,8	0,04	4	–	–	●	–	–	–	–	–
SPCT10T3PPERLD2	10	3,97	10,00	2,70	0,8	0,04	4	–	●	●	–	–	●	–	–
SPCT10T312PPELLD2	10	3,97	10,00	2,70	1,2	0,04	4	–	–	●	–	–	–	–	–
SPCT10T312PPERLD2	10	3,97	10,00	2,70	1,2	0,04	4	–	–	●	–	–	–	–	–
SPCT10T316ENLD2	10	3,97	10,00	–	1,6	0,04	4	–	–	●	–	–	–	●	–
SPCT10T320ENLD2	10	3,97	10,00	–	2,0	0,04	4	–	–	●	–	–	–	–	–

- Light-duty insert.
- Four cutting edges.

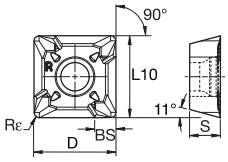
SPCT-LE

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPCT10T304PPFLLE	10	3,97	10,00	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–
SPCT10T304PPFRLE	10	3,97	10,00	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–
SPCT10T3PPFLLE	10	3,97	10,00	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–
SPCT10T3PPFRLE	10	3,97	10,00	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–
SPCT10T312PPFRLE	10	3,97	10,00	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–
SPCT10T320FNLE	10	3,97	10,00	–	2,0	0,02	4	●	–	–	–	–	–	–	–

- Medium to heavy machining.
- Four cutting edges.



SPET-GB2 SPPT-GB2



SPET-GB2
SPPT-GB2

● first choice
○ alternate choice

		KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
P				●		●	●		
M				●		○	○	○	
K			●		●	○	○		●
N		●							
S								●	
H									

SPET-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPET10T304PPELGB2	10	3,97	10,00	2,70	0,4	0,08	4	–	–	●	●	●	–	–	–
SPET10T304PPERGB2	10	3,97	10,00	2,70	0,4	0,08	4	–	–	●	●	●	–	–	–
SPET10T3PPELGB2	10	3,97	10,00	2,70	0,8	0,08	4	–	●	●	●	●	–	–	–
SPET10T3PPERGB2	10	3,97	10,00	2,70	0,8	0,08	4	–	●	●	●	●	●	–	–
SPET10T3PPSLGB2	10	3,97	10,00	2,70	0,8	0,13	4	–	–	●	–	●	–	–	–
SPET10T3PPSRGB2	10	3,97	10,00	2,70	0,8	0,13	4	–	●	●	●	●	–	–	–

- Four cutting edges.

SPPT-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPPT10T3PPERGB2	10	3,97	10,00	2,70	0,8	0,08	4	–	–	–	●	●	–	–	–
SPPT10T3PPSRGB2	10	3,97	10,00	2,70	0,8	0,13	4	–	–	–	●	●	–	–	●

Recommended Starting Feeds

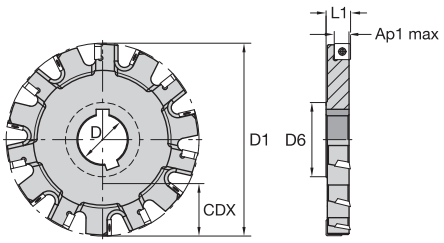
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	0,12	**0,42**	0,70	0,08	**0,30**	0,50	0,06	**0,23**	0,38	0,06	**0,20**	0,33	0,05	**0,18**	0,30	.F..LE
.F..LD	0,12	**0,42**	0,70	0,08	**0,30**	0,50	0,06	**0,23**	0,38	0,06	**0,20**	0,33	0,05	**0,18**	0,30	.F..LD
.E..LD2	0,12	**0,46**	0,81	0,09	**0,33**	0,58	0,07	**0,25**	0,43	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..LD2
.E..LD	0,17	**0,47**	0,82	0,12	**0,34**	0,59	0,09	**0,26**	0,44	0,08	**0,22**	0,38	0,07	**0,20**	0,35	.E..LD
.E..GB2	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB2
.S..GB	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB
.S..GB2	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB2
.S..GN	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Right- and left-hand cutters.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Faceted inserts for superior surface finishes.





Arbour Mount • 12mm IC • Right Hand

order number	catalogue number	D1	D	D6	CDX	L1	Ap1 max	Z	Z S	max RPM	kg
3330984	**160H12RP90SD12**	160	40	54,8	52,6	20,0	11,7	12	12	9170	1,96
3330987	**200J14RP90SD12**	200	50	68,8	65,6	20,0	11,7	14	14	8210	3,18
3330990	**250J16RP90SD12 ***	250	50	68,8	90,6	20,0	11,7	16	16	7300	5,29

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Arbour Mount • 12mm IC • Left Hand

order number	catalogue number	D1	D	D6	CDX	L1	Ap1 max	Z	Z S	max RPM	kg
3330985	**160H12LP90SD12**	160	40	54,8	52,6	20,0	11,7	12	12	9170	1,96
3330988	**200J14LP90SD12**	200	50	68,8	65,6	20,0	11,7	14	14	8210	3,18
3330991	**250J16LP90SD12 ***	250	50	68,8	90,6	20,0	11,7	16	16	7300	5,29

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

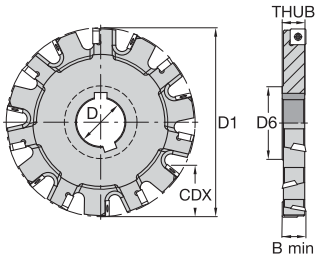




D1	insert screw	Nm	Torx Plus driver
160	**MS2078**	4,0	**DT15IP**
200	**MS2078**	4,0	**DT15IP**
250	**MS2078**	4,0	**DT15IP**

NOTE: For superior surface finish, use left-hand inserts.
Insert radii ≥1,6mm (.062") has no facet.

- Neutral (full slotting) cutters.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Faceted inserts for superior surface finishes.





Arbour Mount • 12mm IC • Neutral (Full Slotting)

order number	catalogue number	D1	D	D6	CDX	THUB	B min	Z	Z S	max RPM	kg
3330983	**160H14NP90SD12N20K**	160	40	54,8	52,2	17,9	19,8	14	7	9170	1,85
3330986	**200J18NP90SD12N20K**	200	50	68,8	65,2	17,9	19,8	18	9	8210	3,11
3330989	**250J22NP90SD12N20K**	250	50	68,8	90,4	17,9	19,8	22	11	7300	5,14

Spare Parts

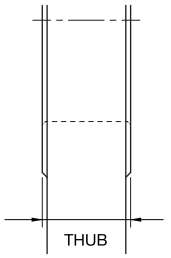


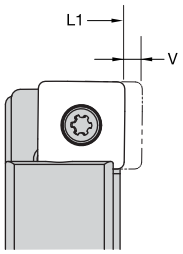


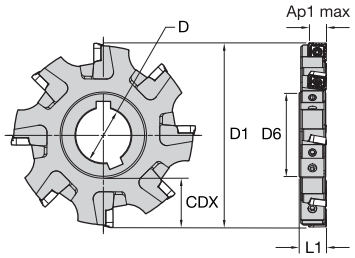
D1	insert screw	Nm	Torx Plus driver
160	**MS2078**	4,0	**DT15IP**
200	**MS2078**	4,0	**DT15IP**
250	**MS2078**	4,0	**DT15IP**

NOTE: For superior surface finish, use left-hand inserts.
Insert radii ≥1,6mm (.062") has no facet.

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.









Arbour Mount • Half-Side Cutting • Right Hand

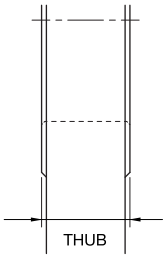
order number	catalogue number	D1	D	D6	CDX	L1	THUB	V	Ap1 max	Z	Z S	max RPM	kg
2443438	**125H08RK90SD12N18K**	125	40	54,8	34,0	18,1	18,2	1,3	11,7	8	8	10350	1,00
2443462	**160H10RK90SD12N18K**	160	40	54,8	51,5	18,1	18,2	1,3	11,7	10	10	9150	1,80

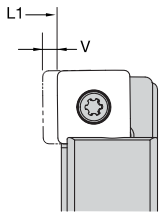
Spare Parts

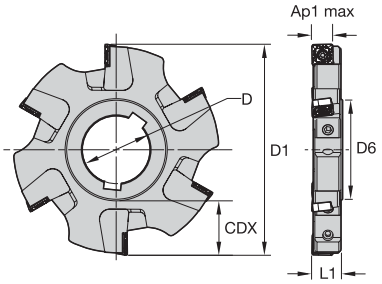


D1	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
125	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
160	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.









Arbour Mount • Half-Side Cutting • Left Hand

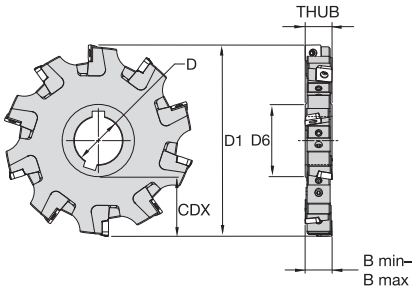
order number	catalogue number	D1	D	D6	CDX	L1	THUB	V	Ap1 max	Z	Z S	max RPM	kg
2443439	**125H08LK90SD12N18K**	125	40	54,8	34,0	18,1	18,2	1,3	11,7	8	8	10350	1,00
2443463	**160H10LK90SD12N18K**	160	40	54,8	51,5	18,1	18,2	1,3	11,7	10	10	9150	1,80
2443526	**315K18LK90SD12N18K**	315	60	83,8	114,5	18,1	18,2	1,3	11,7	18	18	6500	8,40

Spare Parts



D1	cartridge left-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
125	**LK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
160	**LK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
315	**LK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.



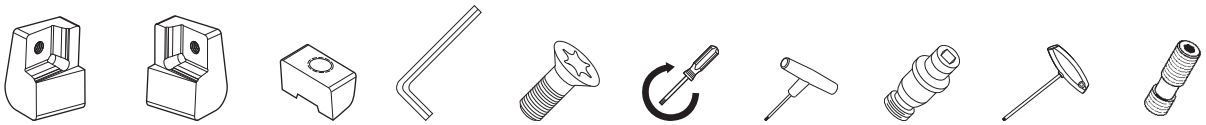


Arbour Mount Slotting Cutter • 18–20,7mm Adjustment Range

order number	catalogue number	D1	D	D6	B min	B max	CDX	THUB	Z	Z S	max RPM	kg
2443437	**125H08NK90SD12N18K**	125	40	54,8	18	20,7	34,0	18,2	8	4	10350	1,00
2443461	**160H10NK90SD12N18K**	160	40	54,8	18	20,7	51,5	18,2	10	5	9150	1,80
2443485	**200J14NK90SD12N18K**	200	50	68,8	18	20,7	64,5	18,2	14	7	8200	3,00
2443506	**250J16NK90SD12N18K ***	250	50	68,8	18	20,7	89,5	18,2	16	8	7350	5,00
2443524	**315K18NK90SD12N18K**	315	60	83,8	18	20,7	114,5	18,2	18	9	6500	8,40

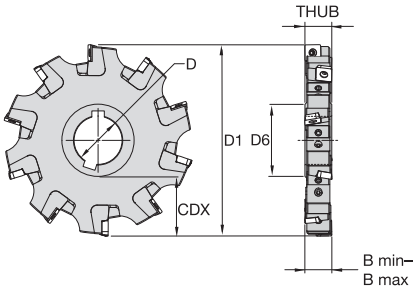
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
125	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
160	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
200	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
250	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
315	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.



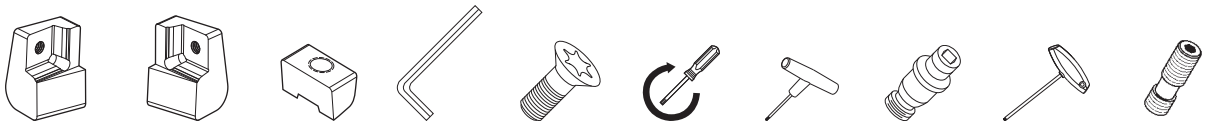


Arbour Mount Slotting Cutter • 20,7–23,3mm Adjustment Range

order number	catalogue number	D1	D	D6	B min	B max	CDX	THUB	Z	Z S	max RPM	kg
2443440	**125H08NK90SD12N20K**	125	40	54,8	20,7	23,3	34,0	20,8	8	4	10350	1,20
2443464	**160H10NK90SD12N20K ***	160	40	54,8	20,7	23,3	51,5	20,8	10	5	9150	2,10
2443488	**200J14NK90SD12N20K ***	200	50	68,8	20,7	23,3	64,5	20,8	14	7	8200	3,50
2443527	**315K18NK90SD12N20K**	315	60	83,8	20,7	23,3	114,5	20,8	18	9	6500	9,70

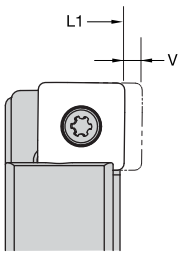
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

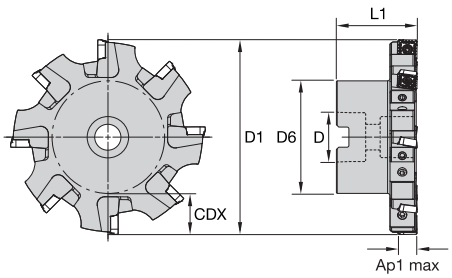
Spare Parts



D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw
125	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
160	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
200	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**
315	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.



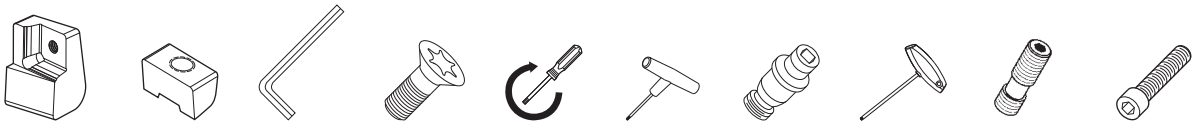




Shell Mount • Half-Side Cutting • Right Hand

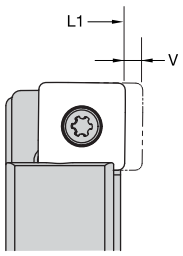
order number	catalogue number	D1	D	D6	CDX	L1	V	Ap1 max	Z	Z S	max RPM	kg
2443450	**125Y08RK90SD12N18K**	125	32	58,0	31,9	51,0	1,3	11,7	8	8	10350	1,60

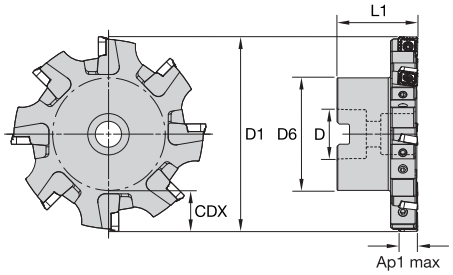
Spare Parts



D1	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
125	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**MS1559**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.



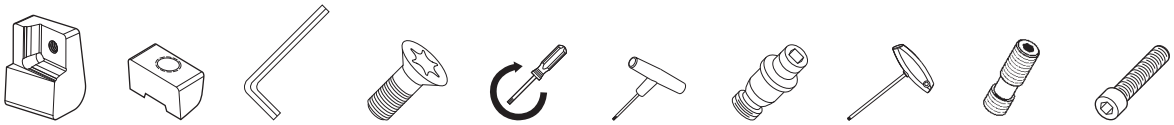




Shell Mount • Half-Side Cutting • Right Hand

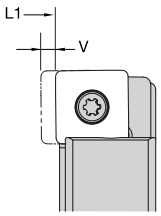
order number	catalogue number	D1	D	D6	CDX	L1	V	Ap1 max	Z	Z S	max RPM	kg
2443453	**125Y08RK90SD12N20K**	125	32	58,0	31,9	51,0	1,3	11,7	8	8	10350	1,70

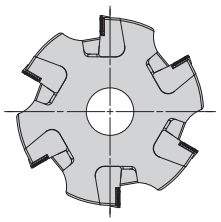
Spare Parts

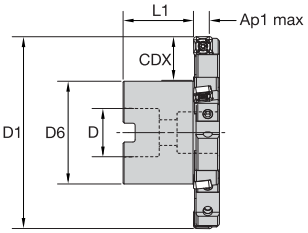


D1	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
125	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**MS1559**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.







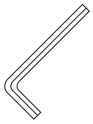


Shell Mount • Half-Side Cutting • Left Hand

order number	catalogue number	D1	D	D6	CDX	L1	V	Ap1 max	Z	Z S	max RPM	kg
2443451	**125Y08LK90SD12N18K**	125	32	58,0	31,9	33,0	1,3	11,7	8	8	10350	1,60
2443475	**160Y10LK90SD12N18K**	160	40	70,0	43,4	33,0	1,3	11,7	10	10	9150	2,30

Spare Parts





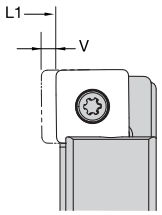


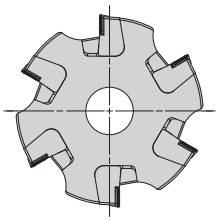


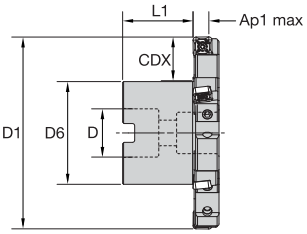



D1	cartridge left-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
125	**LK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**MS1559**
160	**LK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.







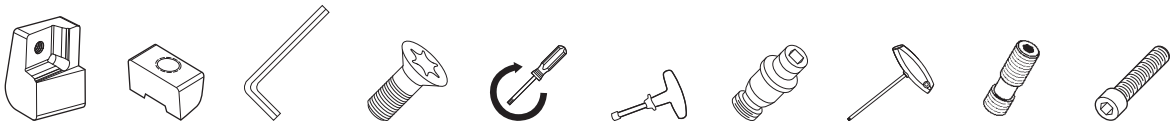


Shell Mount • Half-Side Cutting • Left Hand

order number	catalogue number	D1	D	D6	CDX	L1	V	Ap1 max	Z	Z S	max RPM	kg
2443454	**125Y08LK90SD12N20K**	125	32	58,0	31,9	30,4	1,3	11,7	8	8	10350	1,70
2443502	**200Y14LK90SD12N20K ***	200	40	90,0	53,4	30,4	1,3	11,7	14	14	8200	4,60

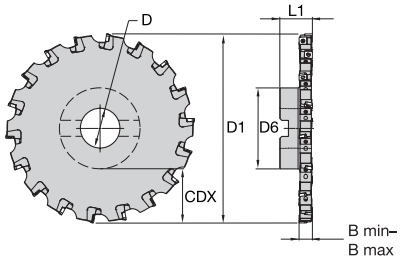
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



D1	cartridge left-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin wrench	wedge wrench	wedge screw	socket-head cap screw
125	**LK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**MS1559**
200	**LK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.



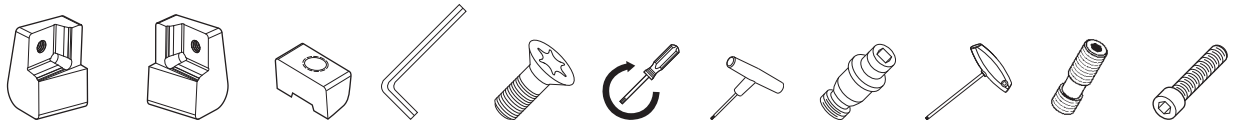


Shell Mount • Slotting Width • 18–20,7mm Adjustment Range

order number	catalogue number	D1	D	D6	B min	B max	CDX	L1	Z	Z S	max RPM	kg
2443449	**125Y08NK90SD12N18K**	125	32	58,0	18	20,7	31,9	51,0	8	4	10350	1,60
2443473	**160Y10NK90SD12N18K**	160	40	70,0	18	20,7	43,4	51,0	10	5	9150	2,30
2443515	**250Y16NK90SD12N18K** *	250	60	130,0	18	20,7	58,4	51,0	16	8	7350	6,70
2443536	**315Y18NK90SD12N18K** *	315	60	130,0	18	20,7	90,9	51,0	18	9	6500	10,04

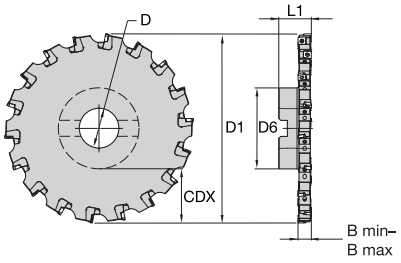
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
125	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**MS1559**
160	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**
250	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**
315	**LK90SD1218**	**RK90SD1218**	**W18**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide choice of insert radii.
- Wiper insert facets for superior surface finishes.

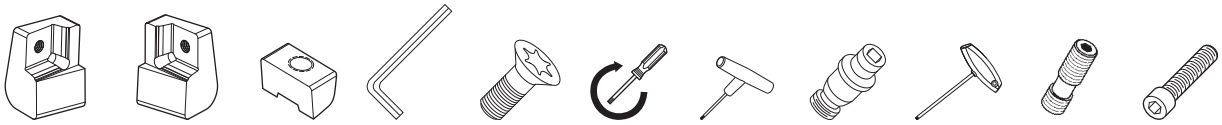




Shell Mount • Slotting Width • 20,7–23,3mm Adjustment Range

order number	catalogue number	D1	D	D6	B min	B max	CDX	L1	Z	Z S	max RPM	kg
2443452	**125Y08NK90SD12N20K**	125	32	58,0	20,7	23,3	31,9	51,0	8	4	10350	1,70
2443476	**160Y10NK90SD12N20K**	160	40	70,0	20,7	23,3	43,4	51,0	10	5	9150	2,50
2443500	**200Y14NK90SD12N20K**	200	40	90,0	20,7	23,3	53,4	51,0	14	7	8200	4,60
2443518	**250Y16NK90SD12N20K**	250	60	130,0	20,7	23,3	58,4	51,0	16	8	7350	7,30
2443533	**315Y18NK90SD12N20K**	315	60	130,0	20,7	23,3	90,9	51,0	18	9	6500	11,30

Spare Parts



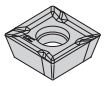
D1	cartridge left-hand	cartridge right-hand	wedge	cam pin wrench	insert screw	Nm	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
125	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**MS1559**
160	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**
200	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**
250	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**
315	**LK90SD1220**	**RK90SD1220**	**W20**	**MW3**	**MS2077**	4,0	**TTP15**	**CP1820**	**THW3M**	**STCM11**	**–**

Insert Selection Guide

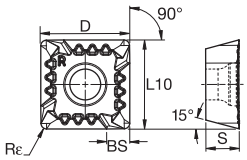
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
S4	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts • KSSM SD.T1204...

- Light-duty insert.
- Four cutting edges.



SDCT-LE



SDCT-LE

● first choice
○ alternate choice

P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										

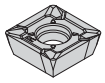
SDCT-LE

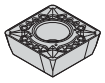
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDCT120404PDFLLE	12,70	4,76	12,70	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–
SDCT120404PDFRLE	12,70	4,76	12,70	2,70	0,4	0,02	4	●	–	–	–	–	–	–	–	–
SDCT1204PDFLLE	12,70	4,76	12,70	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–
SDCT1204PDFRLE	12,70	4,76	12,70	2,70	0,8	0,02	4	●	–	–	–	–	–	–	–	–
SDCT120412PDFLLE	12,70	4,76	12,70	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–	–
SDCT120412PDFRLE	12,70	4,76	12,70	2,70	1,2	0,02	4	●	–	–	–	–	–	–	–	–
SDCT120416FNLE	12,70	4,76	12,70	–	1,6	0,02	4	●	–	–	–	–	–	–	–	–
SDCT120420FNLE	12,70	4,76	12,70	–	2,0	0,02	4	●	–	–	–	–	–	–	–	–
SDCT120424FNLE	12,70	4,76	12,70	–	2,4	0,02	4	●	–	–	–	–	–	–	–	–
SDCT120432FNLE	12,70	4,76	12,70	–	3,2	0,02	4	●	–	–	–	–	–	–	–	–

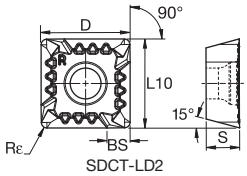
- Light and finish machining.
- Precision ground.
- 15° rake face.
- Four cutting edges.

P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N	●									
S				●	●				●	●
H										

● first choice
○ alternate choice


SDCT-LD2


SDET-GB



SDCT-LD2
SDET-GB

SDCT-LD2

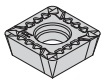
catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDCT120404PDELLD2	12,70	4,76	12,70	2,70	0,4	0,04	4	–	–	–	●	–	–	–	–	–
SDCT120404PDERLD2	12,70	4,76	12,70	2,93	0,4	0,04	4	–	–	–	●	–	–	–	–	–
SDCT1204PDELLD2	12,70	4,76	12,70	3,32	0,8	0,04	4	–	–	–	●	–	–	–	–	–
SDCT1204PDERLD2	12,70	4,76	12,70	3,32	0,8	0,04	4	–	●	–	●	–	–	●	–	●
SDCT120412PDELLD2	12,70	4,76	12,70	3,05	1,2	0,04	4	–	–	–	●	–	–	–	–	–
SDCT120412PDERLD2	12,70	4,76	12,70	3,05	1,2	0,04	4	–	–	–	●	–	–	–	–	●
SDCT120416ENLD2	12,70	4,76	12,70	–	1,6	0,04	4	–	–	–	●	–	–	–	–	●
SDCT120420ENLD2	12,70	4,76	12,70	–	2,0	0,04	4	–	–	–	●	–	–	–	–	–
SDCT120424ENLD2	12,70	4,76	12,70	–	2,4	0,04	4	–	–	–	●	–	–	–	–	–
SDCT120432ENLD2	12,70	4,76	12,70	–	3,2	0,04	4	–	–	●	●	–	–	–	●	●
SDCT120464ENLD2	12,70	4,76	12,70	–	6,3	0,04	2	–	–	–	●	–	–	–	–	●

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.

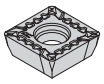
SDET-GB

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDET1204PDERGB	12,70	4,76	12,70	2,56	0,8	0,08	4	–	●	–	–	–	–	–	–	●
SDET1204PDSRGB	12,70	4,76	12,70	2,56	0,8	0,15	4	–	–	–	●	–	●	●	●	●
SDET120412PDERGB	12,70	4,76	12,70	2,19	1,2	0,08	4	–	–	–	●	–	–	●	–	●
SDET120412PDSRGB	12,70	4,76	12,70	2,16	1,2	0,15	4	–	–	–	●	–	–	–	–	●
SDET120416ENGB	12,70	4,76	12,70	–	1,6	0,08	4	–	–	–	–	–	–	–	–	●
SDET120416SNGB	12,70	4,76	12,70	–	1,6	0,15	4	–	–	–	●	–	–	–	–	●
SDET120424ENGB	12,70	4,76	12,70	–	2,4	0,08	4	–	–	–	●	–	–	–	–	●
SDET120424SNGB	12,70	4,76	12,70	–	2,4	0,15	4	–	–	–	●	–	–	–	–	●
SDET120432ENGB	12,70	4,76	12,70	–	3,2	0,08	4	–	–	–	●	–	–	–	–	●
SDET120432SNGB	12,70	4,76	12,70	–	3,2	0,15	4	–	–	–	–	–	–	–	–	●
SDET120448ENGB	12,70	4,76	12,70	–	4,8	0,08	2	–	–	–	●	–	–	–	–	●
SDET120448SNGB	12,70	4,76	12,70	–	4,8	0,15	2	–	–	–	●	–	–	–	–	●
SDET120464ENGB	12,70	4,76	12,70	–	6,4	0,08	2	–	–	–	●	–	–	–	–	●
SDET120464SNGB	12,70	4,76	12,70	–	6,4	0,15	2	–	–	–	●	–	●	–	●	●

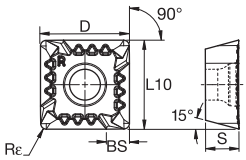
- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.



SDET-GB2



SDPT-GB2



SDET-GB2
SDPT-GB2

● first choice
○ alternate choice

P			○	●		●	●		○
M			●	●		○	○	○	●
K		●	○		●	○			
N	●								
S			●	●				●	●
H									

SDET-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDET1204PDELGB2	12,70	4,76	12,70	3,32	0,8	0,08	4	–	●	–	●	●	●	–	–	–
SDET1204PDERGB2	12,70	4,76	12,70	3,32	0,8	0,08	4	–	●	–	●	●	●	●	–	●
SDET1204PDSLGB2	12,70	4,76	12,70	3,32	0,8	0,13	4	–	–	–	●	–	●	–	–	–
SDET1204PDSRGB2	12,70	4,76	12,70	3,32	0,8	0,13	4	–	●	–	●	●	●	●	–	–
SDET120412PDELGB2	12,70	4,76	12,70	3,05	1,2	0,08	4	–	●	–	●	●	–	–	–	–
SDET120412PDERGB2	12,70	4,76	12,70	3,05	1,2	0,08	4	–	●	–	●	●	●	●	–	–
SDET120416SNGB2	12,70	4,76	12,70	–	1,6	0,13	4	–	●	–	●	●	●	–	–	–
SDET120420SNGB2	12,70	4,76	12,70	–	2,0	0,13	4	–	●	–	●	●	●	●	–	–
SDET120424SNGB2	12,70	4,76	12,70	–	2,4	0,13	4	–	–	–	●	●	●	–	–	–
SDET120432SNGB2	12,70	4,76	12,70	–	3,2	0,13	4	–	●	–	●	●	●	–	–	–
SDET120432XENGB2	12,70	4,76	12,70	–	3,2	0,08	2	–	–	–	●	–	–	–	–	–
SDET120464SNGB2	12,70	4,76	12,70	–	6,4	0,13	2	–	–	–	–	–	●	–	–	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.

SDPT-GB2

catalogue number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDPT1204PDERGB2	12,70	4,76	12,70	2,70	0,8	0,08	4	–	–	–	●	●	●	●	–	●
SDPT1204PDSRGB2	12,70	4,76	12,70	2,70	0,8	0,13	4	–	–	–	●	●	●	●	–	●

Recommended Starting Feeds

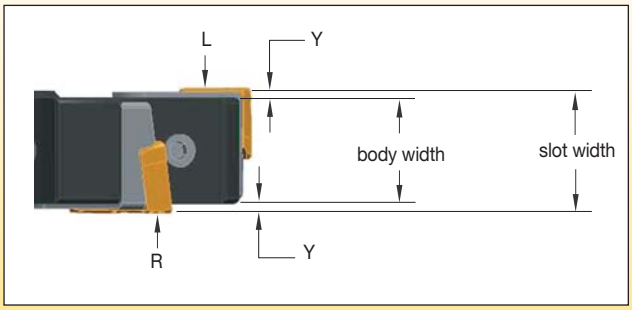
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	0,12	**0,42**	0,74	0,08	**0,30**	0,54	0,06	**0,23**	0,40	0,06	**0,20**	0,35	0,05	**0,18**	0,32	.F..LE
.E..LD	0,17	**0,47**	0,82	0,12	**0,34**	0,59	0,09	**0,26**	0,44	0,08	**0,22**	0,38	0,07	**0,20**	0,35	.E..LD
.E..LD2	0,12	**0,46**	0,81	0,09	**0,33**	0,58	0,07	**0,25**	0,43	0,06	**0,22**	0,38	0,05	**0,20**	0,35	.E..LD2
.E..GB	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB
.E..GB2	0,23	**0,53**	0,89	0,17	**0,38**	0,64	0,13	**0,29**	0,48	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.E..GB2
.S..GB	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB
.S..GB2	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GB2
.S..GN	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..GN

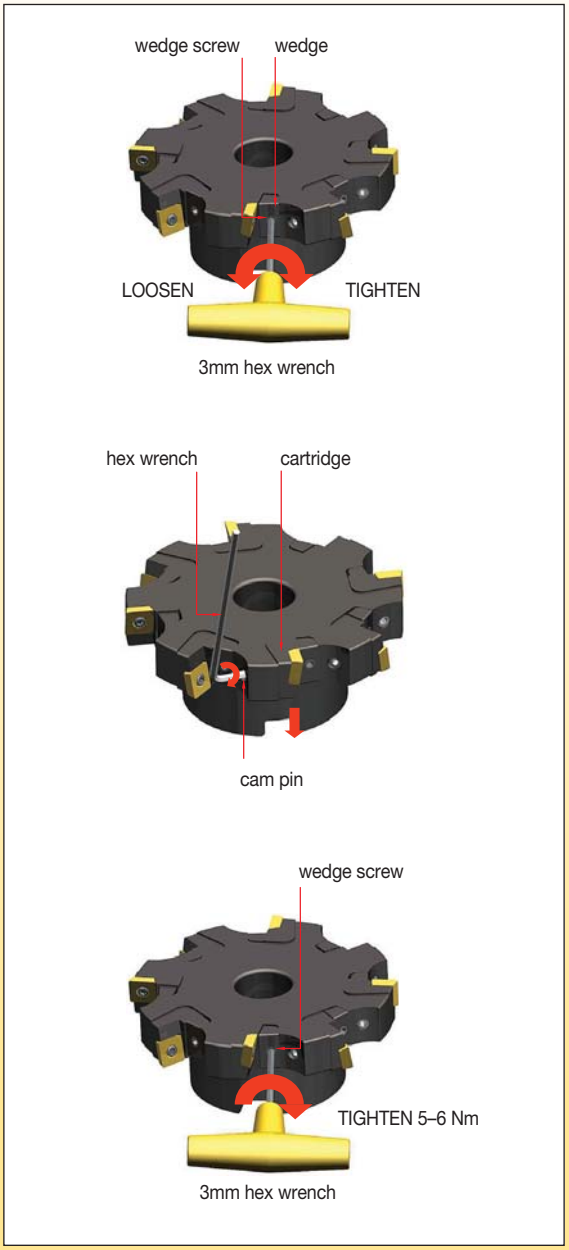
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSSM Slot Width Adjustment Instructions

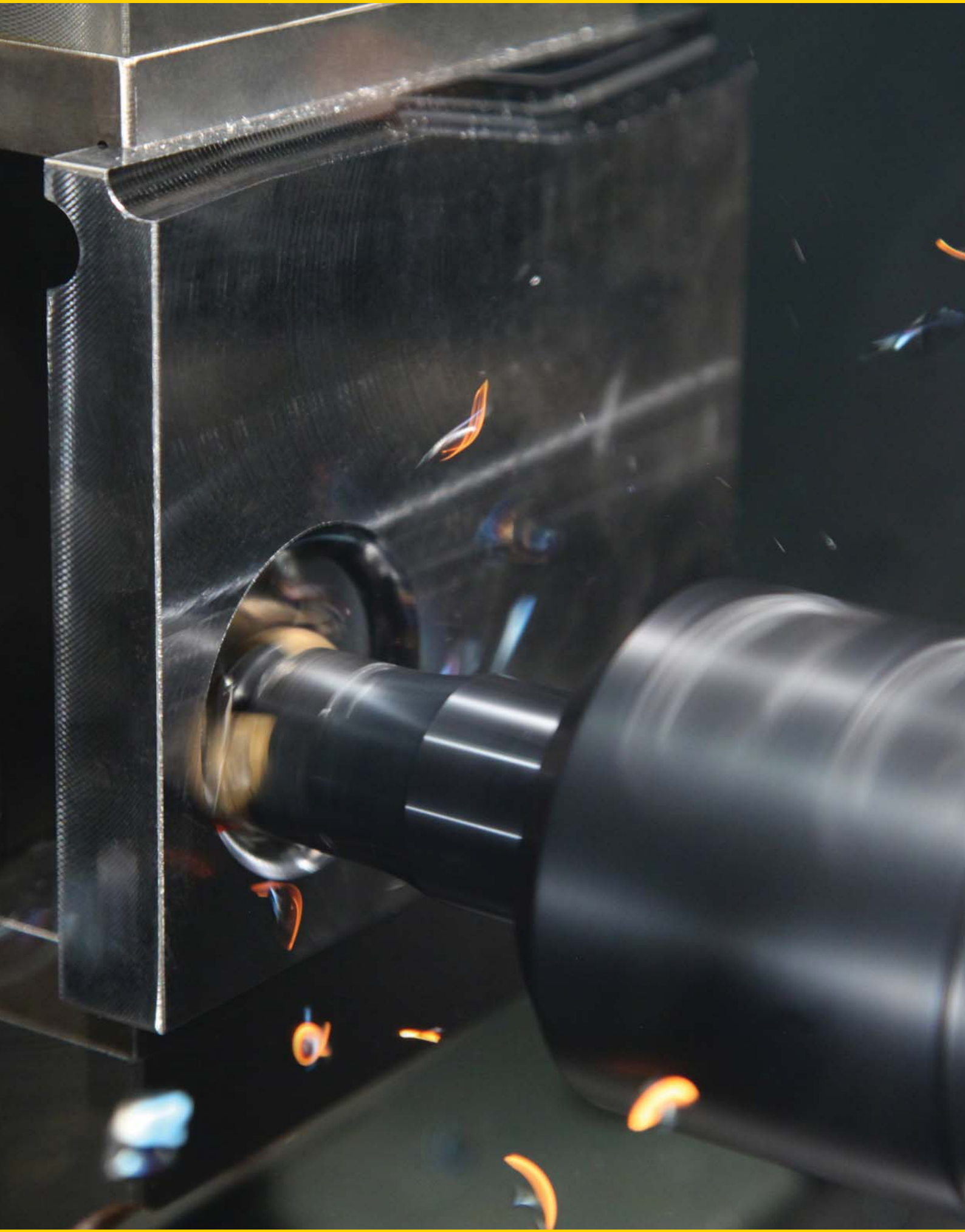


1. Measure body width at pocket 1 (per stamp on tool body) behind cartridge.
2. Zero tool presetter at pocket 1 behind cartridge.
3. Move presetter over the insert and set distance Y. Y= (Desired Slot Width-Body Width)/2
4. Zero over insert at starting pocket (pocket 1).
5. Adjust remaining cartridges on the same side.
6. Return to starting pocket and start with step 2 for opposite side of cutter.

KSSM Cartridge Adjustment Instructions



1. Insert 3mm hex wrench into STCM Screw.
2. Rotate 3mm hex wrench anti-clockwise to loosen wedge.
3. Rotate 3mm hex wrench clockwise to lightly tighten STCM screw to approximately 1 Nm, so the wedge is touching the cartridge and cutterbody. This creates some slight resistance against the cartridge during the adjustment.
4. Insert hex wrench into cam pin behind cartridge.
5. Rotate wrench to adjust cartridge to desired position.
6. For best accuracy, back cam pin off, so you can feel it is not touching the sides of the slot in the back of the cartridge.
7. Remove wrench from cam pin.
8. Insert 3mm hex wrench into STCM screw.
9. Tighten STCM screw to 5,1–6,2 Nm prior to using the cutter. Kennametal torque wrench KTW45 or alternate torque wrench should be used.
10. Double check cartridge position to assure no movement.



Indexable Milling • Copy Milling

Stellram 7792VX • High-Feed Series V2–V35

KenFeed 2X • Double-Sided High-Feed Milling Cutters V36–V43

Rodeka • Double-Sided Round Inserts V44–V66

Rodeka 10 ..... V46–V52

Rodeka 12 ..... V53–V59

Rodeka 16 ..... V60–V62

Rodeka 12X V63–V66

KSRM • Round Inserts, Specially Developed for Titanium and Stainless Steel V68–V85

Stellram 7713VR • Round Inserts V86–V99

Stellram 7713VR10 ..... V87–V92

Stellram 7713VR12 ..... V93–V99

Stellram 5505VX V100–V108

KDMB • KDMT • KDMS V110–V135

Z-Axis V136–V143

KCRA • Double-Sided Ceramic Round Inserts V144–V150

KIPR V152–V157

Stellram® 7792 High-Feed Series

Indexable Milling

The 7792 cutter series has been designed for high-feed milling applications with superior surface generation. 7792VX cutters are designed for a wide range of applications, including facing, pocketing, ramping, helical interpolation, and plunging. They are capable of machining all materials, including steel, stainless steel, cast iron, and high-temperature and aluminium alloys.



Features and Benefits

- The 7792VX high-feed cutters are the best solution for reducing cycle times or removing the maximum amount of material in the shortest time.
- New ultra-fine pitch cutters further increase metal removal rates, especially in high-temp alloys.
- The unique design and insert positioning help to achieve up to 5x higher feed rates than other cutters on the market.
- When used in long (extended) toolholders, 7792VX cutters absorb vibrations and greatly reduce instability and tool deflection.
- Integrated wiper facet for improved surface finish: 16 Ra (1,6µ) when used at <0,5 mm/z.



7792VXP06:
Maximum ap = 0,90mm
Diameter Range = 16–35mm

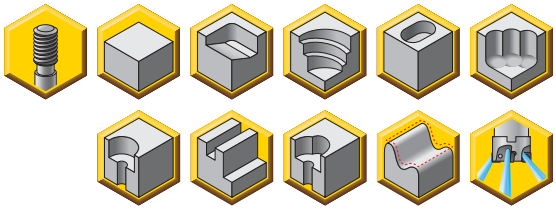
7792VXD09:
Maximum ap = 1,50mm
Diameter Range = 25–66mm

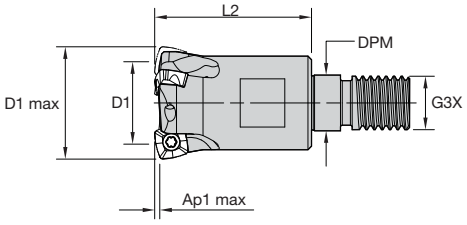
7792VXD12:
Maximum ap = 2,50mm
Diameter Range = 32–160mm

7792VXE16:
Maximum ap = 3,50mm
Diameter Range = 40–160mm

NOTE: Larger diameter shell mill fixation cutters with interchangeable cartridges are available.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.
- Screw-on cutters provide better rigidity and stability when used with small spindels: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







7792VXP06 Modular Head • Screw-On

order number	catalogue number	D1 max	D1	L2	G3X	DPM	Ap1 max	Z U
5681105	**7792VXP06SA016Z2R25**	16	8	25	M8	8,50	0,90	2
5665820	**7792VXP06SA020Z2R35**	20	12	35	M10	10,50	0,90	2
5681122	**7792VXP06SA020Z3R35**	20	12	35	M10	10,50	0,90	3
5665964	**7792VXP06SA025Z3R35**	25	17	35	M12	12,50	0,90	3
5667023	**7792VXP06SA025Z4R35**	25	17	35	M12	12,50	0,90	4
5660062	**7792VXP06SA032Z5R43**	32	24	43	M16	17,00	0,90	5
6024320	**7792VXP06SA035Z6R43**	35	27	43	M16	17,00	0,90	6

Spare Parts



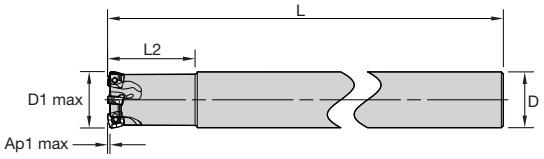


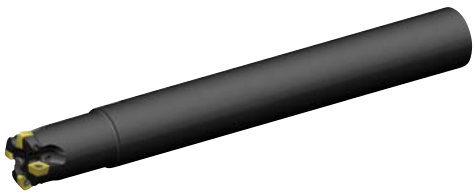
catalogue number	insert screw	Nm	Torx driver
7792VXP06SA016Z2R25	**FP2506T**	0,8	**TP7**
7792VXP06SA020Z2R35	**FP2506T**	0,8	**TP7**
7792VXP06SA020Z3R35	**FP2506T**	0,8	**TP7**
7792VXP06SA025Z3R35	**FP2507T**	0,8	**TP7**
7792VXP06SA025Z4R35	**FP2507T**	0,8	**TP7**
7792VXP06SA032Z5R43	**FP2507T**	0,8	**TP7**
7792VXP06SA035Z6R43	**FP2507T**	0,8	**TP7**

NOTE: For further application recommendation, please see technical information on pages V33–V35.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXP06 Cylindrical Shank

order number	catalogue number	D1 max	D	D1	L	L2	Ap1 max	Z U
5673240	**7792VXP06CA016Z2R140**	16	16	8	188	25	0,90	2
5673237	**7792VXP06CA020Z3R154**	20	20	12	200	32	0,90	3
5666409	**7792VXP06CA025Z4R154**	25	25	16	210	40	0,90	4
5681124	**7792VXP06CA032Z5R190**	32	32	24	250	40	0,90	5

Spare Parts

catalogue number	 insert screw	 Nm	 Torx driver
7792VXP06CA016Z2R140	**FP2506T**	0,8	**TP7**
7792VXP06CA020Z3R154	**FP2506T**	0,8	**TP7**
7792VXP06CA025Z4R154	**FP2507T**	0,8	**TP7**
7792VXP06CA032Z5R190	**FP2507T**	0,8	**TP7**

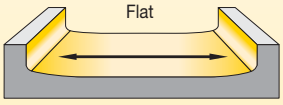
NOTE: For further application recommendation, please see technical information on pages V33–V35.

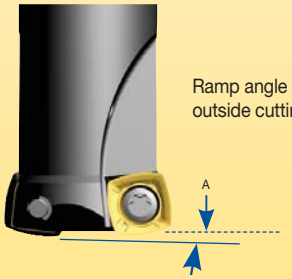
Technical Information (mm)

order number	catalogue number	dimension						
		facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	max RPM
5673240	7792VXP06CA016Z2R140	7,60	5,9	22	30	0,60	3,00	65000
5673237	7792VXP06CA020Z3R154	11,60	3,4	30	38	0,60	3,00	57000
5666409	7792VXP06CA025Z4R154	16,60	2,2	40	48	0,60	3,00	49000
5681124	7792VXP06CA032Z5R190	23,60	1,4	54	62	0,60	3,00	41500
5681105	7792VXP06SA016Z2R25	7,60	5,9	22	30	0,60	3,00	65000
5665820	7792VXP06SA020Z2R35	11,6	3,4	30	38	0,60	3,00	57000
5681122	7792VXP06SA020Z3R35	11,6	3,4	30	38	0,60	3,00	57000
5665964	7792VXP06SA025Z3R35	16,60	2,8	40	48	0,60	3,00	49000
5667023	7792VXP06SA025Z4R35	16,60	2,2	40	48	0,60	3,00	49000
5660062	7792VXP06SA032Z5R43	23,60	1,4	54	62	0,60	3,00	41500
6024320	7792VXP06SA035Z6R43	23,60	1,3	60	68	0,60	3,00	37500


Helical Interpolation


Plunging





Ramp angle A uses one outside cutting edge only.

A = max ramp angle utilising full-face contact.

Inserts

Insert Selection Guide • IC 06

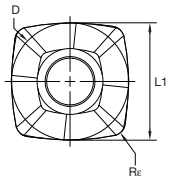
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	...D41	SC6525	**...D41**	**SC6525**	...D41	X400
P3–P4	…D	KC522M	**…D**	**KC522M**	…D	KCPM40
P5–P6	...D41	SP6519	**...D41**	**X500**	...D41	X500
M1–M2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
M3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
K1–K2	…D	KC510M	**…D**	**KCPK30**	…D	KCPK30
K3	…D	KC510M	**…D**	**KCPK30**	…D	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S4	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
H1	…D	KC510M	**…D**	**KC510M**	…D	KCPM40

● first choice
○ alternate choice

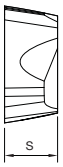
		KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
P		○	○	●	●	○	●	○	●	○
M			●	○	○	●		●		●
K		●	○	○			●	○		
N		○								
S			●			●		●		●
H									○	



XPLT06-D41



XPLT06-D41



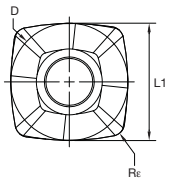
XPLT06-D41 • First choice for machining stainless steel and high-temp alloys

catalogue number	D	LI	S	Rε	hm	RT	KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
XPLT060308ERD41	7,00	7,00	3,17	0,8	0,04	1,37	–	–	–	–	–	●	●	●	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XPPT-D41



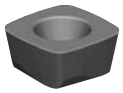
XPPT-D41



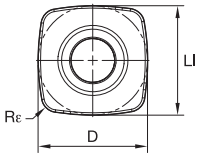
XPPT-D41 • Precision pressed insert. General purpose in soft steels, stainless steels, and high-temp alloys.

catalogue number	D	LI	S	Rε	hm	RT	KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
XPPT060308ERD41	7,00	7,00	3,17	0,8	0,04	1,37	–	–	–	–	●	–	–	–	–

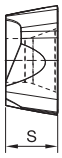
NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XPPW-06-D



XPPW-06-D



XPPW-06-D • Precision pressed insert; improved cost per edge. Reinforced geometry. Particularly suitable for high strength steels, hardened materials, and cast iron.

catalogue number	D	LI	S	Rε	hm	RT	KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
XPPW060310SRD	7,00	7,00	3,18	1,0	0,15	1,54	●	●	●	●	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds [mm] • High-Feed

Light Machining	General Purpose	Heavy Machining

At 0,90 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	0,37	**1,06**	1,89	0,27	**0,73**	1,24	0,20	**0,53**	0,89	0,17	**0,46**	0,77	0,16	**0,42**	0,70	.E..D41
.S..D	0,68	**1,46**	2,35	0,48	**0,98**	1,49	0,36	**0,71**	1,07	0,31	**0,62**	0,92	0,28	**0,56**	0,84	.S..D

At 0,70 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	0,42	**1,21**	2,20	0,30	**0,83**	1,41	0,22	**0,60**	1,01	0,19	**0,52**	0,87	0,18	**0,48**	0,79	.E..D41
.S..D	0,78	**1,68**	2,79	0,55	**1,12**	1,71	0,40	**0,81**	1,21	0,35	**0,70**	1,04	0,32	**0,64**	0,94	.S..D

At 0,60 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	0,46	**1,32**	2,43	0,32	**0,89**	1,53	0,24	**0,65**	1,09	0,21	**0,56**	0,94	0,19	**0,52**	0,85	.E..D41
.S..D	0,84	**1,84**	3,12	0,59	**1,21**	1,85	0,43	**0,87**	1,30	0,38	**0,75**	1,12	0,34	**0,69**	1,02	.S..D

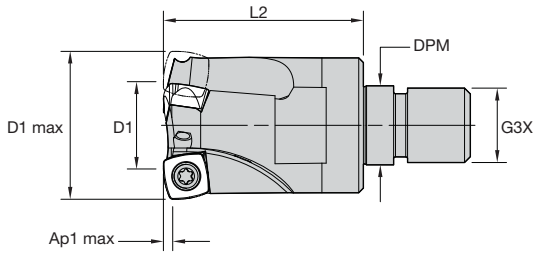
Feed Rate Guide • Plunging • IC 06 • fz [mm/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max 3mm insert engagement (ae radial engagement)			Insert Geometry
.E..D41	0,06	**0,15**	0,25	.E..D41
.S..D	0,10	**0,20**	0,30	.S..D

NOTE: For further details about using the 7792VX series in plunging operations, please see page V33.
Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.
- Screw-on cutters provide better rigidity and stability when used with small spindels: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







7792VXD09 Modular Head • Screw-On

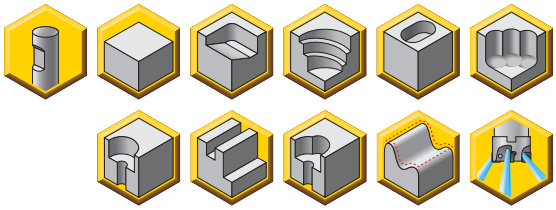
order number	catalogue number	D1 max	D1	L2	G3X	DPM	Ap1 max	Z U
5667916	**7792VXD09SA025Z2R35**	25	12	35	M12	12,50	1,50	2
6024361	**7792VXD09SA025Z3R35**	25	12	35	M12	12,50	1,50	3
5660448	**7792VXD09SA032Z3R43**	32	19	43	M16	17,00	1,50	3
6024362	**7792VXD09SA032Z4R43**	32	19	43	M16	17,00	1,50	4
5673503	**7792VXD09SA035Z3R43**	35	22	43	M16	17,00	1,50	3
6024363	**7792VXD09SA035Z4R43**	35	22	43	M16	17,00	1,50	4
6024365	**7792VXD09SA042Z5R43**	42	29	43	M16	17,00	1,50	5

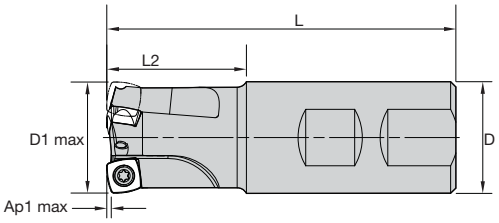
Spare Parts

catalogue number	 insert screw	 Nm	 Torx driver
7792VXD09SA025Z2R35	**F3508T**	2,1	**T15**
7792VXD09SA025Z3R35	**F3508T**	2,1	**TB15**
7792VXD09SA032Z3R43	**F3510T**	2,1	**T15**
7792VXD09SA032Z4R43	**F3508T**	2,1	**T15**
7792VXD09SA035Z3R43	**F3510T**	2,1	**T15**
7792VXD09SA035Z4R43	**F3510T**	2,1	**T15**
7792VXD09SA042Z5R43	**F3510T**	2,1	**T15**

NOTE: For further application recommendation, please see technical information on pages V33–V35.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD09 Weldon® Shank

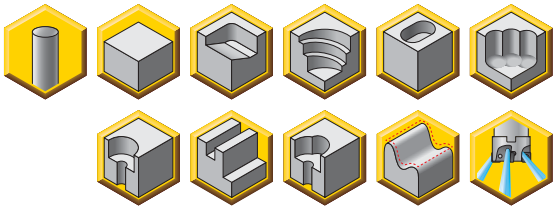
order number	catalogue number	D1 max	D	D1	L	L2	Ap1 max	Z U
5657893	**7792VXD09WA025Z2R**	25	25	12	96	40	1,50	2
5658074	**7792VXD09WA032Z3R**	32	32	19	100	40	1,50	3

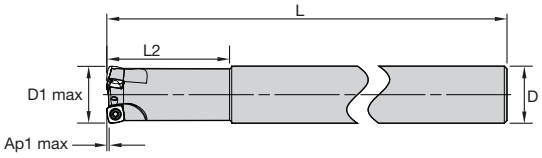
Spare Parts

catalogue number	 insert screw	 Nm	 Torx driver
7792VXD09WA025Z2R	**F3508T**	2,1	**T15**
7792VXD09WA032Z3R	**F3510T**	2,1	**T15**

NOTE: For further application recommendation, please see technical information on pages V33–V35.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD09 Cylindrical Shank

order number	catalogue number	D1 max	D	D1	L	L2	Ap1 max	Z U
5659947	**7792VXD09CA025Z2R50**	25	25	12	200	50	1,50	2
6024366	**7792VXD09CA025Z3R50**	25	25	12	200	50	1,50	3
5661016	**7792VXD09CA032Z3R70**	32	32	19	250	70	1,50	3
6024367	**7792VXD09CA032Z4R70**	32	32	19	250	70	1,50	4

Spare Parts



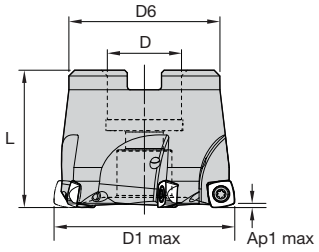


catalogue number	insert screw	Nm	Torx driver
7792VXD09CA025Z2R50	**F3508T**	2,1	**T15**
7792VXD09CA025Z3R50	**F3508T**	2,1	**TB15**
7792VXD09CA032Z3R70	**F3510T**	2,1	**T15**
7792VXD09CA032Z4R70	**F3510T**	2,1	**T15**

NOTE: For further application recommendation, please see technical information on pages V33–V35.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD09 Shell Mill

order number	catalogue number	D1 max	D	D1	D6	L	Ap1 max	Z U
5656727	7792VXD09-A040Z3R	40	16	27	36	32	1,50	3
5657234	7792VXD09-A040Z4R	40	16	27	36	32	1,50	4
5667475	7792VXD09-A040Z5R	40	16	27	36	32	1,50	5
5656914	7792VXD09-A050Z5R	50	22	37	46	40	1,50	5
5656377	7792VXD09-A050Z6R	50	22	37	46	40	1,50	6
6024368	7792VXD09-A050Z7R	50	22	37	45	40	1,50	7
6024369	7792VXD09-A052Z5R	52	22	39	45	40	1,50	5
6024370	7792VXD09-A052Z6R	52	22	39	45	40	1,50	6
6024371	7792VXD09-A052Z7R	52	22	39	45	40	1,50	7
6024372	7792VXD09-A063Z5R	63	22	50	42	40	1,50	5
6024373	7792VXD09-A063Z6R	63	22	50	42	40	1,50	6
6024374	7792VXD09-A063Z9R	63	22	50	45	40	1,50	9
6024375	7792VXD09-A066Z5R	66	27	53	55	50	1,50	5
6024376	7792VXD09-A066Z6R	66	27	53	55	50	1,50	6
6024377	7792VXD09-A066Z9R	66	27	53	55	50	1,50	9

Spare Parts



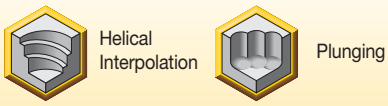


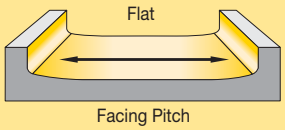

catalogue number	insert screw	Nm	Torx driver	mounting screw
7792VXD09-A040Z3R	F3510T	2,1	T15	M8 1.25 X 25 SHCS
7792VXD09-A040Z4R	F3510T	2,1	T15	M8 1.25 X 25 SHCS
7792VXD09-A040Z5R	F3510T	2,1	T15	M8 1.25 X 25 SHCS
7792VXD09-A050Z5R	F3510T	2,1	T15	M10 1.5 X 25 SHCS
7792VXD09-A050Z6R	F3510T	2,1	T15	M10 1.5 X 25 SHCS
7792VXD09-A050Z7R	F3510T	2,1	TB15	M10 1.5 X 25 SHCS
7792VXD09-A052Z5R	F3510T	2,1	T15	M10 1.5 X 25 SHCS
7792VXD09-A052Z6R	F3510T	2,1	T15	M10 1.5 X 25 SHCS
7792VXD09-A052Z7R	F3510T	2,1	TB15	M10 1.5 X 25 SHCS
7792VXD09-A063Z5R	F3510T	2,1	T15	M10 1.5 X 25 SHCS
7792VXD09-A063Z6R	F3510T	2,1	T15	M10 1.5 X 25 SHCS
7792VXD09-A063Z9R	F3510T	2,1	TB15	M10 1.5 X 25 SHCS
7792VXD09-A066Z5R	F3510T	2,1	T15	M12 X 1.75 X 30 SHCS
7792VXD09-A066Z6R	F3510T	2,1	T15	M12 X 1.75 X 30 SHCS
7792VXD09-A066Z9R	F3510T	2,1	TB15	M12 X 1.75 X 30 SHCS

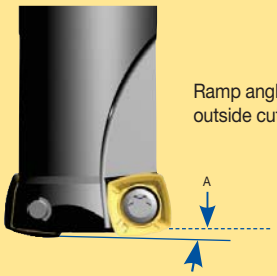
NOTE: For further application recommendation, please see technical information on pages V33–V35.

Technical Information (mm)

order number	catalogue number	dimension						max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	
5657893	7792VXD09WA025Z2R	11,75	2,8	34	48	1,00	6,00	48500
5658074	7792VXD09WA032Z3R	18,75	1,5	48	62	1,00	6,00	40500
5659947	7792VXD09CA025Z2R50	11,75	2,8	34	48	1,00	6,00	48500
6024366	7792VXD09CA025Z3R50	11,75	2,8	34	48	1,00	6,00	48500
5661016	7792VXD09CA032Z3R70	18,75	1,5	48	62	1,00	6,00	40500
6024367	7792VXD09CA032Z4R70	18,75	1,5	48	62	1,00	6,00	40500
5656727	7792VXD09-A040Z3R	26,75	0,8	64	78	1,00	6,00	34500
5657234	7792VXD09-A040Z4R	26,75	0,8	64	78	1,00	6,00	34500
5667475	7792VXD09-A040Z5R	26,75	0,8	64	78	1,00	6,00	34500
5656914	7792VXD09-A050Z5R	36,75	0,7	84	98	1,00	6,00	30000
5656377	7792VXD09-A050Z6R	36,75	0,7	84	98	1,00	6,00	29500
6024368	7792VXD09-A050Z7R	36,75	0,7	84	98	1,00	6,00	30000
6024369	7792VXD09-A052Z5R	38,75	0,7	88	102	1,00	6,00	29500
6024370	7792VXD09-A052Z6R	38,75	0,7	88	102	1,00	6,00	29500
6024371	7792VXD09-A052Z7R	38,75	0,7	88	102	1,00	6,00	29500
6024372	7792VXD09-A063Z5R	49,75	0,5	88	102	1,00	6,00	26000
6024373	7792VXD09-A063Z6R	49,75	0,5	88	102	1,00	6,00	26000
6024374	7792VXD09-A063Z8R	49,75	0,5	88	102	1,00	6,00	26000
6024375	7792VXD09-A066Z5R	52,75	0,5	116	130	1,00	6,00	25500
6024376	7792VXD09-A066Z6R	52,75	0,5	116	130	1,00	6,00	25500
6024377	7792VXD09-A066Z9R	52,75	0,5	116	130	1,00	6,00	25500
5667916	7792VXD09SA025Z2R35	11,75	2,8	34	48	1,00	6,00	48500
6024361	7792VXD09SA025Z3R35	11,75	2,8	34	48	1,00	6,00	48500
5660448	7792VXD09SA032Z3R43	18,75	1,5	48	62	1,00	6,00	40500
6024362	7792VXD09SA032Z4R43	18,75	1,5	48	62	1,00	6,00	40500
6024363	7792VXD09SA035Z4R43	21,75	1,3	54	68	1,00	6,00	37500
6024365	7792VXD09SA042Z5R43	28,75	1,0	68	82	1,00	6,00	34000







Ramp angle A uses one outside cutting edge only.

A = max ramp angle utilising full face contact.

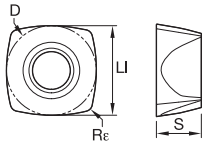
Insert Selection Guide • IC 09

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	…GP	KC522M	**…GP**	**KCPM40**	…GP	KCPM40
P3–P4	…GP	KC522M	**…D**	**KC522M**	…D	KCPM40
P5–P6	...D411	SP6519	**...D411**	**X500**	...D41	X500
M1–M2	...D411	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
M3	...D411	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
K1–K2	…D	KCK15	**…D**	**KCK15**	…D	KCPK30
K3	…D	KCPK30	**…D**	**KCPK30**	…D	KCPK30
N1–N2	...D721	GH2	**...D721**	**GH2**	...D721	GH2
N3	...D721	GH2	**...D721**	**GH2**	...D721	GH2
S1–S2	...D411	SP6519	**...D411**	**KCSM40**	...D41	KCSM40
S3	...D411	SP6519	**...D411**	**KCSM40**	...D41	KCSM40
S4	...D411	SP6519	**...D411**	**KCSM40**	...D41	KCSM40
H1	…D	KC510M	**…D**	**KC510M**	…D	KCPM40

Milling Inserts



XDLT09-D721



XDLT09-D721

● first choice
○ alternate choice

	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P		○	○	●		●	●	○		●	○	●	○
M			●	●		○	○	●			●		●
K	○	●	○		●	○			●	●	○		
N	●	○											
S			●	●				●			●		●
H												○	

XDLT09-D721 • First choice for non-ferrous alloys

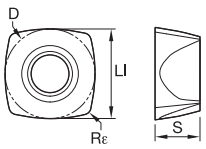
catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT090408ERD721	9,53	9,53	4,75	0,8	0,04	2,01	●	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

• First choice for machining stainless steel and high-temp alloys.



XDLT09...D41



XDLT09...D41

XDLT09-D41 • General purpose in soft steels. Best fit for face milling, slotting operation

catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT090408ERD41	9,53	9,53	4,76	0,8	0,05	2,01	–	–	–	–	–	–	–	–	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

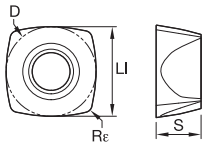
- First choice for machining stainless steel and high-temp alloys.

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M					●	●		○	○	●			●		●
K		○	●	○			●	○			●	●	○		
N		●	○												
S					●	●				●			●		●
H														○	



XDPT09...D41



XDPT09...D41

XDPT09-D41 • Precision pressed. General purpose in soft steels. Best fit for face milling, slotting operation

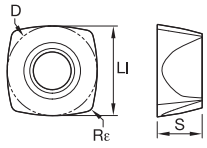
catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT090408ERD41	9,53	9,53	4,76	0,8	0,05	2,01	–	–	–	–	–	–	–	●	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Geometry similar to D41, but with higher corner nose protection for heavier applications.



XDLT09...D411



XDLT09...D411

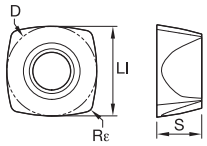
XDLT09-D411 • General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general, also in combination with long overhangs

catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT090412ERD411	9,53	9,53	4,75	1,2	0,05	2,27	–	–	–	–	–	–	–	–	–	–	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDPT-D411



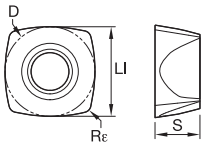
XDPT-D411

XDPT-D411 • Precision pressed. General purpose in stainless steel and high-temp alloys. Best for pocketing and profiling operations in general, also in combination with long overhangs

catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT090412ERD411	9,53	9,53	4,76	1,2	0,05	2,27	–	–	–	–	–	–	–	●	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDPW09-D



XDPW09-D

● first choice
○ alternate choice

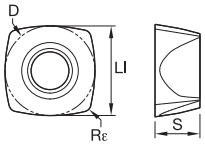
		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M					●	●		○	○	●			●		●
K		○	●	○		●	○				●	●	○		
N		●	○												
S					●	●				●			●		●
H														○	

XDPW09-D • Precision pressed. First choice for roughing alloyed steel and cast iron

catalogue number	D	LI	S	Rε	hm	RT
XDPW090412SRD	9,52	9,52	4,76	1,2	0,10	2,27

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDLW09...D



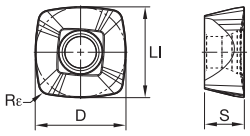
XDLW09...D

XDLW09-D • First choice for roughing alloyed steel and cast iron

catalogue number	D	LI	S	Rε	hm	RT
XDLW090408SRD	9,53	9,53	4,76	0,8	0,10	2,01

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDPT09-GP



XDPT09-GP

XDPT09-GP • Precision pressed. General use on alloyed steels. Good balance across all machining situations.

catalogue number	D	LI	S	Rε	hm	RT
XDPT090412SRGP	9,53	9,53	4,76	1,2	0,22	0,67

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds [mm] • High-Feed

Light Machining	General Purpose	Heavy Machining

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	0,30	**0,96**	1,69	0,22	**0,68**	1,18	0,16	**0,51**	0,87	0,14	**0,44**	0,75	0,13	**0,40**	0,69	.E..D721
.E..D41	0,38	**1,10**	1,69	0,27	**0,78**	1,18	0,20	**0,58**	0,87	0,18	**0,50**	0,75	0,16	**0,46**	0,69	.E..D41
.E..D411	0,38	**1,10**	1,69	0,27	**0,78**	1,18	0,20	**0,58**	0,87	0,18	**0,50**	0,75	0,16	**0,46**	0,69	.E..D411
.S..D	0,55	**1,21**	1,99	0,39	**0,86**	1,38	0,29	**0,63**	1,01	0,25	**0,55**	0,88	0,23	**0,50**	0,80	.S..D
.S..GP	0,55	**1,22**	2,01	0,39	**0,86**	1,39	0,29	**0,64**	1,02	0,25	**0,55**	0,89	0,23	**0,51**	0,81	.S..GP

At 1,10 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	0,35	**1,12**	1,98	0,25	**0,79**	1,37	0,19	**0,59**	1,01	0,16	**0,51**	0,87	0,15	**0,47**	0,80	.E..D721
.E..D41	0,44	**1,28**	1,98	0,32	**0,90**	1,37	0,24	**0,67**	1,01	0,21	**0,58**	0,87	0,19	**0,53**	0,80	.E..D41
.E..D411	0,44	**1,28**	1,98	0,32	**0,90**	1,37	0,24	**0,67**	1,01	0,21	**0,58**	0,87	0,19	**0,53**	0,80	.E..D411
.S..D	0,64	**1,42**	2,35	0,45	**1,00**	1,61	0,34	**0,74**	1,18	0,30	**0,64**	1,02	0,27	**0,59**	0,93	.S..D
.S..GP	0,64	**1,42**	2,37	0,45	**1,00**	1,63	0,34	**0,74**	1,19	0,30	**0,64**	1,03	0,27	**0,59**	0,94	.S..GP

At 0,90 Axial Depth of Cut (ap)

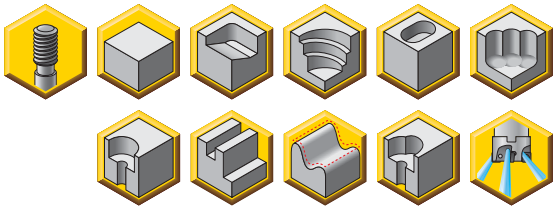
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	0,39	**1,24**	2,20	0,28	**0,88**	1,52	0,21	**0,65**	1,11	0,18	**0,56**	0,96	0,17	**0,52**	0,88	.E..D721
.E..D41	0,48	**1,42**	2,20	0,35	**1,00**	1,52	0,26	**0,74**	1,11	0,23	**0,64**	0,96	0,21	**0,59**	0,88	.E..D41
.E..D411	0,48	**1,42**	2,20	0,35	**1,00**	1,52	0,26	**0,74**	1,11	0,23	**0,64**	0,96	0,21	**0,59**	0,88	.E..D411
.S..D	0,70	**1,57**	2,61	0,50	**1,10**	1,78	0,37	**0,81**	1,30	0,33	**0,71**	1,12	0,30	**0,64**	1,03	.S..D
.S..GP	0,70	**1,58**	2,65	0,50	**1,11**	1,80	0,37	**0,82**	1,31	0,33	**0,71**	1,14	0,30	**0,65**	1,04	.S..GP

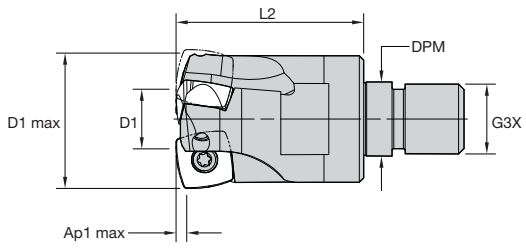
Feed Rate Guide • Plunging • IC 09 • fz [mm/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max 6mm insert engagement (ae radial engagement)			Insert Geometry
.E..D721	0,06	**0,18**	0,30	.E..D721
.E..D41	0,07	**0,20**	0,30	.E..D41
.E..D411	0,07	**0,20**	0,30	.E..D411
.S..D	0,10	**0,22**	0,35	.S..D
.S..GP	0,10	**0,22**	0,35	.S..GP

NOTE: For further details about using the 7792VX series in plunging operations, please see page V33.
Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.
- Screw-on cutters provide better rigidity and stability when used with small spindels: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







7792VXD12 Modular Head • Screw-On

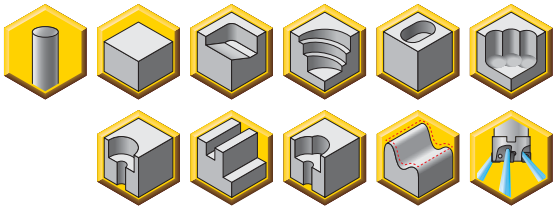
order number	catalogue number	D1 max	D1	L2	G3X	DPM	Ap1 max	Z U
5659132	**7792VXD12SA032Z2R43**	32	11	43	M16	17,00	2,50	2
6025280	**7792VXD12SA032Z3R43**	32	14	43	M16	17,00	2,50	3
6025561	**7792VXD12SA035Z3R43**	35	17	43	M16	17,00	2,50	3
6025562	**7792VXD12SA042Z4R43**	42	24	43	M16	17,00	2,50	4

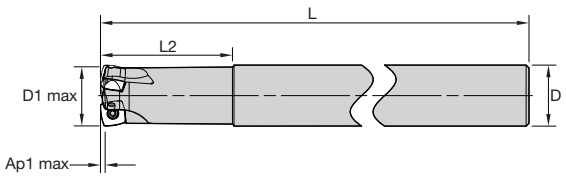
Spare Parts

catalogue number	 insert screw	 Nm	 Torx driver
7792VXD12SA032Z2R43	**D4010T**	3,1	**T15**
7792VXD12SA032Z3R43	**D4010T**	3,1	**T15**
7792VXD12SA035Z3R43	**D4010T**	3,1	**T15**
7792VXD12SA042Z4R43	**D4010T**	3,1	**T15**

NOTE: For further application recommendation, please see technical information on pages V33–V35.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD12 Cylindrical Shank

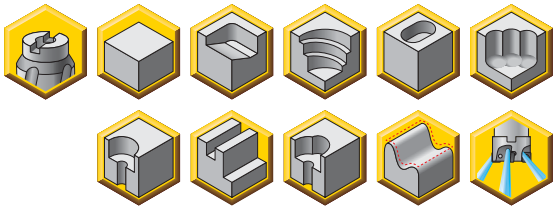
order number	catalogue number	D1 max	D	D1	L	L2	Ap1 max	Z U
5661017	7792VXD12CA032Z2R70	32	32	11	250	70	2,50	2
6025563	7792VXD12CA032Z3R70	32	32	14	250	70	2,50	3

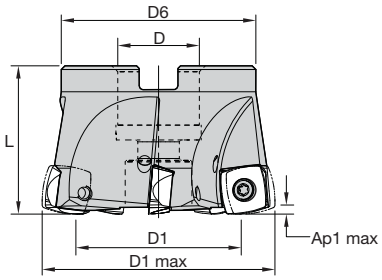
Spare Parts

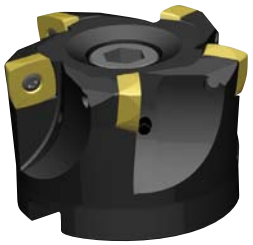
catalogue number	insert screw	Nm	Torx driver
7792VXD12CA032Z2R70	D4010T	3,1	T15
7792VXD12CA032Z3R70	D4010T	3,1	T15

NOTE: For further application recommendation, please see technical information on pages V33–V35.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD12 Shell Mill • Coarse, Medium, and Fine Pitch

order number	catalogue number	D1 max	D	D1	D6	L	Ap1 max	Z U
6025272	7792VXD12-A040Z4R	40	22	22	38	40	2,50	4
5673504	7792VXD12-A050Z4R	50	22	32	48	40	2,50	4
6025273	7792VXD12-A050Z6R	50	22	32	45	40	2,50	6
5656728	7792VXD12-A052Z3R	52	22	34	48	40	2,50	3
5666187	7792VXD12-A052Z4R	52	22	34	48	40	2,50	4
5656383	7792VXD12-A052Z5R	52	22	34	48	40	2,50	5
6025274	7792VXD12-A052Z6R	52	22	34	45	40	2,50	6
5656729	7792VXD12-A063Z4R	63	22	45	53	40	2,50	4
5657235	7792VXD12-A063Z5R	63	22	45	53	40	2,50	5
6025275	7792VXD12-A063Z7R	63	22	45	45	40	2,50	7
5660064	7792VXD12-A066Z4R	66	27	48	58	45	2,50	4
5660065	7792VXD12-A066Z5R	66	27	48	58	45	2,50	5
6025276	7792VXD12-A066Z7R	66	27	48	50	45	2,50	7
5656730	7792VXD12-A080Z5R	80	27	62	55	50	2,50	5
5667478	7792VXD12-A080Z8R	80	27	62	55	50	2,50	8
6025277	7792VXD12-A080Z10R	80	27	62	55	50	2,50	10
5667834	7792VXD12-A100Z6R	100	32	82	82	50	2,50	6
5666144	7792VXD12-A100Z9R	100	32	82	82	50	2,50	9
6025278	7792VXD12-A100Z11R	100	32	82	68	50	2,50	11
5656380	7792VXD12-A125Z8R	125	40	107	82	63	2,50	8
5665943	7792VXD12-A125Z11R	125	40	107	82	63	2,50	11
6025279	7792VXD12-A125Z13R	125	40	107	80	63	2,50	13
5659130	7792VXD12-160Z7R	160	40	142	110	63	2,50	7

NOTE: No through coolant for cutters where D1 max = 160mm.

(continued)

(continued)

Spare Parts

catalogue number	 insert screw	 Nm	 Torx driver	 mounting screw	 mounting screw
7792VXD12-A040Z4R	D4010T	3,1	T15	–	KLSSM22-39-CG
7792VXD12-A050Z4R	D4012T	3,1	T15	M10 1.5 X 25 SHCS	–
7792VXD12-A050Z6R	D4010T	3,1	TB15	M10 1.5 X 25 SHCS	–
7792VXD12-A052Z3R	D4012T	3,1	T15	M10 1.5 X 25 SHCS	–
7792VXD12-A052Z4R	D4012T	3,1	T15	M10 1.5 X 25 SHCS	–
7792VXD12-A052Z5R	D4010T	3,1	T15	M10 1.5 X 25 SHCS	–
7792VXD12-A052Z6R	D4010T	3,1	TB15	M10 1.5 X 25 SHCS	–
7792VXD12-A063Z4R	D4012T	3,1	T15	M10 1.5 X 25 SHCS	–
7792VXD12-A063Z5R	D4012T	3,1	T15	M10 1.5 X 25 SHCS	–
7792VXD12-A063Z7R	D4010T	3,1	TB15	M10 1.5 X 25 SHCS	–
7792VXD12-A066Z4R	D4012T	3,1	T15	M12 X 1.75 X 30 SHCS	–
7792VXD12-A066Z5R	D4012T	3,1	T15	M12 X 1.75 X 30 SHCS	–
7792VXD12-A066Z7R	D4010T	3,1	TB15	M12 X 1.75 X 30 SHCS	–
7792VXD12-A080Z5R	D4012T	3,1	T15	M12 X 1.75 X 30 SHCS	–
7792VXD12-A080Z8R	D4012T	3,1	T15	M12 X 1.75 X 30 SHCS	–
7792VXD12-A080Z10R	D4010T	3,1	TB15	M12 X 1.75 X 30 SHCS	–
7792VXD12-A100Z6R	D4012T	3,1	T15	M16 X 2 X 40 SHCS	–
7792VXD12-A100Z9R	D4012T	3,1	T15	M16 X 2 X 40 SHCS	–
7792VXD12-A100Z11R	D4010T	3,1	TB15	M16 X 2 X 40 SHCS	–
7792VXD12-A125Z8R	D4012T	3,1	T15	M20 X 2.5 X 50 SHCS	–
7792VXD12-A125Z11R	D4012T	3,1	T15	M20 X 2.5 X 50 SHCS	–
7792VXD12-A125Z13R	D4010T	3,1	TB15	M20 X 2.5 X 50 SHCS	–
7792VXD12-160Z7R	D4012T	3,1	T15	–	–

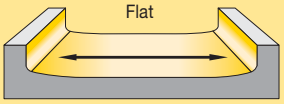
NOTE: For further application recommendation, please see technical information on pages V33–V35.

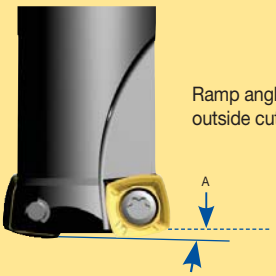
Technical Information (mm)

order number	catalogue number	dimension						max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	
5661017	7792VXD12CA032Z2R70	10,60	1,8	42	62	1,80	9,00	31500
6025563	7792VXD12CA032Z3R70	10,6	1,8	42	62	1,80	9,00	31500
6025272	7792VXD12-A040Z4R	21,6	1,4	58	78	1,80	9,00	26500
6025273	7792VXD12-A050Z6R	31,6	0,9	78	98	1,80	9,00	22500
5656728	7792VXD12-A052Z3R	33,60	0,8	82	102	1,80	9,00	22000
5666187	7792VXD12-A052Z4R	33,60	0,8	82	102	1,80	9,00	22000
5656383	7792VXD12-A052Z5R	33,60	0,8	82	102	1,80	9,00	22000
6025274	7792VXD12-A052Z6R	33,6	0,8	82	102	1,80	9,00	22000
5656729	7792VXD12-A063Z4R	44,60	0,6	104	124	1,80	9,00	19500
5657235	7792VXD12-A063Z5R	44,60	0,6	104	124	1,80	9,00	19500
6025275	7792VXD12-A063Z7R	44,6	0,6	104	124	1,80	9,00	19500
5660064	7792VXD12-A066Z4R	47,60	0,5	110	130	1,80	9,00	19000
5660065	7792VXD12-A066Z5R	47,60	0,5	110	130	1,80	9,00	19000
6025276	7792VXD12-A066Z7R	47,6	0,5	110	130	1,80	9,00	19000
5656730	7792VXD12-A080Z5R	61,60	0,5	138	158	1,80	9,00	17000
5667478	7792VXD12-A080Z8R	61,60	0,5	138	158	1,80	9,00	17000
6025277	7792VXD12-A080Z10R	61,6	0,5	138	158	1,80	9,00	17000
5667834	7792VXD12-A100Z6R	81,60	0,3	178	198	1,80	9,00	15000
5666144	7792VXD12-A100Z9R	81,60	0,3	178	198	1,80	9,00	15000
6025278	7792VXD12-A100Z11R	81,6	0,3	178	198	1,80	9,00	15000
5656380	7792VXD12-A125Z8R	106,60	0,2	228	248	1,80	9,00	13000
5665943	7792VXD12-A125Z11R	106,60	0,2	228	248	1,80	9,00	13000
6025279	7792VXD12-A125Z13R	106,6	0,2	228	248	1,80	9,00	13000
5659130	7792VXD12-160Z7R	141,6	0,2	298	318	1,80	9,00	11500
5659132	7792VXD12SA032Z2R43	10,60	1,8	42	62	1,80	9,00	31500
6025280	7792VXD12SA032Z3R43	10,6	1,8	42	62	1,80	9,0	31500
6025561	7792VXD12SA035Z3R43	16,6	1,8	48	68	1,80	9,0	29000
6025562	7792VXD12SA042Z4R43	23,6	1,3	62	82	1,80	9,0	25500


Helical Interpolation


Plunging





Ramp angle A uses one outside cutting edge only.

A = max ramp angle utilising full face contact.

Inserts

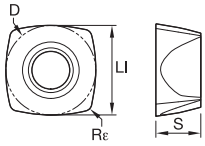
Insert Selection Guide • IC 12

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	…GP	KC522M	**…GP**	**KCPM40**	…GP	KCPM40
P3–P4	…GP	KC522M	**…D**	**KC522M**	…D	KCPM40
P5–P6	…D411	SP6519	**…D411**	**X500**	…D41	X500
M1–M2	…D411	SP6519	**…D41**	**KCSM40**	…D41	KCSM40
M3	…D411	SP6519	**…D41**	**KCSM40**	…D41	KCSM40
K1–K2	…D	KCK15	**…D**	**KCK15**	…D	KCPK30
K3	…D	KCPK30	**…D**	**KCPK30**	…D	KCPK30
N1–N2	…D721	GH2	**…D721**	**GH2**	…D721	GH2
N3	…D721	GH2	**…D721**	**GH2**	…D721	GH2
S1–S2	…D411	SP6519	**…D411**	**KCSM40**	…D41	KCSM40
S3	…D411	SP6519	**…D411**	**KCSM40**	…D41	KCSM40
S4	…D411	SP6519	**…D411**	**KCSM40**	…D41	KCSM40
H1	…D	KC510M	**…D**	**KC510M**	…D	KCPM40

Copy Milling



XDLT12-D721



XDLT12-D721

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M				●	●		○	○	●			●		●
K		○	●	○		●	○			●	●	○		
N		●	○											
S				●	●				●			●		●
H													○	

XDLT12-D721 • First choice for non-ferrous alloys

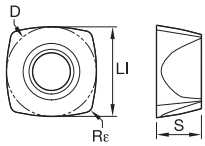
catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT120508ERD721	12,70	12,70	5,56	0,8	0,04	2,50	●	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Positive geometry for lower cutting forces; first choice for machining stainless steel and high-temp alloys.



XDLT12-D41



XDLT12-D41

XDLT12-D41 • General purpose in soft steels. Best fit for face milling, slotting operation

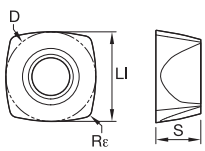
catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT120508ERD41	12,70	12,70	5,56	0,8	0,05	2,50	–	–	–	–	–	–	–	●	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- First choice for machining stainless steel and high-temp alloys.



XDPT12-D41



XDPT12-D41

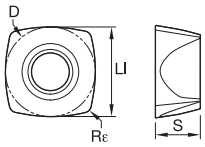
XDPT12-D41 • Precision pressed insert; improved cost per edge. General purpose in soft steels. Best fit for face milling, slotting operation

catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT120508ERD41	12,70	12,70	5,56	0,8	0,05	2,50	–	–	–	–	–	–	–	●	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDPT12-D411



XDPT12-D411

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M					●	●		○	○	●			●		●
K		○	●	○		●	○				●	●	○		
N		●	○												
S					●	●				●			●		●
H														○	

XDPT12-D411 • Precision pressed. General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general, also in combination with long overhangs.

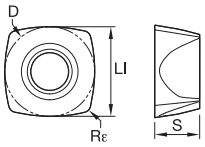
catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT120512ERD411	12,70	12,70	5,56	1,2	0,05	2,73	–	–	–	–	–	–	–	●	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Geometry similar to D41, but with higher corner nose protection for heavier applications.



XDLT12-D411

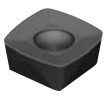


XDLT12-D411

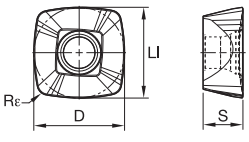
XDLT12-D411 • General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general

catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT120512ERD411	12,70	12,70	5,56	1,2	0,05	2,73	–	–	–	–	–	–	–	●	–	–	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDPT12-GP



XDPT12-GP

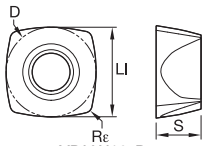
XDPT12-GP • Precision pressed insert; improved cost per edge. General use on alloyed steels. Good balance across all machining situations

catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT120515SRGP	12,70	12,70	5,56	1,5	0,23	2,78	–	–	●	●	–	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDLW12-D



XDLW12-D

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M				●	●		○	○	●			●		●
K		○	●	○		●	○			●	●	○		
N		●	○											
S				●	●				●			●		●
H													○	

XDLW12-D • First choice for roughing alloyed steel and cast iron

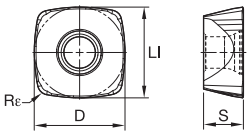
catalogue number	D	LI	S	Rε	hm	RT
XDLW120508SRD	12,70	12,70	5,56	0,8	0,25	2,50

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Particularly suitable for high strength steels, hardened materials, and cast iron.



XDPT12-D



XDPT12-D

XDPW12-D • Precision Pressed with Reinforced Geometry • First Choice for Hardened Materials and Cast Iron

catalogue number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPW120515SRD	12,70	12,70	5,56	1,5	0,25	2,78	–	●	●	–	●	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds [mm] • High-Feed

Light Machining	General Purpose	Heavy Machining

At 2,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	0,28	**1,02**	1,65	0,21	**0,73**	1,18	0,15	**0,55**	0,88	0,13	**0,48**	0,76	0,12	**0,44**	0,70	.E..D721
.E..D41	0,36	**1,15**	1,81	0,26	**0,83**	1,29	0,19	**0,62**	0,96	0,17	**0,54**	0,83	0,15	**0,49**	0,76	.E..D41
.E..D411	0,36	**1,15**	1,81	0,26	**0,83**	1,29	0,19	**0,62**	0,96	0,17	**0,54**	0,83	0,15	**0,49**	0,76	.E..D411
.S..GP	0,51	**1,30**	1,99	0,37	**0,93**	1,41	0,28	**0,70**	1,05	0,24	**0,61**	0,91	0,22	**0,55**	0,83	.S..GP
.S..D	0,51	**1,30**	1,95	0,37	**0,93**	1,38	0,28	**0,70**	1,03	0,24	**0,61**	0,89	0,22	**0,55**	0,82	.S..D

At 1,70 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	0,34	**1,23**	2,00	0,25	**0,88**	1,42	0,19	**0,66**	1,05	0,16	**0,57**	0,92	0,15	**0,52**	0,84	.E..D721
.E..D41	0,43	**1,39**	2,20	0,31	**0,99**	1,56	0,23	**0,74**	1,15	0,20	**0,64**	1,00	0,19	**0,59**	0,92	.E..D41
.E..D411	0,43	**1,39**	2,20	0,31	**0,99**	1,56	0,23	**0,74**	1,15	0,20	**0,64**	1,00	0,19	**0,59**	0,92	.E..D411
.S..GP	0,62	**1,57**	2,41	0,45	**1,12**	1,70	0,33	**0,84**	1,26	0,29	**0,73**	1,10	0,27	**0,67**	1,00	.S..GP
.S..D	0,62	**1,57**	2,36	0,45	**1,12**	1,67	0,33	**0,84**	1,24	0,29	**0,73**	1,08	0,27	**0,67**	0,98	.S..D

At 1,30 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	0,39	**1,41**	2,29	0,28	**1,01**	1,62	0,21	**0,75**	1,20	0,18	**0,65**	1,04	0,17	**0,60**	0,96	.E..D721
.E..D41	0,49	**1,59**	2,52	0,35	**1,13**	1,78	0,26	**0,84**	1,31	0,23	**0,73**	1,14	0,21	**0,67**	1,04	.E..D41
.E..D411	0,49	**1,59**	2,52	0,35	**1,13**	1,78	0,26	**0,84**	1,31	0,23	**0,73**	1,14	0,21	**0,67**	1,04	.E..D411
.S..GP	0,70	**1,80**	2,76	0,51	**1,28**	1,94	0,38	**0,95**	1,44	0,33	**0,83**	1,25	0,30	**0,76**	1,14	.S..GP
.S..D	0,70	**1,80**	2,71	0,51	**1,28**	1,90	0,38	**0,95**	1,41	0,33	**0,83**	1,22	0,30	**0,76**	1,12	.S..D

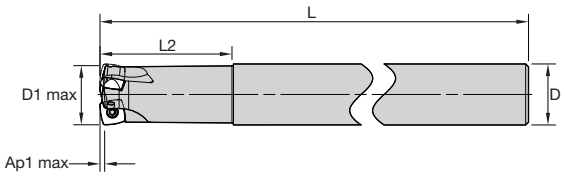
Feed Rate Guide • Plunging • IC 12 • fz [mm/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max 9mm insert engagement (ae radial engagement)			Insert Geometry
.E..D721	0,06	**0,20**	0,32	.E..D721
.E..D41	0,07	**0,23**	0,35	.E..D41
.E..D411	0,07	**0,23**	0,35	.E..D411
.S..GP	0,10	**0,25**	0,38	.S..GP
.S..D	0,10	**0,25**	0,38	.S..D

NOTE: For further details about using the 7792VX series in plunging operations, please see page V33.
Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXE16 Cylindrical Shank

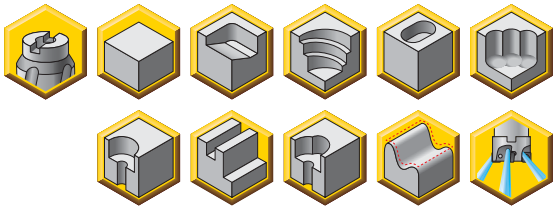
order number	catalogue number	D1 max	D	D1	L	L2	Ap1 max	Z U
5658651	**7792VXE16CA040Z2R102**	40	40	16	172	102	3,50	2
5659563	**7792VXE16CA050Z3R102**	50	40	26	172	102	3,50	3

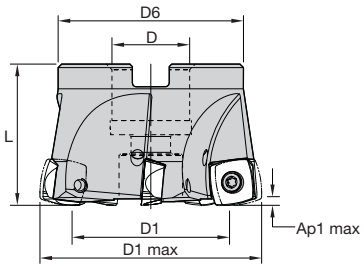
Spare Parts

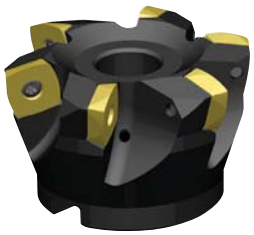
catalogue number	 insert screw	 Nm	 Torx driver
7792VXE16CA040Z2R102	**DP5013T**	6,1	**TP20**
7792VXE16CA050Z3R102	**DP5013T**	6,1	**TP20**

NOTE: For further application recommendation, please see technical information on pages V33–V35.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXE16 Shell Mill

order number	catalogue number	D1 max	D	D1	D6	L	Ap1 max	Z U
6025614	7792VXE16-A050Z3R	50	22	26	45	45	3,50	3
6025615	7792VXE16-A050Z4R	50	22	26	45	45	3,50	4
6025616	7792VXE16-A052Z4R	52	22	28	45	45	3,50	4
5659955	7792VXE16-A063Z5R	63	22	37	47	40	3,50	5
6025617	7792VXE16-A063Z6R	63	22	39	45	40	3,50	6
6025618	7792VXE16-A066Z6R	66	27	42	55	50	3,50	6
5667006	7792VXE16-A080Z6R	80	27	54	58	50	3,50	6
6025619	7792VXE16-A080Z7R	80	27	56	55	50	3,50	7
5659956	7792VXE16-A100Z8R	100	32	74	68	50	3,50	8
6025620	7792VXE16-A100Z9R	100	32	76	63	50	3,50	9
5661028	7792VXE16-A125Z10R	125	40	99	84	63	3,50	10
6025661	7792VXE16-A125Z11R	125	40	101	80	63	3,50	11
5665957	7792VXE16-160Z12R	160	40	135	102	63	3,50	12
6025662	7792VXE16-160Z13R	160	40	136	90	63	3,50	13

NOTE: No through coolant for cutters where D1 max = 160mm.

Spare Parts








catalogue number	insert screw	Nm	Torx driver	mounting screw	LHCS mounting screw	mounting screw
7792VXE16-A050Z3R	DP5013T	6,1	TP20	–	–	KLSSM22-39-CG
7792VXE16-A050Z4R	DP5013T	6,1	TP20	–	–	KLSSM22-39-CG
7792VXE16-A052Z4R	DP5013T	6,1	TP20	–	–	KLSSM22-39-CG
7792VXE16-A063Z5R	DP5013T	6,1	TP20	M10 1.5 X 25 SHCS	–	–
7792VXE16-A063Z6R	DP5013T	6,1	TB20	M10 1.5 X 25 SHCS	–	–
7792VXE16-A066Z6R	DP5013T	6,1	TB20	M12 X 1.75 X 30 SHCS	–	–
7792VXE16-A080Z6R	DP5013T	6,1	TP20	M12 X 1.75 X 30 SHCS	–	–
7792VXE16-A080Z7R	DP5013T	6,1	TB20	M12 X 1.75 X 30 SHCS	–	–
7792VXE16-A100Z8R	DP5013T	6,1	TP20	–	M16X2X40 LHSCS	–
7792VXE16-A100Z9R	DP5013T	6,1	TB20	–	M16X2X40 LHSCS	–
7792VXE16-A125Z10R	DP5013T	6,1	TP20	M20 X 2.5 X 50 SHCS	–	–
7792VXE16-A125Z11R	DP5013T	6,1	TB20	M20 X 2.5 X 50 SHCS	–	–
7792VXE16-160Z12R	DP5013T	6,1	TP20	–	–	–
7792VXE16-160Z13R	DP5013T	6,1	TB20	–	–	–

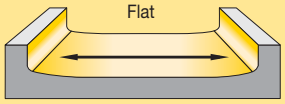
NOTE: For further application recommendation, please see technical information on pages V33–V35.

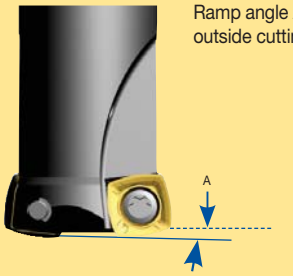
Technical Information (mm)

order number	catalogue number	dimension						max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	
5658651	7792VXE16CA040Z2R102	16,3	2,55	50	78	2,50	13,00	33000
6025614	7792VXE16-A050Z3R	26,10	1,36	70	98	2,50	13,00	27500
6025615	7792VXE16-A050Z4R	26,10	1,36	70	98	2,50	13,00	27500
6025616	7792VXE16-A052Z4R	28	1,24	74	102	2,50	13,00	25000
5659955	7792VXE16-A063Z5R	39	0,86	96	124	2,50	13,00	22000
6025617	7792VXE16-A063Z6R	39	0,86	96	124	2,50	13,00	22000
6025618	7792VXE16-A066Z6R	41,9	0,80	102	130	2,50	13,00	23000
5667006	7792VXE16-A080Z6R	55,9	0,58	130	158	2,50	13,00	19000
6025619	7792VXE16-A080Z7R	55,9	0,58	130	158	2,50	13,00	19000
5659956	7792VXE16-A100Z8R	75,9	0,42	170	198	2,50	13,00	16500
6025620	7792VXE16-A100Z9R	75,9	0,42	170	198	2,50	13,00	16500
5661028	7792VXE16-A125Z10R	100,9	0,32	220	248	2,50	13,00	14500
6025661	7792VXE16-A125Z11R	100,9	0,32	220	248	2,50	13,00	14500
5665957	7792VXE16-160Z12R	135,8	0,23	290	318	2,50	13,00	12500
6025662	7792VXE16-160Z13R	135,8	0,23	290	318	2,50	13,00	12500


Helical Interpolation


Plunging





Ramp angle A uses one outside cutting edge only.

A = max ramp angle utilising full-face contact.

Insert Selection Guide • IC 16

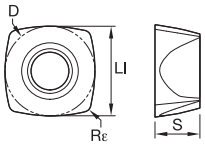
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	...D41	SC6525	**...D41**	**KCPM40**	...D41	KCPM40
P3–P4	...D41	SC6525	**...D**	**KCPM40**	...D	KCPM40
P5–P6	...D41	SP6519	**...D41**	**KCPM40**	...D41	KCPM40
M1–M2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
M3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
K1–K2	...D	KCK15	**...D**	**KCK15**	...D	KCPK30
K3	...D	KCPK30	**...D**	**KCPK30**	...D	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S4	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
H1	...D	KCPM40	**...D**	**KCPM40**	...D	KCPM40

Milling Inserts

- First choice for machining stainless steel and high-temp alloys.



XELT16-D41



XELT16-D41

● first choice
○ alternate choice

		KC522M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P		○		●	●	○		●	○	●	○
M		●		○	○	●			●		●
K		○	●	○			●	●	○		
N											
S		●				●			●		●
H										○	

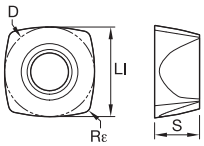
XELT16-D41 • Best fit for face milling and slotting operation. General purpose in soft steels.

catalogue number	D	LI	S	Rε	hm	RT	KC522M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XELT160512ERD41	16,79	16,79	5,56	1,2	0,05	4,18	–	–	–	–	●	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Copy Milling


XEPT16-D41



XEPT16-D41

● first choice
○ alternate choice

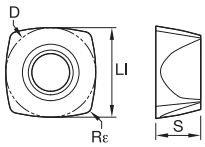
		KC522M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P		○		●	●	○		●	○	●	○
M		●		○	○	●			●		●
K		○	●	○			●	●	○		
N											
S		●				●			●		●
H										○	

XEPT16-D41 • Precision pressed insert • Best fit for face milling and slotting operation. General purpose in soft steels.

catalogue number	D	LI	S	Rε	hm	RT	KC522M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XEPT160512ERD41	16,80	16,80	5,56	1,2	0,05	4,18	–	–	–	–	●	–	–	–	–	–
XEPT160516ERD41	16,80	16,80	5,56	1,6	0,05	4,44	●	–	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XEPW16-D



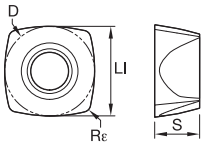
XEPW16-D

XEPW16-D • Precision pressed insert. First Choice for machining steel and cast iron

catalogue number	D	LI	S	Rε	hm	RT	KC522M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XEPW160520SRD	16,80	16,79	5,56	2,0	0,12	4,75	●	●	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XELW16-D



XELW16-D

XELW16-D • First Choice for machining steel and cast iron

catalogue number	D	LI	S	Rε	hm	RT	KC522M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XELW160512SRD	16,79	16,79	5,56	1,2	0,12	4,18	–	–	–	–	–	●	–	–	●	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds [mm] • High-Feed

Light Machining	General Purpose	Heavy Machining

At 3,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	0,30	**0,98**	1,66	0,22	**0,71**	1,18	0,17	**0,53**	0,88	0,14	**0,46**	0,76	0,13	**0,42**	0,70	.E..D41
.S..D	0,44	**1,11**	1,80	0,32	**0,80**	1,28	0,24	**0,59**	0,95	0,21	**0,52**	0,83	0,19	**0,47**	0,76	.S..D

At 2,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	0,36	**1,15**	1,95	0,26	**0,83**	1,38	0,19	**0,62**	1,03	0,17	**0,54**	0,89	0,15	**0,49**	0,82	.E..D41
.S..D	0,51	**1,30**	2,12	0,37	**0,93**	1,50	0,28	**0,70**	1,11	0,24	**0,61**	0,97	0,22	**0,55**	0,89	.S..D

At 2,00 Axial Depth of Cut (ap)

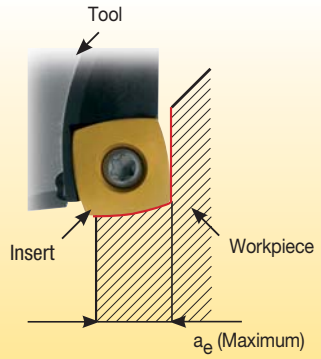
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	0,40	**1,28**	2,18	0,29	**0,92**	1,54	0,21	**0,68**	1,14	0,19	**0,60**	0,99	0,17	**0,55**	0,91	.E..D41
.S..D	0,57	**1,45**	2,37	0,41	**1,04**	1,67	0,31	**0,77**	1,24	0,27	**0,67**	1,08	0,25	**0,62**	0,99	.S..D

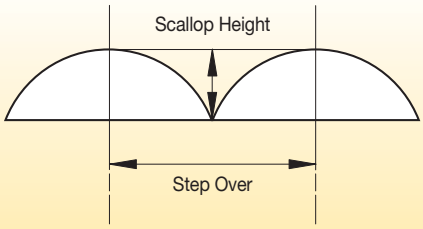
Feed Rate Guide • Plunging • IC 16 • fz [mm/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max 13mm insert engagement (ae radial engagement)			Insert Geometry
.E..D41	0,07	**0,23**	0,38	.E..D41
.S..D	0,10	**0,25**	0,41	.S..D

NOTE: For further details about using the 7792VX series in plunging operations, please see page V33.
Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Plunging





The cutting edge should not be in contact with the material face after machining to maintain the cutting edge quality.

The scallop height is calculated in relation to the step over.

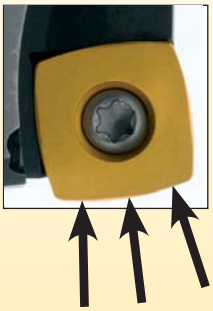
The maximum radial engagement is directly in relation to insert cutting edge length.

For insert type:
XP…06 the ae, max is 3mm.
XD…09 the ae, max is 6mm.
XD…12 the ae, max is 9mm.
XE…16 the ae, max is 13mm.

The advantages of face milling and producing cavities with the Stellram® high-feed face mill are numerous.
The unique design of the insert, approach angle, and the cutter body ensure the cutting forces are predominantly directed in the axial direction.
The example shown with a round insert tool shows complex forces which result in high levels of vibration and damage to the cutting edge.

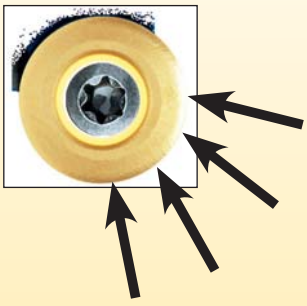
7792VX

- Cutting forces predominantly axial.
- Relationship between cutting edge and workpiece is at its most stable.
- Results in high feed rates and consistent tool life.



Round Insert Tools

- Tangential forces act around the radius.
- Leads to vibration and damage of the cutting edge.
- Leads to reduced feed and lower productivity.



The 7792VX machines with a constant volume of chip throughout all aspects of producing cavities and produces a side wall that is close to profile.

7792VX

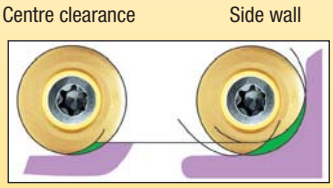
- Constant cutting section (chip volume) irrespective of position in cavity.
- Producing a close to profile side wall.
- Near-square side walls possible.



Round insert tools have increasing chip volume through the process.

Round insert

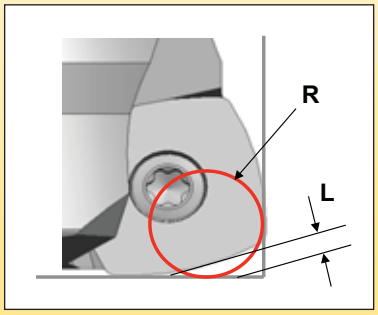
- Greater surface contact.
- Increased chip section for side wall machining.
- Vibration in corners.
- Undulating side wall cusps.



CNC Programme • Corner Radius Definition

The use of common CAD/CAM systems requires a round insert dimension to be known for cavity machining. This is available with 7792VX cutters as shown below and in the reference table.

For finish pass applications:
Wiper Facet for finishing use max feed 0,5 mm/z

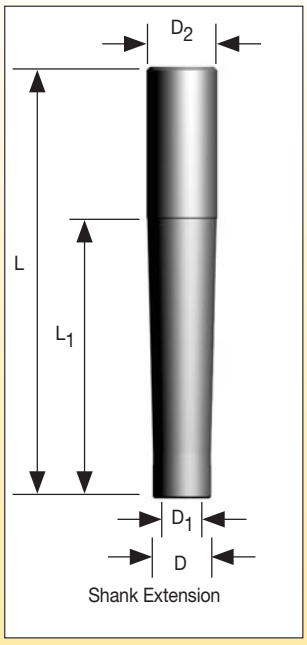


Programming Data (mm)			
Insert corner nose size (IC)	Rε	R	L
06	0,80	1,37	0,40
09	0,80	2,01	0,73
	1,20	2,27	0,67
12	0,80	2,50	1,02
	1,20	2,73	0,97
16	1,20	4,18	1,46

Cylindrical Shank Extensions for Modular Heads

order number	catalogue number	dimension					
			ramping angle		helical hole		
		L	L1	D_2	D	D1	M
5673782	**M-13-M8-CA16-090**	90	40	16	13	8,50	M8
5673352	**M-13-M8-CA16-110**	110	60	16	13	8,50	M8
5672829	**M-13-M8-CA16-130**	130	80	16	13	8,50	M8
5673587	**M-13-M8-CA16-170**	170	120	16	13	8,50	M8
5673703	**M-18-M10-CA20-110**	110	60	20	18	10,50	M10
5673519	**M-18-M10-CA20-130**	130	80	20	18	10,50	M10
5672984	**M-18-M10-CA20-170**	170	120	20	18	10,50	M10
5672830	**M-18-M10-CA20-190**	190	140	20	18	10,50	M10
5672985	**M-21-M12-CA25-131**	131	75	25	21	12,50	M12
5672468	**M-21-M12-CA25-156**	156	100	25	21	12,50	M12
5672986	**M-21-M12-CA25-181**	181	125	25	21	12,50	M12
5672831	**M-21-M12-CA25-206**	206	150	25	21	12,50	M12
5672987	**M-21-M12-CA25-231**	231	175	25	21	12,50	M12
5672832	**M-29-M16-CA32-160**	160	100	32	29	17,00	M16
5672988	**M-29-M16-CA32-210**	210	150	32	29	17,00	M16
5673783	**M-29-M16-CA32-260**	260	200	32	29	17,00	M16
5672989	**M-29-M16-CA32-310**	310	250	32	29	17,00	M16

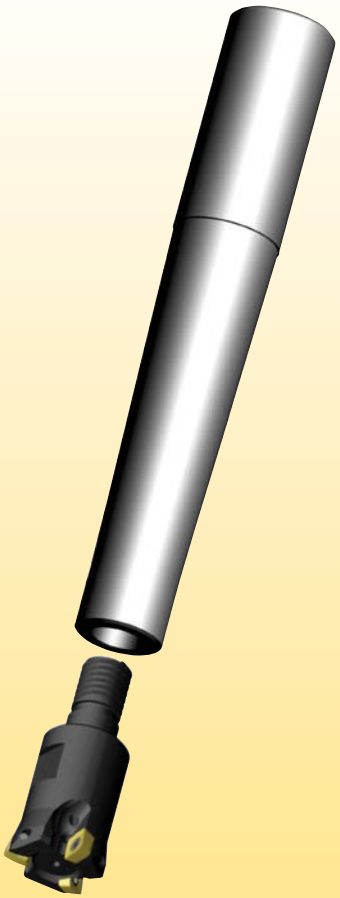
NOTE: Order example with cylindrical shank: M-13-M8-CA.625-3.543.



Shank Extension

Cylindrical shank extensions can be used with all modular heads found in several product family series within this catalogue.

These extensions have the industry standard of metric threads.



Technical Advice

M	Modular adaptor
13	Diameter in front of the modular shank (D) = 13mm
M8	Metric Thread (M)
CA16	Cylindrical shank diameter 16mm with through coolant
90	Total length of the body

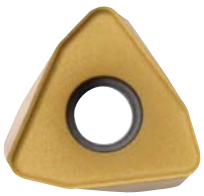
KenFeed™ 2X Series

Primary Application

KenFeed 2X is a double-sided trigon insert with six cutting edges engineered to provide superior metal removal and productivity through high feed rates in roughing operations. Smaller depths of cut at extremely high feed rates result in lower cutting forces, reducing vibrations and increasing process reliability.

Features and Benefits

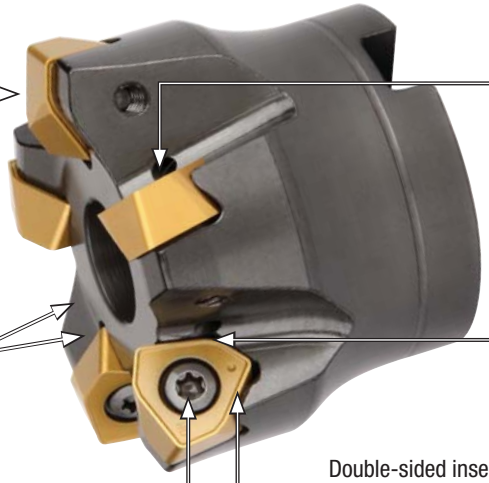
- Six cutting edges per insert. Double-sided solution with unique design.
- Two different topography styles cover any type of material, component, and application.
- KenFeed 2X inserts are specially suitable for long, deep applications, up to 10 x L/D ratio.



9mm IC Insert WOEJ094....
Up to 1,5mm Ap max.
Diameter 25–80mm

The ultimate and innovative concept for applying the latest high-feed milling strategies.





Strong design with a thick insert provides outstanding reliability.

Screw-on, end mill, and shell mill cutters with internal coolant.

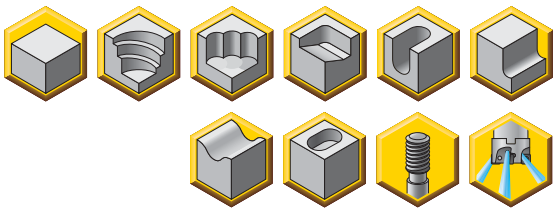
Platform designed for pocketing, ramping, and helical interpolations.

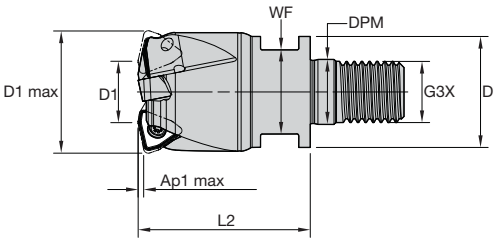
Just two topographies to cover all applications with easy selection.

Double-sided insert with six cutting edges for better cost-per-edge position with full usage.

No need for additional clamping device. Screw provides easy handling.

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 2,5mm fz.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.







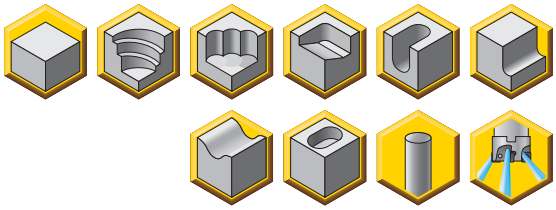
Screw-On End Mills

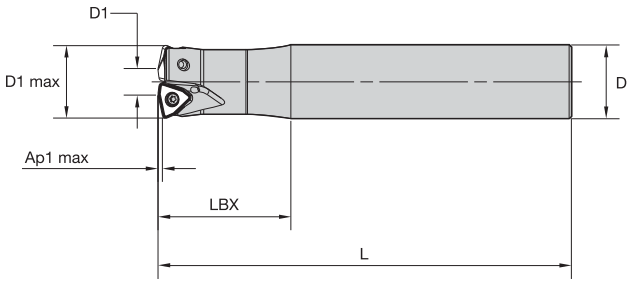
order number	catalogue number	D1 max	D1	D	DPM	WF	G3X	L2	Ap1 max	Z	kg	max RPM	insert 1
4113983	**KF2X25Z02M12WO09**	25	9	21	13	17	M12	35	1,5	2	0,09	37000	WOEJ090512__
4113984	**KF2X32Z03M16WO09**	32	16	29	17	22	M16	45	1,5	3	0,22	30900	WOEJ090512__
4113985	**KF2X35Z03M16WO09**	35	19	29	17	22	M16	45	1,5	3	0,24	29000	WOEJ090512__
4113986	**KF2X42Z04M16WO09**	42	26	29	17	22	M16	45	1,5	4	0,28	25800	WOEJ090512__

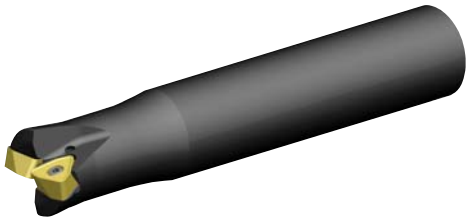
Spare Parts

D1 max	 insert screw	 Nm	 Torx Plus driver
25	**MS2219**	1,8	**DT9IP**
32	**MS2219**	1,8	**DT9IP**
35	**MS2219**	1,8	**DT9IP**
42	**MS2219**	1,8	**DT9IP**

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 2,5mm fz.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.







End Mills

order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	kg	max RPM	insert 1
4113987	**KF2X25Z02A25WO09L140**	25	9	25	140	45	1,5	2	0,46	37000	WOEJ090512__
4113988	**KF2X25Z02A25WO09L200**	25	9	25	200	45	1,5	2	0,68	37000	WOEJ090512__
4113989	**KF2X25Z02A25WO09L300**	25	9	25	300	45	1,5	2	1,05	37000	WOEJ090512__
4113990	**KF2X28Z02A25WO09L200**	28	11	25	200	45	1,5	2	0,70	34000	WOEJ090512__
4113991	**KF2X32Z03A32WO09L150**	32	16	32	150	50	1,5	3	0,82	30900	WOEJ090512__
4113992	**KF2X32Z03A32WO09L200**	32	16	32	200	50	1,5	3	1,13	30900	WOEJ090512__
4113993	**KF2X32Z03A32WO09L300**	32	16	32	300	50	1,5	3	1,75	30900	WOEJ090512__
4113994	**KF2X35Z03A32WO09L200**	35	19	32	200	45	1,5	3	1,16	29000	WOEJ090512__

Spare Parts

D1 max	 insert screw	 Nm	 Torx Plus driver
25	**MS2219**	1,8	**DT9IP**
28	**MS2219**	1,8	**DT9IP**
32	**MS2219**	1,8	**DT9IP**
35	**MS2219**	1,8	**DT9IP**

- Dramatically improves MRR using the latest milling strategies.
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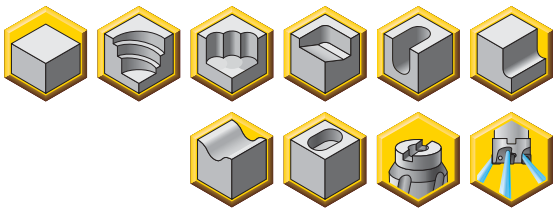
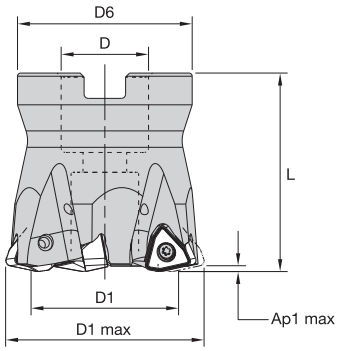






Face Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	kg	max RPM	insert 1
4113995	**KF2X40Z04WO09**	40	24	22	37	40	1,5	4	0,18	26600	WOEJ090512__
4113996	**KF2X50Z05WO09**	50	34	22	44	50	1,5	5	0,39	23100	WOEJ090512__
4113997	**KF2X52Z05WO09**	52	36	22	44	50	1,5	5	0,42	22600	WOEJ090512__
5396014	**KF2X63Z05S22WO09**	63	47	22	49	50	1,5	5	0,76	20100	WOEJ090512SRHD
4113998	**KF2X63Z05WO09**	63	47	22	60	50	1,5	5	0,76	20100	WOEJ090512__
5396015	**KF2X66Z06S22WO09**	66	50	22	49	50	1,5	6	0,78	19600	WOEJ090512SRHD
4113999	**KF2X66Z06WO09**	66	50	27	60	50	1,5	6	0,78	19600	WOEJ090512__
4114000	**KF2X80Z07WO09**	80	64	27	60	50	1,5	7	1,07	17500	WOEJ090512__

Spare Parts







D1 max	insert screw	Nm	Torx Plus driver	socket-head cap screw	mounting screw
40	**MS2219**	1,0	**DT9IP**	**–**	**KLSSM22-39-CG**
50	**MS2219**	1,0	**DT9IP**	**125.025**	**–**
52	**MS2219**	1,0	**DT9IP**	**125.025**	**–**
63	**MS2219**	1,0	**DT9IP**	**125.025**	**–**
66	**MS2219**	1,0	**DT9IP**	**125.025**	**–**
66	**MS2219**	1,0	**DT9IP**	**125.225**	**–**
80	**MS2219**	1,0	**DT9IP**	**125.230**	**–**

Insert Selection Guide

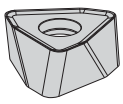
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.S..GD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P5–P6	.S..GD	KCPK30	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.S..GD	KC522M	**.S..GD**	**KC725M**	.S..HD	KC725M
M3	.S..GD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
K1–K2	.S..HD	KCK15	**.S..HD**	**KCK15**	.S..HD	KCK15
K3	.S..GD	KCPK30	**.S..HD**	**KCK15**	.S..HD	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GD	KC522M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.S..GD	KC725M	**.S..GD**	**KCPM40**	.S..HD	KCPM40
S4	.S..GD	KC522M	**.S..HD**	**KC522M**	.S..HD	KC725M
H1	–	–	**–**	**–**	–	–

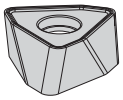
Indexable Inserts • WOEJ09...

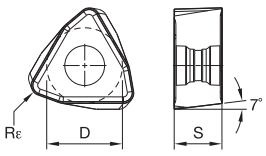
- Double-sided insert with six cutting edges.
- Unique and strong insert design that enables high-feed conditions, up to 2,5mm fz.
- -HD geometry is the first choice for steels, high-strength steels, and cast iron.
- -GD provides lower cutting forces; first choice for soft materials.

● first choice
○ alternate choice

	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
P		○	●		●	●	
M		●	●		○	○	○
K	●	○		●	○		
N							
S		●	●				●
H		○					


WOEJ-GD


WOEJ-HD



WOEJ-GD
WOEJ-HD

WOEJ-GD

catalogue number	D	S	Rε	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
WOEJ090512SRGD	8,90	5,40	1,2	6	–	●	●	–	●	●	●

WOEJ-HD

catalogue number	D	S	Rε	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
WOEJ090512SRHD	8,90	5,50	1,2	6	–	●	●	–	●	●	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..GD	1,15	**2,42**	3,84	0,82	**1,71**	2,67	0,61	**1,26**	1,96	0,53	**1,10**	1,70	0,49	**1,01**	1,55	.S..GD
.S..HD	1,15	**2,78**	4,27	0,82	**1,96**	2,94	0,61	**1,44**	2,16	0,53	**1,26**	1,87	0,49	**1,15**	1,71	.S..HD

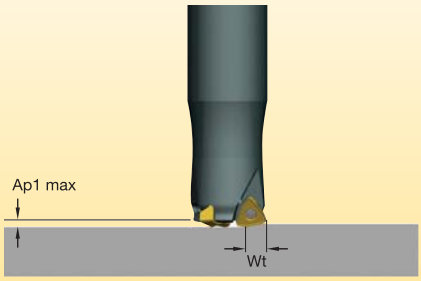
Feed Rate Guide • Plunging • IC09 • fz [mm/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max 13mm insert engagement (ae radial engagement)			Insert Geometry
.S..GD	0,10	**0,21**	0,32	.S..GD
.S..HD	0,10	**0,24**	0,36	.S..HD

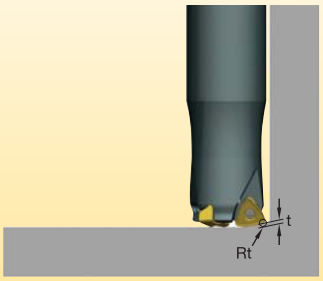
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

General Programming Information for Applying KenFeed 2X • IC09

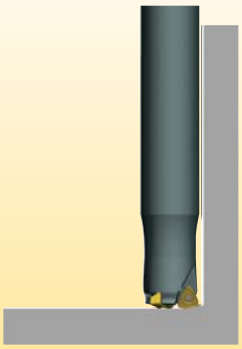
Rt	Wt	t
2.70	8.15	1.15



Small Ap1 values and higher feed rates generate lower cutting forces versus traditional milling strategies.

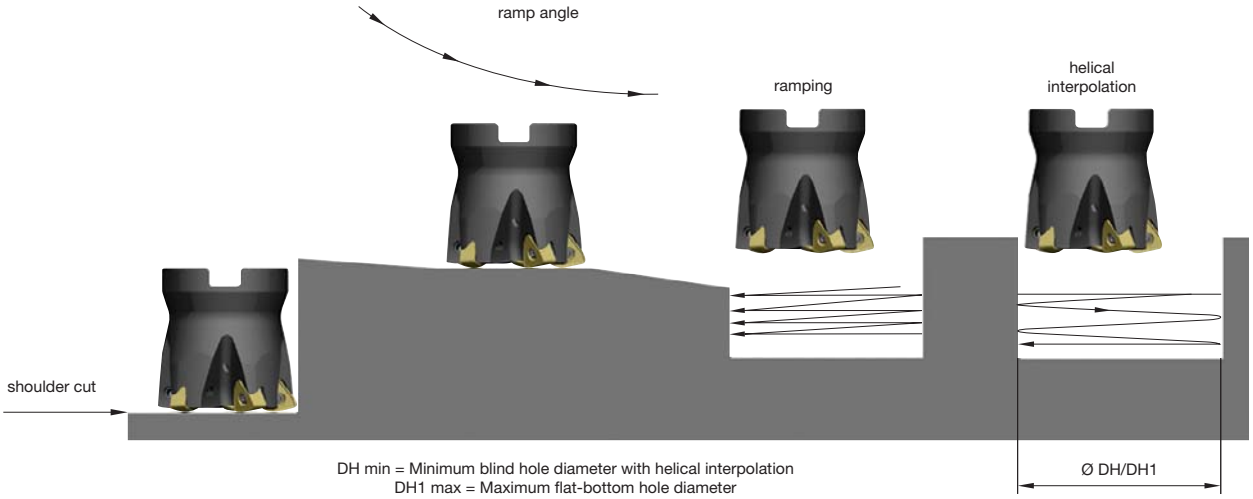


For CAM programming, the loads can be programmed as a toroidal tool type by using the Rt value as the insert radius.



Recommended when long overhang is necessary due to lower radial forces. Maximum L/D ratio of 10 x D.

Maximum Linear Ramping and Helical Interpolation from Solid



cutter type	catalogue number	recommended ramping angle (for continuous ramping process)	max ramp angle when Ap max (not for continuous ramping process)	max ramp angle for 360° helical interpolation	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	max diameter (no flat bottom)
Screw-On	**KF2X2X25Z02M12WO09**	3.6°	5.4°	3.1°	26,5	33,7	50
	KF2X32Z03M16WO09	1.8°	2.7°	1.7°	41,2	48,4	64
	KF2X35Z03M16WO09	1.6°	2.4°	1.4°	46,8	54,0	70
	KF2X42Z04M16WO09	1.2°	1.9°	0.8°	68,7	75,9	84
End Mills	**KF2X25Z02A25WO09L140**	3.6°	5.4°	3.1°	26,5	33,7	50
	KF2X25Z02A25WO09L200	3.6°	5.4°	3.1°	26,5	33,7	50
	KF2X25Z02A25WO09L300	3.6°	5.4°	3.1°	26,5	33,7	50
	KF2X28Z02A25WO09L200	3.1°	4.6°	2.5°	31,6	38,8	56
	KF2X32Z03A32WO09L150	1.8°	2.7°	1.7°	41,2	48,4	64
	KF2X32Z03A32WO09L200	1.8°	2.7°	1.7°	41,2	48,4	64
	KF2X32Z03A32WO09L300	1.8°	2.7°	1.7°	41,2	48,4	64
	KF2X35Z03A32WO09L200	1.6°	2.4°	1.4°	46,8	54,0	70
Face Mills	**KF2X40Z04WO09**	1.3°	2.0°	1.2°	56,4	63,6	80
	KF2X50Z05WO09	1.0°	1.5°	0.8°	76,7	83,9	100
	KF2X52Z05WO09	1.0°	1.4°	0.8°	80,7	87,9	104
	KF2X63Z05S22WO09	0.8°	1.2°	0.6°	102,7	109,9	126
	KF2X63Z05WO09	0.8°	1.2°	0.6°	102,7	109,9	126
	KF2X66Z06S22WO09	0.7°	1.1°	0.5°	108,7	115,9	132
	KF2X66Z06WO09	0.7°	1.1°	0.5°	108,7	115,9	132
	KF2X80Z07WO09	0.6°	0.9°	0.4°	136,6	143,8	160

Rodeka™ Inserts

The New Round Insert Generation

Primary Application

Kennametal introduces a revolutionary double-sided round milling insert capable of running in multiple types of milling operations and workpiece materials. The Rodeka series provides the latest double-sided insert technology to boost your productivity with the most efficient cost per edge.

Features and Benefits

Rodeka Double-Sided Round Inserts

- Three insert sizes: 10, 12, and 16mm.
- Innovative, cutting-edge design increases tool life and reduces cutting forces.
- Rodeka 12X series is a tailor-made solution for turbine blade machining.



Rodeka 10
10mm IC insert
8 cutting edges



Rodeka 12X
12mm IC insert
8 cutting edges

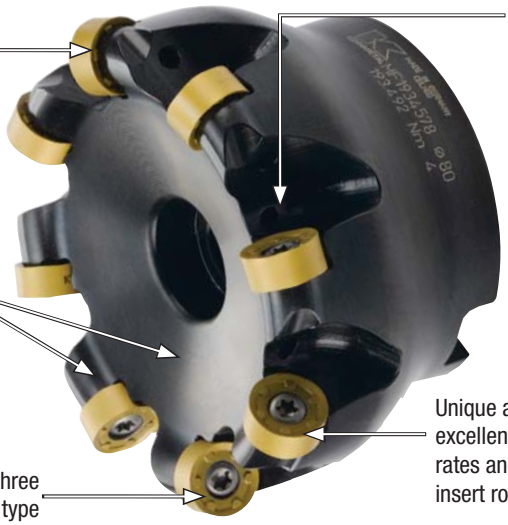


Rodeka 12
12mm IC insert
12 cutting edges



Rodeka 16
16mm IC insert
12 cutting edges





Double-sided insert with up to 12 cutting edges for a more productive cutting process.

Screw-on, end mill, and shell mill cutters with internal coolant.

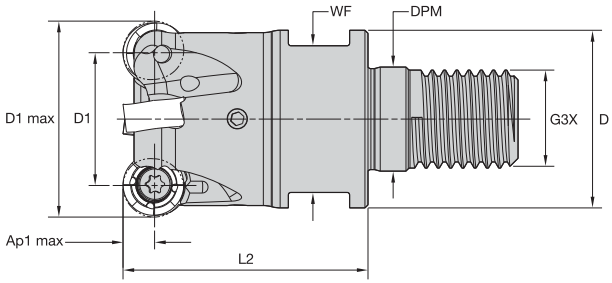
Higher clearance in bodies to permit pocketing, profiling, and 5-axis machining.

Unique anti-rotation feature for excellent stability with higher feed rates and cutting forces. User-friendly insert rotation.

Three different insert sizes and three topography styles per size cover any type of material, component, and application.

- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Screw-On End Mills

order number	catalogue number	D1 max	D1	D	DPM	WF	G3X	L2	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
5152621	**KDR25Z03M12RN10**	25	15	21	13	17	M12	32	5,0	3	.6°	0,07	54700	RNGJ10T3M0_N__
5152622	**KDR32Z04M16RN10**	32	22	29	17	24	M16	40	5,0	4	.5°	0,18	48300	RN_J10T3M0_N__
5152623	**KDR35Z05M16RN10**	35	25	29	17	24	M16	40	5,0	5	.5°	0,20	46200	RN_J10T3M0_N__
5152624	**KDR40Z05M16RN10**	40	30	29	17	24	M16	40	5,0	5	.4°	0,23	43200	RN_J10T3M0_N__

Spare Parts

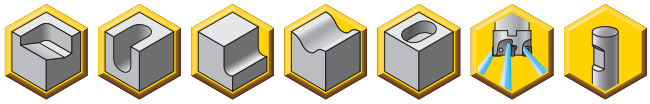


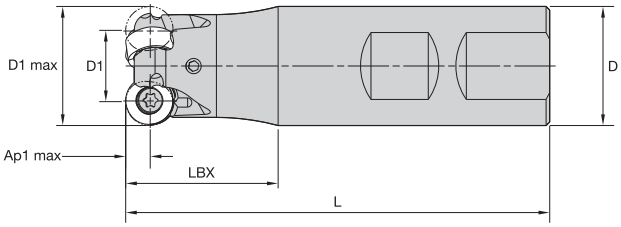




D1 max	insert screw	Nm	Torx Plus driver
25	**191.848**	2,0	**170.025**
32	**191.848**	2,0	**170.025**
35	**191.848**	2,0	**170.025**
40	**191.848**	2,0	**170.025**

- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing, profiling, ramping, and helical interpolation capabilities.







Weldon End Mills

order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
5152626	**KDR25Z03B25RN10**	25	15	25	89	32	5,0	3	.6°	0,27	54700	RN_J10T3M0_N__

Spare Parts

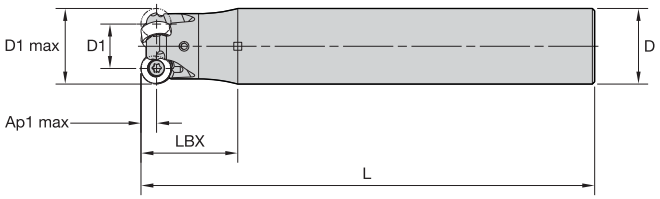




D1 max	insert screw	Nm	Torx Plus driver
25	**191.848**	2,0	**170.025**

- Double-sided round insert with eight indexable positions.
- Anti-rotation features enable higher cutting forces and extra stability.
- Pocketing and profiling capabilities.







Cylindrical End Mills

order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
5152629	**KDR25Z03A25RN10L150**	25	15	25	150	32	5,0	3	.6°	0,50	54700	RN_J10T3M0_N__
5152680	**KDR25Z03A25RN10L200**	25	15	25	200	32	5,0	3	.6°	0,69	54700	RN_J10T3M0_N__
5152681	**KDR25Z03A32RN10L250**	25	15	32	250	32	5,0	3	.6°	1,42	54700	RN_J10T3M0_N__
5152684	**KDR32Z03A32RN10L250**	32	22	32	250	40	5,0	3	.5°	1,44	48300	RN_J10T3M0_N__
5152683	**KDR32Z04A32RN10L200**	32	22	32	200	40	5,0	4	.5°	1,14	48300	RN_J10T3M0_N__

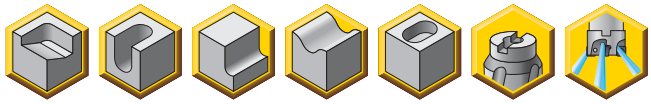
Spare Parts

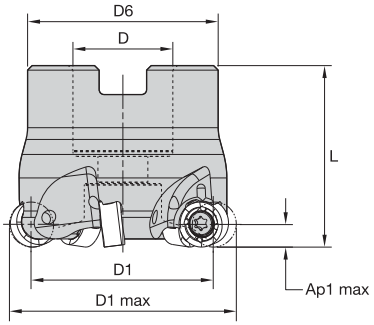




D1 max	insert screw	Nm	Torx Plus driver
25	**191.848**	2,0	**170.025**
32	**191.848**	2,0	**170.025**

- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
5152685	**KDR40Z04S16RN10**	40	30	16	38	40	5,0	4	.4°	0,24	43200	RN_J10T3M0_N__
5152686	**KDR40Z06S16RN10**	40	30	16	38	40	5,0	6	.4°	0,24	43200	RN_J10T3M0_N__
5152687	**KDR50Z05S22RN10**	50	40	22	42	40	5,0	5	.3°	0,32	38600	RN_J10T3M0_N__
5152688	**KDR50Z06S22RN10**	50	40	22	42	40	5,0	6	.3°	0,32	38600	RN_J10T3M0_N__
5152689	**KDR52Z06S22RN10**	52	42	22	49	50	5,0	6	.3°	0,52	37900	RN_J10T3M0_N__
5152690	**KDR63Z07S22RN10**	63	53	22	49	50	5,0	7	.3°	0,66	34400	RN_J10T3M0_N__
5152691	**KDR66Z07S27RN10**	66	56	27	60	50	5,0	7	.3°	0,86	33600	RN_J10T3M0_N__
5152692	**KDR80Z08S27RN10**	80	70	27	60	50	5,0	8	.2°	1,07	30500	RN_J10T3M0_N__

Spare Parts






D1 max	insert screw	Nm	socket-head cap screw	Torx Plus driver
40	**191.848**	2,0	**MS1294**	**170.025**
50	**191.848**	2,0	**–**	**170.025**
52	**191.848**	2,0	**MS1242**	**170.025**
63	**191.848**	2,0	**MS1242**	**170.025**
66	**191.848**	2,0	**MS2038**	**170.025**
80	**191.848**	2,0	**MS2038**	**170.025**

Insert Selection Guide

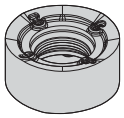
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LDJ	KC725M	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.S..GD	KCPK30	**.S..HD**	**KCPK30**	.S..HD	KCPM40
P5–P6	.E..LDJ	KC725M	**.S..GDJ**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LDJ	KC522M	**.E..LDJ**	**KCSM40**	.S..GDJ	KC522M
M3	.E..LDJ	KCSM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KC520M**	.S..HD	KCK15
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD	KCPK30
N1–N2	.F..LDJ	KC422M	**.F..LDJ**	**KC422M**	.S..GD	KC510M
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LDJ	KC725M	**.S..GDJ**	**KC725M**	.S..HD	KC725M
S3	.E..LDJ	KCSM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
S4	.E..LDJ	KC522M	**.E..LDJ**	**KCSM40**	.S..GDJ	KC522M
H1	.S..GD	KC510M	**.S..GD**	**KC510M**	–	–

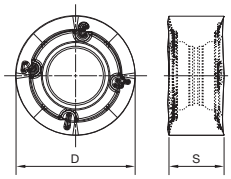
Indexable Inserts RN.J10..

- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.

● first choice
○ alternate choice

	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P		○		○	●		●	●		○
M				●	●		○	○	○	●
K		●	●	○		●	○			
N	●	○								
S				●	●				●	●
H										


RNGJ10-LD

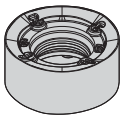


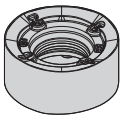
RNGJ10-LD

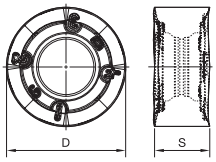
RNGJ10-LD

catalogue number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ10T3M0ELDJ	10,00	3,93	0,04	8	–	–	–	–	●	–	–	–	–	●
RNGJ10T3M0FLDJ	10,00	3,93	0,04	8	●	–	–	–	–	–	–	–	–	–

- -GD geometry is for general use in steel and stainless steel.


RNGJ10-GD


RNPJ10-HD



RNGJ10-GD

● first choice
○ alternate choice

		KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○		○	●		●	●		○
M					●	●		○	○	○	●
K			●	●	○		●	○			
N		●	○								
S					●	●				●	●
H											

RNGJ10-GD

catalogue number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ10T3M0SGDJ	10,00	3,93	0,09	8	–	–	–	–	–	–	–	–	●	–

RNGJ10-GDJ

catalogue number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ10T3M0SGDJ	10,00	3,93	0,09	8	–	–	–	–	●	–	–	–	–	–

RNPJ10-GD

catalogue number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ10T3M0SGD	10,00	3,93	0,09	8	–	–	–	●	–	–	●	●	–	–

- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.

RNPJ10-HD

catalogue number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ10T3M0SHD	10,00	3,93	0,18	8	–	–	–	–	●	●	●	●	–	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 5,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,12	**0,40**	0,72	0,09	**0,29**	0,51	0,07	**0,21**	0,38	0,06	**0,19**	0,33	0,05	**0,17**	0,30	.F..LDJ
.E..LDJ	0,12	**0,44**	0,76	0,09	**0,32**	0,54	0,07	**0,24**	0,41	0,06	**0,21**	0,35	0,05	**0,19**	0,32	.E..LDJ
.E..LD	0,12	**0,44**	0,76	0,09	**0,32**	0,54	0,07	**0,24**	0,41	0,06	**0,21**	0,35	0,05	**0,19**	0,32	.E..LD
.S..GDJ	0,24	**0,53**	0,82	0,17	**0,38**	0,59	0,13	**0,28**	0,44	0,11	**0,25**	0,38	0,10	**0,23**	0,35	.S..GDJ
.S..GD	0,24	**0,53**	0,82	0,17	**0,38**	0,59	0,13	**0,28**	0,44	0,11	**0,25**	0,38	0,10	**0,23**	0,35	.S..GD
.S..HD	0,24	**0,53**	0,83	0,17	**0,38**	0,59	0,13	**0,29**	0,44	0,11	**0,25**	0,38	0,10	**0,23**	0,35	.S..HD

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,15	**0,50**	0,90	0,11	**0,36**	0,64	0,08	**0,27**	0,48	0,07	**0,23**	0,42	0,07	**0,21**	0,38	.F..LDJ
.E..LDJ	0,15	**0,56**	0,96	0,11	**0,40**	0,68	0,08	**0,30**	0,51	0,07	**0,26**	0,44	0,07	**0,24**	0,40	.E..LDJ
.E..LD	0,15	**0,56**	0,96	0,11	**0,40**	0,68	0,08	**0,30**	0,51	0,07	**0,26**	0,44	0,07	**0,24**	0,40	.E..LD
.S..GDJ	0,29	**0,67**	1,04	0,21	**0,48**	0,74	0,16	**0,35**	0,55	0,14	**0,31**	0,48	0,13	**0,28**	0,44	.S..GDJ
.S..GD	0,29	**0,67**	1,04	0,21	**0,48**	0,74	0,16	**0,35**	0,55	0,14	**0,31**	0,48	0,13	**0,28**	0,44	.S..GD
.S..HD	0,29	**0,67**	1,04	0,21	**0,48**	0,74	0,16	**0,36**	0,55	0,14	**0,31**	0,48	0,13	**0,28**	0,44	.S..HD

At 1,00 Axial Depth of Cut (ap)

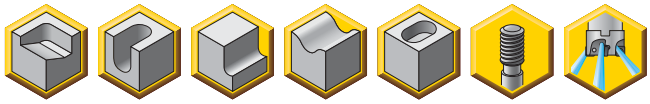
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,21	**0,67**	1,22	0,15	**0,48**	0,86	0,11	**0,36**	0,64	0,10	**0,31**	0,55	0,09	**0,29**	0,51	.F..LDJ
.E..LDJ	0,21	**0,75**	1,30	0,15	**0,53**	0,92	0,11	**0,40**	0,68	0,10	**0,35**	0,59	0,09	**0,32**	0,54	.E..LDJ
.E..LD	0,21	**0,75**	1,30	0,15	**0,53**	0,92	0,11	**0,40**	0,68	0,10	**0,35**	0,59	0,09	**0,32**	0,54	.E..LD
.S..GDJ	0,39	**0,89**	1,40	0,28	**0,64**	0,99	0,21	**0,47**	0,73	0,18	**0,41**	0,63	0,17	**0,38**	0,58	.S..GDJ
.S..GD	0,39	**0,89**	1,40	0,28	**0,64**	0,99	0,21	**0,47**	0,73	0,18	**0,41**	0,63	0,17	**0,38**	0,58	.S..GD
.S..HD	0,39	**0,90**	1,41	0,28	**0,64**	0,99	0,21	**0,48**	0,73	0,18	**0,41**	0,64	0,17	**0,38**	0,58	.S..HD

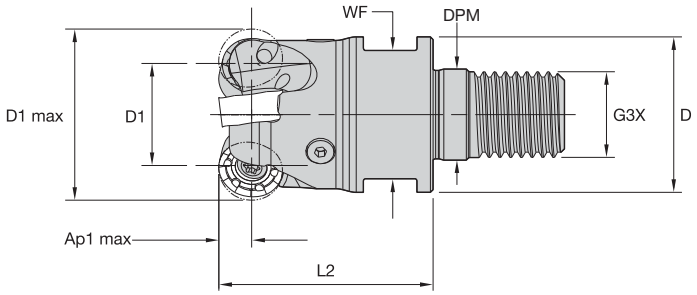
At 0,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,29	**0,93**	1,71	0,21	**0,66**	1,19	0,15	**0,49**	0,88	0,13	**0,43**	0,76	0,12	**0,39**	0,70	.F..LDJ
.E..LDJ	0,29	**1,04**	1,83	0,21	**0,74**	1,27	0,15	**0,55**	0,93	0,13	**0,48**	0,81	0,12	**0,44**	0,74	.E..LDJ
.E..LD	0,29	**1,04**	1,83	0,21	**0,74**	1,27	0,15	**0,55**	0,93	0,13	**0,48**	0,81	0,12	**0,44**	0,74	.E..LD
.S..GDJ	0,55	**1,25**	1,98	0,39	**0,88**	1,37	0,29	**0,65**	1,01	0,25	**0,57**	0,87	0,23	**0,52**	0,80	.S..GDJ
.S..GD	0,55	**1,25**	1,98	0,39	**0,88**	1,37	0,29	**0,65**	1,01	0,25	**0,57**	0,87	0,23	**0,52**	0,80	.S..GD
.S..HD	0,55	**1,26**	1,99	0,39	**0,89**	1,38	0,29	**0,66**	1,01	0,25	**0,57**	0,88	0,23	**0,52**	0,80	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Screw-On End Mills

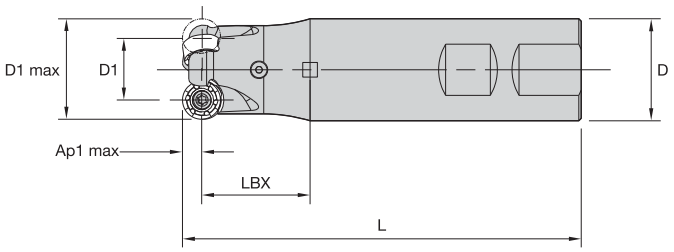
order number	catalogue number	D1 max	D1	D	DPM	WF	G3X	L2	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4147001	**KDR32Z03M16RN12**	32	20	29	17	24	M16	40	3,0	3	.3°	0,18	39160	RN_J1204M0__
4147002	**KDR35Z03M16RN12**	35	23	29	17	24	M16	40	3,0	3	.4°	0,20	37440	RN_J1204M0__
4147033	**KDR42Z04M16RN12**	42	30	29	17	24	M16	40	3,0	4	.4°	0,23	34180	RN_J1204M0__

Spare Parts

D1 max	 insert screw	 Nm	 wrench
32	**193.492**	4,0	**170.025**
35	**193.492**	4,0	**170.025**
42	**193.492**	4,0	**170.025**

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing, profiling, ramping, and helical interpolation capabilities.







Weldon End Mills

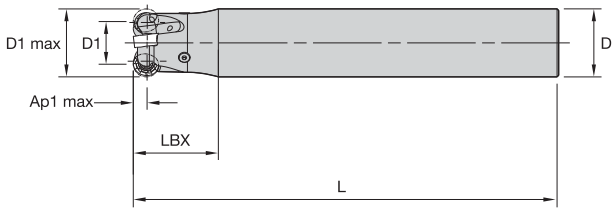
order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4147035	**KDR32Z03B32RN12**	32	20	32	125	40	3,0	3	.3°	0,64	39160	RN_J1204M0__

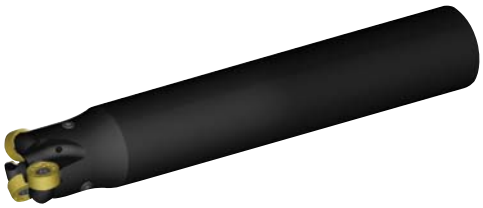
Spare Parts

D1 max	insert screw	Nm	Torx Plus driver
32	**193.492**	4,0	**170.025**

- Double-sided round insert with 12 indexable positions.
- Anti-rotation feature, enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Cylindrical End Mills

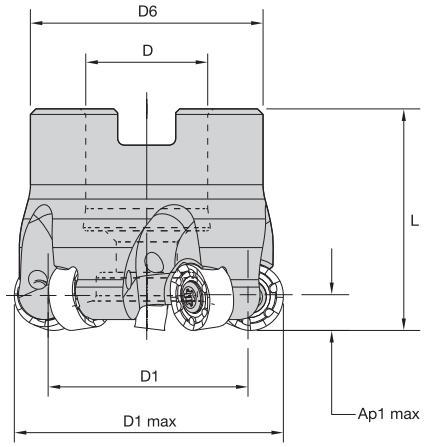
order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4147038	**KDR32Z02A32RN12L250**	32	20	32	250	40	3,0	2	.4°	1,41	39160	RN_J1204M0__
4147037	**KDR32Z03A32RN12L200**	32	20	32	200	40	3,0	3	.3°	1,10	39160	RN_J1204M0__

Spare Parts

D1 max	insert screw	Nm	Torx Plus driver
32	**193.492**	4,0	**170.025**

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4147039	**KDR40Z04S16RN12**	40	28	16	38	40	3,0	4	.5°	0,21	35020	RN_J1204M0__
4147040	**KDR50Z04S22RN12**	50	38	22	42	40	3,0	4	.7°	0,29	31330	RN_J1204M0__
4147041	**KDR50Z05S22RN12**	50	38	22	42	40	3,0	5	.7°	0,29	31330	RN_J1204M0__
4147042	**KDR52Z05S22RN12**	52	40	22	49	50	3,0	5	.5°	0,81	30720	RN_J1204M0__
4147043	**KDR63Z05S22RN12**	63	51	22	49	50	3,0	5	.5°	0,81	27910	RN_J1204M0__
4147044	**KDR63Z07S22RN12**	63	51	22	49	50	3,0	7	.5°	0,81	27910	RN_J1204M0__
4147045	**KDR66Z07S27RN12**	66	54	27	60	50	3,0	7	.5°	0,81	27260	RN_J1204M0__
4147046	**KDR80Z06S27RN12**	80	68	27	60	50	3,0	6	.5°	1,07	24760	RN_J1204M0__
4147047	**KDR80Z08S27RN12**	80	68	27	60	50	3,0	8	.5°	0,81	24760	RN_J1204M0__
4147048	**KDR100Z07S32RN12**	100	88	32	78	50	3,0	7	.4°	1,57	22150	RN_J1204M0__
4147049	**KDR100Z09S32RN12**	100	88	32	78	50	3,0	9	.4°	1,58	22150	RN_J1204M0__

Spare Parts








D1 max	insert screw	Nm	low-head cap screw	socket-head cap screw	coolant lock screw assembly	wrench
40	**193.492**	4,0	–	**MS1294**	–	**170.025**
50	**193.492**	4,0	**MS1336**	–	–	**170.025**
52	**193.492**	4,0	–	**MS1242**	–	**170.025**
63	**193.492**	4,0	–	**MS1242**	–	**170.025**
66	**193.492**	4,0	–	**MS2038**	–	**170.025**
80	**193.492**	4,0	–	**MS2038**	–	**170.025**
100	**193.492**	4,0	–	–	**MS2195C**	**170.025**

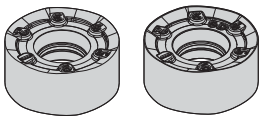
Insert Selection Guide

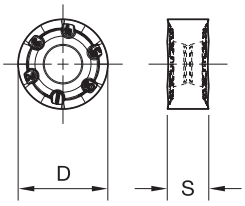
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPM40
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KC522M	**.S..GDJ**	**KCSM40**	.S..HD	KC725M
M3	.S..GD	KCPM40	**.S..GDJ**	**KCSM40**	.S..HD	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD	KCK15
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD	KCK15
N1–N2	.F..LDJ	KC422M	**.F..LDJ**	**KC422M**	.S..GD	KC510M
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.S..GD	KCPM40	**.S..GDJ**	**KCSM40**	.S..HD	KCPM40
S4	.S..GD	KC522M	**.S..GDJ**	**KCSM40**	.S..HD	KC725M
H1	.S..GD	KC510M	**.S..GD**	**KC510M**	–	–

- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is for general use in steel and stainless steel.

● first choice
○ alternate choice

	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●		●	●		○
M			●	●		○	○	○	●
K		●	○		●	○			
N	●								
S			●	●				●	●
H									


RNGJ12-LD RNGJ12-GD



RNGJ12-LD
RNGJ12-GD

RNGJ12-LD

catalogue number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1204M0ELD	12,00	4,75	0,04	12	–	–	●	●	–	●	–	–	–
RNGJ1204M0ELDJ	12,00	4,75	0,04	12	–	–	–	–	–	–	–	●	–
RNGJ1204M0FLDJ	12,00	4,75	0,04	12	●	–	–	–	–	–	–	–	–

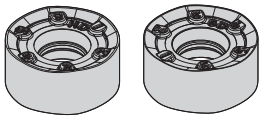
RNGJ12-GD

catalogue number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1204M0SGD	12,00	4,75	0,09	12	–	–	●	●	–	●	–	–	–
RNGJ1204M0SGDJ	12,00	4,75	0,09	12	–	–	–	–	–	–	–	–	●

- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.
- -GD geometry is for general use in steel and for stainless steel.

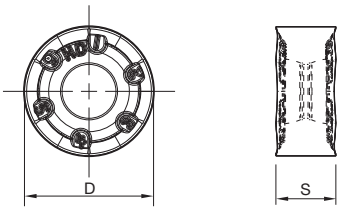
● first choice
○ alternate choice

P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										



RNGJ12-HD
RNPJ12-HD

RNPJ12-GD



RNGJ12-HD
RNPJ12-GD

RNGJ12-HD

catalogue number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1204M0SHD	12,00	4,75	0,19	12	–	–	–	●	–	●	–	–	–

RNPJ12-GD

catalogue number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1204M0SGD	12,00	4,75	0,09	12	–	–	●	●	–	●	●	–	–

RNPJ12-HD

catalogue number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1204M0SHD	12,00	4,75	0,18	12	–	–	–	●	–	●	●	–	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 6,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,12	**0,40**	0,76	0,09	**0,29**	0,54	0,07	**0,21**	0,40	0,06	**0,19**	0,35	0,05	**0,17**	0,32	.F..LDJ
.E..LDJ	0,12	**0,44**	0,80	0,09	**0,32**	0,58	0,07	**0,24**	0,43	0,06	**0,21**	0,37	0,05	**0,19**	0,34	.E..LDJ
.E..LD	0,12	**0,44**	0,80	0,09	**0,32**	0,58	0,07	**0,24**	0,43	0,06	**0,21**	0,37	0,05	**0,19**	0,34	.E..LD
.S..GDJ	0,23	**0,59**	0,90	0,17	**0,43**	0,64	0,13	**0,32**	0,48	0,11	**0,28**	0,42	0,10	**0,25**	0,38	.S..GDJ
.S..GD	0,23	**0,59**	0,90	0,17	**0,43**	0,64	0,13	**0,32**	0,48	0,11	**0,28**	0,42	0,10	**0,25**	0,38	.S..GD
.S..HD	0,23	**0,59**	0,90	0,17	**0,43**	0,64	0,13	**0,32**	0,48	0,11	**0,28**	0,42	0,10	**0,25**	0,38	.S..HD

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,17	**0,53**	1,03	0,12	**0,38**	0,73	0,09	**0,29**	0,54	0,08	**0,25**	0,47	0,07	**0,23**	0,43	.F..LDJ
.E..LDJ	0,17	**0,60**	1,09	0,12	**0,43**	0,77	0,09	**0,32**	0,58	0,08	**0,28**	0,50	0,07	**0,25**	0,46	.E..LDJ
.E..LD	0,17	**0,60**	1,09	0,12	**0,43**	0,77	0,09	**0,32**	0,58	0,08	**0,28**	0,50	0,07	**0,25**	0,46	.E..LD
.S..GDJ	0,32	**0,80**	1,22	0,23	**0,57**	0,86	0,17	**0,43**	0,64	0,15	**0,37**	0,56	0,14	**0,34**	0,51	.S..GDJ
.S..GD	0,32	**0,80**	1,22	0,23	**0,57**	0,86	0,17	**0,43**	0,64	0,15	**0,37**	0,56	0,14	**0,34**	0,51	.S..GD
.S..HD	0,32	**0,80**	1,22	0,23	**0,57**	0,86	0,17	**0,43**	0,64	0,15	**0,37**	0,56	0,14	**0,34**	0,51	.S..HD

At 1,30 Axial Depth of Cut (ap)

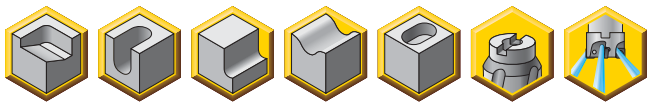
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,20	**0,64**	1,24	0,14	**0,46**	0,88	0,11	**0,34**	0,65	0,09	**0,30**	0,57	0,09	**0,28**	0,52	.F..LDJ
.E..LDJ	0,20	**0,72**	1,31	0,14	**0,51**	0,93	0,11	**0,38**	0,69	0,09	**0,33**	0,60	0,09	**0,31**	0,55	.E..LDJ
.E..LD	0,20	**0,72**	1,31	0,14	**0,51**	0,93	0,11	**0,38**	0,69	0,09	**0,33**	0,60	0,09	**0,31**	0,55	.E..LD
.S..GDJ	0,38	**0,97**	1,47	0,27	**0,69**	1,04	0,20	**0,51**	0,77	0,18	**0,45**	0,67	0,16	**0,41**	0,61	.S..GDJ
.S..GD	0,38	**0,97**	1,47	0,27	**0,69**	1,04	0,20	**0,51**	0,77	0,18	**0,45**	0,67	0,16	**0,41**	0,61	.S..GD
.S..HD	0,38	**0,97**	1,47	0,27	**0,69**	1,04	0,20	**0,51**	0,77	0,18	**0,45**	0,67	0,16	**0,41**	0,61	.S..HD

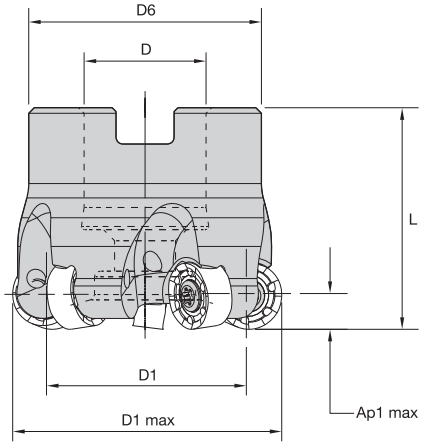
At 0,80 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	0,25	**0,81**	1,56	0,18	**0,58**	1,10	0,13	**0,43**	0,81	0,12	**0,37**	0,71	0,11	**0,34**	0,65	.F..LDJ
.E..LDJ	0,25	**0,90**	1,65	0,18	**0,64**	1,17	0,13	**0,48**	0,86	0,12	**0,42**	0,75	0,11	**0,38**	0,69	.E..LDJ
.E..LD	0,25	**0,90**	1,65	0,18	**0,64**	1,17	0,13	**0,48**	0,86	0,12	**0,42**	0,75	0,11	**0,38**	0,69	.E..LD
.S..GDJ	0,47	**1,21**	1,86	0,34	**0,86**	1,30	0,26	**0,64**	0,96	0,22	**0,56**	0,84	0,20	**0,51**	0,76	.S..GDJ
.S..GD	0,47	**1,21**	1,86	0,34	**0,86**	1,30	0,26	**0,64**	0,96	0,22	**0,56**	0,84	0,20	**0,51**	0,76	.S..GD
.S..HD	0,47	**1,21**	1,86	0,34	**0,86**	1,30	0,26	**0,64**	0,96	0,22	**0,56**	0,84	0,20	**0,51**	0,76	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.



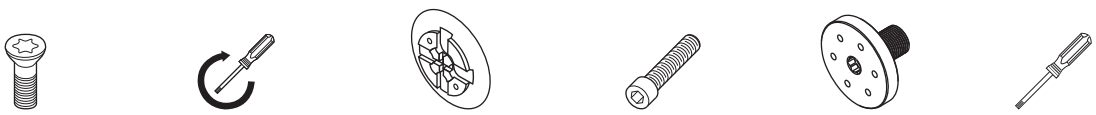




Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
5153837	KDR50Z04S22RN16	50	34	22	42	50	4,0	4	.5°	0,36	26700	RNGJ1605M0___
5153838	KDR52Z04S22RN16	52	36	22	42	50	4,0	4	.4°	0,39	26000	RNGJ1605M0___
5153839	KDR63Z04S22RN16	63	47	22	49	50	4,0	4	.4°	0,58	22700	RNGJ1605M0___
5153890	KDR63Z06S22RN16	63	47	22	49	50	4,0	6	.4°	0,57	22700	RNGJ1605M0___
5153891	KDR66Z05S27RN16	66	50	27	60	50	4,0	5	.4°	0,69	22000	RNGJ1605M0___
5153892	KDR80Z05S27RN16	80	64	27	60	50	4,0	5	.3°	0,88	19500	RNGJ1605M0___
5153893	KDR80Z07S27RN16	80	64	27	60	50	4,0	7	.3°	0,88	19500	RNGJ1605M0___
5153894	KDR100Z06S32RN16	100	84	32	78	50	4,0	6	.3°	1,51	17000	RNGJ1605M0___
5153895	KDR100Z08S32RN16	100	84	32	78	50	4,0	8	.3°	1,52	17000	RNGJ1605M0___
5153897	KDR125Z08S40RN16	125	109	40	90	63	4,0	8	.2°	2,88	14900	RNGJ1605M0___
5153898	KDR125Z10S40RN16	125	109	40	90	63	4,0	10	.2°	2,92	14900	RNGJ1605M0___
5338057	KDR160Z12S40RN16	160	144	40	100	63	4,0	12	.2°	4,06	13000	RNGJ1605M0___

Spare Parts



D1 max	insert screw	Nm	coolant shower plate assembly	socket-head cap screw	coolant lock screw assembly	wrench
50	192.932	4,0	–	MS1242	–	170.026
52	MS2260	4,0	–	MS1242	–	170.026
63	MS2260	4,0	–	MS1242	–	170.026
63	192.932	4,0	–	MS1242	–	170.026
66	MS2260	4,0	–	MS2038	–	170.026
80	MS2260	4,0	–	MS2038	–	170.026
100	MS2260	4,0	–	–	MS2195C	170.026
125	MS2260	4,0	–	–	MS2187C	170.026
160	MS2260	4,0	MCCM16001	–	–	170.026

NOTE: For coolant shower plates (MCC..), only use low-pressure coolant.

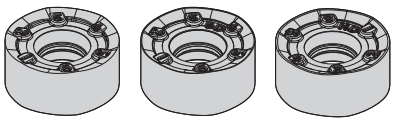
Insert Selection Guide

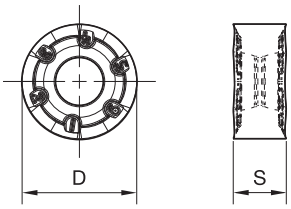
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LDJ	KC725M	.S..GD	KCPM40	.S..HD	KCPM40
P3–P4	.E..LDJ	KC522M	.S..GD	KCPK30	.S..HD	KCPM40
P5–P6	.E..LDJ	KC725M	.S..GD	KC725M	.S..HD	KC725M
M1–M2	.E..LDJ	KC522M	.S..HD	KC725M	.S..GD	KCSM40
M3	.E..LDJ	KC725M	.S..GD	KCPM40	.S..HD	KCPM40
K1–K2	.S..HD	KC520M	.S..HD	KC520M	.S..HD	KCK15
K3	.S..GD	KCPK30	.S..HD	KC520M	.S..HD	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..LDJ	KC725M	.S..GD	KCSM40	.S..HD	KC725M
S3	.E..LDJ	KC725M	.S..GD	KCSM40	.S..HD	KCPM40
S4	.E..LDJ	KC522M	.S..GD	KCSM40	.S..HD	KC725M
H1	–	–	–	–	–	–

Indexable Inserts • RN.J16..

- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is for general use in steel and for stainless steel.
- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.

● first choice
○ alternate choice


RNGJ16-LD RNPJ16-GD RNPJ16-HD



RNGJ16-LD

RNGJ16-LD

catalogue number	D	S	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1605M0ELDJ	16,00	5,52	0,04	12	–	●	●	–	–	–	–	–

RNPJ16-GD

catalogue number	D	S	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1605M0SGD	16,00	5,52	0,09	12	–	●	●	–	●	●	–	●

RNPJ16-HD

catalogue number	D	S	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1605M0SHD	16,00	5,52	0,23	12	●	–	●	●	●	●	–	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 8,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	0,12	**0,44**	0,80	0,09	**0,32**	0,57	0,07	**0,24**	0,43	0,06	**0,21**	0,37	0,05	**0,19**	0,34	.E..LDJ
.E..LD	0,12	**0,44**	0,80	0,09	**0,32**	0,57	0,07	**0,24**	0,43	0,06	**0,21**	0,37	0,05	**0,19**	0,34	.E..LD
.S..GD	0,23	**0,50**	0,89	0,17	**0,36**	0,64	0,13	**0,27**	0,48	0,11	**0,24**	0,42	0,10	**0,22**	0,38	.S..GD
.S..HD	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..HD

At 2,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	0,17	**0,61**	1,10	0,12	**0,44**	0,79	0,09	**0,33**	0,59	0,08	**0,29**	0,51	0,07	**0,26**	0,47	.E..LDJ
.E..LD	0,17	**0,61**	1,10	0,12	**0,44**	0,79	0,09	**0,33**	0,59	0,08	**0,29**	0,51	0,07	**0,26**	0,47	.E..LD
.S..GD	0,32	**0,70**	1,24	0,23	**0,50**	0,89	0,18	**0,38**	0,66	0,15	**0,33**	0,58	0,14	**0,30**	0,53	.S..GD
.S..HD	0,32	**0,81**	1,32	0,23	**0,59**	0,94	0,18	**0,44**	0,70	0,15	**0,38**	0,61	0,14	**0,35**	0,56	.S..HD

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	0,21	**0,76**	1,38	0,15	**0,55**	0,99	0,12	**0,41**	0,74	0,10	**0,36**	0,64	0,09	**0,33**	0,59	.E..LDJ
.E..LD	0,21	**0,76**	1,38	0,15	**0,55**	0,99	0,12	**0,41**	0,74	0,10	**0,36**	0,64	0,09	**0,33**	0,59	.E..LD
.S..GD	0,40	**0,87**	1,55	0,29	**0,63**	1,11	0,22	**0,47**	0,82	0,19	**0,41**	0,72	0,17	**0,37**	0,66	.S..GD
.S..HD	0,40	**1,02**	1,65	0,29	**0,73**	1,18	0,22	**0,55**	0,87	0,19	**0,48**	0,76	0,17	**0,44**	0,70	.S..HD

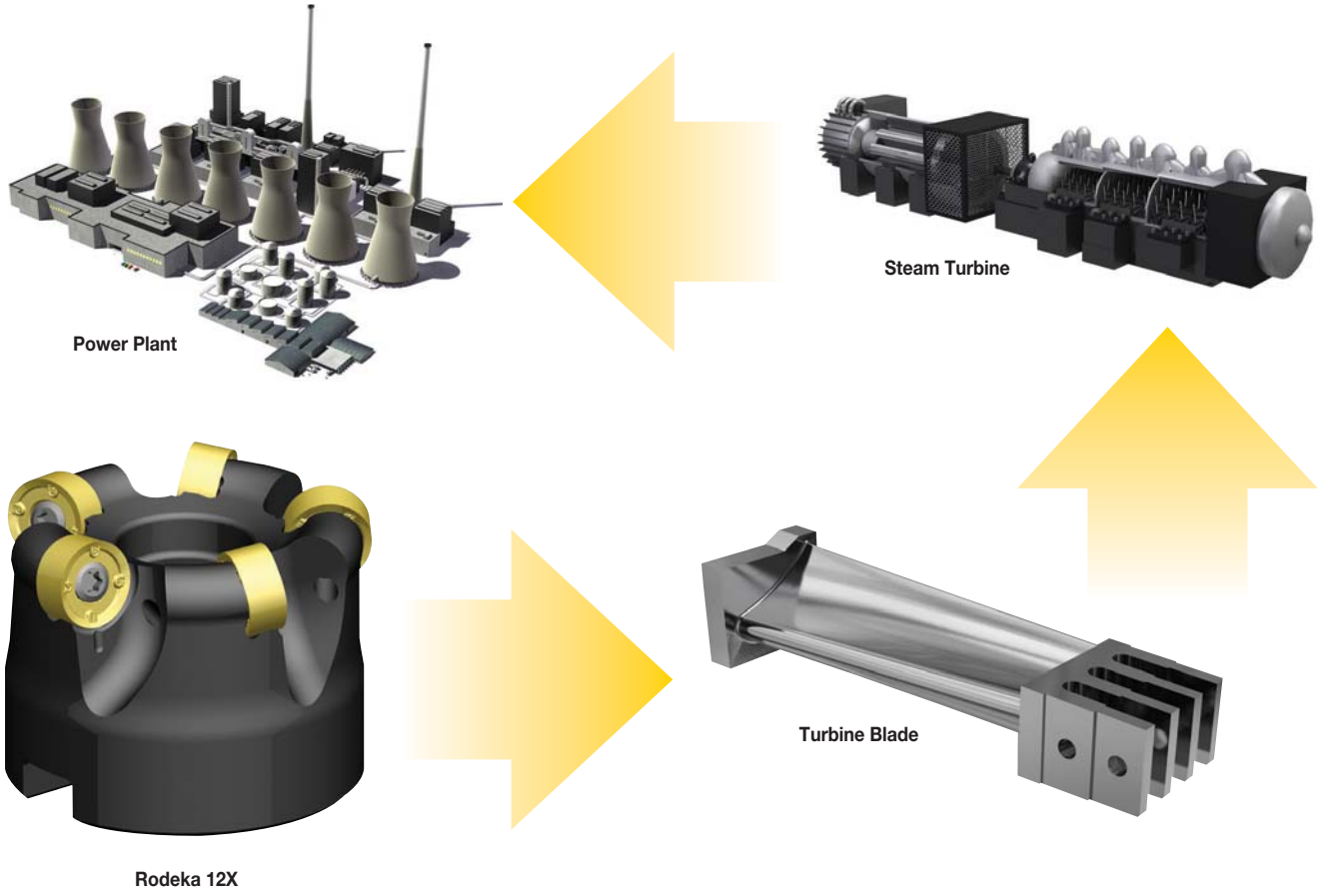
At 1,00 Axial Depth of Cut (ap)

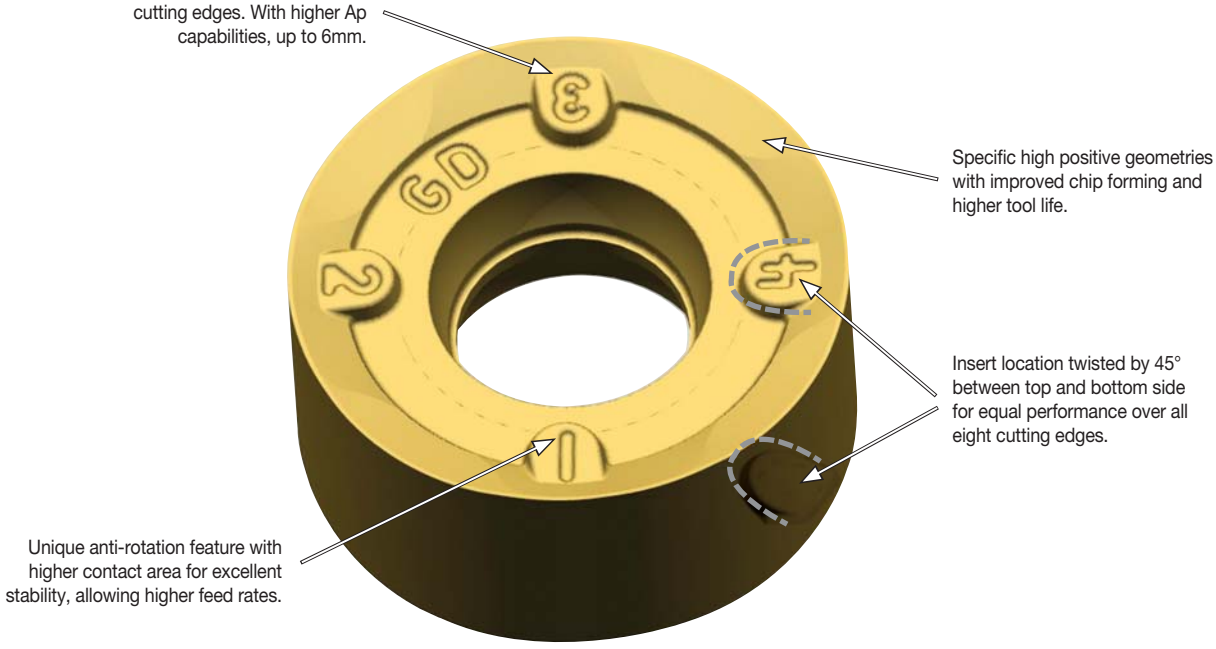
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	0,26	**0,92**	1,67	0,19	**0,66**	1,19	0,14	**0,49**	0,89	0,12	**0,43**	0,77	0,11	**0,39**	0,71	.E..LDJ
.E..LD	0,26	**0,92**	1,67	0,19	**0,66**	1,19	0,14	**0,49**	0,89	0,12	**0,43**	0,77	0,11	**0,39**	0,71	.E..LD
.S..GD	0,49	**1,05**	1,88	0,35	**0,75**	1,34	0,26	**0,56**	0,99	0,23	**0,49**	0,86	0,21	**0,45**	0,79	.S..GD
.S..HD	0,49	**1,23**	2,00	0,35	**0,88**	1,42	0,26	**0,66**	1,05	0,23	**0,57**	0,92	0,21	**0,52**	0,84	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Rodeka 12X Turbine Blade Version

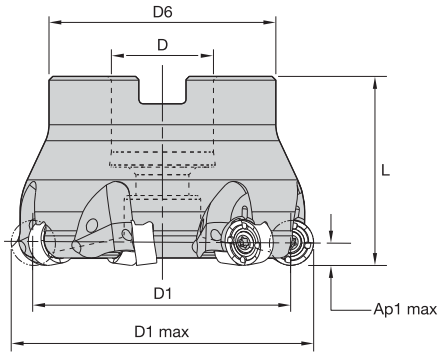
Revolutionary double-sided round insert engineered for turbine blade machining. Special geometries, insert styles, and dedicated cutter bodies have been developed to serve this demanding application.





- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Engineered for turbine blade machining.







Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
5104420	**KDR40Z04S16RN12X**	40	28	16	38	40	6,0	4	.5°	0,23	35020	RN_J1204M0___
5104421	**KDR50Z05S22RN12X**	50	38	22	42	40	6,0	5	.7°	0,30	31330	RN_J1204M0___
5104424	**KDR63Z06S22RN12X**	63	51	22	49	40	6,0	6	.5°	0,48	27910	RN_J1204M0___
5104426	**KDR80Z07S27RN12X**	80	68	27	60	50	6,0	7	.3°	1,05	24760	RN_J1204M0___

Spare Parts







D1 max	insert screw	Nm	socket-head cap screw	socket-head cap screw with coolant groove	wrench
40	**193.492**	4,0	**MS1294**	**MS1294CG**	**170.025**
50	**193.492**	4,0	**–**	**MS1234CG**	**170.025**
63	**193.492**	4,0	**–**	**MS1234CG**	**170.025**
80	**193.492**	4,0	**MS2038**	**MS2038CG**	**170.025**

NOTE: Socket-head cap screw with coolant groove needs to be purchased separately.

Insert Selection Guide

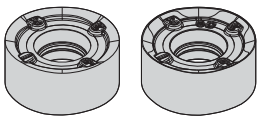
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
P3–P4	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC522M
P5–P6	.E..LDJX	KC725M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
M1–M2	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC522M
M3	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
K1–K2	–	–	**–**	**–**	–	–
K3	–	–	**–**	**–**	–	–
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
S3	.E..LDJX	KC725M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
S4	.E..LDJX	KC522M	**.S..GDJX**	**KC522M**	.S..GDJX	KC725M
H1	–	–	**–**	**–**	–	–

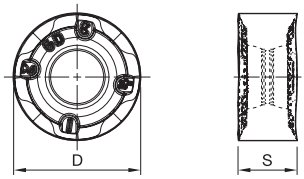
Indexable Inserts RN.J12..

- -LD geometry is for general use on blades from a solid block.
- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is the first choice for forged blades.
- -GD geometry is for general use in steel and stainless steel.

● first choice
○ alternate choice

P	○	●	
M	●	●	○
K	○		
N			
S	●	●	●
H	○		


RNGJ-LDX RNGJ-GDX



RNGJ-LDX
RNGJ-GDX

RNGJ12-LDX

catalogue number	D	S	hm	cutting edges	KC522M	KC725M	KCSM30
RNGJ1204M0ENLDJX	12,00	4,75	0,03	8	●	–	–

RNGJ12-GDX

catalogue number	D	S	hm	cutting edges	KC522M	KC725M	KCSM30
RNGJ1204M0SNGDJX	12,00	4,75	0,09	8	–	●	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 6,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	0,12	**0,49**	0,84	0,08	**0,35**	0,60	0,06	**0,26**	0,45	0,06	**0,23**	0,39	0,05	**0,21**	0,36	.E..LDJX
.S..GDJX	0,23	**0,59**	0,89	0,17	**0,43**	0,64	0,13	**0,32**	0,48	0,11	**0,28**	0,42	0,10	**0,25**	0,38	.S..GDJX

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	0,16	**0,65**	1,13	0,11	**0,47**	0,81	0,09	**0,35**	0,61	0,07	**0,31**	0,53	0,07	**0,28**	0,48	.E..LDJX
.S..GDJX	0,31	**0,79**	1,20	0,23	**0,57**	0,86	0,17	**0,43**	0,64	0,15	**0,37**	0,56	0,14	**0,34**	0,51	.S..GDJX

At 1,30 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	0,19	**0,79**	1,36	0,14	**0,57**	0,98	0,10	**0,42**	0,73	0,09	**0,37**	0,63	0,08	**0,34**	0,58	.E..LDJX
.S..GDJX	0,38	**0,95**	1,44	0,27	**0,69**	1,03	0,20	**0,51**	0,77	0,18	**0,45**	0,67	0,16	**0,41**	0,61	.S..GDJX

At 0,80 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	0,23	**0,98**	1,71	0,17	**0,71**	1,22	0,13	**0,53**	0,91	0,11	**0,46**	0,79	0,10	**0,42**	0,72	.E..LDJX
.S..GDJX	0,47	**1,19**	1,81	0,34	**0,86**	1,29	0,25	**0,64**	0,96	0,22	**0,56**	0,83	0,20	**0,51**	0,76	.S..GDJX

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Mobile App

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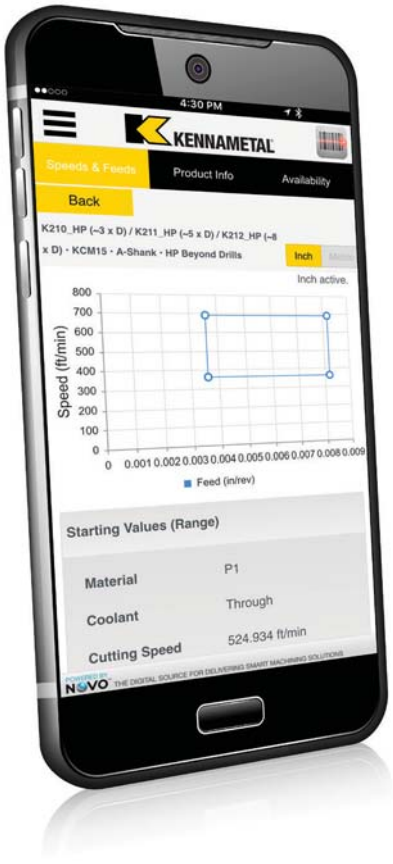

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KSRM™ Series

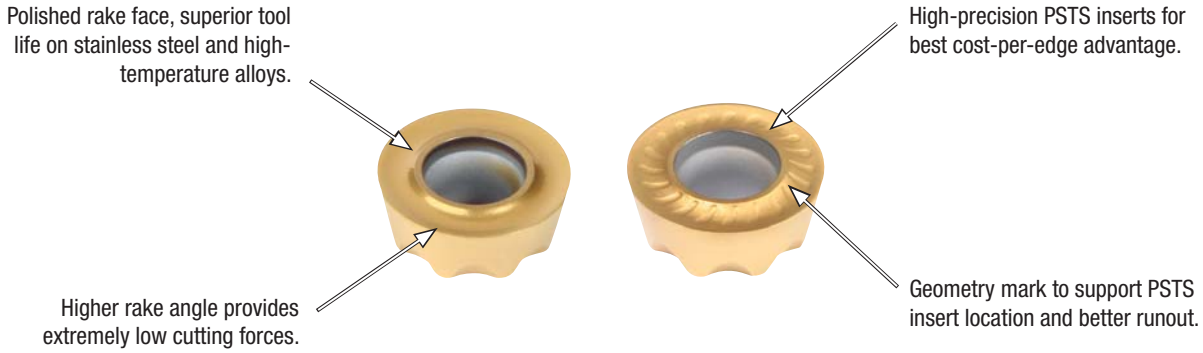
Multipurpose Milling Cutters • 12mm, 16mm, and 20mm ICs

Primary Application

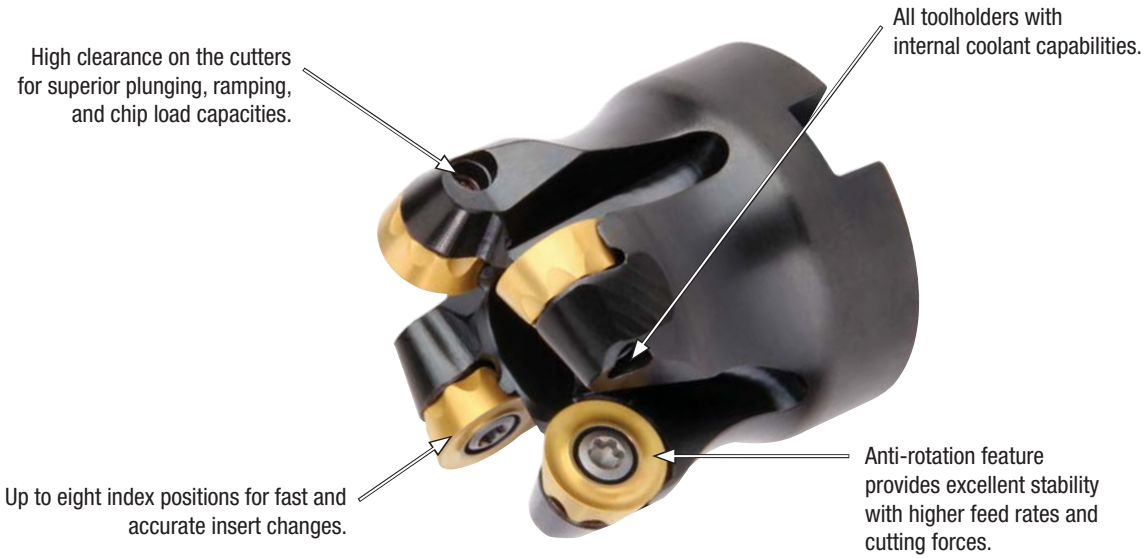
Specially developed for machining titanium and stainless steel. KSRM platform enables you to pocket, profile, ramp, and plunge with consistent performance and outstanding metal removal rates with the lowest cutting forces.

Features and Benefits

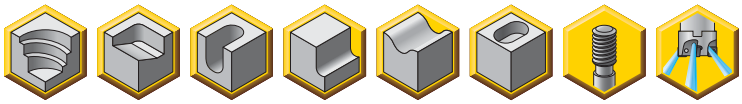
- Up to eight cutting edges per insert.
- Anti-rotation feature achieves excellent stability.
- Engineered to provide longer tool life in titanium and stainless steel.
- Roughing and semi-finishing operations with lower cutting forces.

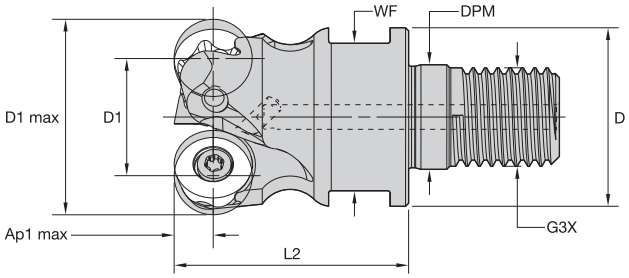





High clearance on the cutters for superior plunging, ramping, and chip load capacities.
All toolholders with internal coolant capabilities.
Up to eight index positions for fast and accurate insert changes.
Anti-rotation feature provides excellent stability with higher feed rates and cutting forces.

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Screw-On End Mills

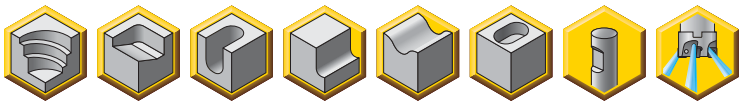
order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	Ap1 max	Z	max ramp angle	max RPM	kg	insert 1
4043046	**32E03R045M16RP12**	32	20	29	17,0	M16	45	6,0	3	6.0°	43400	0,18	RP.T1204M0..
4043047	**40E04R045M16RP12**	40	28	29	17,0	M16	45	6,0	4	9.0°	38800	0,21	RP.T1204M0..

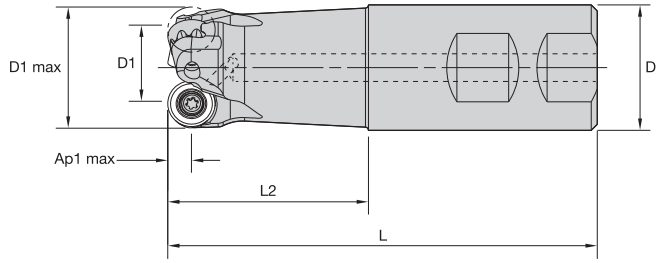
Spare Parts





D1 max	insert screw	Nm	Torx Plus driver
32	**MS2077**	2,3	**DT15IP**
40	**MS2077**	2,3	**DT15IP**







Weldon End Mills

order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4043048	**32A03R040B32RP12**	32	20	32	101	40	6,0	3	6.0°	0,51	43400	RP.T1204M0..

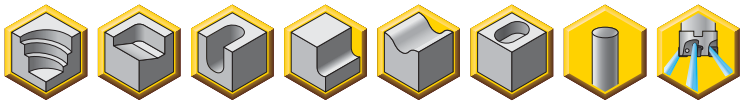
Spare Parts

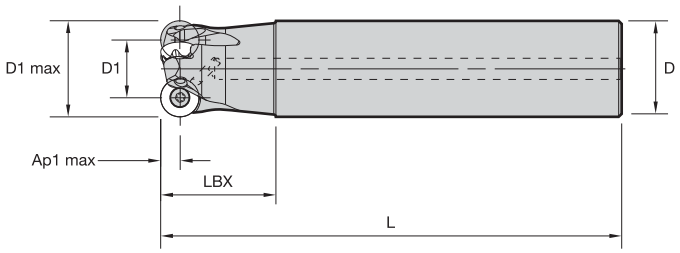




D1 max	insert screw	Nm	Torx Plus driver
32	**MS2077**	2,3	**DT15IP**

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Cylindrical End Mills

order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4043049	32A03R040A32RP12L190	32	20	32	190	40	6,0	3	6.0°	1,05	43400	RP_T1204M0__
4177052	35E04R050A32RP12L200	35	23	32	200	50	6,0	4	7.0°	1,11	41400	RP_T1204M0__

Spare Parts

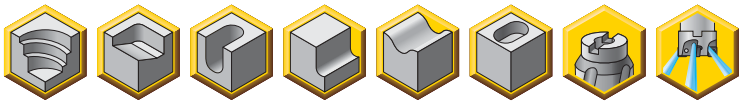


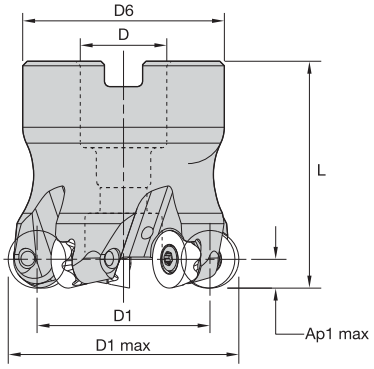




D1 max	insert screw	Nm	Torx Plus driver
32	MS2077	2,3	DT15IP
35	MS2077	2,3	DT15IP

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4043050	40A04RS90RP12	40	28	16	38	40	6,0	4	9.0°	0,21	38800	RP.T1204M0..
4177163	42A04RS90RP12	42	30	16	38	40	6,0	4	10.0°	0,22	37800	RP.T1204M0..
4043051	50A04RS90RP12	50	38	22	42	40	6,0	4	10.8°	0,26	34700	RP.T1204M0..
4043052	50A05RS90RP12	50	38	22	42	40	6,0	5	7.9°	0,26	34700	RP.T1204M0..
3891914	52A05RS90RP12	52	40	22	49	50	6,0	5	10.2°	0,50	34000	RP.T1204M0..
4043063	63A05RS90RP12	63	51	22	49	50	6,0	5	7.7°	0,56	30900	RP.T1204M0..
4025498	63A07RS90RP12	63	51	22	49	50	6,0	7	2.6°	0,56	30900	RP.T1204M0..
4005063	66A06RS90RP12	66	54	27	60	50	6,0	6	6.6°	0,74	30200	RP.T1204M0..
4043064	80A06RS90RP12	80	68	27	60	50	6,0	6	5.1°	0,95	27300	RP.T1204M0..
4024763	80A08RS90RP12	80	68	27	60	50	6,0	8	4.1°	0,96	27300	RP.T1204M0..
4043065	100B07RS90RP12	100	88	32	78	50	6,0	7	4.0°	1,39	24000	RP.T1204M0..
4027389	100B09RS90RP12	100	88	32	78	50	6,0	9	3.1°	1,39	24000	RP.T1204M0..

Spare Parts



D1 max	insert screw	Nm	low-head cap screw	socket-head cap screw	socket-head cap screw with coolant groove	coolant nozzle screw	coolant lock screw assembly	T-handle hex wrench	Torx Plus driver
40	MS2077	2,3	–	MS1294	MS1294CG	–	–	–	DT15IP
42	MS2077	2,3	–	MS1294	MS1294CG	–	–	–	DT15IP
50	MS2077	2,3	MS1336	–	MS2072CG	–	–	–	DT15IP
52	MS2077	2,3	–	MS1242	MS1242CG	–	–	–	DT15IP
63	MS2077	2,3	–	MS1242	MS1242CG	–	–	–	DT15IP
66	MS2077	2,3	–	MS2038	MS2038CG	–	–	–	DT15IP
80	MS2077	2,3	–	MS2038	MS2038CG	–	–	–	DT15IP
100	MS2077	2,3	–	–	–	MS2191C00	MS2195C	THW2M	DT15IP

NOTE: Socket-head cap screw with coolant groove sold separately as a spare part.

Insert Selection Guide

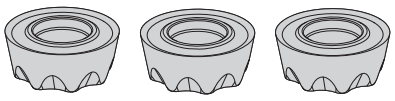
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GE	KCPK30	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
P3–P4	.S..GE	KCPK30	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
P5–P6	.S..GEJ	KC725M	**.S..GDX**	**KC725M**	.S..GP	KC725M
M1–M2	.E..LEJ	KC725M	**.S..GDX**	**KC725M**	.S..GP	KC725M
M3	.S..GE	KCPK30	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
K1–K2	–	–	**–**	**–**	–	–
K3	.E..LE	KCPK30	**.S..GE**	**KCPK30**	.S..GP	KCPK30
N1–N2	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GEJ	KC725M	**.S..GDX**	**KC725M**	.S..GP	KC725M
S3	.S..GEJ	KC725M	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
S4	.S..GEJ	KC522M	**.S..GDX**	**KC725M**	.S..GP	KC725M
H1	–	–	**–**	**–**	–	–

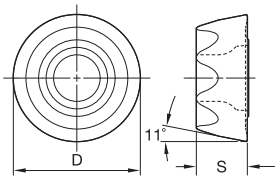
Indexable Inserts

- -SGEJ and -ELEJ are the first choice for titanium machining.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edges.
- -SGEJ geometry for general purpose in roughing operations.

● first choice
○ alternate choice

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								


RPET-LEJ RPET-GEJ RPET-LE



RPET-LEJ

RPET-LEJ

catalogue number	D	S	hm	cutting edges
RPET1204M0ELEJ	12,00	4,76	0,05	8

RPET-GEJ

catalogue number	D	S	hm	cutting edges
RPET1204M0SGEJ	12,00	4,76	0,11	8

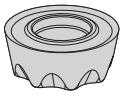
RPET-LE

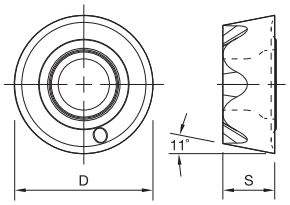
catalogue number	D	S	hm	cutting edges
RPET1204M0ELE	12,00	4,76	0,05	8

- -SGEJ and -ELEJ are the first choice for titanium machining.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edges.
- -SGEJ geometry for general purpose in roughing operations.

● first choice
○ alternate choice

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								


RPET-GE



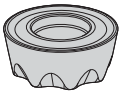
RPET-GE

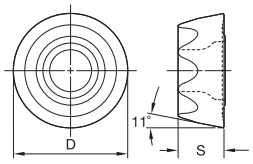
RPET-GE

catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1204M0SGE	12,00	4,76	0,11	8	–	–	–	●	–	–	–

- -GP geometry for roughing operations, especially in steel.
- -SGDX is the first choice for martensitic stainless steel and turbine blade applications.


RPPT-GDX


RPPT-GP



RPPT-GDX
RPPT-GP

RPPT-GDX

catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT1204M0SGDX	12,00	4,76	0,18	8	–	–	●	–	●	–	–

RPPT-GP

catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT1204M0SGP	12,00	4,76	0,13	8	–	–	●	●	●	–	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 6,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			30%			20%			30%			40–100%			
.E..LEJ	0,17	**0,47**	0,75	0,12	**0,34**	0,54	0,09	**0,26**	0,40	0,08	**0,22**	0,35	0,07	**0,20**	0,32	.E..LEJ
.E..LE	0,17	**0,47**	0,75	0,12	**0,34**	0,54	0,09	**0,26**	0,40	0,08	**0,22**	0,35	0,07	**0,20**	0,32	.E..LE
.S..GEJ	0,23	**0,53**	0,82	0,17	**0,38**	0,59	0,13	**0,29**	0,44	0,11	**0,25**	0,39	0,10	**0,23**	0,35	.S..GEJ
.S..GE	0,23	**0,53**	0,82	0,17	**0,38**	0,59	0,13	**0,29**	0,44	0,11	**0,25**	0,39	0,10	**0,23**	0,35	.S..GE
.S..GDX	0,23	**0,59**	0,89	0,17	**0,43**	0,64	0,13	**0,32**	0,48	0,11	**0,28**	0,42	0,10	**0,25**	0,38	.S..GDX
.S..GP	0,23	**0,59**	0,89	0,17	**0,43**	0,64	0,13	**0,32**	0,48	0,11	**0,28**	0,42	0,10	**0,25**	0,38	.S..GP

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			30%			20%			30%			40–100%			
.E..LEJ	0,22	**0,64**	1,01	0,16	**0,46**	0,72	0,12	**0,34**	0,54	0,11	**0,30**	0,47	0,10	**0,27**	0,43	.E..LEJ
.E..LE	0,22	**0,64**	1,01	0,16	**0,46**	0,72	0,12	**0,34**	0,54	0,11	**0,30**	0,47	0,10	**0,27**	0,43	.E..LE
.S..GEJ	0,31	**0,71**	1,11	0,23	**0,51**	0,80	0,17	**0,38**	0,59	0,15	**0,33**	0,52	0,14	**0,31**	0,47	.S..GEJ
.S..GE	0,31	**0,71**	1,11	0,23	**0,51**	0,80	0,17	**0,38**	0,59	0,15	**0,33**	0,52	0,14	**0,31**	0,47	.S..GE
.S..GDX	0,31	**0,79**	1,20	0,23	**0,57**	0,86	0,17	**0,43**	0,64	0,15	**0,37**	0,56	0,14	**0,34**	0,51	.S..GDX
.S..GP	0,31	**0,79**	1,20	0,23	**0,57**	0,86	0,17	**0,43**	0,64	0,15	**0,37**	0,56	0,14	**0,34**	0,51	.S..GP

At 1,30 Axial Depth of Cut (ap)

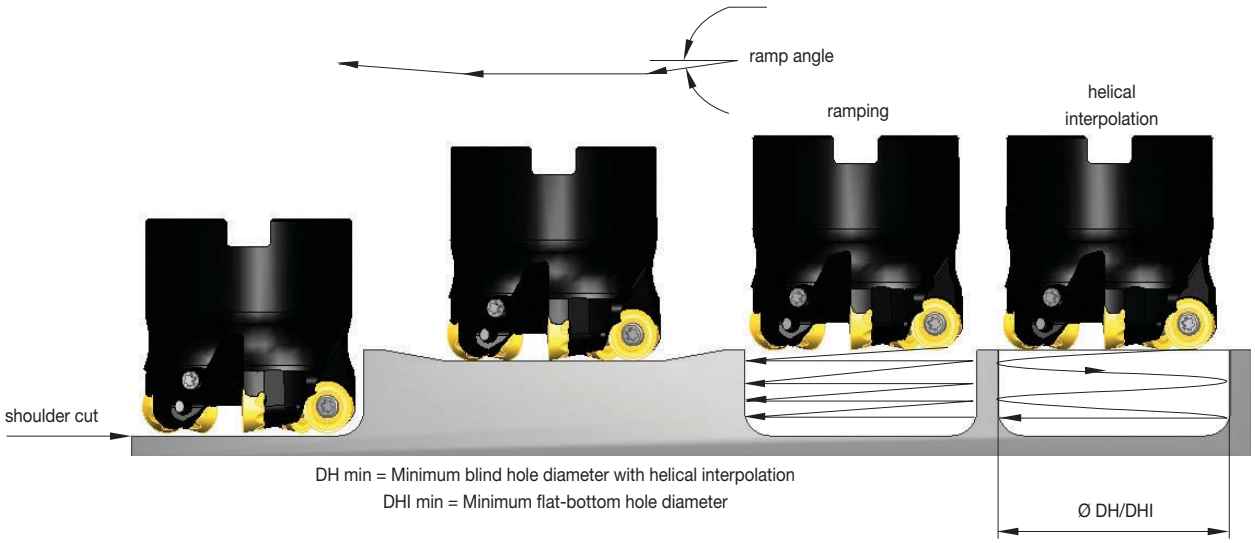
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			30%			20%			30%			40–100%			
.E..LEJ	0,27	**0,76**	1,21	0,19	**0,55**	0,87	0,15	**0,41**	0,65	0,13	**0,36**	0,56	0,12	**0,33**	0,52	.E..LEJ
.E..LE	0,27	**0,76**	1,21	0,19	**0,55**	0,87	0,15	**0,41**	0,65	0,13	**0,36**	0,56	0,12	**0,33**	0,52	.E..LE
.S..GEJ	0,38	**0,85**	1,34	0,27	**0,62**	0,96	0,20	**0,46**	0,71	0,18	**0,40**	0,62	0,16	**0,37**	0,57	.S..GEJ
.S..GE	0,38	**0,85**	1,34	0,27	**0,62**	0,96	0,20	**0,46**	0,71	0,18	**0,40**	0,62	0,16	**0,37**	0,57	.S..GE
.S..GDX	0,38	**0,95**	1,44	0,27	**0,69**	1,03	0,20	**0,51**	0,77	0,18	**0,45**	0,67	0,16	**0,41**	0,61	.S..GDX
.S..GP	0,38	**0,95**	1,44	0,27	**0,69**	1,03	0,20	**0,51**	0,77	0,18	**0,45**	0,67	0,16	**0,41**	0,61	.S..GP

At 0,80 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			30%			20%			30%			40–100%			
.E..LEJ	0,33	**0,95**	1,52	0,24	**0,69**	1,09	0,18	**0,51**	0,81	0,16	**0,45**	0,70	0,14	**0,41**	0,64	.E..LEJ
.E..LE	0,33	**0,95**	1,52	0,24	**0,69**	1,09	0,18	**0,51**	0,81	0,16	**0,45**	0,70	0,14	**0,41**	0,64	.E..LE
.S..GEJ	0,47	**1,07**	1,68	0,34	**0,77**	1,20	0,25	**0,57**	0,89	0,22	**0,50**	0,77	0,20	**0,46**	0,71	.S..GEJ
.S..GE	0,47	**1,07**	1,68	0,34	**0,77**	1,20	0,25	**0,57**	0,89	0,22	**0,50**	0,77	0,20	**0,46**	0,71	.S..GE
.S..GDX	0,47	**1,19**	1,81	0,34	**0,86**	1,29	0,25	**0,64**	0,96	0,22	**0,56**	0,83	0,20	**0,51**	0,76	.S..GDX
.S..GP	0,47	**1,19**	1,81	0,34	**0,86**	1,29	0,25	**0,64**	0,96	0,22	**0,56**	0,83	0,20	**0,51**	0,76	.S..GP

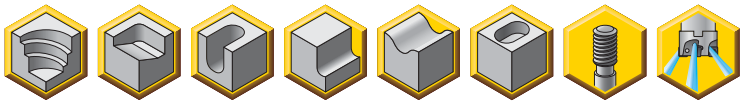
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

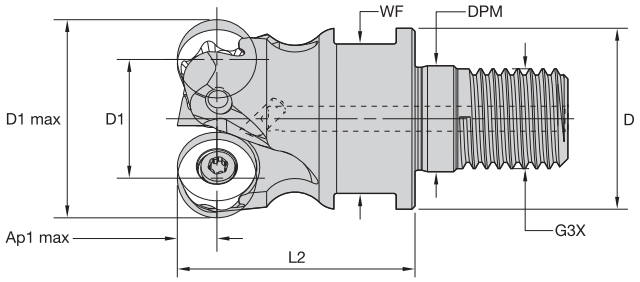
Maximum Linear Ramping and Helical Interpolation from Solid



catalogue number	max ramp angle	max plunging depth	min hole diameter (DH min)	min flat-bottomed hole diameter (DHI min)	max hole diameter (flat bottom)
32E03R045M16RP12	6.0°	1,65	43,95	52	64
40E04R045M16RP12	9.0°	3,50	57,24	68	80
32A03R040B32RP12	6.0°	1,65	43,95	52	64
32A03R040A32RP12L190	6.0°	1,65	43,95	52	64
40A04RS90RP12	9.0°	3,50	57,24	68	80
42A04RS90RP12	9.6°	4,20	60,68	72	84
50A04RS90RP12	10.8°	6,00	76,04	88	100
50A05RS90RP12	7.9°	4,40	76,50	88	100
52A05RS90RP12	10.2°	6,00	80,05	92	104
63A05RS90RP12	7.7°	6,00	102,02	114	126
63A07RS90RP12	2.6°	2,10	105,08	114	126
66A06RS90RP12	6.6°	5,50	108,14	120	132
80A06RS90RP12	5.1°	5,50	136,04	148	160
80A08RS90RP12	4.1°	4,40	136,58	148	160
100B07RS90RP12	4.0°	5,70	176,04	188	200
100B09RS90RP12	3.1°	4,40	176,55	188	200

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Screw-On End Mills

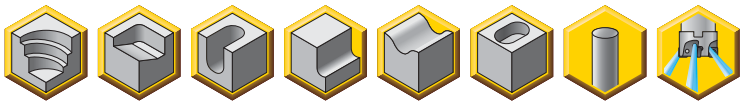
order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4042581	40E03R045M16RP16	40	24	29	17,0	M16	45	22	8,0	3	8.4°	0,19	27300	RP..T1605M0..

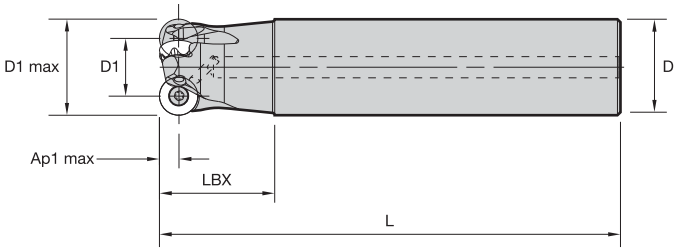
Spare Parts





D1 max	insert screw	Nm	Torx Plus driver
40	MS-2071	4,0	DT15IP







Cylindrical End Mills

order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4042582	40E02R040A32RP16L200	40	24	32	200	40	8,0	2	11.1°	1,13	27300	RP..T1605M0..

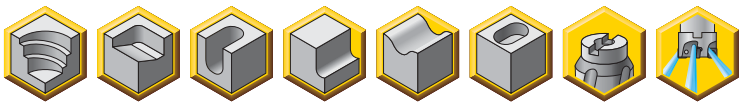
Spare Parts

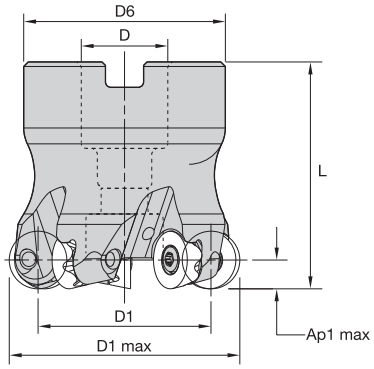




D1 max	insert screw	Nm	Torx Plus driver
40	MS-2071	4,0	DT15IP

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.



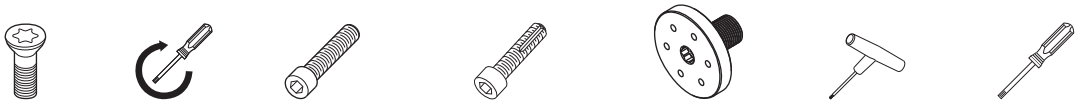




Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4164868	50A04RS90RP16	50	34	22	42	50	8,0	4	9.3°	0,33	24400	RP..T1605M0..
4042693	52A04RS90RP16	52	36	22	49	50	8,0	4	10.7°	0,42	23900	RP..T1605M0..
4042694	63A04RS90RP16	63	47	22	49	50	8,0	4	11.8°	0,50	21700	RP..T1605M0..
4042695	63A06RS90RP16	63	47	22	49	50	8,0	6	4.3°	0,51	21700	RP..T1605M0..
4042696	80A05RS90RP16	80	64	27	60	50	8,0	5	8.2°	0,87	19200	RP..T1605M0..
4042697	80A07RS90RP16	80	64	27	60	50	8,0	7	4.5°	0,90	19200	RP..T1605M0..
4042698	100B06RS90RP16	100	84	32	78	50	8,0	6	6.1°	1,29	16700	RP..T1605M0..
4042699	100B08RS90RP16	100	84	32	78	50	8,0	8	4.7°	1,29	16700	RP..T1605M0..
4042700	125B09RS90RP16	125	109	40	90	63	8,0	9	4.3°	2,48	14700	RP..T1605M0..

Spare Parts



D1 max	insert screw	Nm	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw assembly	T-handle hex wrench	Torx Plus driver
50	MS-2071	4,0	MS1242	MS1242CG	–	–	DT15IP
52	MS-2071	4,0	MS1242	MS1242CG	–	–	DT15IP
63	MS-2071	4,0	MS1242	MS1242CG	–	–	DT15IP
80	MS-2071	4,0	MS2038	MS2038CG	–	–	DT15IP
100	MS-2071	4,0	–	–	MS2195C	THW2M	DT15IP
125	MS-2071	4,0	–	–	MS2187C	THW2M	DT15IP

NOTE: Socket-head cap screw with coolant groove sold separately as a spare part.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LE	KCPK30	**.S..GE**	**KCPK30**	.S..HP	KCPM40
P3–P4	.E..LE	KCPK30	**.S..GE**	**KCPK30**	.S..HP	KCPM40
P5–P6	.E..LEJ	KC725M	**.S..GEJ**	**KC725M**	.S..HP	KC725M
M1–M2	.E..LEJ	KC522M	**.S..GEJ**	**KC522M**	.S..HP	KC725M
M3	.E..LEJ	KC725M	**.S..GEJ**	**KC725M**	.S..HP	KCPM40
K1–K2	–	–	**–**	**–**	–	–
K3	.E..LE	KCPK30	**.S..GE**	**KCPK30**	.S..HP	KCPK30
N1–N2	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LEJ	KC725M	**.S..GEJ**	**KC725M**	.S..HP	KC725M
S3	.E..LEJ	KC725M	**.S..GEJ**	**KC725M**	.S..HP	KCPM40
S4	.E..LEJ	KC522M	**.S..GEJ**	**KC522M**	.S..HP	KC725M
H1	–	–	**–**	**–**	–	–

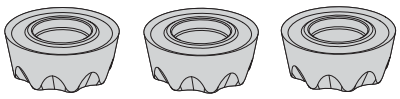
Indexable Inserts

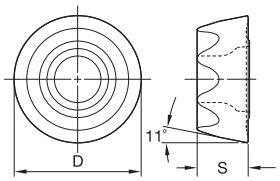
- -SGEJ and -ELEJ are the first choice for titanium machining.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edge.
- -SGEJ geometry for general purpose in roughing operations.

● first choice
○ alternate choice

beyond

P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								


RPET-LEJ RPET-GEJ RPET-GE RPET-LE



RPET-GEJ

RPET-LEJ

catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0ELEJ	16,00	5,56	0,03	8	–	–	●	–	–	–	–

RPET-LE

catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0ELE	16,00	5,56	0,03	8	–	–	–	●	–	–	–

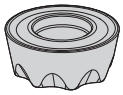
RPET-GEJ

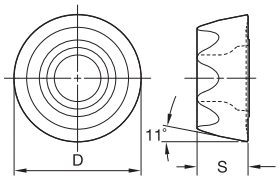
catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0SGEJ	16,00	5,56	0,11	8	–	●	●	–	–	●	–

RPET-GE

catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0SGE	16,00	5,56	0,11	8	–	–	–	●	–	–	–

- -HP geometry for roughing operations, especially in steel.


RPPT-HP



RPPT-HP

● first choice
○ alternate choice

beyond

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								

RPPT-HP

catalogue number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT1605M0SHP	16,00	5,56	0,18	8	–	–	●	●	●	–	–

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 8,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	0,12	**0,49**	0,81	0,08	**0,35**	0,58	0,06	**0,26**	0,43	0,06	**0,23**	0,38	0,05	**0,21**	0,35	.E..LEJ
.E..LE	0,12	**0,49**	0,81	0,08	**0,35**	0,58	0,06	**0,26**	0,43	0,06	**0,23**	0,38	0,05	**0,21**	0,35	.E..LE
.S..GEJ	0,23	**0,53**	0,88	0,17	**0,38**	0,63	0,13	**0,29**	0,47	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.S..GEJ
.S..GE	0,23	**0,53**	0,88	0,17	**0,38**	0,63	0,13	**0,29**	0,47	0,11	**0,25**	0,41	0,10	**0,23**	0,38	.S..GE
.S..HP	0,23	**0,59**	0,95	0,17	**0,43**	0,68	0,13	**0,32**	0,51	0,11	**0,28**	0,44	0,10	**0,25**	0,41	.S..HP

At 2,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	0,16	**0,67**	1,12	0,12	**0,49**	0,80	0,09	**0,36**	0,60	0,08	**0,32**	0,52	0,07	**0,29**	0,48	.E..LEJ
.E..LE	0,16	**0,67**	1,12	0,12	**0,49**	0,80	0,09	**0,36**	0,60	0,08	**0,32**	0,52	0,07	**0,29**	0,48	.E..LE
.S..GEJ	0,32	**0,73**	1,23	0,23	**0,53**	0,87	0,18	**0,39**	0,65	0,15	**0,34**	0,57	0,14	**0,31**	0,52	.S..GEJ
.S..GE	0,32	**0,73**	1,23	0,23	**0,53**	0,87	0,18	**0,39**	0,65	0,15	**0,34**	0,57	0,14	**0,31**	0,52	.S..GE
.S..HP	0,32	**0,82**	1,33	0,23	**0,59**	0,95	0,18	**0,44**	0,70	0,15	**0,38**	0,61	0,14	**0,35**	0,56	.S..HP

At 1,50 Axial Depth of Cut (ap)

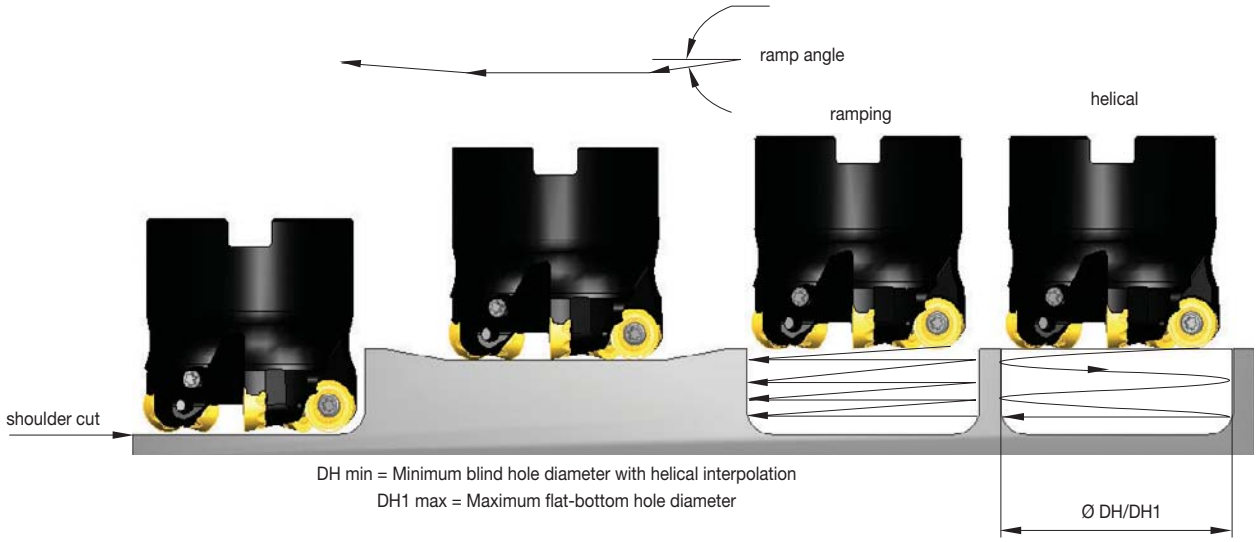
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	0,20	**0,84**	1,41	0,15	**0,61**	1,00	0,11	**0,45**	0,74	0,10	**0,39**	0,65	0,09	**0,36**	0,59	.E..LEJ
.E..LE	0,20	**0,84**	1,41	0,15	**0,61**	1,00	0,11	**0,45**	0,74	0,10	**0,39**	0,65	0,09	**0,36**	0,59	.E..LE
.S..GEJ	0,40	**0,92**	1,54	0,29	**0,66**	1,09	0,22	**0,49**	0,81	0,19	**0,43**	0,71	0,17	**0,39**	0,65	.S..GEJ
.S..GE	0,40	**0,92**	1,54	0,29	**0,66**	1,09	0,22	**0,49**	0,81	0,19	**0,43**	0,71	0,17	**0,39**	0,65	.S..GE
.S..HP	0,40	**1,03**	1,67	0,29	**0,73**	1,18	0,22	**0,55**	0,88	0,19	**0,48**	0,76	0,17	**0,44**	0,70	.S..HP

At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	0,24	**1,02**	1,71	0,18	**0,73**	1,21	0,13	**0,54**	0,90	0,11	**0,47**	0,78	0,10	**0,43**	0,71	.E..LEJ
.E..LE	0,24	**1,02**	1,71	0,18	**0,73**	1,21	0,13	**0,54**	0,90	0,11	**0,47**	0,78	0,10	**0,43**	0,71	.E..LE
.S..GEJ	0,49	**1,11**	1,87	0,35	**0,79**	1,32	0,26	**0,59**	0,98	0,23	**0,51**	0,85	0,21	**0,47**	0,78	.S..GEJ
.S..GE	0,49	**1,11**	1,87	0,35	**0,79**	1,32	0,26	**0,59**	0,98	0,23	**0,51**	0,85	0,21	**0,47**	0,78	.S..GE
.S..HP	0,49	**1,24**	2,03	0,35	**0,89**	1,43	0,26	**0,66**	1,06	0,23	**0,57**	0,92	0,21	**0,52**	0,84	.S..HP

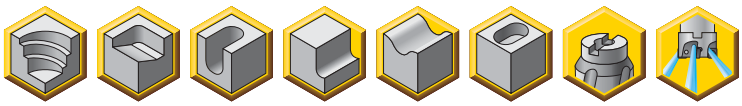
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

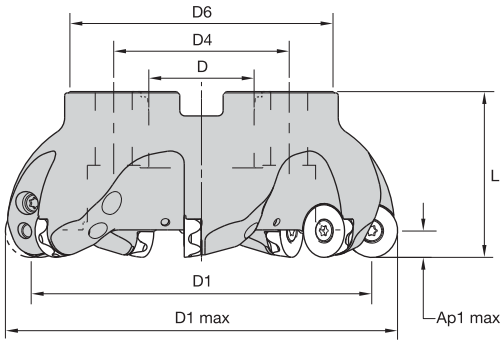
Maximum Linear Ramping and Helical Interpolation from Solid

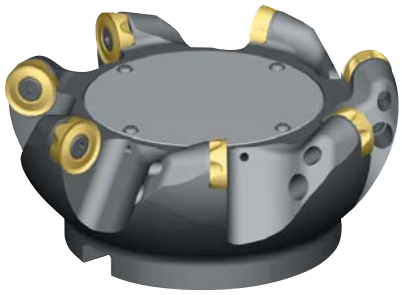


catalogue number	max ramp angle	max plunging depth	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	max diameter (no flat bottom)
40E03R045M16RP16	8.3°	2,6	52,4	64	80
40E02R040A32RP16L200	11.1°	3,3	51,2	64	80
50A04RS90RP16	9.2°	4,3	70	84	100
52A04RS90RP16	10.7°	5,25	73,14	88	104
63A04RS90RP16	11.8°	8,0	94,05	110	126
63A06RS90RP16	4.3°	3,07	97,71	110	126
80A05RS90RP16	8.2°	8,0	128,02	144	160
80A07RS90RP16	4.5°	4,5	129,89	144	160
100B06RS90RP16	6.1°	8,0	168,01	184	200
100B08RS90RP16	4.7°	6,22	168,58	184	200
125B09RS90RP16	4,3°	7,5	218,08	234	250

- Diameter range from 63–200mm.
- Engineered for roughing titanium with large depths of cut through positive geometry inserts.
- Anti-rotation feature allows up to six indexable rotations.
- High coolant pressure capabilities.







Shell Mills

order number	catalogue number	D1 max	D1	D	D4	D6	L	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
3095646	63A04RS90RC20C	63	43	22	–	50	50	10,0	4	.8°	0,62	26000	RCGT2006M0___
3095647	80A05RS90RC20C	80	60	27	–	60	50	10,0	5	.8°	0,89	22000	RCGT2006M0___
3095649	100B06RS90RC20C	100	80	32	–	80	63	10,0	6	.9°	2,11	18000	RCGT2006M0___
3095650	125B06RS90RC20C	125	105	40	–	90	63	10,0	6	.6°	2,96	15000	RCGT2006M0___
3095651	160C07RS90RC20C	160	140	40	67	100	63	10,0	7	.5°	3,90	14000	RCGT2006M0___
5971597	160C07RS90RC20CHP *	160	140	40	67	100	63	10,0	7	.5°	3,92	14000	RCGT2006M0___
3095652	160C08RS90RC20C	160	140	40	67	104	63	10,0	8	.5°	3,87	14000	RCGT2006M0___
5971596	160C08RS90RC20CHP *	160	140	40	67	100	63	10,0	8	.5°	3,96	14000	RCGT2006M0___
3095653	200C09RS90RC20C	200	180	60	102	130	63	10,0	9	.4°	5,77	12500	RCGT2006M0___
5971570	200C09RS90RC20CHP *	200	180	60	102	150	63	10,0	9	.4°	6,53	12500	RCGT2006M0___

NOTE: For high pressure coolant applications (>30 bar/>435 PSI) with cutter diameter 160-200mm, use items marked with “HP” in the catalogue number. They are available as per request. Please ask your local sales contact for further information.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



order number	D1 max	insert screw	Nm	Torx wrench	anti-rotation screw	coolant cap assembly	socket-head cap screw with coolant groove	coolant lock screw assembly	high pressure coolant cap assembly	wrench adaptor
3095646	63	MS1162	5,0	TT25	S2160	–	MS1242CG	–	–	–
3095647	80	MS1162	5,0	TT25	S2160	–	MS2190CG	–	–	–
3095649	100	MS1162	5,0	TT25	S2160	–	–	MS2188C	–	–
3095650	125	MS1162	5,0	TT25	S2160	–	–	MS2187C	–	–
3095651	160	MS1162	5,0	TT25	S2160	MCCM16001	–	–	–	–
5971597	160	MS1162	5,0	TT25	S2160	–	–	–	MCCM160HP	SDSW66
3095652	160	MS1162	5,0	TT25	S2160	MCCM16001	–	–	–	–
5971596	160	MS1162	5,0	TT25	S2160	–	–	–	MCCM160HP	SDSW66
3095653	200	MS1162	5,0	TT25	S2160	MCC080001	–	–	–	–
5971570	200	MS1162	5,0	TT25	S2160	–	–	–	MCC0800HP	SDSW66

NOTE: For coolant shower plate assembly use only low pressure coolant.
Use high pressure coolant cap assembly only in combination with high pressure cutters.
Wrench adaptor for high-pressure tools SDSW66, order number 5976678 is not included and needs to be purchased separately.

Insert Selection Guide

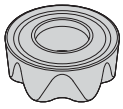
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LF	KC725M	**.S..GFJ**	**KCPM40**	.S..HFJ	KCPM40
P3–P4	.E..LF	KC725M	**.S..GFJ**	**KCPM40**	.S..HFJ	KCPM40
P5–P6	.E..LF	KC725M	**.S..GF**	**KC725M**	.S..HF	KC725M
M1–M2	.E..LF	KCSM40	**.S..GF**	**KC522M**	.S..HF	KCSM40
M3	.E..LF	KCSM40	**.S..GFJ**	**KCPM40**	.S..HF	KCSM40
K1–K2	–	–	**–**	**–**	–	–
K3	.S..HF	KCPK30	**.S..HF**	**KCPK30**	.S..HF	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LF	KCSM40	**.S..GF**	**KC725M**	.S..HF	KCSM40
S3	.E..LF	KCSM40	**.S..GFJ**	**KCPM40**	.S..HF	KCSM40
S4	.E..LF	KCSM40	**.S..GF**	**KC522M**	.S..HF	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

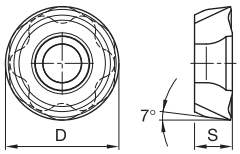
- -ELF is the first choice for lower cutting forces to avoid built-up edge.
- -SGF is for general purpose in roughing applications.
- -SHF is the first choice for heavy-duty applications.

● first choice
○ alternate choice

		KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P		○	●	●	●		○
M		●	●	○	●	○	●
K		○		○			
N							
S		●	●		○	●	●
H							



RCGT-LF
RCGT-GF
RCGT-HF



RCGT-LF
RCGT-GF
RCGT-HF

RCGT-LF

catalogue number	D	S	hm	cutting edges	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT2006M0ELF	20,00	6,35	0,04	6	–	●	–	–	–	●

RCGT-GF

catalogue number	D	S	hm	cutting edges	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT2006M0SGFJ	20,00	6,35	0,10	6	–	–	–	●	●	–
RCGT2006M0SGF	20,00	6,35	0,10	6	●	●	–	–	–	–

RCGT-HF

catalogue number	D	S	hm	cutting edges	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT2006M0SHFJ	20,00	6,35	0,25	6	–	–	–	●	–	–
RCGT2006M0SHF	20,00	6,35	0,25	6	–	●	●	–	–	●

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 10,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LFJ	0,12	**0,44**	0,87	0,09	**0,32**	0,62	0,07	**0,24**	0,47	0,06	**0,21**	0,41	0,05	**0,19**	0,37	.E..LFJ
.E..LF	0,12	**0,44**	0,87	0,09	**0,32**	0,62	0,07	**0,24**	0,47	0,06	**0,21**	0,41	0,05	**0,19**	0,37	.E..LF
.S..GFJ	0,23	**0,52**	0,93	0,17	**0,38**	0,67	0,13	**0,28**	0,50	0,11	**0,24**	0,43	0,10	**0,22**	0,40	.S..GFJ
.S..GF	0,23	**0,52**	0,93	0,17	**0,38**	0,67	0,13	**0,28**	0,50	0,11	**0,24**	0,43	0,10	**0,22**	0,40	.S..GF
.S..HFJ	0,23	**0,59**	1,01	0,17	**0,42**	0,72	0,13	**0,32**	0,54	0,11	**0,28**	0,47	0,10	**0,25**	0,43	.S..HFJ
.S..HF	0,23	**0,59**	1,01	0,17	**0,42**	0,72	0,13	**0,32**	0,54	0,11	**0,28**	0,47	0,10	**0,25**	0,43	.S..HF

At 3,80 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LFJ	0,16	**0,56**	1,11	0,11	**0,40**	0,80	0,09	**0,30**	0,59	0,07	**0,26**	0,52	0,07	**0,24**	0,47	.E..LFJ
.E..LF	0,16	**0,56**	1,11	0,11	**0,40**	0,80	0,09	**0,30**	0,59	0,07	**0,26**	0,52	0,07	**0,24**	0,47	.E..LF
.S..GFJ	0,30	**0,66**	1,18	0,22	**0,48**	0,85	0,16	**0,36**	0,64	0,14	**0,31**	0,55	0,13	**0,29**	0,51	.S..GFJ
.S..GF	0,30	**0,66**	1,18	0,22	**0,48**	0,85	0,16	**0,36**	0,64	0,14	**0,31**	0,55	0,13	**0,29**	0,51	.S..GF
.S..HFJ	0,30	**0,75**	1,29	0,22	**0,54**	0,92	0,16	**0,41**	0,69	0,14	**0,35**	0,60	0,13	**0,32**	0,55	.S..HFJ
.S..HF	0,30	**0,75**	1,29	0,22	**0,54**	0,92	0,16	**0,41**	0,69	0,14	**0,35**	0,60	0,13	**0,32**	0,55	.S..HF

At 2,00 Axial Depth of Cut (ap)

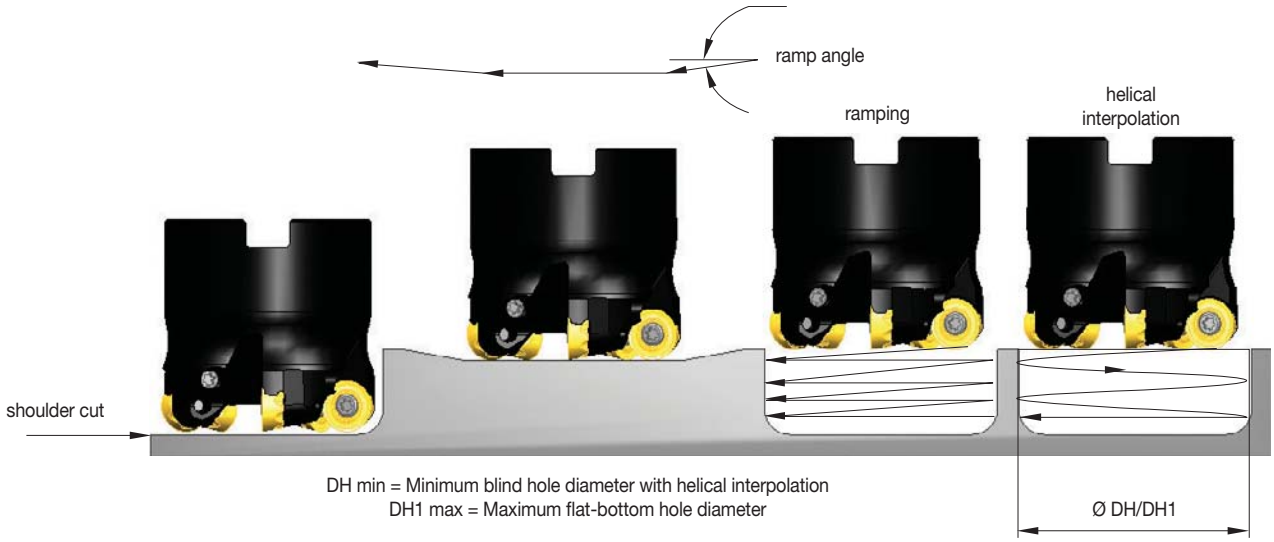
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LFJ	0,21	**0,73**	1,46	0,15	**0,53**	1,04	0,11	**0,40**	0,78	0,10	**0,35**	0,68	0,09	**0,32**	0,62	.E..LFJ
.E..LF	0,21	**0,73**	1,46	0,15	**0,53**	1,04	0,11	**0,40**	0,78	0,10	**0,35**	0,68	0,09	**0,32**	0,62	.E..LF
.S..GFJ	0,39	**0,87**	1,56	0,28	**0,63**	1,12	0,21	**0,47**	0,83	0,18	**0,41**	0,72	0,17	**0,37**	0,66	.S..GFJ
.S..GF	0,39	**0,87**	1,56	0,28	**0,63**	1,12	0,21	**0,47**	0,83	0,18	**0,41**	0,72	0,17	**0,37**	0,66	.S..GF
.S..HFJ	0,39	**0,99**	1,69	0,28	**0,71**	1,21	0,21	**0,53**	0,90	0,18	**0,46**	0,79	0,17	**0,42**	0,72	.S..HFJ
.S..HF	0,39	**0,99**	1,69	0,28	**0,71**	1,21	0,21	**0,53**	0,90	0,18	**0,46**	0,79	0,17	**0,42**	0,72	.S..HF

At 1,30 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LFJ	0,25	**0,90**	1,78	0,18	**0,65**	1,27	0,14	**0,48**	0,95	0,12	**0,42**	0,83	0,11	**0,39**	0,76	.E..LFJ
.E..LF	0,25	**0,90**	1,78	0,18	**0,65**	1,27	0,14	**0,48**	0,95	0,12	**0,42**	0,83	0,11	**0,39**	0,76	.E..LF
.S..GFJ	0,48	**1,06**	1,90	0,34	**0,76**	1,36	0,26	**0,57**	1,01	0,22	**0,50**	0,88	0,21	**0,46**	0,81	.S..GFJ
.S..GF	0,48	**1,06**	1,90	0,34	**0,76**	1,36	0,26	**0,57**	1,01	0,22	**0,50**	0,88	0,21	**0,46**	0,81	.S..GF
.S..HFJ	0,48	**1,20**	2,07	0,34	**0,86**	1,48	0,26	**0,65**	1,10	0,22	**0,56**	0,96	0,21	**0,52**	0,88	.S..HFJ
.S..HF	0,48	**1,20**	2,07	0,34	**0,86**	1,48	0,26	**0,65**	1,10	0,22	**0,56**	0,96	0,21	**0,52**	0,88	.S..HF

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Maximum Linear Ramping and Helical Interpolation from Solid

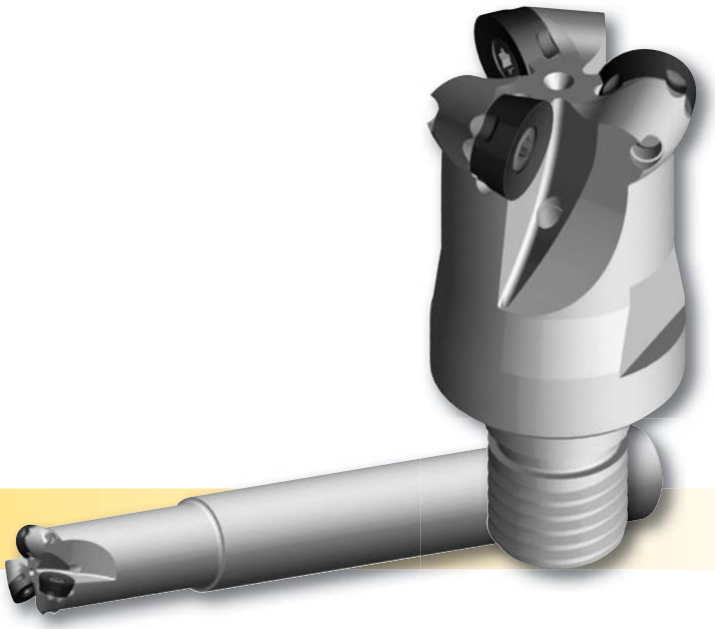


insert IC	catalogue number	max ramp angle (ra) when hx = .127mm	max ramp angle (ra) when hx = .5mm	max plunge radial depth (ae) when hx = .5mm	min hole diameter (DH min)	max flat-bottom hole diameter	max diameter (no flat bottom)
RCGX2006	**63A04RS90RC20C**	1.29°	0.79°	13.61	99.48	106.08	126.00
RCGX2006	**80A05RS90RC20C**	1.23°	0.80°	14.35	131.61	140.08	160.00
RCGX2006	**100B05RS90RC20C**	1.17°	0.84°	15.24	170.31	180.08	200.00
RCGX2006	**100B06RS90RC20C**	1.15°	0.89°	15.16	170.09	180.08	200.00
RCGX2006	**125B06RS90RC20C**	1.06°	0.63°	15.50	219.05	230.08	250.00
RCGX2006	**160C07RS90RC20C**	0.92°	0.50°	14.95	220.23	230.08	250.00
RCGX2006	**160C08RS90RC20C**	0.92°	0.49°	14.90	290.34	300.08	320.00
RCGX2006	**200C09RS90RC20C**	0.79°	0.41°	15.03	290.01	300.08	320.00

7713VR Series

Round Insert Milling Cutter with Indexation

The 7713VR is our newest round insert cutter series. Designed with a new silver-satin surface treatment that reduces body degradation during high-performance applications and enhances body tool life. This cutter series has an anti-rotation design that ensures a precise number of indexes per insert. This enables maximum usage of the available edges for roughing applications.



Features and Benefits

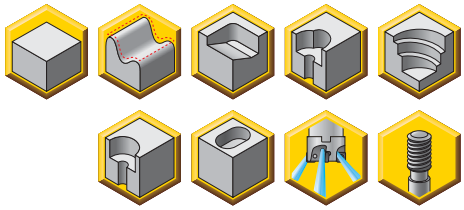
This unique patented pocket system prevents the inserts from rotating in the pocket during heavy-feed machining and unstable conditions. The 7713VR cutter is excellent for roughing and semi-finishing of all materials, especially stainless steel and high-temperature alloys, as well as steel, tool steel, and aluminium alloys.

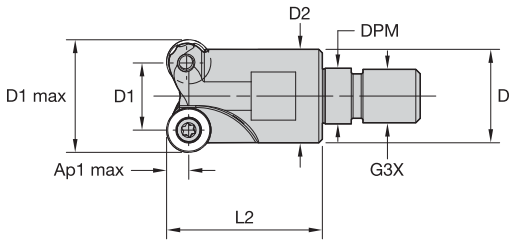


7713VR10:
Maximum ap = 5mm
Diameter Range = 20–63mm

7713VR12:
Maximum ap = 6mm
Diameter Range = 25–80mm

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Screw-On End Mills

order number	catalogue number	D1 max	D1	D	D2	L2	G3X	DPM	Ap1 max	Z
5673049	**7713VR10SA020Z2R25**	20	10	18	19	25	M10	10,50	5,0	2
5672230	**7713VR10SA025Z2R35**	25	15	21	24	35	M12	12,50	5,0	2
5673768	**7713VR10SA025Z3R35**	25	15	21	24	35	M12	12,50	5,0	3
5672231	**7713VR10SA032Z3R35**	32	22	29	31	35	M16	17,00	5,0	3
5673050	**7713VR10SA032Z4R35**	32	22	29	31	35	M16	17,00	5,0	4
5673341	**7713VR10SA035Z5R35**	35	25	29	34	35	M16	17,00	5,0	5

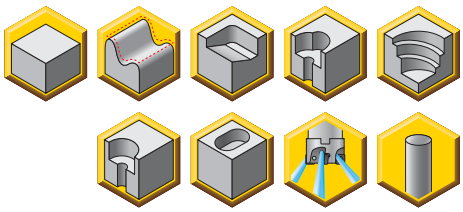
Spare Parts

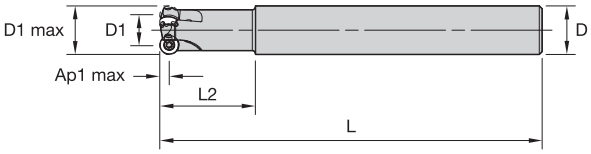




D1 max	insert screw	Nm	Torx driver
20	**D4007T**	3,1	**TB15**
25	**D4007T**	3,1	**TB15**
32	**D4008T**	3,1	**TB15**
35	**D4007T**	3,1	**TB15**

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Cylindrical End Mills

order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z
5672811	**7713VR10CA020Z2R40**	20	10	20	180	40	5,0	2
5673047	**7713VR10CA025Z3R50**	25	15	25	200	50	5,0	3
5672812	**7713VR10CA032Z3R70**	32	22	32	250	70	5,0	3
5673048	**7713VR10CA032Z4R70**	32	22	32	250	70	5,0	4

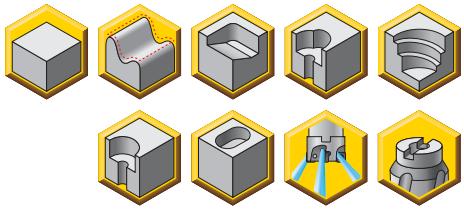
Spare Parts

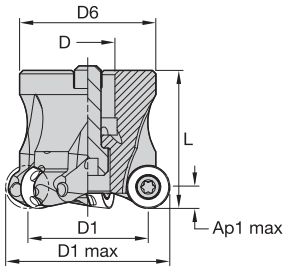




D1 max	insert screw	Nm	Torx driver
20	**D4007T**	3,1	**TB15**
25	**D4007T**	3,1	**TB15**
32	**D4008T**	3,1	**TB15**

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Shell Mills

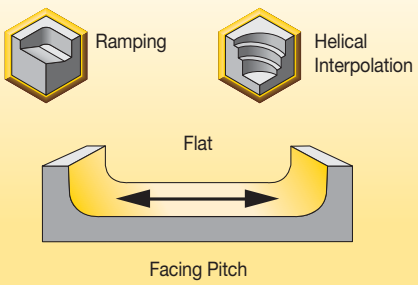
order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z
5672813	7713VR10-A040Z05R	40	30	16	36	40	5,0	5
5672625	7713VR10-A042Z06R	42	32	16	38	40	5,0	6
5673340	7713VR10-A050Z06R	50	40	22	41	40	5,0	6
5673828	7713VR10-A050Z07R	50	40	22	41	40	5,0	7
5673438	7713VR10-A063Z08R	63	53	22	56	40	5,0	8

Spare Parts

D1 max	insert screw	Nm	Torx driver	socket-head cap screw
40	D4008T	3,1	TB15	M8 1.25 X 25 SHCS
42	D4007T	3,1	TB15	M8 1.25 X 25 SHCS
50	D4008T	3,1	TB15	M10 1.5 X 25 SHCS
63	D4008T	3,1	TB15	M10 1.5 X 25 SHCS

Technical Information (mm)

order number	catalogue number	dimension facing pitch	ramping angle	helical hole min	helical hole max	ap max helical/linear	max RPM
5672811	7713VR10CA020Z2R40	10	1,89	22	38	3,33	79500
5673047	7713VR10CA025Z3R50	15	5,22	32	48	3,33	64500
5672812	7713VR10CA032Z3R70	22	8,64	46	62	3,33	53500
5673048	7713VR10CA032Z4R70	22	8,64	46	62	3,33	53500
5672813	7713VR10-A040Z05R	30	7,28	62	78	3,33	45500
5672625	7713VR10-A042Z06R	32	6,71	66	82	3,33	39500
5673340	7713VR10-A050Z06R	40	5,22	82	98	3,33	39500
5673828	7713VR10-A050Z07R	40	5,31	82	98	3,33	39500
5673438	7713VR10-A063Z08R	53	3,79	108	124	3,33	34500
5673049	7713VR10SA020Z2R25	10	1,89	22	38	3,33	79500
5672230	7713VR10SA025Z2R35	15	5,22	32	48	3,33	64500
5673768	7713VR10SA025Z3R35	15	5,22	32	48	3,33	64500
5672231	7713VR10SA032Z3R35	22	8,64	46	62	3,33	53500
5673050	7713VR10SA032Z4R35	22	8,64	46	62	3,33	53500
5673341	7713VR10SA035Z5R35	25	7,20	52	68	3,33	50000



Insert Selection Guide • IC 10

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷				⟷ toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	422-X8	SP6519	**432-X5**	**SC6525**	422-X4	SP6519
P3–P4	422-X8	SP6519	**432-X5**	**SP6519**	422-X4	SP6519
P5–P6	422-X8	SP6519	**T-X4**	**SP6519**	T-X4	X500
M1–M2	422-X8	SP6519	**432-X5**	**SC6525**	422-X4	SP6519
M3	422-X8	X700	**432-X5**	**SP6519**	422-X4	X500
K1–K2	422-X8	SP6519	**432-X5**	**SC6525**	T-X4	SP6519
K3	422-X8	SP6519	**432-X5**	**SC6525**	T-X4	SP6519
N1–N2	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
N3	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
S1–S2	422-X8	X700	**432-X5**	**X500**	422-X4	X500
S3	422-X8	X700	**432-X5**	**X500**	422-X4	X500
S4	422-X8	X700	**432-X5**	**X500**	422-X4	X500
H1	–	–	**–**	**–**	–	–

Indexable Inserts

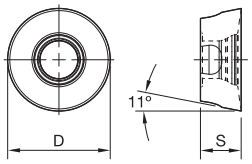
- Four indexation positions:
  - Ap max: 5mm.
  - Ap recommended: ≤2,5mm.

● first choice
○ alternate choice

		GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
P			●	●	●	○	○	○	
M			●			●	●	●	●
K		○		●	●	●	○		
N		●							
S			○			●	●	●	●
H				○		○			


RPEX10-701-X4


RPHT10-421-X4



RPEX10-701-X4 • Precision Ground • 4 Indexes • First Choice for Roughing Non-Ferrous Alloys and Finishing High-Temp Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPEX10T3M0F701X4	10,00	3,97	0,02	4	●	–	–	–	●	–	–	–

RPHT10-421-X4 • Precision Ground • 4 Indexes

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0E421X4	10,00	3,97	0,04	4	–	–	–	–	–	–	●	●


RPHT10-422-X8

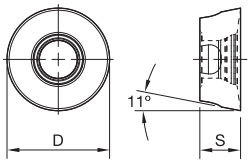

RPHT10-TX4


RPMT10-41-X4


RPHT10-422-X4


RPMW10-T-X4


RPPT10-432-X5



● first choice
○ alternate choice

P			●	●	●	○	○	○	
M			●			●	●	●	●
K		○		●	●	●	○		
N		●							
S			○			●	●	●	●
H				○		○			

RPHT10-422-X4 • Precision Ground • 4 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0E422X4	10,00	3,97	0,03	4	–	–	–	–	–	●	●	●

RPHT10-422-X8 • Precision Ground • 8 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0E422X8	10,00	3,96	0,03	8	–	–	–	–	–	●	●	●

RPHT10-TX4 • Precision Ground • 4 Indexes • General Purpose for Roughing

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0TX4	10,00	3,97	0,08	4	–	–	–	–	–	●	●	–

RPMT10-41-X4 • 4 Indexes • For Finishing Alloy Steel and Iron

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMT10T3M0E41X4	10,00	3,97	0,04	4	–	–	●	–	–	●	●	–

RPMW10-T-X4 • 4 Indexes • General Purpose for Roughing

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMW10T3M0TX4	10,00	3,97	0,13	4	–	–	–	–	–	–	●	–

RPPT10-432-X5 • Precision Pressed • 5 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT10T3M0E432X5	10,00	3,97	0,03	5	–	–	–	●	–	●	●	●

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 5,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	0,12	**0,19**	0,26	0,08	**0,13**	0,18	0,06	**0,10**	0,14	0,05	**0,09**	0,12	0,05	**0,08**	0,11	701-X4
422-X8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	422-X8
432-X5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	432-X5
422-X4	0,12	**0,29**	0,57	0,08	**0,21**	0,40	0,06	**0,16**	0,30	0,05	**0,14**	0,26	0,05	**0,13**	0,24	422-X4
T-X4	0,23	**0,41**	0,66	0,17	**0,30**	0,47	0,13	**0,22**	0,35	0,11	**0,19**	0,31	0,10	**0,18**	0,28	T-X4

At 2,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	0,13	**0,21**	0,30	0,10	**0,15**	0,21	0,07	**0,12**	0,16	0,06	**0,10**	0,14	0,06	**0,09**	0,13	701-X4
422-X8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	422-X8
432-X5	0,13	**0,34**	0,66	0,10	**0,24**	0,47	0,07	**0,18**	0,35	0,06	**0,16**	0,30	0,06	**0,15**	0,28	432-X5
422-X4	0,13	**0,34**	0,66	0,10	**0,24**	0,47	0,07	**0,18**	0,35	0,06	**0,16**	0,30	0,06	**0,15**	0,28	422-X4
T-X4	0,27	**0,48**	0,77	0,19	**0,34**	0,55	0,14	**0,25**	0,41	0,13	**0,22**	0,35	0,12	**0,20**	0,32	T-X4

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	0,14	**0,23**	0,32	0,10	**0,17**	0,23	0,08	**0,13**	0,17	0,07	**0,11**	0,15	0,06	**0,10**	0,14	701-X4
422-X8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	422-X8
432-X5	0,14	**0,37**	0,71	0,10	**0,26**	0,51	0,08	**0,20**	0,38	0,07	**0,17**	0,33	0,06	**0,16**	0,30	432-X5
422-X4	0,14	**0,37**	0,71	0,10	**0,26**	0,51	0,08	**0,20**	0,38	0,07	**0,17**	0,33	0,06	**0,16**	0,30	422-X4
T-X4	0,29	**0,52**	0,84	0,21	**0,37**	0,59	0,16	**0,28**	0,44	0,14	**0,24**	0,38	0,13	**0,22**	0,35	T-X4

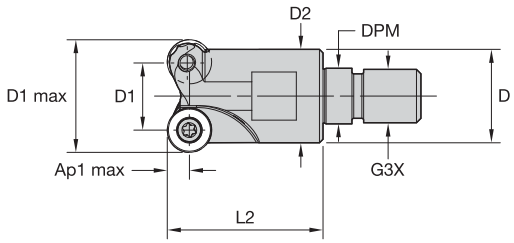
At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	0,16	**0,26**	0,36	0,12	**0,19**	0,26	0,09	**0,14**	0,19	0,08	**0,12**	0,17	0,07	**0,11**	0,15	701-X4
422-X8	0,16	**0,41**	0,80	0,12	**0,30**	0,57	0,09	**0,22**	0,42	0,08	**0,19**	0,37	0,07	**0,18**	0,34	422-X8
432-X5	0,16	**0,41**	0,80	0,12	**0,30**	0,57	0,09	**0,22**	0,42	0,08	**0,19**	0,37	0,07	**0,18**	0,34	432-X5
422-X4	0,16	**0,41**	0,80	0,12	**0,30**	0,57	0,09	**0,22**	0,42	0,08	**0,19**	0,37	0,07	**0,18**	0,34	422-X4
T-X4	0,33	**0,58**	0,94	0,23	**0,42**	0,67	0,18	**0,31**	0,49	0,15	**0,27**	0,43	0,14	**0,25**	0,39	T-X4

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Screw-On End Mills

order number	catalogue number	D1 max	D1	D	D2	L2	G3X	DPM	Ap1 max	Z
5672236	7713VR12SA025Z2R35	25	13	21	24	35	M12	12,50	6,0	2
5673052	7713VR12SA032Z3R35	32	20	29	31	35	M16	17,00	6,0	3
5673439	7713VR12SA040Z4R43	40	28	29	38	43	M16	17,00	6,0	4
5673053	7713VR12SA040Z5R43	40	28	29	38	43	M16	17,00	6,0	5

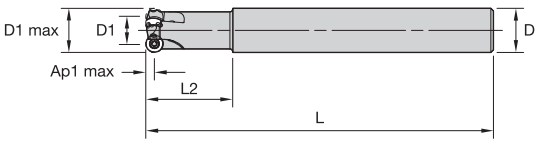
Spare Parts





D1 max	insert screw	Nm	Torx driver
25	D4008T	3,1	T15
32	D4008T	3,1	T15
40	D4008T	3,1	T15







Cylindrical End Mills

order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z
5673770	7713VR12CA025Z2R50	25	13	25	200	50	6,0	2
5673830	7713VR12CA032Z3R70	32	20	32	250	70	6,0	3

Spare Parts

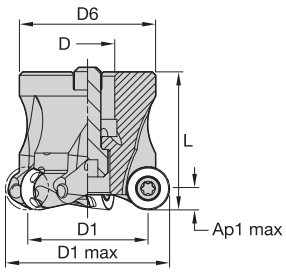




D1 max	insert screw	Nm	Torx driver
25	D4008T	3,1	T15
32	D4008T	3,1	T15

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z
5672232	7713VR12-A040Z04R	40	28	16	34	40	6,0	4
5673360	7713VR12-A040Z05R	40	28	16	33	40	6,0	5
5672233	7713VR12-A050Z05R	50	38	22	43	40	6,0	5
5673051	7713VR12-A050Z06R	50	38	22	43	40	6,0	6
5673769	7713VR12-A052Z05R	52	40	22	45	40	6,0	5
5673342	7713VR12-A052Z06R	52	40	22	45	40	6,0	6
5672234	7713VR12-A063Z06R	63	51	22	56	50	6,0	6
5673599	7713VR12-A063Z07R	63	51	22	56	50	6,0	7
5672235	7713VR12-A066Z06R	66	54	27	56	50	6,0	6
5673479	7713VR12-A066Z07R	66	54	27	56	50	6,0	7
5673829	7713VR12-A080Z08R	80	68	27	68	50	6,0	8

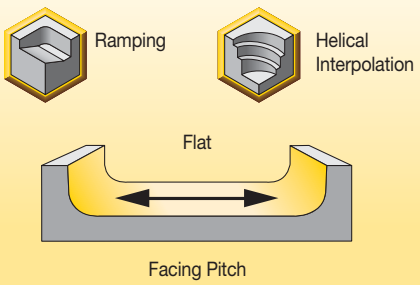
Spare Parts

order number	D1 max	 insert screw	 Nm	 Torx driver	 socket-head cap screw
5672232	40	D4010T	3,1	T15	M8 1.25 X 25 SHCS
5673360	40	D4008T	3,1	T15	M8 1.25 X 25 SHCS
5672233	50	D4010T	3,1	T15	M10 1.5 X 25 SHCS
5673051	50	D4010T	3,1	T15	M10 1.5 X 25 SHCS
5673769	52	D4010T	3,1	T15	M10 1.5 X 25 SHCS
5673342	52	D4010T	3,1	T15	M10 1.5 X 25 SHCS
5672234	63	D4010T	3,1	T15	M10 1.5 X 25 SHCS
5673599	63	D4010T	3,1	T15	M10 1.5 X 25 SHCS
5672235	66	D4010T	3,1	T15	M12 X 1.75 X 30 SHCS
5673479	66	D4010T	3,1	T15	M12 X 1.75 X 30 SHCS
5673829	80	D4010T	3,1	T15	M12 X 1.75 X 30 SHCS

Technical Information

Technical Information (mm)

order number	catalogue number	dimension: facing pitch	ramping angle	helical hole min	helical hole max	ap max helical/linear	max RPM
5673770	7713VR12CA025Z2R50	13	11,20	28	48	4,00	50000
5673830	7713VR12CA032Z3R70	20	10,80	42	62	4,00	40000
5672232	7713VR12-A040Z04R	28	7,90	58	78	4,00	34000
5673360	7713VR12-A040Z05R	28	7,90	58	78	4,00	34000
5672233	7713VR12-A050Z05R	38	5,50	78	98	4,00	29000
5673051	7713VR12-A050Z06R	38	5,50	78	98	4,00	29000
5673769	7713VR12-A052Z05R	40	5,15	82	102	4,00	28500
5673342	7713VR12-A052Z06R	40	5,15	82	102	4,00	28500
5672234	7713VR12-A063Z06R	51	3,85	104	124	4,00	25000
5673599	7713VR12-A063Z07R	51	3,85	104	124	4,00	25000
5672235	7713VR12-A066Z06R	54	3,60	110	130	4,00	24500
5673479	7713VR12-A066Z07R	54	3,60	110	130	4,00	24500
5673829	7713VR12-A080Z08R	68	2,75	138	158	4,00	21500
5672236	7713VR12SA025Z2R35	13	11,20	28	48	4,00	50000
5673052	7713VR12SA032Z3R35	20	10,80	42	62	4,00	40000
5673439	7713VR12SA040Z4R43	28	7,90	58	78	4,00	34000
5673053	7713VR12SA040Z5R43	28	7,90	58	78	4,00	34000



Insert Selection Guide • IC 12

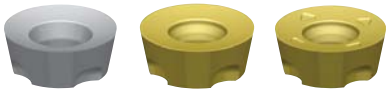
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	442-X8	SC6525	**432-X5**	**SC6525**	GD-X5	KCM40
P3–P4	432-X8	SP6519	**432-X5**	**SP6519**	GD-X5	KCM40
P5–P6	432-X8	SP6519	**T-X4**	**SP6519**	T-X4	X500
M1–M2	442-X8	SC6525	**432-X5**	**SC6525**	GD-X5	KCM40
M3	432-X8	SP6519	**GD-X5**	**KCM40**	442-X4	X500
K1–K2	T-X4	MP91M	**T-X4**	**MP91M**	T-X4	MP91M
K3	T-X4	MP91M	**T-X4**	**MP91M**	T-X4	MP91M
N1–N2	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
N3	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
S1–S2	442-X5	SP6519	**GD-X5**	**KCM40**	442-X4	X500
S3	442-X5	SP6519	**GD-X5**	**KCM40**	442-X4	X500
S4	442-X5	SP6519	**442-X5**	**X500**	442-X4	X500
H1	–	–	**T-X4**	**MP91M**	–	–

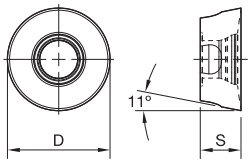
Indexable Inserts

- Four indexation positions:
  - — Ap max: 6mm
  - — Ap recommended: ≤ 3,5mm
- Five indexation positions:
  - — Ap max: 4mm
  - — Ap recommended: ≤ 2,5mm
- Eight indexation positions:
  - — Ap max: 3mm
  - — Ap recommended: ≤ 1,5mm

● first choice
○ alternate choice

		GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
P			●	●	●	○	○	○	
M			●			●	●	●	●
K		○		●	●	●	○		
N		●							
S			○			●	●	●	●
H				○		○			


RPEX12-701-X4 RPHT12-421-X4 RPHT12-422-X4



RPEX12-701-X4 • Precision Ground • 4 Indexes • For Roughing Non-Ferrous Alloys and Finishing High-Temp Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPEX1204M0F701X4	12,00	4,76	0,02	4	●	–	–	–	–	–	–	–
RPEX1204M0E701X4	12,00	4,76	0,03	4	–	–	–	–	–	–	●	–

RPHT12-421-X4 • Precision Ground • 4 Indexes

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E421X4	12,00	4,76	0,04	4	–	–	–	–	–	–	●	–

RPHT12-442-X4 • Precision Ground • 4 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

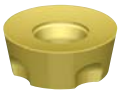
catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E442X4	12,00	4,76	0,04	4	–	–	–	–	–	●	●	●


RPHT12-442-X5

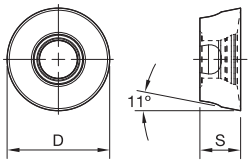

RPHT12-442-X8


RPHT12-SGD-X5


RPHT12-SGD-X8


RPHT12-T-X4


RPMT12-41-X4



● first choice
○ alternate choice

P			●	●	●	○	○	○		
M			●			●	●	●	●	
K		○		●	●	●	○			
N		●								
S			○			●	●	●	●	
H				○		○				

RPHT12-442-X5 • Precision Ground • 5 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E442X5	12,00	4,76	0,04	5	–	–	–	●	–	●	●	●

RPHT12-442-X8 • Precision Ground • 8 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E442X8	12,00	4,76	0,04	8	–	–	–	●	–	–	–	–

RPHT12-SGD-X5 • Precision Ground • 5 Indexes • For Stainless Steel and Heat-Resistant Alloys in Tougher Conditions

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0SGDX5	12,00	4,76	0,04	5	–	●	–	–	–	–	–	–

RPHT12-SGD-X8 • Precision Ground • 8 Indexes • For Stainless Steel and Heat-Resistant Alloys in Tougher Conditions

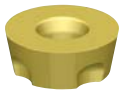
catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0SGDX8	12,00	4,76	0,04	8	–	●	–	–	–	–	–	–

RPHT12-T-X4 • Precision Ground • 4 Indexes • General Purpose for Roughing

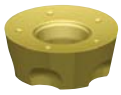
catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0TX4	12,00	4,76	0,10	4	–	–	–	–	–	●	●	●

RPMT12-41-X4 • 4 Indexes • For Finishing Alloy Steel and Iron

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMT1204M0E41X4	12,00	4,76	0,05	4	–	–	●	–	–	●	●	–


RPMW12-T-X4


RPPT12-432-X4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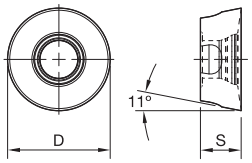
RPPT12-432-X8


RPPT12-SGD-X5



● first choice
○ alternate choice

		GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
P			●	●	●	○	○	○	
M			●			●	●	●	●
K		○		●	●	●	○		
N		●							
S			○			●	●	●	●
H				○		○			

RPMW12-T-X4 • 4 Indexes • General Purpose for Roughing

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMW1204M0TX4	12,00	4,76	0,13	4	–	–	●	–	–	●	●	–

RPPT12-432-X4 • Precision Pressed • 4 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0E432X4	12,00	4,76	0,04	4	–	–	–	●	–	–	●	●

RPPT12-432-X5 • Precision Pressed • 5 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0E432X5	12,00	4,76	0,04	5	–	–	–	●	–	●	●	●

RPPT12-432-X8 • Precision Pressed • 8 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0E432X8	12,00	4,76	0,04	8	–	–	–	–	–	●	●	●

RPPT12-SGD-X4, X5, X8 • Precision Pressed • 4, 5, or 8 Indexes • For Stainless Steel and Heat-Resistant Alloys in Tougher Conditions

catalogue number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0SGDX4	12,00	4,76	0,04	4	–	●	–	–	–	–	–	–
RPPT1204M0SGDX5	12,00	4,76	0,04	5	–	●	–	–	–	–	–	–
RPPT1204M0SGDX8	12,00	4,76	0,04	8	–	●	–	–	–	–	–	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 6,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
701–X4	0,12	**0,16**	0,22	0,08	**0,12**	0,16	0,06	**0,09**	0,12	0,05	**0,08**	0,10	0,05	**0,07**	0,10	701–X4
432–X5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432–X5
432–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432–X8
442–X5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442–X5
442–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442–X8
442–X4	0,23	**0,41**	0,66	0,17	**0,30**	0,47	0,13	**0,22**	0,35	0,11	**0,19**	0,31	0,10	**0,18**	0,28	442–X4
GD–X5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD–X5
GD–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD–X8
T–X4	0,23	**0,41**	0,66	0,17	**0,30**	0,47	0,13	**0,22**	0,35	0,11	**0,19**	0,31	0,10	**0,18**	0,28	T–X4

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
701–X4	0,13	**0,19**	0,25	0,10	**0,14**	0,18	0,07	**0,10**	0,14	0,06	**0,09**	0,12	0,06	**0,08**	0,11	701–X4
432–X5	0,16	**0,49**	0,93	0,12	**0,35**	0,66	0,09	**0,26**	0,49	0,08	**0,23**	0,43	0,07	**0,21**	0,39	432–X5
432–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432–X8
442–X5	0,16	**0,49**	0,93	0,12	**0,35**	0,66	0,09	**0,26**	0,49	0,08	**0,23**	0,43	0,07	**0,21**	0,39	442–X5
442–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442–X8
442–X4	0,16	**0,49**	0,93	0,12	**0,35**	0,66	0,09	**0,26**	0,49	0,08	**0,23**	0,43	0,07	**0,21**	0,39	442–X4
GD–X5	0,16	**0,54**	0,99	0,12	**0,39**	0,70	0,09	**0,29**	0,52	0,08	**0,25**	0,45	0,07	**0,23**	0,42	GD–X5
GD–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD–X8
T–X4	0,27	**0,68**	1,10	0,19	**0,49**	0,78	0,14	**0,36**	0,58	0,13	**0,32**	0,50	0,12	**0,29**	0,46	T–X4

At 2,50 Axial Depth of Cut (ap)

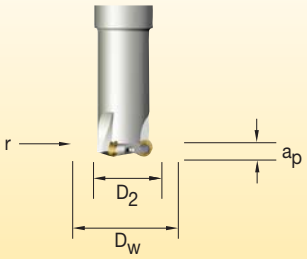
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
701–X4	0,14	**0,20**	0,27	0,10	**0,14**	0,20	0,08	**0,11**	0,15	0,07	**0,09**	0,13	0,06	**0,09**	0,12	701–X4
432–X5	0,17	**0,52**	1,00	0,12	**0,37**	0,71	0,09	**0,28**	0,53	0,08	**0,24**	0,46	0,07	**0,22**	0,42	432–X5
432–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432–X8
442–X5	0,17	**0,52**	1,00	0,12	**0,37**	0,71	0,09	**0,28**	0,53	0,08	**0,24**	0,46	0,07	**0,22**	0,42	442–X5
442–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442–X8
442–X4	0,17	**0,52**	1,00	0,12	**0,37**	0,71	0,09	**0,28**	0,53	0,08	**0,24**	0,46	0,07	**0,22**	0,42	442–X4
GD–X5	0,17	**0,58**	1,06	0,12	**0,41**	0,75	0,09	**0,31**	0,56	0,08	**0,27**	0,48	0,07	**0,25**	0,44	GD–X5
GD–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD–X8
T–X4	0,29	**0,73**	1,18	0,21	**0,52**	0,84	0,15	**0,39**	0,62	0,13	**0,34**	0,54	0,12	**0,31**	0,49	T–X4

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
701–X4	0,17	**0,24**	0,33	0,13	**0,18**	0,24	0,09	**0,13**	0,18	0,08	**0,12**	0,16	0,08	**0,11**	0,14	701–X4
432–X5	0,21	**0,64**	1,23	0,15	**0,46**	0,87	0,11	**0,34**	0,65	0,10	**0,30**	0,56	0,09	**0,27**	0,51	432–X5
432–X8	0,21	**0,64**	1,23	0,15	**0,46**	0,87	0,11	**0,34**	0,65	0,10	**0,30**	0,56	0,09	**0,27**	0,51	432–X8
442–X5	0,21	**0,64**	1,23	0,15	**0,46**	0,87	0,11	**0,34**	0,65	0,10	**0,30**	0,56	0,09	**0,27**	0,51	442–X5
442–X8	0,21	**0,64**	1,23	0,15	**0,46**	0,87	0,11	**0,34**	0,65	0,10	**0,30**	0,56	0,09	**0,27**	0,51	442–X8
442–X4	0,21	**0,64**	1,23	0,15	**0,46**	0,87	0,11	**0,34**	0,65	0,10	**0,30**	0,56	0,09	**0,27**	0,51	442–X4
GD–X5	0,21	**0,71**	1,31	0,15	**0,51**	0,93	0,11	**0,38**	0,68	0,10	**0,33**	0,60	0,09	**0,30**	0,54	GD–X5
GD–X8	0,21	**0,71**	1,31	0,15	**0,51**	0,93	0,11	**0,38**	0,68	0,10	**0,33**	0,60	0,09	**0,30**	0,54	GD–X8
T–X4	0,35	**0,90**	1,47	0,25	**0,64**	1,03	0,19	**0,47**	0,76	0,17	**0,41**	0,66	0,15	**0,38**	0,60	T–X4

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

7713VR Technical Information



Working Diameter:

Formula to evaluate the correct working diameter based on axial depth of cut (ap).

$$D_w = D_2 + 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:

D_w = Working diameter
D_2 = Diameter of cutter insert centre to centre
r = Insert radius
a_p = Axial depth of cut

where:

f_z = Feed per tooth
h_m = Average chip thickness
r = Insert radius
a_e = Radial depth of cut
a_p = Axial depth of cut

Formula to find programmed feed rate based on radial engagement and axial depth of cut.

$$f_z = \frac{h_m}{\frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}}$$

Formula to calculate the average chip thickness hm in relation with radial engagement and depth of cut.

$$h_m = f_z \times \frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}$$

Simplified formulas to evaluate h_m and f_z based on radial engagement or depth of cut.

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Programme Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

h_m = Average chip thickness
a_p = Depth of cut
f_z = Feed per tooth
d = Insert diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of diameter

Formula: Programme Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{d}{a_p}}$$

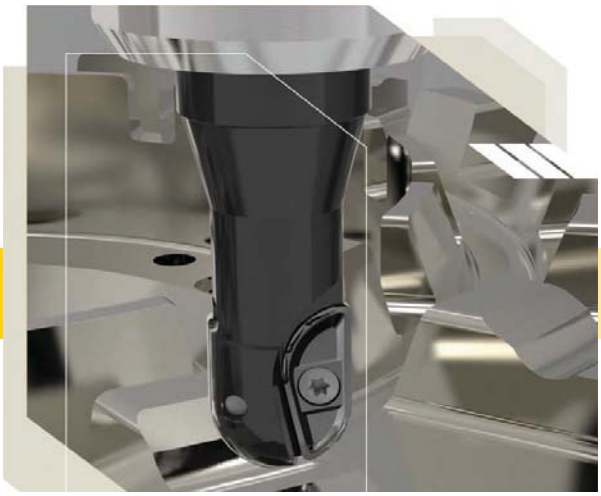
5505VX Series



Copy/3D



Contour Milling

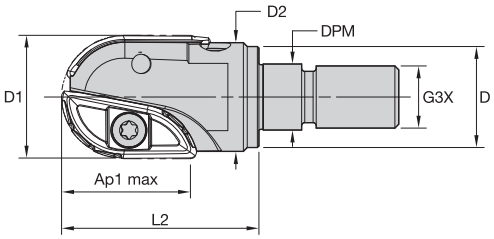


Ball Nose Contour Milling Cutter

- The 5505VX ball nose cutters have a reinforced design feature, which delivers a high volume of chip removal.
- The chipbreaker geometry provides excellent chip control and evacuation during machining and prevents edge build-up.
- 5505VX roughing ball nose cutters are ideal for roughing and semi-finishing profiles and complex contours.
- One grade and one geometry are qualified to machine steel, alloyed steel, stainless steel, high-temperature alloys, and cast iron.

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimised inventory.







Screw-On End Mills

order number	catalogue number	D1	D	D2	L2	G3X	DPM	Ap1 max	Z
5673711	**5505VX16SA016R25**	16	13	15	25	M8	8,50	16,6	2
5672843	**5505VX20SA020R35**	20	18	19	35	M10	10,50	20,0	2
5673115	**5505VX25SA025R40**	25	21	23	40	M12	12,50	25,2	2
5673632	**5505VX32SA032R50**	32	29	29	50	M16	17,00	32,4	2

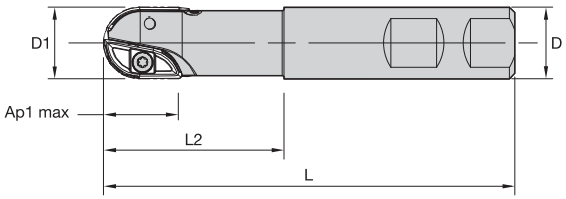
NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	 insert screw	 Nm	 Torx Plus driver	 Torx driver
16	**FP3006T**	1,8	**TP8**	**–**
20	**FP3007T**	1,4	**TP8**	**–**
25	**D4010T**	3,1	**–**	**T15**
32	**D5013T**	6,1	**–**	**T20**

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimised inventory.





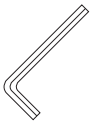


Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z
5673112	**5505VX25WA025R60**	25	25	116	60	25,2	2
5673329	**5505VX32WA032R75**	32	32	135	75	32,7	2
5672842	**5505VX32WA032R100**	32	32	160	100	32,4	2
5673113	**5505VX40WA040R100**	40	40	170	100	40,1	2
5673521	**5505VX40WA040R150**	40	40	220	150	40,1	2
5673114	**5505VX50WA050R100**	50	40	170	100	51,0	2
5673297	**5505VX50WA050R150**	50	50	230	150	51,0	2

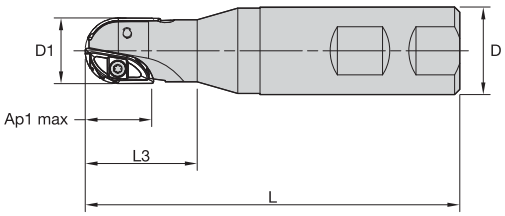
NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	 insert screw	 Nm	 Torx driver	 wrench
25	**D4010T**	3,1	**T15**	**–**
32	**D5013T**	6,0	**T20**	**–**
40	**D6014T**	10,5	**T20**	**–**
50	**F8017S**	24,5	**–**	**KH5005**

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimised inventory.







Weldon® End Mills Flat

order number	catalogue number	D1	D	L	L3	Ap1 max	Z
5673750	**5505VX20WA020R34**	20	25	106	34	20,3	2
5673749	**5505VX25WA025R69**	25	32	150	69	25,0	2

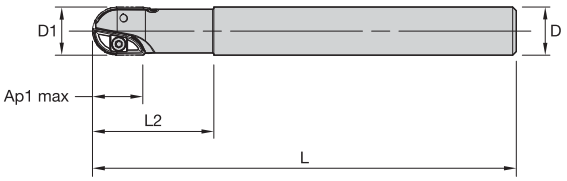
NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	 insert screw	 Nm	 Torx Plus driver	 Torx driver
20	**FP3007T**	1,8	**TP8**	**–**
25	**D4010T**	3,1	**–**	**T15**

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimised inventory.







Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z
5673712	**5505VX16CA20/016R30**	16	20	180	40	16,6	2
5672627	**5505VX20CA25/020R40**	20	25	200	50	20,3	2
5673610	**5505VX25CA025R55**	25	25	250	65	25,2	2
5673785	**5505VX25CA32/025R55**	25	32	250	65	25,2	2
5673141	**5505VX32CA032R65**	32	32	250	75	32,4	2

NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	 insert screw	 Nm	 Torx Plus driver	 Torx driver
16	**FP3006T**	1,8	**TP8**	**–**
20	**FP3007T**	1,8	**TP8**	**–**
25	**D4010T**	3,1	**–**	**T15**
32	**D5013T**	6,0	**–**	**T20**

Technical Information

Technical Information (mm)

order number	catalogue number	dimension: facing pitch	dimension: ramping angle	dimension: helical hole min	dimension: helical hole max	dimension: ap max helical/linear	max RPM
5673750	**5505VX20WA020R34**	–	85	–	–	–	34750
5673112	**5505VX25WA025R60**	–	85	–	–	–	30500
5673749	**5505VX25WA025R69**	–	85	–	–	–	30500
5673329	**5505VX32WA032R75**	–	85	–	–	–	23250
5672842	**5505VX32WA032R100**	–	85	–	–	–	23250
5673113	**5505VX40WA040R100**	–	85	–	–	–	17250
5673521	**5505VX40WA040R150**	–	85	–	–	–	17250
5673114	**5505VX50WA050R100**	–	85	–	–	–	17250
5673297	**5505VX50WA050R150**	–	85	–	–	–	17250
5673712	**5505VX16CA20/016R30**	–	85	–	–	–	54000
5672627	**5505VX20CA25/020R40**	–	85	–	–	–	34750
5673610	**5505VX25CA025R55**	–	85	–	–	–	30500
5673785	**5505VX25CA32/025R55**	–	85	–	–	–	30500
5673141	**5505VX32CA032R65**	–	85	–	–	–	23250
5673711	**5505VX16SA016R25**	–	85	–	–	–	54000
5672843	**5505VX20SA020R35**	–	85	–	–	–	34750
5673115	**5505VX25SA025R40**	–	85	–	–	–	30500
5673632	**5505VX32SA032R50**	–	85	–	–	–	23250



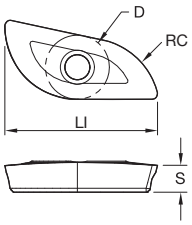
Ramping

Copy Milling

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
P3–P4	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
P5–P6	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
M1–M2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
M3	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
K1–K2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
K3	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
S3	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
S4	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
H1	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519


XPNT-F



● first choice
○ alternate choice

P	○
M	●
K	○
N	
S	●
H	

XPNT-F

catalogue number	D	LI	S	RC	hm	SP6519
XPNT16160308RF	7,39	17,40	3,18	7,93	0,04	●
XPNT2020T306RF	9,00	20,85	3,97	10,00	0,04	●
XPNT25250408RF	11,00	25,98	4,75	12,70	0,04	●
XPNT32320612RF	14,10	33,40	6,33	15,88	0,04	●
XPNT4040T716RF	18,00	41,84	7,95	20,00	0,04	●
XPNT5050T716RF	22,23	52,86	8,53	25,40	0,04	●

Very Important



Please do not remove this screw. The screw is glued into the body to keep the inserts in the correct position.

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 8,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,09	**0,20**	0,34	0,07	**0,15**	0,25	0,05	**0,11**	0,19	0,04	**0,10**	0,16	0,04	**0,09**	0,15	R-F

At 4,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,11	**0,23**	0,39	0,08	**0,17**	0,29	0,06	**0,13**	0,21	0,05	**0,11**	0,19	0,05	**0,10**	0,17	R-F

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,14	**0,31**	0,52	0,10	**0,22**	0,37	0,08	**0,17**	0,28	0,07	**0,15**	0,24	0,06	**0,13**	0,22	R-F

At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,19	**0,42**	0,71	0,14	**0,30**	0,51	0,10	**0,23**	0,38	0,09	**0,20**	0,33	0,08	**0,18**	0,31	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

5505VX • 20mm • Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 10,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,09	**0,26**	0,39	0,07	**0,19**	0,28	0,05	**0,14**	0,21	0,04	**0,12**	0,18	0,04	**0,11**	0,17	R-F

At 5,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,11	**0,30**	0,45	0,08	**0,22**	0,32	0,06	**0,16**	0,24	0,05	**0,14**	0,21	0,05	**0,13**	0,19	R-F

At 2,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,14	**0,39**	0,59	0,10	**0,28**	0,43	0,08	**0,21**	0,32	0,07	**0,18**	0,28	0,06	**0,17**	0,25	R-F

At 1,25 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,19	**0,54**	0,81	0,14	**0,39**	0,58	0,10	**0,29**	0,43	0,09	**0,25**	0,38	0,08	**0,23**	0,35	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 12,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,09	**0,29**	0,46	0,07	**0,21**	0,33	0,05	**0,16**	0,25	0,04	**0,14**	0,22	0,04	**0,12**	0,20	R-F

At 6,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,11	**0,34**	0,54	0,08	**0,24**	0,39	0,06	**0,18**	0,29	0,05	**0,16**	0,26	0,05	**0,15**	0,23	R-F

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,14	**0,44**	0,72	0,10	**0,32**	0,52	0,08	**0,24**	0,39	0,07	**0,21**	0,34	0,06	**0,19**	0,31	R-F

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,19	**0,61**	0,98	0,14	**0,44**	0,71	0,11	**0,33**	0,53	0,09	**0,28**	0,46	0,08	**0,26**	0,42	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

5505VX • 32mm • Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 16,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,09	**0,29**	0,46	0,07	**0,21**	0,33	0,05	**0,16**	0,25	0,04	**0,14**	0,22	0,04	**0,12**	0,20	R-F

At 8,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,11	**0,33**	0,54	0,08	**0,24**	0,39	0,06	**0,18**	0,29	0,05	**0,16**	0,25	0,05	**0,14**	0,23	R-F

At 4,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,14	**0,43**	0,70	0,10	**0,31**	0,51	0,08	**0,23**	0,38	0,07	**0,20**	0,33	0,06	**0,19**	0,30	R-F

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,19	**0,59**	0,96	0,14	**0,43**	0,69	0,10	**0,32**	0,52	0,09	**0,28**	0,45	0,08	**0,26**	0,41	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 20,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,09	**0,31**	0,56	0,07	**0,23**	0,40	0,05	**0,17**	0,30	0,04	**0,15**	0,26	0,04	**0,14**	0,24	R-F

At 10,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,11	**0,36**	0,64	0,08	**0,26**	0,46	0,06	**0,20**	0,35	0,05	**0,17**	0,30	0,05	**0,16**	0,28	R-F

At 5,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,14	**0,48**	0,85	0,10	**0,34**	0,61	0,08	**0,26**	0,45	0,07	**0,22**	0,40	0,06	**0,21**	0,36	R-F

At 2,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,19	**0,65**	1,16	0,14	**0,47**	0,83	0,10	**0,35**	0,62	0,09	**0,31**	0,54	0,08	**0,28**	0,50	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

5505VX • 50mm • Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 25,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,09	**0,37**	0,63	0,07	**0,27**	0,46	0,05	**0,20**	0,34	0,04	**0,17**	0,30	0,04	**0,16**	0,27	R-F

At 12,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,11	**0,43**	0,73	0,08	**0,31**	0,53	0,06	**0,23**	0,39	0,05	**0,20**	0,34	0,05	**0,18**	0,31	R-F

At 6,25 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,14	**0,56**	0,96	0,10	**0,40**	0,69	0,08	**0,30**	0,52	0,07	**0,26**	0,45	0,06	**0,24**	0,41	R-F

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	0,19	**0,78**	1,35	0,14	**0,56**	0,96	0,11	**0,42**	0,72	0,09	**0,37**	0,63	0,08	**0,34**	0,57	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Service and Support

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Poland	Polish	0080 04411887	eu.techsupport@kennametal.com
Russia (landline)	Russian	8800 5556394	eu.techsupport@kennametal.com
Russia (cell phone)	Russian	+7 8005556394	eu.techsupport@kennametal.com
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KDMB™ • KDMT™

Indexable Copy Insert Platform

Primary Application

Ball nose and toroidal styles for roughing and finishing operations. Engineered with the ultimate technologies and supported with a wide range of diameters and insert styles to provide exceptional performance and productivity. The new high-feed insert style provides the highest metal removal rates for roughing applications.



Features and Benefits

Longer Tool Life and Improved Geometries

- Longer tool life for finishing operations, up to 63 HRC.
- High-accuracy inserts and holders: overall runout ± 0,01mm.
- Improved geometries for roughing and finishing operations.
- Smaller diameters from 6mm to replace SCEM, setting a more productive machining process.

Superior Productivity

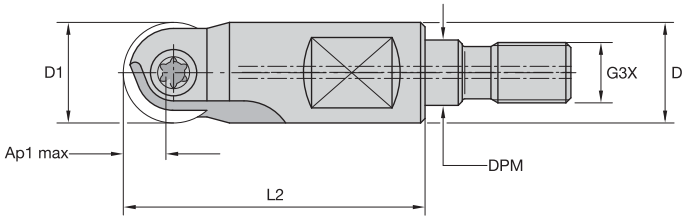
- Achieve better surface quality with the new helical geometry.
- New ultra-grain grade for outstanding tool life.
- Diameters 6mm and 8mm are a natural replacement for SEM tools.
- Better cost per edge.

Usability and Flexibility

- Wide diameter range, from 6–32mm, use in a wide range of machining conditions.
- Many workpiece materials are possible — from hardened steel to aluminium.
- Large holder style offering: screw-on, cylindrical, and tapered steel and carbide holders.

- Available diameters: 12–25mm.
- High precision and runout accuracy.
- Suitable for roughing and finishing operations.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	Ap1 max	Z	Z U	max ramp angle	max RPM	insert 1
1918651	**KDMB12R026M08SN**	12	13	8,5	M8	26	6,0	1	2	3.0°	40000	KDMB12..
1918652	**KDMB16R026M08SN**	16	13	8,5	M8	26	8,0	1	2	3.0°	40000	KDMB16..
1918663	**KDMB20R030M10SN**	20	18	10,5	M10	30	10,0	1	2	3.0°	40000	KDMB20..
1918664	**KDMB25R040M12SN**	25	21	12,5	M12	40	12,5	1	2	3.0°	30000	KDMB25..

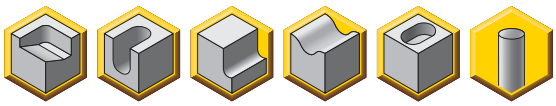
Spare Parts

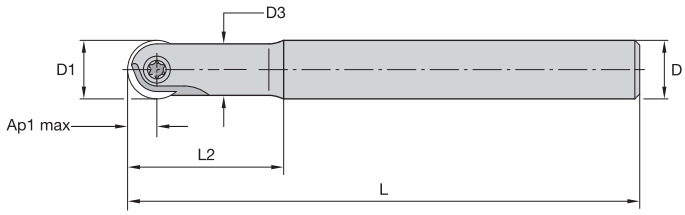




D1	insert screw	Nm	Torx wrench
12	**193.393**	4,0	**KT20**
16	**193.392**	5,0	**KT20**
20	**193.391**	6,0	**KT20**
25	**193.390**	6,5	**KT30**

- Cutting diameter ranges from 12–32mm.
- Ball nose finishers for 3D milling applications.
- Suitable for roughing and finishing operations.
- High precision and runout accuracy.
- Can be used with heat shrink technology, h6 shank tolerance.







Necked End Mills • Cylindrical Shank • Steel

order number	catalogue number	D1	D	D3	L	L2	Ap1 max	Z	Z U	coolant supply	max ramp angle	max RPM	insert 1
1918676	**KDMB12R130A12SN**	12	12	11	130	32	6,0	1	2	No	3.0°	40000	KDMB12..
1918677	**KDMB12R150A12SN**	12	12	11	150	46	6,0	1	2	No	3.0°	40000	KDMB12..
1918678	**KDMB16R140A16SN**	16	16	14	140	35	8,0	1	2	No	3.0°	40000	KDMB16..
1918679	**KDMB16R160A16SN**	16	16	14	160	53	8,0	1	2	No	3.0°	40000	KDMB16..
1918680	**KDMB20R160A20SN**	20	20	18	160	45	10,0	1	2	No	3.0°	40000	KDMB20..
1918681	**KDMB20R175A20SN**	20	20	18	175	61	10,0	1	2	No	3.0°	40000	KDMB20..
1918682	**KDMB25R160A25SN**	25	25	22	160	45	12,5	1	2	No	3.0°	40000	KDMB25..
1918683	**KDMB25R190A25SN**	25	25	22	190	70	12,5	1	2	No	3.0°	40000	KDMB25..
1918684	**KDMB32R175A32SN**	32	32	29	175	56	16,0	1	2	No	3.0°	40000	KDMB32..
1918685	**KDMB32R210A32SN**	32	32	29	210	80	16,0	1	2	No	3.0°	40000	KDMB32..

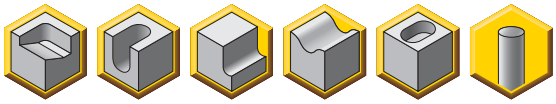
Spare Parts

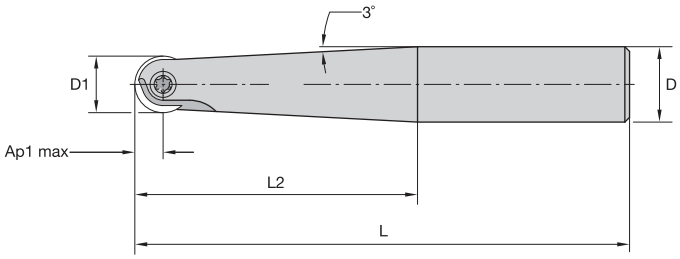




D1	insert screw	Nm	Torx wrench
12	**193.393**	4,0	**KT20**
16	**193.392**	5,0	**KT20**
20	**193.391**	6,0	**KT20**
25	**193.390**	6,5	**KT30**
32	**193.389**	6,5	**KT30**

- Available diameters: 8–25mm.
- Ball nose finishers for 3D milling applications.
- Suitable for roughing and finishing operations.
- Tapered version ideal for 5-axis applications.
- High precision and runout accuracy.
- Can be used with heat shrink technology, h6 shank tolerance.







Tapered End Mills • Cylindrical Shank • Steel

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	Z U	coolant supply	max ramp angle	max RPM	insert 1
1918669	**KDMB08R140A08ST**	8	12	140	50	4,0	1	2	No	3.0°	40000	KDMB08..
1918670	**KDMB10R150A10ST**	10	12	150	34	5,0	1	2	No	3.0°	40000	KDMB10..
1918671	**KDMB12R160A12ST**	12	16	160	60	6,0	1	2	No	3.0°	40000	KDMB12..
1918672	**KDMB16R175A16ST**	16	20	175	67	8,0	1	2	No	3.0°	40000	KDMB16..
1918673	**KDMB20R190A20ST**	20	25	190	80	10,0	1	2	No	3.0°	40000	KDMB20..
1918674	**KDMB25R210A25ST**	25	32	210	100	12,5	1	2	No	3.0°	40000	KDMB25..

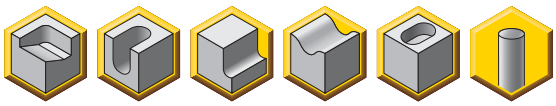
Spare Parts

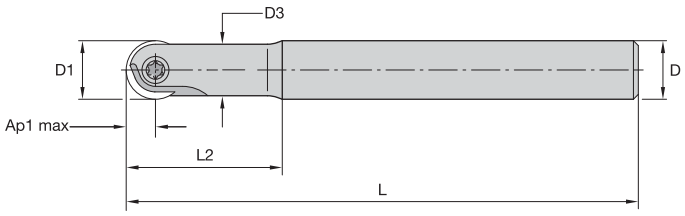




D1	insert screw	Nm	Torx wrench
8	**193.395**	2,0	**KT8**
10	**193.394**	3,0	**KT15**
12	**193.393**	4,0	**KT20**
16	**193.392**	5,0	**KT20**
20	**193.391**	6,0	**KT20**
25	**193.390**	6,5	**KT30**

- Available diameters: 6–32mm.
- Ball nose finishers for 3D milling applications.
- Suitable for roughing and finishing operations.
- High precision and runout accuracy.
- Can be used with heat shrink technology, h6 shank tolerance.







Necked End Mills • Cylindrical Shank • Carbide

order number	catalogue number	D1	D	D3	L2	L	Ap1 max	Z	Z U	coolant supply	max ramp angle	max RPM	insert 1
3700622	KDMB06R100A06HN	6	6	6	20	100	3,0	1	2	No	3.0°	40000	KDM.06..
3964191	KDMB06R150A06HN	6	6	6	70	150	3,0	1	2	No	3.0°	40000	KDM.06..
3964192	KDMB06R200A06HN	6	6	6	100	200	3,0	1	2	No	3.0°	40000	KDM.06..
1918704	KDMB08R100A08HN	8	8	7	25	100	4,0	1	2	No	3.0°	40000	KDM.08..
1918705	KDMB08R150A08HN	8	8	7	40	150	4,0	1	2	No	3.0°	40000	KDM.08..
2877242	KDMB10R120A10HNC	10	10	9	34	120	5,0	1	2	Yes	3.0°	40000	KDMB10..
2877373	KDMB10R150A10HNC	10	10	9	49	150	5,0	1	2	Yes	3.0°	40000	KDMB10..
2877374	KDMB12R120A12HNC	12	12	11	35	120	6,0	1	2	Yes	3.0°	40000	KDMB12..
2877375	KDMB12R160A12HNC	12	12	11	50	160	6,0	1	2	Yes	3.0°	40000	KDMB12..
2877376	KDMB16R140A16HNC	16	16	14	40	140	8,0	1	2	Yes	3.0°	40000	KDMB16..
2877377	KDMB16R175A16HNC	16	16	14	55	175	8,0	1	2	Yes	3.0°	40000	KDMB16..
2877378	KDMB20R140A20HNC	20	20	18	50	140	10,0	1	2	Yes	3.0°	40000	KDMB20..
2877379	KDMB20R190A20HNC	20	20	18	75	190	10,0	1	2	Yes	3.0°	40000	KDMB20..
2877380	KDMB25R160A25HNC	25	25	22	60	160	12,5	1	2	Yes	3.0°	30000	KDMB25..
2877381	KDMB25R210A25HNC	25	25	22	90	210	12,5	1	2	Yes	3.0°	30000	KDMB25..
2877383	KDMB32R240A32HNC	32	32	29	105	240	16,0	1	2	Yes	3.0°	30000	KDMB32..

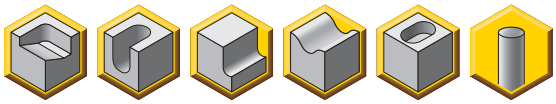
Spare Parts

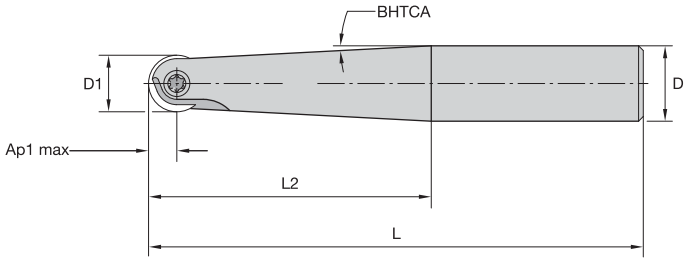




D1	insert screw	Nm	Torx wrench
6	MS2236	1,7	KT6
8	193.395	2,0	KT8
10	193.394	3,0	KT15
12	193.393	4,0	KT20
16	193.392	5,0	KT20
20	193.391	6,0	KT20
25	193.390	6,5	KT30
32	193.389	6,5	KT30

- Available diameters: 6–16mm.
- High precision and runout accuracy.
- Can be used with heat shrink technology, h6 shank tolerance.
- Suitable for roughing and finishing operations.
- Tapered version ideal for 5-axis applications.







Tapered End Mills • Cylindrical Shank • Carbide

order number	catalogue number	D1	D	BHTCA	L2	L	Ap1 max	Z	Z U	coolant supply	max ramp angle	max RPM	insert 1
3964257	KDMB06R90A08HN	6	8	1.8°	40	90	3,0	1	2	No	3.0°	40000	KDM.06..
3964258	KDMB08R100A10HN	8	10	1.3°	60	100	4,0	1	2	No	3.0°	40000	KDM.08..
3964259	KDMB08R150A10HN	8	10	1.0°	90	150	4,0	1	2	No	3.0°	40000	KDM.08..
3964260	KDMB10R100A12HNC	10	12	1.3°	60	100	5,0	1	2	Yes	3.0°	40000	KDMB10..
3964261	KDMB10R150A12HNC	10	12	1.0°	90	150	5,0	1	2	Yes	3.0°	40000	KDMB10..
3964262	KDMB12R120A16HNC	12	16	2.0°	70	120	6,0	1	2	Yes	3.0°	40000	KDMB12..
3964263	KDMB12R150A16HNC	12	16	1.5°	90	150	6,0	1	2	Yes	3.0°	40000	KDMB12..
3964264	KDMB16R140A20HNC	16	20	2.0°	70	140	8,0	1	2	Yes	3.0°	40000	KDMB16..
3964265	KDMB16R175A20HNC	16	20	1.5°	90	175	8,0	1	2	Yes	3.0°	40000	KDMB16..

Spare Parts

D1	insert screw	Nm	Torx wrench
6	MS2236	1,0	KT6
8	193.395	1,7	KT8
10	193.394	3,0	KT15
12	193.393	4,0	KT20
16	193.392	5,0	KT20

Insert Selection Guide

KDMB Ball Nose Platform • 6mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	.E..GP	KC515M	–	–
P3–P4	.E..GP	KC505M	.E..GP	KC515M	–	–
P5–P6	.E..GP	KC505M	.E..GP	KC515M	–	–
M1–M2	.E..GP	KC515M	–	–	–	–
M3	.E..GP	KC515M	–	–	–	–
K1–K2	.E..GP	KC515M	.E..GP	KC515M	–	–
K3	.E..GP	KC515M	.E..GP	KC515M	–	–
N1–N2	.E..LD	K115M	.E..LD	K115M	–	–
N3	.E..LD	K115M	.E..LD	K115M	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	.E..LD	K115M	.E..GP	KC515M	–	–
H1	.E..GP	KC505M	.E..GP	KC505M	.E..GN	KC505M

KDMB Ball Nose Platform • 8mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	.E..GP	KC515M	.E..GN	KC530M
P3–P4	.E..GP	KC505M	.E..GP	KC515M	.E..GN	KC515M
P5–P6	.E..GP	KC505M	.E..GP	KC515M	.E..GN	KC530M
M1–M2	.E..GP	KC515M	.E..GN	KC530M	–	–
M3	.E..GP	KC515M	.E..GN	KC530M	–	–
K1–K2	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
K3	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
N1–N2	.E..LD	K115M	.E..LD	K115M	–	–
N3	.E..LD	K115M	.E..LD	K115M	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	.E..LD	K115M	.E..GP	KC515M	–	–
H1	.E..GP	KC505M	.E..GP	KC505M	.E..GN	KC505M

KDMB Ball Nose Platform • 10mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	.E..GP	KC515M	.E..GN	KC515M
P3–P4	.E..GP	KC505M	.E..GP	KC515M	.E..GN	KC515M
P5–P6	.E..GP	KC505M	.E..GP	KC515M	.E..GN	KC530M
M1–M2	.E..GP	KC515M	.E..GN	KC530M	.E..GN	KC530M
M3	.E..GP	KC515M	.E..GN	KC530M	.E..GN	KC530M
K1–K2	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
K3	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
N1–N2	.E..LD	K115M	.E..LD	K115M	–	–
N3	.E..LD	K115M	.E..LD	K115M	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	.E..LD	K115M	.E..GP	KC515M	–	–
H1	.E..GP	KC505M	.E..GP	KC505M	.E..GN	KC505M

KDMB Ball Nose Platform • 12mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	.E..GP	KC515M	.E..HC	KC530M
P3–P4	.E..GP	KC505M	.E..GP	KC515M	.E..HC	KC530M
P5–P6	.E..GP	KC505M	.E..GP	KC515M	.E..HC	KC530M
M1–M2	.E..GP	KC515M	.E..HC	KC530M	.E..HC	KC530M
M3	.E..GP	KC515M	.E..HC	KC530M	.E..HC	KC530M
K1–K2	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
K3	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
N1–N2	.E..LD	K115M	.E..LD	K115M	–	–
N3	.E..LD	K115M	.E..LD	K115M	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	.E..LD	K115M	.E..GP	KC515M	.E..HC	KC530M
H1	.E..GP	KC505M	.E..GP	KC505M	.E..GN	KC505M

KDMB Ball Nose Platform • 16mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	.E..GP	KC515M	.E..HC	KC530M
P3–P4	.E..GP	KC505M	.E..GP	KC515M	.E..HC	KC530M
P5–P6	.E..GP	KC505M	.E..GP	KC515M	.E..HC	KC530M
M1–M2	.E..GP	KC515M	.E..HC	KC530M	.E..HC	KC530M
M3	.E..GP	KC515M	.E..HC	KC530M	.E..HC	KC530M
K1–K2	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
K3	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
N1–N2	.E..LD	K115M	.E..LD	K115M	–	–
N3	.E..LD	K115M	.E..LD	K115M	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	.E..LD	K115M	.E..GP	KC515M	.E..HC	KC530M
H1	.E..GP	KC505M	.E..GP	KC505M	.E..GN	KC505M

KDMB Ball Nose Platform • 20mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	.E..GP	KC515M	.E..HC	KC530M
P3–P4	.E..GP	KC505M	.E..GP	KC515M	.E..HC	KC530M
P5–P6	.E..GP	KC505M	.E..GP	KC515M	.E..HC	KC530M
M1–M2	.E..GP	KC515M	.E..HC	KC530M	.E..HC	KC530M
M3	.E..GP	KC515M	.E..HC	KC530M	.E..HC	KC530M
K1–K2	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
K3	.E..GP	KC515M	.E..GN	KC515M	.E..GN	KC515M
N1–N2	.E..LD	K115M	.E..LD	K115M	–	–
N3	.E..LD	K115M	.E..LD	K115M	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	.E..LD	K115M	.E..GP	KC515M	.E..HC	KC530M
H1	.E..GP	KC505M	.E..GP	KC505M	.E..GN	KC505M

KDMB Ball Nose Platform • 25mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷				toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..HC	KC530M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
M1–M2	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
M3	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
K1–K2	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
K3	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	.E..HC	KC530M
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GN	KC505M

KDMB Ball Nose Platform • 32mm

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷				toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..HC	KC530M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
M1–M2	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
M3	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
K1–K2	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
K3	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	.E..HC	KC530M
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GN	KC505M

Insert Style

HC Geometry:

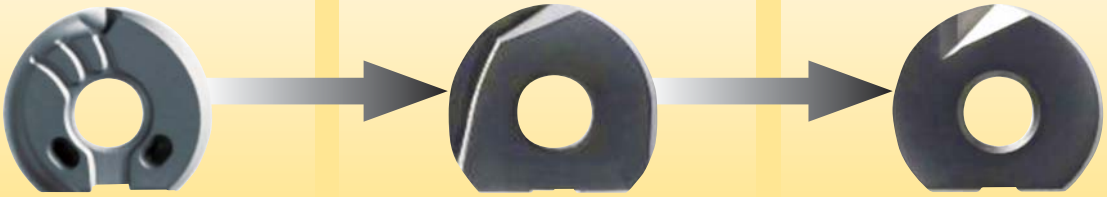
PSTS geometry with chipbreaker for roughing. Semi-finishing and rest material of steel, cast steel, and high-temperature alloys.

GP Geometry:

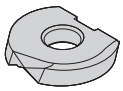
High-precision insert with helical geometry for semi-finishing and finishing of steel up to 63 HRC, cast steel, and high-temperature alloys.

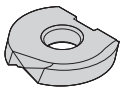
GN Geometry:

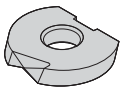
Geometry with extremely solid cutting edge for roughing cast steel, high-temperature alloys, and hardened steel up to 60 HRC.

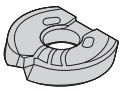


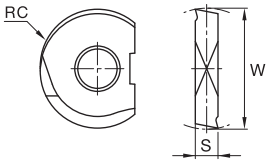
roughing, rest material | semi-finishing, finishing | finishing


KDMB-LD


KDMB-GP


KDMB-GN


KDMB-HC



KDMB-LD

● first choice
○ alternate choice

P			●	●	●
M			○	○	●
K			○	●	○
N		●			
S					○
H			●	○	○

KDMB-LD • High-Precision Positive Geometry • Non-Ferrous and Titanium

catalogue number	S	W	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB06M0ERLD	1,60	6,00	3,00	0,05	●	–	–	–
KDMB08M0ERLD	2,00	8,00	4,00	0,05	●	–	–	–
KDMB10M0ERLD	2,50	10,00	5,00	0,05	●	–	–	–
KDMB12M0ERLD	2,50	12,00	6,00	0,05	●	–	–	–
KDMB16M0ERLD	3,00	16,00	8,00	0,05	●	–	–	–
KDMB20M0ERLD	3,00	20,00	10,00	0,05	●	–	–	–
KDMB25M0ERLD	4,00	25,00	12,50	0,05	●	–	–	–
KDMB32M0ERLD	5,00	32,00	16,00	0,05	●	–	–	–

KDMB-GP • High-Precision Helical Geometry and Lower Cutting Forces

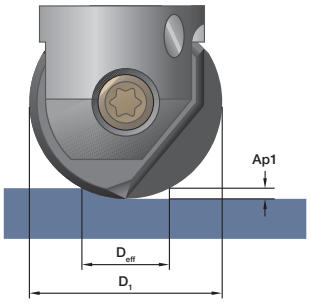
catalogue number	S	W	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB06M0ERGP	1,60	6,00	3,00	0,06	–	●	●	–
KDMB08M0ERGP	2,00	8,00	4,00	0,06	–	●	●	–
KDMB10M0ERGP	2,50	10,00	5,00	0,06	–	●	●	–
KDMB12M0ERGP	2,50	12,00	6,00	0,06	–	●	●	–
KDMB16M0ERGP	3,00	16,00	8,00	0,06	–	●	●	–
KDMB20M0ERGP	3,00	20,00	10,00	0,06	–	●	●	–
KDMB25M0ERGP	4,00	25,00	12,50	0,06	–	●	●	–
KDMB32M0ERGP	5,00	32,00	16,00	0,06	–	●	●	–

KDMB-GN • High Precision • Extremely Solid Cutting Edge

catalogue number	S	W	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB06M0ERGN	1,60	6,00	3,00	0,08	–	●	–	–
KDMB08M0ERGN	2,00	8,00	4,00	0,08	–	●	●	●
KDMB10M0ERGN	2,50	10,00	5,00	0,08	–	●	●	●
KDMB12M0ERGN	2,50	12,00	6,00	0,08	–	●	●	●
KDMB16M0ERGN	3,00	16,00	8,00	0,08	–	●	●	●
KDMB20M0ERGN	3,00	20,00	10,00	0,08	–	●	●	●
KDMB25M0ERGN	4,00	25,00	12,50	0,08	–	●	●	●
KDMB32M0ERGN	5,00	32,00	16,00	0,08	–	●	●	●

KDMB-HC • PSTS Insert Developed for Roughing and Rest Material Operations

catalogue number	S	W	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB12M0ERHC	2,50	12,00	6,00	0,10	–	–	–	●
KDMB16M0ERHC	3,00	16,00	8,00	0,10	–	–	–	●
KDMB20M0ERHC	3,00	20,00	10,00	0,10	–	–	–	●
KDMB25M0ERHC	4,00	25,00	12,50	0,10	–	–	–	●
KDMB32M0ERHC	5,00	32,00	16,00	0,10	–	–	–	●



KDMB Ball Nose • 6mm

	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	3,00	1,50	0,50	0,25
6,00	6,00	5,20	3,32	2,40

KDMB Ball Nose • 8mm

	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	4,00	1,50	0,50	0,25
8,00	8,00	6,24	3,87	2,78

KDMB Ball Nose • 10mm

	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	5,00	2,00	1,00	0,50
10,00	10,00	8,00	6,00	4,36

KDMB Ball Nose • 12mm

	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	6,00	2,00	1,00	0,50
12,00	12,00	8,94	6,63	4,80

KDMB Ball Nose • 16mm

	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	8,00	3,00	1,50	0,75
16,00	16,00	12,49	9,33	6,76

KDMB Ball Nose • 20mm

	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	10,00	3,00	1,50	0,75
20,00	20,00	14,28	10,54	7,60

KDMB Ball Nose • 25mm

	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	12,50	5,00	2,00	1,00
25,00	25,00	20,00	13,56	9,80

KDMB Ball Nose • 32mm

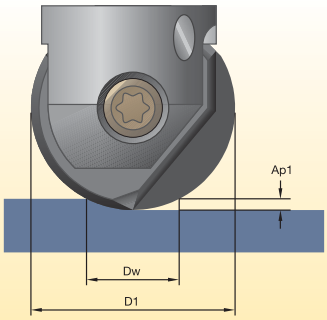
	Working Diameter (Dw) at Axial Depth of Cut (ap)			
D1 max	16,00	5,00	2,00	1,00
32,00	32,00	23,24	15,49	11,14

NOTE: Working diameter (Dw) or effective diameter has to be considered when calculating appropriate RPM.

Calculating Working Diameter and Resulting Surface Speed

Case 1:

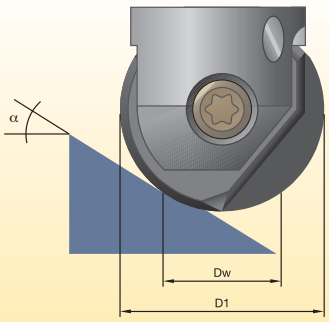
It is important to consider the effective diameter (Dw) when using light depths of cut in order to properly calculate RPM values. Use the following formula when machining flat surfaces or inclinations of 10° or less to find the Dw value. Then, use this for RPM calculations, as opposed to using the overall insert diameter (D1).



$$Dw = \sqrt{D1^2-(D1-2Ap1)^2}$$

Case 2:

When machining inclinations between 11° and 55°, further modification of vc is required. Apply factor "k" from the given formula to calculate the correct vc (vceff). This corrected value is then used to calculate the proper RPM for the tool.



$$k = \frac{1}{\sin[\alpha + \arccos(1-(2(Ap1/D1)))]}$$

$$vceff = vc \times k$$

Recommended Starting Feeds [mm] • Ball Nose Insert Size 6mm

Light Machining	General Purpose	Heavy Machining

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,29	0,09	**0,13**	0,22	0,08	**0,11**	0,19	0,07	**0,10**	0,18	0,07	**0,10**	0,18	.E..LD
.E..GP	0,14	**0,20**	0,34	0,11	**0,15**	0,25	0,09	**0,13**	0,22	0,09	**0,12**	0,21	0,08	**0,12**	0,20	.E..GP
.E..GN	0,17	**0,25**	0,34	0,13	**0,19**	0,25	0,11	**0,17**	0,22	0,10	**0,16**	0,21	0,10	**0,15**	0,20	.E..GN

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,14	**0,19**	0,34	0,10	**0,14**	0,25	0,09	**0,13**	0,22	0,08	**0,12**	0,21	0,08	**0,12**	0,20	.E..LD
.E..GP	0,16	**0,23**	0,39	0,12	**0,17**	0,29	0,11	**0,15**	0,26	0,10	**0,14**	0,24	0,10	**0,14**	0,23	.E..GP
.E..GN	0,20	**0,29**	0,39	0,15	**0,22**	0,29	0,13	**0,19**	0,26	0,12	**0,18**	0,24	0,12	**0,18**	0,23	.E..GN

At 0,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,21	**0,30**	0,53	0,16	**0,23**	0,40	0,14	**0,20**	0,35	0,13	**0,18**	0,32	0,13	**0,18**	0,32	.E..LD
.E..GP	0,26	**0,36**	0,62	0,19	**0,27**	0,46	0,17	**0,24**	0,40	0,16	**0,22**	0,38	0,15	**0,22**	0,37	.E..GP
.E..GN	0,31	**0,46**	0,62	0,23	**0,35**	0,46	0,20	**0,30**	0,40	0,19	**0,28**	0,38	0,18	**0,28**	0,37	.E..GN

At 0,25 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,30	**0,42**	0,74	0,22	**0,31**	0,55	0,19	**0,27**	0,48	0,18	**0,26**	0,45	0,18	**0,25**	0,44	.E..LD
.E..GP	0,36	**0,50**	0,86	0,27	**0,38**	0,64	0,23	**0,33**	0,56	0,22	**0,31**	0,52	0,21	**0,30**	0,51	.E..GP
.E..GN	0,43	**0,64**	0,86	0,32	**0,48**	0,64	0,28	**0,42**	0,56	0,26	**0,39**	0,52	0,25	**0,38**	0,51	.E..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • Ball Nose Insert Size 8mm

Light Machining	General Purpose	Heavy Machining

At 4,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,29	0,09	**0,13**	0,22	0,08	**0,11**	0,19	0,07	**0,10**	0,18	0,07	**0,10**	0,18	.E..LD
.E..GP	0,14	**0,20**	0,35	0,11	**0,15**	0,26	0,09	**0,13**	0,23	0,09	**0,12**	0,21	0,08	**0,12**	0,21	.E..GP
.E..GN	0,17	**0,25**	0,43	0,13	**0,19**	0,32	0,11	**0,17**	0,28	0,10	**0,16**	0,26	0,10	**0,15**	0,25	.E..GN

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,15	**0,21**	0,38	0,11	**0,16**	0,28	0,10	**0,14**	0,24	0,09	**0,13**	0,23	0,09	**0,13**	0,22	.E..LD
.E..GP	0,18	**0,26**	0,45	0,14	**0,19**	0,34	0,12	**0,17**	0,29	0,11	**0,16**	0,27	0,11	**0,15**	0,27	.E..GP
.E..GN	0,22	**0,33**	0,55	0,16	**0,24**	0,41	0,14	**0,21**	0,36	0,13	**0,20**	0,33	0,13	**0,20**	0,33	.E..GN

At 0,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,24	**0,35**	0,61	0,18	**0,26**	0,45	0,16	**0,23**	0,39	0,15	**0,21**	0,37	0,15	**0,21**	0,36	.E..LD
.E..GP	0,29	**0,41**	0,73	0,22	**0,31**	0,54	0,19	**0,27**	0,47	0,18	**0,25**	0,44	0,18	**0,25**	0,43	.E..GP
.E..GN	0,35	**0,53**	0,88	0,26	**0,39**	0,66	0,23	**0,34**	0,57	0,21	**0,32**	0,54	0,21	**0,31**	0,52	.E..GN

At 0,25 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,34	**0,48**	0,85	0,25	**0,36**	0,63	0,22	**0,31**	0,55	0,21	**0,29**	0,51	0,20	**0,29**	0,50	.E..LD
.E..GP	0,41	**0,58**	1,02	0,31	**0,43**	0,76	0,27	**0,38**	0,66	0,25	**0,35**	0,62	0,24	**0,34**	0,60	.E..GP
.E..GN	0,49	**0,74**	1,23	0,37	**0,55**	0,92	0,32	**0,48**	0,80	0,30	**0,45**	0,75	0,29	**0,44**	0,73	.E..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • Ball Nose Insert Size 10mm

Light Machining	General Purpose	Heavy Machining

At 5,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,29	0,09	**0,13**	0,22	0,08	**0,11**	0,19	0,07	**0,10**	0,18	0,07	**0,10**	0,18	.E..LD
.E..GP	0,14	**0,20**	0,35	0,11	**0,15**	0,26	0,09	**0,13**	0,23	0,09	**0,12**	0,21	0,08	**0,12**	0,21	.E..GP
.E..GN	0,17	**0,27**	0,47	0,13	**0,20**	0,35	0,11	**0,17**	0,31	0,10	**0,16**	0,29	0,10	**0,16**	0,28	.E..GN

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,15	**0,21**	0,37	0,11	**0,16**	0,27	0,10	**0,14**	0,24	0,09	**0,13**	0,22	0,09	**0,13**	0,22	.E..LD
.E..GP	0,18	**0,25**	0,44	0,13	**0,19**	0,33	0,12	**0,16**	0,29	0,11	**0,15**	0,27	0,11	**0,15**	0,26	.E..GP
.E..GN	0,21	**0,33**	0,59	0,16	**0,25**	0,44	0,14	**0,22**	0,38	0,13	**0,20**	0,36	0,13	**0,20**	0,35	.E..GN

At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,20	**0,28**	0,49	0,15	**0,21**	0,37	0,13	**0,18**	0,32	0,12	**0,17**	0,30	0,12	**0,17**	0,29	.E..LD
.E..GP	0,24	**0,33**	0,59	0,18	**0,25**	0,44	0,15	**0,22**	0,38	0,14	**0,20**	0,36	0,14	**0,20**	0,35	.E..GP
.E..GN	0,28	**0,45**	0,78	0,21	**0,33**	0,58	0,18	**0,29**	0,51	0,17	**0,27**	0,48	0,17	**0,27**	0,47	.E..GN

At 0,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,27	**0,38**	0,67	0,20	**0,29**	0,50	0,18	**0,25**	0,44	0,17	**0,23**	0,41	0,16	**0,23**	0,40	.E..LD
.E..GP	0,33	**0,46**	0,81	0,24	**0,34**	0,60	0,21	**0,30**	0,53	0,20	**0,28**	0,49	0,19	**0,28**	0,48	.E..GP
.E..GN	0,39	**0,62**	1,08	0,29	**0,46**	0,81	0,25	**0,40**	0,70	0,24	**0,37**	0,66	0,23	**0,37**	0,64	.E..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • Ball Nose Insert Size 12mm

Light Machining	General Purpose	Heavy Machining

At 6,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,29	0,09	**0,13**	0,22	0,08	**0,11**	0,19	0,07	**0,10**	0,18	0,07	**0,10**	0,18	.E..LD
.E..GP	0,14	**0,20**	0,35	0,11	**0,15**	0,26	0,09	**0,13**	0,23	0,09	**0,12**	0,21	0,08	**0,12**	0,21	.E..GP
.E..GN	0,17	**0,27**	0,47	0,13	**0,20**	0,35	0,11	**0,17**	0,31	0,10	**0,16**	0,29	0,10	**0,16**	0,28	.E..GN
.E..HC	0,17	**0,33**	0,59	0,13	**0,25**	0,44	0,11	**0,22**	0,38	0,10	**0,20**	0,36	0,10	**0,20**	0,35	.E..HC

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,16	**0,22**	0,39	0,12	**0,17**	0,29	0,10	**0,15**	0,26	0,10	**0,14**	0,24	0,09	**0,13**	0,23	.E..LD
.E..GP	0,19	**0,27**	0,47	0,14	**0,20**	0,35	0,12	**0,18**	0,31	0,12	**0,16**	0,29	0,11	**0,16**	0,28	.E..GP
.E..GN	0,23	**0,36**	0,63	0,17	**0,27**	0,47	0,15	**0,23**	0,41	0,14	**0,22**	0,38	0,14	**0,21**	0,38	.E..GN
.E..HC	0,23	**0,45**	0,79	0,17	**0,34**	0,59	0,15	**0,29**	0,51	0,14	**0,27**	0,48	0,14	**0,27**	0,47	.E..HC

At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,21	**0,30**	0,53	0,16	**0,23**	0,40	0,14	**0,20**	0,35	0,13	**0,18**	0,32	0,13	**0,18**	0,32	.E..LD
.E..GP	0,26	**0,36**	0,64	0,19	**0,27**	0,48	0,17	**0,24**	0,41	0,16	**0,22**	0,39	0,15	**0,22**	0,38	.E..GP
.E..GN	0,31	**0,48**	0,85	0,23	**0,36**	0,64	0,20	**0,32**	0,55	0,19	**0,30**	0,52	0,18	**0,29**	0,51	.E..GN
.E..HC	0,31	**0,61**	1,07	0,23	**0,45**	0,79	0,20	**0,40**	0,69	0,19	**0,37**	0,65	0,18	**0,36**	0,63	.E..HC

At 0,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,30	**0,42**	0,74	0,22	**0,31**	0,55	0,19	**0,27**	0,48	0,18	**0,26**	0,45	0,18	**0,25**	0,44	.E..LD
.E..GP	0,36	**0,50**	0,88	0,27	**0,38**	0,66	0,23	**0,33**	0,57	0,22	**0,31**	0,54	0,21	**0,30**	0,53	.E..GP
.E..GN	0,43	**0,67**	1,18	0,32	**0,50**	0,88	0,28	**0,44**	0,77	0,26	**0,41**	0,72	0,25	**0,40**	0,70	.E..GN
.E..HC	0,43	**0,84**	1,48	0,32	**0,63**	1,10	0,28	**0,55**	0,96	0,26	**0,51**	0,89	0,25	**0,50**	0,88	.E..HC

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • Ball Nose Insert Size 16mm

Light Machining	General Purpose	Heavy Machining

At 8,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,29	0,09	**0,13**	0,22	0,08	**0,11**	0,19	0,07	**0,10**	0,18	0,07	**0,10**	0,18	.E..LD
.E..GP	0,14	**0,20**	0,35	0,11	**0,15**	0,26	0,09	**0,13**	0,23	0,09	**0,12**	0,21	0,08	**0,12**	0,21	.E..GP
.E..GN	0,17	**0,27**	0,47	0,13	**0,20**	0,35	0,11	**0,17**	0,31	0,10	**0,16**	0,29	0,10	**0,16**	0,28	.E..GN
.E..HC	0,17	**0,33**	0,59	0,13	**0,25**	0,44	0,11	**0,22**	0,38	0,10	**0,20**	0,36	0,10	**0,20**	0,35	.E..HC

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,15	**0,21**	0,38	0,11	**0,16**	0,28	0,10	**0,14**	0,24	0,09	**0,13**	0,23	0,09	**0,13**	0,22	.E..LD
.E..GP	0,18	**0,26**	0,45	0,14	**0,19**	0,34	0,12	**0,17**	0,29	0,11	**0,16**	0,27	0,11	**0,15**	0,27	.E..GP
.E..GN	0,22	**0,34**	0,60	0,16	**0,26**	0,45	0,14	**0,22**	0,39	0,13	**0,21**	0,37	0,13	**0,2**	0,36	.E..GN
.E..HC	0,22	**0,43**	0,75	0,16	**0,32**	0,56	0,14	**0,28**	0,49	0,13	**0,26**	0,46	0,13	**0,26**	0,45	.E..HC

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,20	**0,29**	0,50	0,15	**0,21**	0,38	0,13	**0,19**	0,33	0,12	**0,18**	0,31	0,12	**0,17**	0,30	.E..LD
.E..GP	0,24	**0,34**	0,60	0,18	**0,26**	0,45	0,16	**0,22**	0,39	0,15	**0,21**	0,37	0,15	**0,21**	0,36	.E..GP
.E..GN	0,29	**0,46**	0,81	0,22	**0,34**	0,60	0,19	**0,30**	0,52	0,18	**0,28**	0,49	0,17	**0,27**	0,48	.E..GN
.E..HC	0,29	**0,58**	1,01	0,22	**0,43**	0,75	0,19	**0,37**	0,66	0,18	**0,35**	0,61	0,17	**0,34**	0,60	.E..HC

At 0,75 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,28	**0,40**	0,7	0,21	**0,30**	0,52	0,18	**0,26**	0,45	0,17	**0,24**	0,42	0,17	**0,24**	0,41	.E..LD
.E..GP	0,34	**0,48**	0,84	0,25	**0,36**	0,62	0,22	**0,31**	0,54	0,20	**0,29**	0,51	0,20	**0,28**	0,50	.E..GP
.E..GN	0,40	**0,64**	1,12	0,30	**0,47**	0,83	0,26	**0,41**	0,72	0,25	**0,39**	0,68	0,24	**0,38**	0,66	.E..GN
.E..HC	0,40	**0,80**	1,40	0,30	**0,59**	1,04	0,26	**0,52**	0,90	0,25	**0,48**	0,85	0,24	**0,47**	0,83	.E..HC

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • Ball Nose Insert Size 20mm

Light Machining	General Purpose	Heavy Machining

At 10,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,33	0,09	**0,13**	0,25	0,08	**0,11**	0,22	0,07	**0,10**	0,20	0,07	**0,10**	0,20	.E..LD
.E..GP	0,14	**0,20**	0,40	0,11	**0,15**	0,30	0,09	**0,13**	0,26	0,09	**0,12**	0,24	0,08	**0,12**	0,24	.E..GP
.E..GN	0,17	**0,27**	0,54	0,13	**0,20**	0,40	0,11	**0,17**	0,35	0,10	**0,16**	0,33	0,10	**0,16**	0,32	.E..GN
.E..HC	0,17	**0,33**	0,67	0,13	**0,25**	0,50	0,11	**0,22**	0,44	0,10	**0,20**	0,41	0,10	**0,20**	0,40	.E..HC

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,17	**0,23**	0,47	0,12	**0,18**	0,35	0,11	**0,15**	0,31	0,10	**0,14**	0,29	0,10	**0,14**	0,28	.E..LD
.E..GP	0,20	**0,28**	0,56	0,15	**0,21**	0,42	0,13	**0,18**	0,37	0,12	**0,17**	0,34	0,12	**0,17**	0,34	.E..GP
.E..GN	0,24	**0,37**	0,75	0,18	**0,28**	0,56	0,16	**0,24**	0,49	0,15	**0,23**	0,46	0,14	**0,22**	0,45	.E..GN
.E..HC	0,24	**0,47**	0,94	0,18	**0,35**	0,70	0,16	**0,31**	0,61	0,15	**0,29**	0,57	0,14	**0,28**	0,56	.E..HC

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,22	**0,32**	0,64	0,17	**0,24**	0,48	0,15	**0,21**	0,41	0,14	**0,19**	0,39	0,13	**0,19**	0,38	.E..LD
.E..GP	0,27	**0,38**	0,77	0,20	**0,29**	0,57	0,18	**0,25**	0,50	0,16	**0,23**	0,47	0,16	**0,23**	0,46	.E..GP
.E..GN	0,32	**0,51**	1,02	0,24	**0,38**	0,76	0,21	**0,33**	0,66	0,20	**0,31**	0,62	0,19	**0,30**	0,61	.E..GN
.E..HC	0,32	**0,64**	1,28	0,24	**0,48**	0,95	0,21	**0,41**	0,83	0,20	**0,39**	0,78	0,19	**0,38**	0,76	.E..HC

At 0,75 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,31	**0,44**	0,89	0,23	**0,33**	0,66	0,20	**0,29**	0,57	0,19	**0,27**	0,54	0,19	**0,26**	0,53	.E..LD
.E..GP	0,37	**0,53**	1,06	0,28	**0,40**	0,79	0,24	**0,34**	0,69	0,23	**0,32**	0,64	0,22	**0,32**	0,63	.E..GP
.E..GN	0,45	**0,71**	1,43	0,33	**0,53**	1,06	0,29	**0,46**	0,92	0,27	**0,43**	0,86	0,27	**0,42**	0,84	.E..GN
.E..HC	0,45	**0,89**	1,79	0,33	**0,66**	1,32	0,29	**0,57**	1,15	0,27	**0,54**	1,07	0,27	**0,53**	1,05	.E..HC

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • Ball Nose Insert Size 25mm

Light Machining	General Purpose	Heavy Machining

At 12,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,29	0,09	**0,13**	0,22	0,08	**0,11**	0,19	0,07	**0,10**	0,18	0,07	**0,10**	0,18	.E..LD
.E..GP	0,14	**0,20**	0,35	0,11	**0,15**	0,26	0,09	**0,13**	0,23	0,09	**0,12**	0,21	0,08	**0,12**	0,21	.E..GP
.E..GN	0,17	**0,27**	0,47	0,13	**0,20**	0,35	0,11	**0,17**	0,31	0,10	**0,16**	0,29	0,10	**0,16**	0,28	.E..GN
.E..HC	0,17	**0,33**	0,59	0,13	**0,25**	0,44	0,11	**0,22**	0,38	0,10	**0,20**	0,36	0,10	**0,20**	0,35	.E..HC

At 5,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,15	**0,21**	0,37	0,11	**0,16**	0,27	0,10	**0,14**	0,24	0,09	**0,13**	0,22	0,09	**0,13**	0,22	.E..LD
.E..GP	0,18	**0,25**	0,44	0,13	**0,19**	0,33	0,12	**0,16**	0,29	0,11	**0,15**	0,27	0,11	**0,15**	0,26	.E..GP
.E..GN	0,21	**0,33**	0,59	0,16	**0,25**	0,44	0,14	**0,22**	0,38	0,13	**0,20**	0,36	0,13	**0,20**	0,35	.E..GN
.E..HC	0,21	**0,42**	0,73	0,16	**0,31**	0,55	0,14	**0,27**	0,48	0,13	**0,26**	0,45	0,13	**0,25**	0,44	.E..HC

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,22	**0,31**	0,54	0,16	**0,23**	0,40	0,14	**0,20**	0,35	0,13	**0,19**	0,33	0,13	**0,18**	0,32	.E..LD
.E..GP	0,26	**0,37**	0,65	0,20	**0,28**	0,48	0,17	**0,24**	0,42	0,16	**0,23**	0,40	0,16	**0,22**	0,39	.E..GP
.E..GN	0,31	**0,49**	0,87	0,23	**0,37**	0,65	0,20	**0,32**	0,56	0,19	**0,30**	0,53	0,19	**0,29**	0,52	.E..GN
.E..HC	0,31	**0,62**	1,09	0,23	**0,46**	0,81	0,20	**0,40**	0,70	0,19	**0,38**	0,66	0,19	**0,37**	0,65	.E..HC

At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,30	**0,43**	0,75	0,23	**0,32**	0,56	0,20	**0,28**	0,49	0,18	**0,26**	0,46	0,18	**0,26**	0,45	.E..LD
.E..GP	0,36	**0,51**	0,90	0,27	**0,38**	0,67	0,24	**0,33**	0,59	0,22	**0,31**	0,55	0,22	**0,31**	0,54	.E..GP
.E..GN	0,43	**0,69**	1,21	0,32	**0,51**	0,90	0,28	**0,45**	0,78	0,26	**0,42**	0,73	0,26	**0,41**	0,71	.E..GN
.E..HC	0,43	**0,86**	1,51	0,32	**0,64**	1,12	0,28	**0,56**	0,98	0,26	**0,52**	0,91	0,26	**0,51**	0,89	.E..HC

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • Ball Nose Insert Size 32mm

Light Machining	General Purpose	Heavy Machining

At 16,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,12	**0,17**	0,29	0,09	**0,13**	0,22	0,08	**0,11**	0,19	0,07	**0,10**	0,18	0,07	**0,10**	0,18	.E..LD
.E..GP	0,14	**0,20**	0,35	0,11	**0,15**	0,26	0,09	**0,13**	0,23	0,09	**0,12**	0,21	0,08	**0,12**	0,21	.E..GP
.E..GN	0,17	**0,27**	0,47	0,13	**0,20**	0,35	0,11	**0,17**	0,31	0,10	**0,16**	0,29	0,10	**0,16**	0,28	.E..GN
.E..HC	0,17	**0,33**	0,59	0,13	**0,25**	0,44	0,11	**0,22**	0,38	0,10	**0,20**	0,36	0,10	**0,20**	0,35	.E..HC

At 5,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,16	**0,23**	0,40	0,12	**0,17**	0,30	0,11	**0,15**	0,26	0,10	**0,14**	0,25	0,10	**0,14**	0,24	.E..LD
.E..GP	0,20	**0,28**	0,48	0,15	**0,21**	0,36	0,13	**0,18**	0,32	0,12	**0,17**	0,30	0,12	**0,17**	0,29	.E..GP
.E..GN	0,23	**0,37**	0,65	0,18	**0,28**	0,48	0,15	**0,24**	0,42	0,14	**0,22**	0,39	0,14	**0,22**	0,39	.E..GN
.E..HC	0,23	**0,46**	0,81	0,18	**0,34**	0,60	0,15	**0,30**	0,53	0,14	**0,28**	0,49	0,14	**0,28**	0,48	.E..HC

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,24	**0,35**	0,61	0,18	**0,26**	0,45	0,16	**0,23**	0,39	0,15	**0,21**	0,37	0,15	**0,21**	0,36	.E..LD
.E..GP	0,29	**0,41**	0,73	0,22	**0,31**	0,54	0,19	**0,27**	0,47	0,18	**0,25**	0,44	0,18	**0,25**	0,43	.E..GP
.E..GN	0,35	**0,55**	0,97	0,26	**0,41**	0,73	0,23	**0,36**	0,63	0,21	**0,34**	0,59	0,21	**0,33**	0,58	.E..GN
.E..HC	0,35	**0,69**	1,22	0,26	**0,52**	0,91	0,23	**0,45**	0,79	0,21	**0,42**	0,74	0,21	**0,41**	0,72	.E..HC

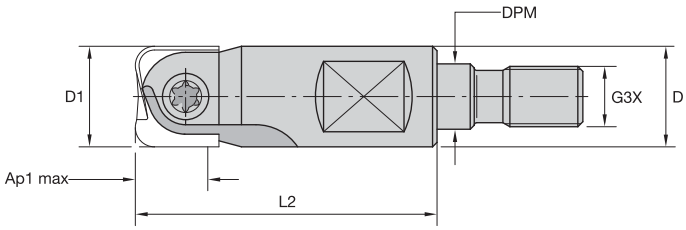
At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	0,34	**0,48**	0,85	0,25	**0,36**	0,63	0,22	**0,31**	0,55	0,21	**0,29**	0,51	0,20	**0,29**	0,50	.E..LD
.E..GP	0,41	**0,58**	1,02	0,31	**0,43**	0,76	0,27	**0,38**	0,66	0,25	**0,35**	0,62	0,24	**0,34**	0,60	.E..GP
.E..GN	0,49	**0,77**	1,36	0,37	**0,58**	1,01	0,32	**0,50**	0,88	0,30	**0,47**	0,82	0,29	**0,46**	0,80	.E..GN
.E..HC	0,49	**0,97**	1,71	0,37	**0,72**	1,26	0,32	**0,63**	1,10	0,30	**0,59**	1,03	0,29	**0,57**	1,01	.E..HC

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Available diameters: 12–20mm.
- High precision and runout accuracy.
- Suitable for roughing and finishing operations.
- Works with toroidal and high-feed inserts.







Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	Ap1 max	Z	Z U	max ramp angle	max RPM	insert 1
1918665	**KDMT12R028M08SN**	12	13	8,5	M8	28	3,0	1	2	3.0°	40000	KDM.12..
1918666	**KDMT16R028M08SN**	16	13	8,5	M8	28	4,0	1	2	3.0°	40000	KDM.16..
1918667	**KDMT20R032M10SN**	20	18	10,5	M10	32	5,0	1	2	3.0°	40000	KDM.20..

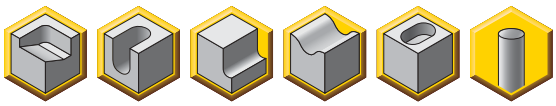
Spare Parts

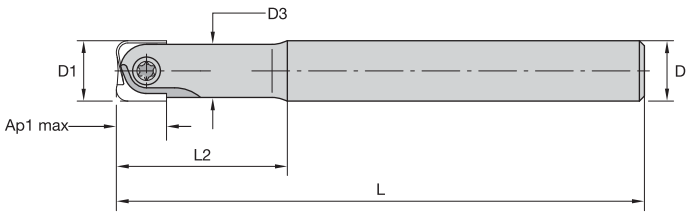




D1	insert screw	Nm	Torx wrench
12	**193.393**	4,0	**KT20**
16	**193.392**	5,0	**KT20**
20	**193.391**	6,0	**KT20**

- Available diameters: 12–25mm.
- High precision and runout accuracy.
- Can be used with the heat shrink technology, h6 shank tolerance.
- Suitable for roughing and finishing operations.
- Works with toroidal and high-feed inserts.







Necked End Mills • Cylindrical Shank • Steel

order number	catalogue number	D1	D	D3	L	L2	Ap1 max	Z	Z U	max ramp angle	max RPM	insert 1
1918690	**KDMT12R130A12SN**	12	12	11	132	34	3,0	1	2	3.0°	40000	KDM.12..
1918691	**KDMT12R150A12SN**	12	12	11	152	48	3,0	1	2	3.0°	40000	KDM.12..
1918692	**KDMT16R140A16SN**	16	16	14	142	40	4,0	1	2	3.0°	40000	KDM.16..
1918693	**KDMT16R160A16SN**	16	16	14	162	57	4,0	1	2	3.0°	40000	KDM.16..
1918694	**KDMT20R160A20SN**	20	20	18	162	47	5,0	1	2	3.0°	40000	KDM.20..
1918695	**KDMT20R175A20SN**	20	20	18	177	63	5,0	1	2	3.0°	40000	KDM.20..
1918697	**KDMT25R190A25SN**	25	25	22	192	72	6,0	1	2	3.0°	40000	KDM.25..
1918699	**KDMT32R210A32SN**	32	32	29	212	82	8,0	1	2	3.0°	40000	KDM.32..

Spare Parts



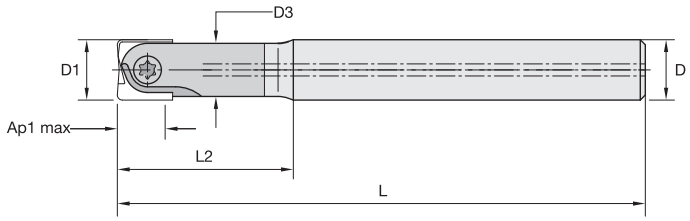




D1	insert screw	Nm	Torx wrench
12	**193.393**	4,0	**KT20**
16	**193.392**	5,0	**KT20**
20	**193.391**	6,0	**KT20**
25	**193.390**	6,5	**KT30**
32	**193.389**	6,5	**KT30**

- Suitable for roughing and finishing operations.
- High precision and runout accuracy.
- Can be used with the heat shrink technology, h6 shank tolerance.
- Works with toroidal and high-feed inserts.
- Available diameters: 10–20mm.







Necked End Mills • Carbide Shank with Through Coolant

order number	catalogue number	D1	D	D3	L	L2	Ap1 max	Z	Z U	max ramp angle	max RPM	insert 1
3964255	**KDMT10R120A10HNC**	10	10	9	122	37	2,5	1	2	3.0°	40000	KDM.10..
3964256	**KDMT10R150A10HNC**	10	10	9	152	52	2,5	1	2	3.0°	40000	KDM.10..
2877384	**KDMT12R120A12HNC**	12	12	11	122	37	3,0	1	2	3.0°	40000	KDM.12..
2877385	**KDMT12R160A12HNC**	12	12	11	162	52	3,0	1	2	3.0°	40000	KDM.12..
2877386	**KDMT16R140A16HNC**	16	16	14	142	42	4,0	1	2	3.0°	40000	KDM.16..
2877387	**KDMT16R175A16HNC**	16	16	14	177	57	4,0	1	2	3.0°	40000	KDM.16..
2877388	**KDMT20R140A20HNC**	20	20	18	142	52	5,0	1	2	3.0°	40000	KDM.20..
2877389	**KDMT20R190A20HNC**	20	20	18	192	77	5,0	1	2	3.0°	40000	KDM.20..

Spare Parts

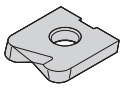


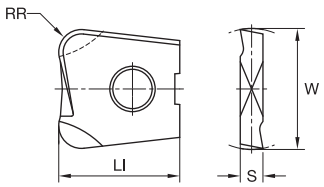


D1	insert screw	Nm	Torx wrench
10	**193.394**	3,0	**KT15**
12	**193.393**	4,0	**KT20**
16	**193.392**	5,0	**KT20**
20	**193.391**	6,0	**KT20**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GC	KC515M	**.E..GC**	**KC515M**	.E..GN	KC515M
P3–P4	.E..HC	KC505M	**.E..GN**	**KC515M**	.E..GN	KC515M
P5–P6	.E..HC	KC505M	**.E..GN**	**KC515M**	.E..GN	KC515M
M1–M2	–	–	**.E..GC**	**KC515M**	–	–
M3	–	–	**.E..GC**	**KC515M**	–	–
K1–K2	.E..GN	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
K3	.E..GN	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	–	–	**.E..GC**	**KC515M**	–	–
H1	.E..HC	KC505M	**.E..HC**	**KC505M**	.E..GN	KC515M


KDMS-GN



KDMS-GN

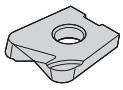
● first choice
○ alternate choice

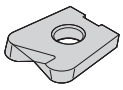
P ● M ○ K ● N S H ●

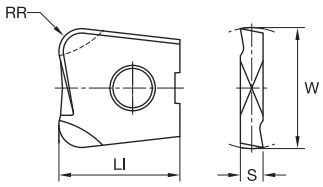
KDMS-GN • Precision Insert • 90° Capabilities

catalogue number	LI	S	W	RR	hm	KC515M
KDMS0806ERGN	9,50	2,00	8,00	0,60	0,08	●
KDMS1008ERGN	11,50	2,50	10,00	0,80	0,08	●
KDMS1210ERGN	14,00	2,50	12,00	1,00	0,08	●
KDMS1613ERGN	16,00	3,00	16,00	1,30	0,08	●
KDMS2016ERGN	18,00	3,00	20,00	1,60	0,08	●
KDMS3220ERGN	28,00	5,00	32,00	2,00	0,08	●

NOTE: Ap1 max is equal to LI.
Insert diameter 6mm and 8mm use KDMB™ holder type. See pages V111–V115.


KDMT-GC


KDMT-GN



KDMT-GC
KDMT-GN

● first choice
○ alternate choice

P		●
M		○
K		●
N		
S		
H		●

KDMT-GC • High-Tolerance Helical Geometry • Finishing Lower Cutting Force

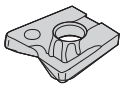
catalogue number	LI	S	W	RR	hm	KC515M
KDMT0605ERGC	8,00	1,60	6,00	0,50	0,05	●
KDMT0810ERGC	9,50	2,00	8,00	1,00	0,05	●
KDMT1010ERGC	11,50	2,50	10,00	1,00	0,05	●
KDMT1210ERGC	14,00	2,50	12,00	1,00	0,08	●
KDMT1610ERGC	16,00	3,00	16,00	1,00	0,08	●
KDMT2010ERGC	18,00	3,00	20,00	1,00	0,08	●
KDMT2510ERGC	23,50	4,00	25,00	1,00	0,08	●

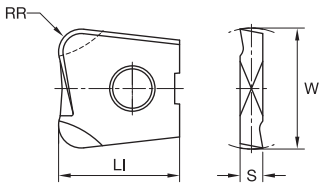
NOTE: Ap1 max is equal to RR.
Insert diameter 6mm and 8mm use KDMB™ holder type. See pages V111–V115.

KDMT-GN • High-Precision Insert • Semi-Finishing and Finishing

catalogue number	LI	S	W	RR	hm	KC515M
KDMT0806ERGN	9,50	2,00	8,00	0,60	0,07	●
KDMT1008ERGN	11,50	2,50	10,00	0,80	0,07	●
KDMT1210ERGN	14,00	2,50	12,00	1,00	0,08	●
KDMT1220ERGN	14,00	2,50	12,00	2,00	0,08	●
KDMT1610ERGN	16,00	3,00	16,00	1,00	0,08	●
KDMT1630ERGN	16,00	3,00	16,00	3,00	0,08	●
KDMT2010ERGN	18,00	3,00	20,00	1,00	0,08	●
KDMT2040ERGN	18,00	3,00	20,00	4,00	0,08	●
KDMT2510ERGN	23,50	4,00	25,00	1,00	0,08	●

NOTE: Ap1 max is equal to RR.
Insert diameter 6mm and 8mm use KDMB holder type. See pages V111–V115.


KDMT-HC



KDMT-HC

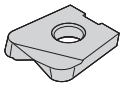
● first choice
○ alternate choice

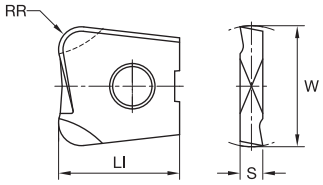
P		●	●	●
M		○	○	○
K		●	○	●
N				
S				
H		○	●	●

KDMT-HC • New Geometry for Semi-Finishing and Finishing with Coolant and Air Flow Grooves

catalogue number	LI	S	W	RR	hm	K115M	KC505M	KC515M
KDMT1010ERHC	11,50	2,50	10,00	1,00	0,10	–	●	–
KDMT1210ERHC	14,00	2,50	12,00	1,00	0,10	–	●	–
KDMT1610ERHC	16,00	3,00	16,00	1,00	0,10	–	●	–
KDMT2010ERHC	18,00	3,00	20,00	1,00	0,10	–	●	–

NOTE: Ap1 max is equal to RR.
Insert diameter 6mm and 8mm use KDMB™ holder type. See pages V111–V115.


KDMT-HF



KDMT-HF

KDMT-HF • Geometry Developed for High-Feed Machining up to 55 HRC

catalogue number	LI	S	W	RT	hm	K115M	KC505M	KC515M
KDMT0604SRHF	8,00	1,60	6,00	0,80	0,08	–	–	●
KDMT0806SRHF	9,50	2,00	8,00	1,00	0,08	–	–	●
KDMT1008SRHF	11,50	2,50	10,00	1,00	0,08	●	–	●
KDMT1210SRHF	14,00	2,50	12,00	1,00	0,08	●	–	●
KDMT1615SRHF	16,00	3,00	16,00	1,50	0,08	●	–	●
KDMT2020SRHF	18,00	3,00	20,00	2,00	0,08	●	–	●

NOTE: RT= Programming Radius
Inset diameter 6mm and 8mm use KDMB holder type. See pages V111–V115.

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

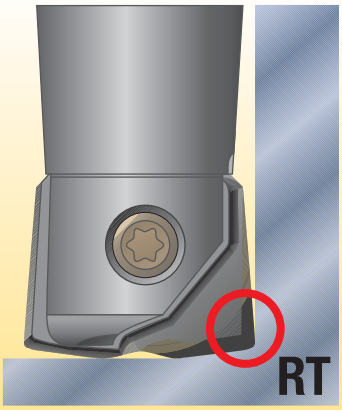
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..GC	0,12	**0,25**	0,34	0,09	**0,19**	0,25	0,08	**0,17**	0,22	0,07	**0,16**	0,21	0,07	**0,15**	0,20	.E..GC
.E..GN	0,17	**0,25**	0,34	0,12	**0,19**	0,25	0,11	**0,17**	0,22	0,10	**0,16**	0,21	0,10	**0,15**	0,20	.E..GN
.E..HC	0,17	**0,25**	0,34	0,13	**0,19**	0,25	0,11	**0,17**	0,22	0,10	**0,16**	0,21	0,10	**0,15**	0,20	.E..HC

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Advice for KDMT-HF Insert Style

For CAM programming, the tools can be programmed as a toroidal tool type requiring the diameter and the RT values only.

insert type	metric			
	Ap max	diameter	RT	max fz
KDMT0604SRHF	0,4	6	0,8	1
KDMT0806SRHF	0,5	8	1	1,3
KDMT1008SRHF	0,5	10	1	1,3
KDMT1210SRHF	0,6	12	1	1,3
KDMT1615SRHF	0,8	16	1,5	1,5
KDMT2020SRHF	1	20	2	1,5



Data for Face Milling, Pocketing, and Profiling Operations

Starting Values

tool diameter	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
Ap max (mm)	0,4	0,5	0,5	0,6	0,8	1
fz recommended for 45 HRC (approximately)	0,4	0,45	0,45	0,5	0,55	0,65
fz recommended for 55 HRC (approximately)	0,3	0,35	0,35	0,4	0,5	0,55
fz recommended for general purpose	0,5	0,55	0,55	0,65	0,7	0,8

NOTE: Use two effective teeth for feed calculations.
For materials above 45 HRC, we recommend to adjust the Ae max to 55% of cutting diameter.
Steel shanks for roughing operations are recommended.

Proven Solutions:

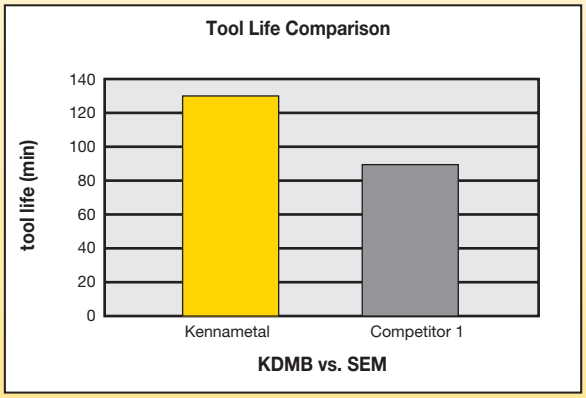
KDMB™ Indexable Milling Cutter vs. Solid Carbide End Mills

1.

Workpiece:
Forging die
Material:
X38 CrMoV 5 3 (1.2367)
Size:
154mm x 115mm x 80mm
Machine:
Vertical milling machine centre

Kennametal
Tool: KDMB06R100A06HN
Insert: KDMB06M0ERGN KC505M
Competitor 1
Solid Carbide End Mill
Ø 6 R3





Cutting data:
vc = 250 m/min (825 SFM)
Ap = 0,28mm (.099")
ae = 1,32mm (.052")
fz = 0,131mm (.0052")

Superior Productivity:
Higher tool life and cost per piece

2.

Workpiece:
Pressing die component
Material:
1.2479 (D2)
Size:
410mm x 320mm x 210mm
Machine:
Vertical milling machine

Kennametal
Tool: KDMB06R100A06HN
Insert: KDMB06M0ERGP KC515M
Competitor 1
Solid Carbide End Mill
Ø 6 R3

Cost Performance Ratio:
Costs for diameter 6mm
MMC:
solid carbide end mill +
2 x regrinding
Reference: 100%
KMT:
3 x inserts +
3 x toolholder share:
Cost savings: 31.15%



Z-Axis Plunge Mill

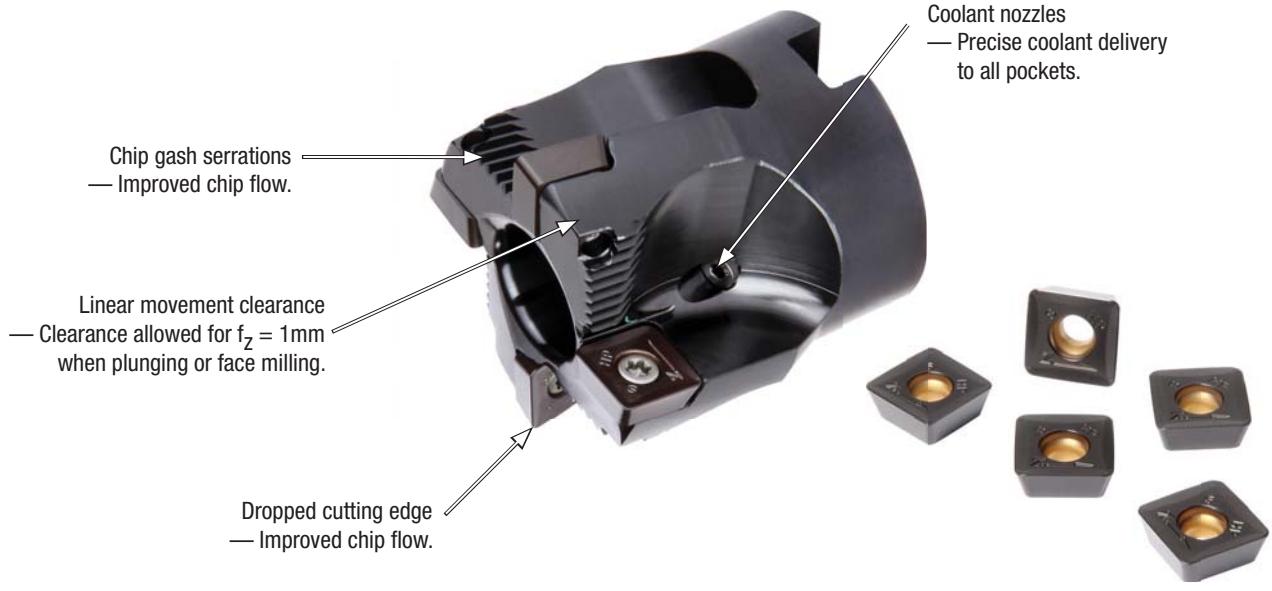
Primary Application

Specifically engineered to eliminate vibration and improve metal removal rates in roughing applications. Ideally suited for rough slotting applications in aerospace, general engineering, die and mould, and power generation.

Features and Benefits

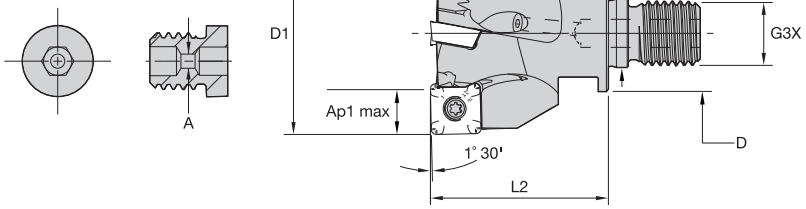
Platform Features

- Nine coolant nozzle sizes enable customised flow by machine tool.
- Unique design is unmatched for chip evacuation.
- Improved performance at a reduced cost per cutting edge.
- Positive geometry lowers cutting force and reduces power requirements, enabling higher feed rates.
- Improved chip control when slotting.
- Fast and easy insert indexing.



- Most stable cutting due to force directions.
- Excellent for long reach applications.
- Extended tool life.
- Suitable for a wide variety of workpiece materials.
- Up to 11mm stepover.
- Unique coolant delivery.
- Chip control when slotting.







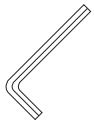
Screw-On End Mills

order number	catalogue number	D1	D	DPM	G3X	L2	Ap1 max	Z	kg	max RPM	insert 1
3111542	**32M2R050M16SSD12PL**	32	29	17,0	M16	50	11,0	2	0,17	25690	SD_T12_PD_N__Z
3064110	**40M3R050M16SSD12PL**	40	29	17,0	M16	50	11,0	3	0,23	22980	SD_T12_PD_N__Z

Spare Parts







D1	insert screw	Nm	Torx Plus driver	coolant nozzle screw	T-handle hex wrench
32	**MS2197**	4,0	**DT15IP**	**MS2191C20**	**THW2M**
40	**MS2197**	4,0	**DT15IP**	**MS2191C20**	**THW2M**

Coolant Screw Detail

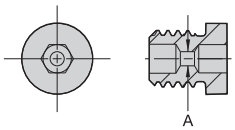
order number	catalogue number	A
3400611	**MS2191C00**	**–**
3400612	**MS2191C06**	**0,600**
3400613	**MS2191C08**	**0,800**
3400616	**MS2191C12**	**1,200**
3400617	**MS2191C14**	**1,400**
3400618	**MS2191C16**	**1,600**
3400619	**MS2191C18**	**1,800**
3400620	**MS2191C20**	**2,000**

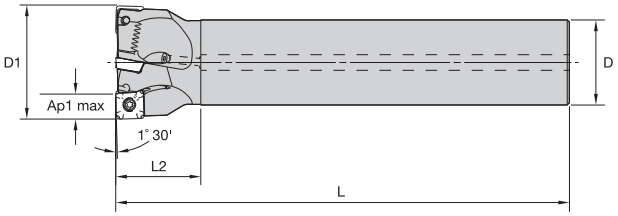
Coolant Nozzle Key

order number	catalogue number	drive size
1993552	**THW2M**	2 MM

NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a 1,20mm hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter, which gives flexibility with coolant flow.

- Most stable cutting due to force directions.
- Excellent for long reach applications.
- Extended tool life.
- Suitable for a wide variety of workpiece materials.
- Up to 11mm stepover.
- Unique coolant delivery.
- Chip control when slotting.





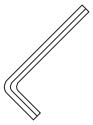


End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	kg	max RPM	insert 1
3402143	**32M2R040A25SSD12PL**	32	25	200	40	11,0	2	0,69	25690	SD_T1204_PD_N_Z
3402144	**40M3R040A32SSD12PL**	40	32	200	40	11,0	3	1,14	22980	SD_T1204_PD_N_Z

Spare Parts



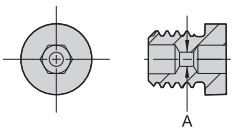

D1	insert screw	Nm	Torx Plus driver	T-handle hex wrench	coolant nozzle screw
32	**MS2197**	4,0	**DT15IP**	**THW2M**	**MS2191C20**
40	**MS2197**	4,0	**DT15IP**	**THW2M**	**MS2191C20**

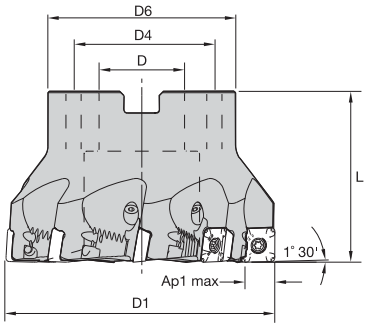
Coolant Screw Detail

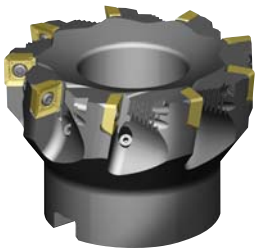
order number	catalogue number	A
3400611	**MS2191C00**	–
3400612	**MS2191C06**	0,600
3400613	**MS2191C08**	0,800
3400616	**MS2191C12**	1,200
3400617	**MS2191C14**	1,400
3400618	**MS2191C16**	1,600
3400619	**MS2191C18**	1,800
3400620	**MS2191C20**	2,000

NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a 1,20mm hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter, which gives flexibility with coolant flow.

- Most stable cutting due to force directions.
- Excellent for long reach applications.
- Extended tool life.
- Suitable for a wide variety of workpiece materials.
- Up to 11mm stepover.
- Unique coolant delivery.
- Chip control when slotting.



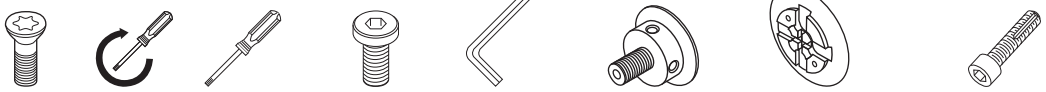




Shell Mills

order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	kg	max RPM	insert 1
3873438	50A05RS90SD12PLHF	27	22	–	40	50	3,0	5	0,3	20600	SD_T1204PD_R___
3873464	52A05RS90SD12PLHF	29	22	–	50	50	3,0	5	0,4	20000	SD_T1204PD_R___
3873467	63A06RS90SD12PLHF	40	22	–	50	50	3,0	6	0,5	18300	SD_T1204PD_R___
3873469	66A06RS90SD12PLHF	43	27	–	60	50	3,0	6	0,7	17900	SD_T1204PD_R___
3055230	50A04RS90SD12PL	50	22	–	42	50	11,0	4	0,3	20600	SD_T1204PD_N__Z
3063843	50A05RS90SD12PL	50	22	–	42	50	11,0	5	0,4	20600	SD_T1204PD_N__Z
3873520	80A07RS90SD12PLHF	57	27	–	60	50	3,0	7	0,9	16300	SD_T1204PD_R___
3120265	63A05RS90SD12PL	63	22	–	50	50	11,0	5	0,5	18300	SD_T1204PD_N__Z
3120266	63A06RS90SD12PL	63	22	–	50	50	11,0	6	0,6	18300	SD_T1204PD_N__Z
3950653	100A08RS90SD12PL-HF	77	32	–	60	50	3,0	8	1,3	14600	SD_T1204PD_R___
3120267	80A05RS90SD12PL	80	27	–	60	50	11,0	5	1,0	16300	SD_T1204PD_N__Z
3120268	80A06RS90SD12PL	80	27	–	60	50	11,0	6	1,0	16300	SD_T1204PD_N__Z
3120269	80A07RS90SD12PL	80	27	–	60	50	11,0	7	1,0	16300	SD_T1204PD_N__Z
3120270	100B07RS90SD12PL	100	32	–	80	63	11,0	7	2,1	14600	SD_T1204PD_N__Z
3120574	125B09RS90SD12PL	125	40	–	90	63	11,0	9	3,1	13000	SD_T1204PD_N__Z
3120577	160C10RS90SD12PL	160	40	67	90	63	11,0	10	3,2	11500	SD_T1204PD_N__Z

Spare Parts



order number	D1	insert screw	Nm	Torx Plus driver	coolant nozzle screw	T-handle hex wrench	coolant lock screw assembly	coolant shower plate assembly	socket-head cap screw with coolant groove
3873438	27	MS2077	4,0	DT15IP	–	–	–	–	MS2072CG
3873464	29	MS2077	–	DT15IP	–	–	–	–	MS2072CG
3873467	40	MS2077	–	DT15IP	–	THW2M	–	–	MS2072CG
3873469	43	MS2077	–	DT15IP	MS2191C20	THW2M	–	–	MS2038CG
3055230	50	MS2197	4,0	DT15IP	MS2191C12	THW2M	–	–	MS1242CG
3063843	50	MS2197	4,0	DT15IP	MS2191C12	THW2M	–	–	MS1242CG
3873520	57	MS2077	–	DT15IP	–	THW2M	–	–	MS2038CG
3120265	63	MS2197	4,0	DT15IP	MS2191C12	THW2M	–	–	MS1242CG
3120266	63	MS2197	4,0	DT15IP	–	THW2M	–	–	MS1242CG
3950653	77	MS2077	–	DT15IP	–	THW2M	–	–	–
3120267	80	MS2197	4,0	DT15IP	MS2191C12	THW2M	–	–	MS2038CG
3120268	80	MS2197	4,0	DT15IP	MS2191C12	THW2M	–	–	MS2038CG
3120269	80	MS2197	4,0	DT15IP	–	THW2M	–	–	MS2038CG
3120270	100	MS2197	4,0	DT15IP	–	THW2M	MS2189C	–	–
3120574	125	MS2197	4,0	DT15IP	–	THW2M	MS2187C	–	–
3120577	160	MS2197	4,0	DT15IP	MS2191C20	THW2M	–	MCCM16001	–

NOTE: For coolant shower plates (MCC..), only use low-pressure coolant.

(continued)

(continued)

Coolant Screw Detail

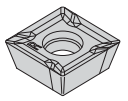
order number	catalogue number	A
3400611	**MS2191C00**	—
3400612	**MS2191C06**	0,600
3400613	**MS2191C08**	0,800
3400616	**MS2191C12**	1,200
3400617	**MS2191C14**	1,400
3400618	**MS2191C16**	1,600
3400619	**MS2191C18**	1,800
3400620	**MS2191C20**	2,000

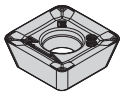
NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a 1,20mm hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter, which gives flexibility with coolant flow.

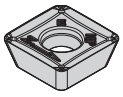
Inserts

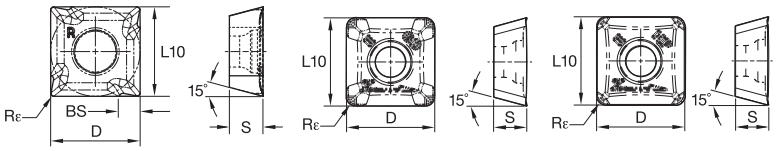
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GDZ	KC725M	**.S..GDZ**	**KC725M**	.E..HPZ	KC725M
P3–P4	.S..GDZ	KCPK30	**.E..HPZ**	**KCPK30**	.S..HPZ	KCPK30
P5–P6	.S..GDZ	KCPK30	**–**	**–**	–	–
M1–M2	.E..GDZ	KC725M	**.S..GDZ**	**KC725M**	.E..HPZ	KC725M
M3	.S..GDZ	KCPK30	**.E..HPZ**	**KCPK30**	.S..HPZ	KCPK30
K1–K2	.E..GDZ	KCPK30	**.S..GDZ**	**KCPK30**	.E..HPZ	KCPK30
K3	.S..GDZ	KCPK30	**.E..HPZ**	**KCPK30**	.S..HPZ	KCPK30
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	–	–	**–**	**–**	–	–
S1–S2	.E..GDZ	KC725M	**.S..GDZ**	**KC725M**	.E..HPZ	KC725M
S3	.S..GDZ	KC725M	**.E..HPZ**	**KC725M**	.S..HPZ	KC725M
S4	.E..HPZ	KC725M	**.S..HPZ**	**KC725M**	–	–
H1	–	–	**–**	**–**	–	–


SDCT-LE


SDET-GDZ


SDPT-HPZ



● first choice
○ alternate choice

P		○		●		●	●		
M		●	●	●		○	○	○	
K		○			●	○			
N	●								
S		●	●	●					●
H									

- High positive rake insert.

SDCT-LE

catalogue number	D	S	BS	L10	Rε	hm	cutting edges	KC410M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
SDCT120404PDFLLE	12,70	4,76	2,70	12,70	0,4	0,02	4	●	–	–	–	–	–	–	–
SDCT120404PDFRLE	12,70	4,76	2,70	12,70	0,4	0,02	4	●	–	–	–	–	–	–	–
SDCT120412PDFLLE	12,70	4,76	2,70	12,70	1,2	0,02	4	●	–	–	–	–	–	–	–
SDCT120412PDFRLE	12,70	4,76	2,70	12,70	1,2	0,02	4	●	–	–	–	–	–	–	–
SDCT120416FNLE	12,70	4,76	–	12,70	1,6	0,02	4	●	–	–	–	–	–	–	–
SDCT120420FNLE	12,70	4,76	–	12,70	2,0	0,02	4	●	–	–	–	–	–	–	–
SDCT120424FNLE	12,70	4,76	–	12,70	2,4	0,02	4	●	–	–	–	–	–	–	–
SDCT120432FNLE	12,70	4,76	–	12,70	3,2	0,02	4	●	–	–	–	–	–	–	–
SDCT1204PDFLLE	12,70	4,76	2,70	12,70	0,8	0,02	4	●	–	–	–	–	–	–	–
SDCT1204PDFRLE	12,70	4,76	2,70	12,70	0,8	0,02	4	●	–	–	–	–	–	–	–

- Precision ground insert.

SDET-GDZ

catalogue number	D	S	BS	L10	Rε	hm	cutting edges	KC410M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
SDET120412PDENGDZ	12,70	4,76	–	12,70	1,2	0,06	4	–	–	–	●	–	●	●	–
SDET120412PDSNGDZ	12,70	4,76	–	12,70	1,2	0,13	4	–	●	–	●	–	●	●	–

- Pressed-to-size insert.

SDPT-HPZ

catalogue number	D	S	BS	L10	Rε	hm	cutting edges	KC410M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
SDPT120412PDENHPZ	12,70	4,76	–	12,70	1,2	0,08	4	–	–	–	●	–	●	●	–
SDPT120412PDSNHPZ	12,70	4,76	–	12,70	1,2	0,15	4	–	–	–	●	–	●	●	–

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.F..LE	–	–	–	–	–	–	–	–	–	–	–	–	0,05	**0,10**	0,20	.F..LE
.E..GDZ	–	–	–	–	–	–	–	–	–	–	–	–	0,09	**0,25**	0,41	.E..GDZ
.S..GDZ	–	–	–	–	–	–	–	–	–	–	–	–	0,10	**0,25**	0,41	.S..GDZ
.E..HPZ	–	–	–	–	–	–	–	–	–	–	–	–	0,10	**0,25**	0,41	.E..HPZ
.S..HPZ	–	–	–	–	–	–	–	–	–	–	–	–	0,10	**0,25**	0,41	.S..HPZ

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Z-Axis

Best Machining Practices

When finishing a workpiece, you sometimes have to use a Z-axis solution versus a conventional end mill solution to get the best results.

When the length-to-diameter ratio protrudes farther than 3:1, you will need to use a Z-axis solution. This is when the end mill starts to vibrate and the surface finish and noise are unacceptable.

When vibration occurs, the feed rates are compromised, which normally slows down the production of the workpiece.

Programming

At this point, there is very little software for this type of application on the market. We suggest that a simple macro is created for this type of application, which can be recalled and the “X” and “Y” movement changed.

The process can be repeated, so the cutter can be removed from the workpiece in the rapid (G00) movement. Tool life will be improved by not allowing the insert to rub on the retract path.

Slotting

There are several differing ways to machine a slot in a component using the Z-axis cutter solution.

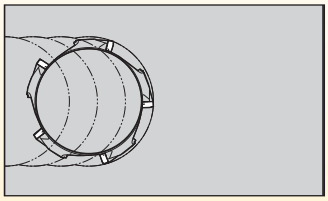


Figure 1

This shows the typical way of machining a slot. The movements are feeding down and straight back up (Z+) in the same axis and will have a negative impact on the insert radii (cutting edge) that could lead to premature failure of the nose radii. When looking at the component, it will show the rapid travel in the Z+ direction. This will highlight the spiral of the insert/cutter operating at a high feed. It looks similar to an oil groove spiralling upwards.

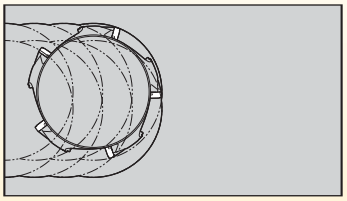


Figure 2

Using a cutter that is smaller than the slot width allows the insert/cutter to be removed from the material when (G00) rapid motion is retracting from the component. Because this type of cutter can be used across various types of machines, assume a 50mm (2.00") diameter cutter is being used to machine a slot of 63mm (2.50") wide on a vertical 3-axis machine.

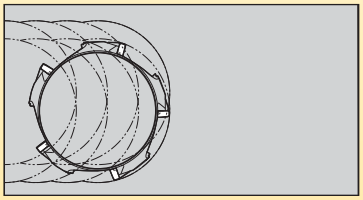


Figure 3

Align the cutter with the centre of the slot on the component and define the stepover that’s required. Move the Y-axis into a position for the first cut, take the first pass to a depth in the Z-axis, and when it reaches the bottom of the slot, programme a 2-axis move to retract the cutting edge for the workpiece.

The 2-axis move will move the Z-axis in a positive direction at 45° (.010") away from the component, and the Y-axis will move away from the workpiece by the same amount at the same angle. Now the cutter can be retracted from the component, and the insert will not rub on the retract move.

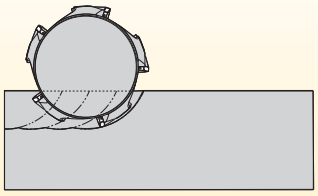
Move the cutter to the left of the slot to define the new position and make the cut. When reaching the base, a 3-axis move will need to be made. Again, the Z-axis will be in a positive direction at 45° (.010"), and the corresponding Y-axis will move away the same respective amount from the wall.

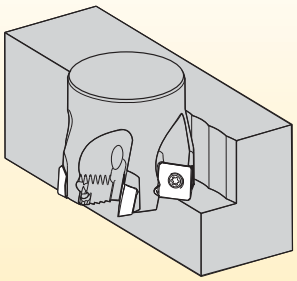
The insert/cutter has now moved away from the workpiece, and the rapid Z+ can take place. Repeat the process on the other side of the slot, remembering the X-axis move needs to be moving the other way.

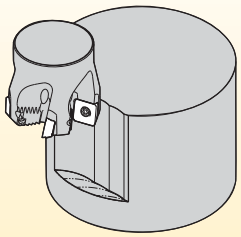
NOTE: When starting the process, it’s better to start at the centre of the slot. After the slot has been defined, you no longer need to put the cutter on the centre path. Passes from both sides create the slot width and enable clearance for the subsequent moves, so the insert/cutter can be moved away from the side walls of the material.

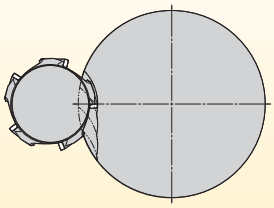
(continued)

Z-Axis *(continued)*









Linear Plunge Milling

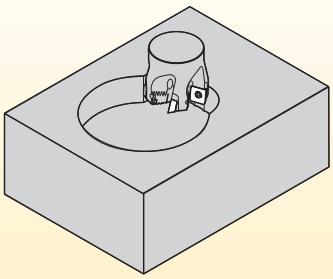
Entering the cutter along a parallel axis, the radial width of cut needs to be defined because the cutter might need to move away from the workpiece material.

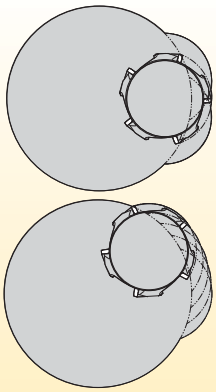
If the radial width of cut takes more than 60% of the cutter diameter, it is more difficult to remove the insert/cutter because the machine programme wants to move the cutter upwards to (G00) Z+. When taking more than 60% of the cutter diameter, the material is enveloping the cutter and is difficult to remove because a cusp has been created.

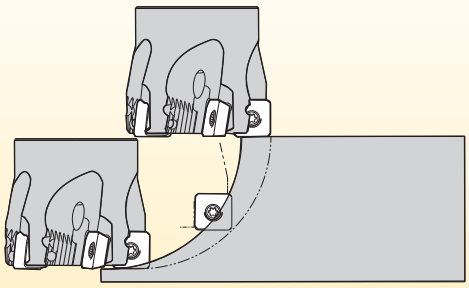
It is suggested to make the radial width of cut 50% of the cutter diameter to allow the insert/cutter to be removed without any problems.

External Profiling

This artwork represents the typical application for this type of process. Move into the cut and follow the external profile of the workpiece. When moving the cutter back to the start position, it's always advisable to move the insert from contacting the workpiece. This should be done with a 2- or 3-axis move (use .010") at 0,25mm. All axes moving in a Z+ direction will stop the rubbing in the retract move.







Internal Profiling

When taking the first pass of a depth, there is also a need to move the insert/cutter away from the material on the retract motion. Each of the passes that follow should adopt the same method on the retract move.

Follow the cutter path until the component has been finished.

Machining Around a Radii

This artwork shows the cutter taking a larger radial width of cut. When moving down in the Z-axis, the insert could start to take a larger radial width of cut. Typical application could be the manufacture of a turbine blade from a rectangular piece of material. Always remember that it's advisable to move the insert/cutter away from the material on the retract motion.

KCRA

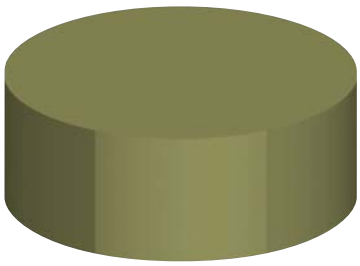
Double-Sided Ceramic Round Insert

KCRA is our newest (patent pending) indexable milling ceramic round platform specifically engineered to maximise productivity while machining high-temperature alloys. Featuring double-sided inserts with increased tooth density, KCRA provides the highest Metal Removal Rate (MRR) with the most effective machining.

Kennametal ceramics dramatically increase your productivity when machining Ni- and Co-based alloys.

Features and Benefits

- First choice for face and shoulder milling of high-temperature alloys.
- Higher metal removal rate due to fine-pitch cutters.
- Secure clamping system improves process stability and reliability.
- Effective air coolant feature. Better chip flow and increased insert tool life.



Flat-top geometry for roughing applications in Ni- and Co-based alloys.

-EGN

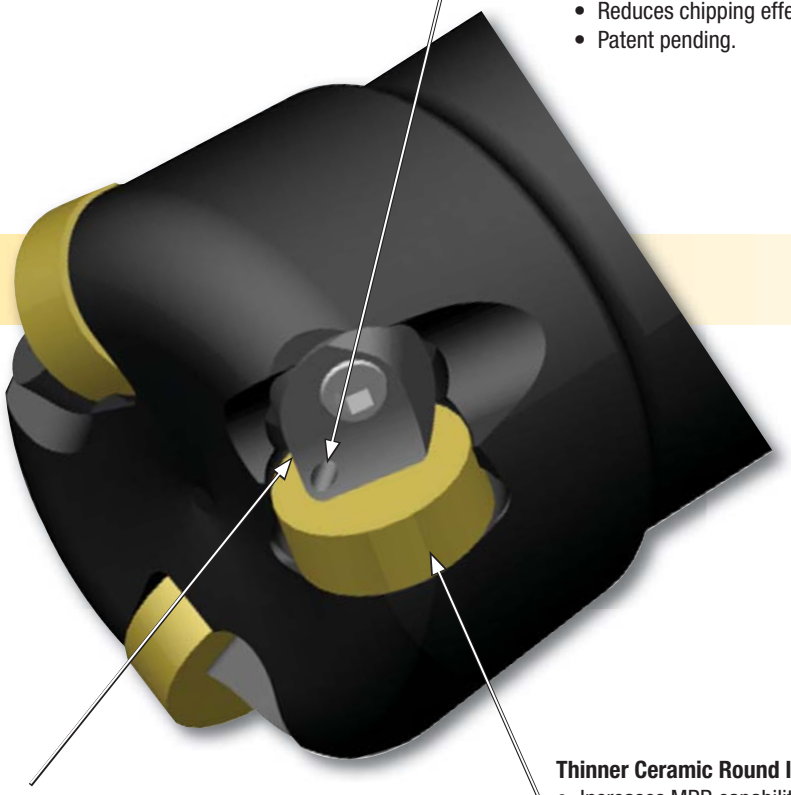
Lower cutting forces.

-TGN

Strongest cutting edge.

*Alternative for unstable situations.

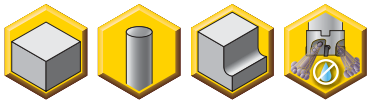
Unique Air Coolant Feature
- Improves chip flow.
- Reduces chipping effect on cutting edges.
- Patent pending.

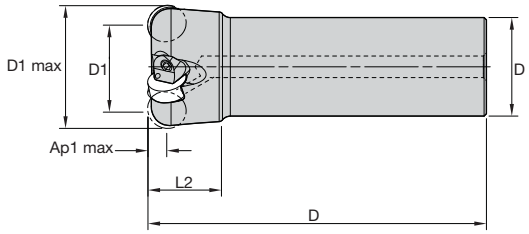


Secure Clamping System
- Improves stability.
- Increases process reliability.
- Facilitates insert change.

Thinner Ceramic Round Inserts
- Increases MRR capabilities.
- Reduces cutting forces.
- Improves cost per edge.

- First choice for face and shoulder milling high-temperature alloys.
- Higher material removal rate due to fine pitch cutters.
- Secure clamping system, improving process stability and reliability.
- Effective air coolant feature. Better chip flow and increased insert tool life.







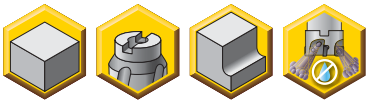
Cylindrical End Mills

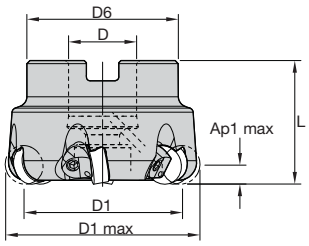
order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z	kg	max RPM	insert 1
5704053	**KCRA40Z03A32RN12**	40	27	32	110	24	6,4	3	0,67	27700	RNGN120400

Spare Parts

D1 max	clamp screw	Nm	hex wrench	wedge
40	**STCM25**	3,3	**MW25**	**KW1008**

- First choice for face and shoulder milling high-temperature alloys.
- Higher material removal rate due to fine pitch cutters.
- Secure clamping system, improving process stability and reliability.
- Effective air coolant feature. Better chip flow and increased insert tool life.







Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	kg	max RPM	insert 1
6002128	KCRA40Z04S22RN12	40	27	22	38	40	6,4	4	0,23	23700	RNGN120400
5704054	KCRA50Z04S22RN12	50	37	22	42	40	6,4	4	0,37	23700	RNGN120400
5704055	KCRA50Z06S22RN12	50	37	22	42	40	6,4	6	0,34	23700	RNGN120400
5704056	KCRA63Z06S22RN12	63	50	22	49	40	6,4	6	0,59	20400	RNGN120400
5704057	KCRA63Z09S22RN12	63	50	22	49	40	6,4	9	0,56	20400	RNGN120400
5704058	KCRA80Z08S27RN12	80	67	27	60	50	6,4	8	1,19	17600	RNGN120400

Spare Parts








D1 max	socket-head cap screw	mounting screw	clamp screw	Nm	hex wrench	wedge
40	–	KLSSM22-39-CG	STCM25	3,3	MW25	KW1008
50	MS1242	–	STCM25	3,3	MW25	KW1008
63	MS1242	–	STCM25	3,3	MW25	KW1008
80	MS1556	–	STCM25	3,3	MW25	KW1008

Insert Selection Guide

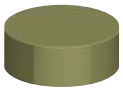
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.EGN	KYS30	**.EGN**	**KYS30**	.TGN	KYS30
S3	.EGN	KYSP30	**.EGN**	**KYSP30**	.TGN	KYSP30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

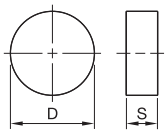
Indexable Inserts

- –EGN geometry is the first choice for unstable situations and/or lower cutting forces.
- –TGN geometry has a stronger cutting edge.
- Use KYSP30 as first choice for S3 group materials, Ni-based alloys.

● first choice
○ alternate choice

P		
M		
K		
N		
S	●	●
H		


RNGN1204



RNGN1204

RNGN1204

catalogue number	D	S	KYS30	KYSP30
RNGN120400EGN	12,70	4,76	●	●
RNGN120400TGN	12,70	4,76	●	●

NOTE: A — Use these tools with the appropriate equipment/machines. Machines have to be covered for safety reasons: Hot flowing chips and loud noises are involved, which is common during the milling process.
B — Use only air flow as coolant method.
C — Higher RPMs are involved; use balanced toolholder for higher tool life and safer operation.

Copy Milling

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 6,35 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	0,08	0,09	0,11	0,06	0,07	0,09	0,06	0,06	0,07	0,05	0,06	0,07	0,05	0,06	0,07	.EGN
.TGN	0,13	0,17	0,19	0,09	0,13	0,14	0,08	0,11	0,13	0,08	0,10	0,12	0,08	0,10	0,12	.TGN

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	0,10	0,11	0,13	0,07	0,08	0,10	0,07	0,07	0,09	0,06	0,07	0,08	0,06	0,07	0,08	.EGN
.TGN	0,15	0,20	0,23	0,11	0,15	0,17	0,10	0,13	0,15	0,09	0,12	0,14	0,09	0,12	0,14	.TGN

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	0,13	0,14	0,18	0,10	0,11	0,13	0,09	0,09	0,12	0,08	0,09	0,11	0,08	0,09	0,11	.EGN
.TGN	0,19	0,26	0,30	0,15	0,19	0,22	0,13	0,17	0,19	0,12	0,16	0,18	0,12	0,15	0,18	.TGN

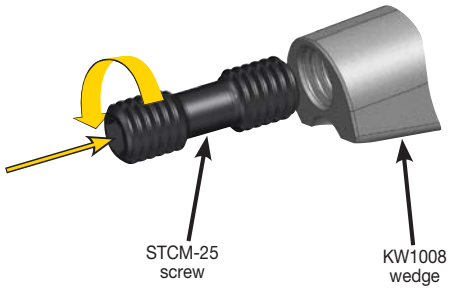
At 0,75 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	0,18	0,20	0,24	0,13	0,15	0,18	0,12	0,13	0,16	0,11	0,12	0,15	0,11	0,12	0,14	.EGN
.TGN	0,27	0,36	0,41	0,20	0,27	0,31	0,17	0,23	0,27	0,16	0,22	0,25	0,16	0,21	0,24	.TGN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Insert Assembly Guide

Safety Notes					
					
Read all instructions carefully	Wear eye protection	Inspect and tighten fasteners regularly	Warning: Cutting hazard	Warning: Hot surfaces	Do not exceed maximum RPM

Assembly Instructions	
1 Assemble STCM-25 screw to KW1008 wedge, 1 to 1 1/2 turns.	**2** Wedge/screw assembly.
	
3 Install wedge/screw assembly into cutter body, but maintain assembly gap for installing insert.	**4** Slide insert, RNGN12... into pocket and torque wedge/insert assembly to 3,5 Nm (31 in/lbs). Repeat for each pocket.
	

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**

KIPR™

Ceramic Milling Cutters

Primary Application

The Kennametal ceramic milling platform has been specifically engineered to machine high-temperature alloys, PH series, stainless steel, and hardened materials. With excellent productivity through the massive reduction of machining time, Kennametal ceramics can run more than 10 times faster than comparable carbide grades.



Features and Benefits

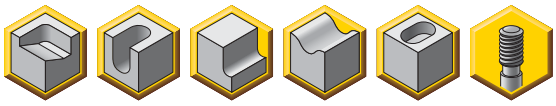
Unbeatable Productivity

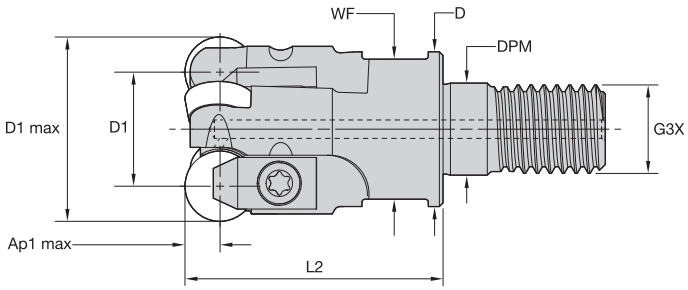
- Engineering to provide outstanding metal removal rates and productivity in nickel-based and/or cobalt-based alloys, stellites, stainless steel, and PH series through HSM.
- High axial and radial runout accuracy.
- Improved insert clearance and thickness tolerance to increase overall performance.
- New clamping system design provides higher spare part tool life and reliability and higher RPM.

Usability and Offering

- Three grades and three insert sizes available to cover a wide range of applications.
- Wide diameter range with end mills and Screw-On cutters from diameter 16mm.
- High clearance on the cutters for superior ramping capacities.
- Through-coolant option in all the cutters. Only for air use.

- For machining high-temp alloys, PH stainless, stainless steels, and hardened materials.
- Excellent productivity through massive reduction of machining time.
- Face milling, pocketing, and ramping capabilities.
- Through-body coolant delivery for internal air supply only.



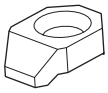




Screw-On End Mills

order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
4052782	**KIPR020RP09MF02**	20	11	18	10,5	M10	30	14	4,8	2	13.0°	0,05	23040	RP_N0903___
4052781	**KIPR020RP06MF03**	20	14	18	10,5	M10	30	14	3,2	3	10.0°	0,05	33325	RP_N0602___
4052843	**KIPR025RP09MF03**	25	16	21	12,5	M12	35	18	4,8	3	8.0°	0,08	20610	RP_N0903___
3101753	**KIPR032RP12MF03**	32	19	29	17,0	M16	45	22	6,3	3	4.2°	0,19	20420	RP_N1204__

Spare Parts

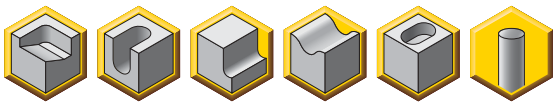


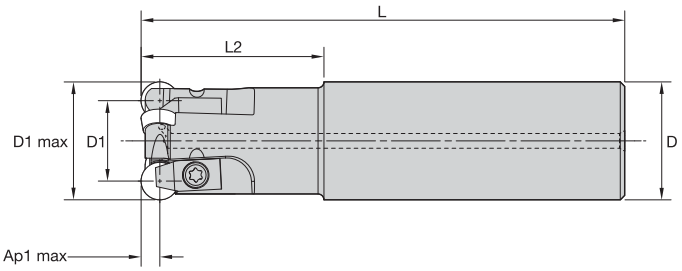




D1 max	clamp	clamp screw	Nm	Torx driver	Torx driver
20	**KCI1**	**191.924**	1,9	**DT9**	**–**
20	**KCI2**	**191.725**	3,5	**DT15**	**–**
25	**KCI2**	**191.725**	3,5	**DT15**	**–**
32	**KCI3M**	**193.409**	6,0	**–**	**TTP20**

- For machining high-temp alloys, PH stainless, stainless steels, and hardened materials.
- Excellent productivity through massive reduction of machining time.
- Face milling, pocketing, and ramping capabilities.
- Through-body coolant delivery for internal air supply only.







Cylindrical End Mills

order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	kg	max RPM	insert 1
3617418	**KIPR016RP06CF02**	16	10	16	75	26	3,2	2	14.0°	0,10	37260	RP_N0602___
4052780	**KIPR020RP09CF02**	20	11	20	82	31	4,8	2	13.0°	0,16	23040	RP_N0903___
3617416	**KIPR020RP06CF03**	20	14	20	82	31	3,2	3	10.0°	0,17	33325	RP_N0602___
3617415	**KIPR025RP09CF03**	25	16	25	96	39	4,8	3	8.0°	0,30	20610	RP_N0903___
3101754	**KIPR032RP12CF03**	32	20	32	110	50	6,3	3	4.2°	0,56	20420	RP_N1204___
3101755	**KIPR040RP12CF04**	40	27	32	110	49	6,3	4	2.9°	0,62	18260	RP_N1204___

Spare Parts







D1 max	clamp	clamp screw	Nm	Torx driver	Torx driver
16	**KCI1**	**KCI1**	1,9	**DT9**	**–**
20	**KCI1**	**KCI1**	1,9	**DT9**	**–**
20	**KCI2**	**KCI2**	3,5	**DT15**	**–**
25	**KCI2**	**KCI2**	3,5	**DT15**	**–**
32	**KCI3M**	**KCI3M**	6,0	**–**	**TTP20**
40	**KCI3M**	**KCI3M**	6,0	**–**	**TTP20**

Insert Selection Guide

RPGN06... High Temp

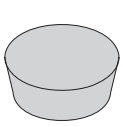
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	..E	KYSP30	**..E**	**KYSP30**	..E	KYSP30
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	..E	KYS30	**..E**	**KYS30**	..E	KYS30
S3	..E	KYS30	**..E**	**KYS30**	..E	KYS30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

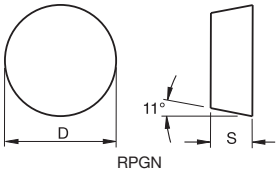
RPGN09... High Temp

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	..E	KYSP30	**..E**	**KYSP30**	..E	KYSP30
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	..E	KYS30	**..E**	**KYS30**	..T	KYS30
S3	..E	KYS30	**..T**	**KYS30**	..T	KYS30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

RPGN12... High Temp

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	..E	KYSP30	**..E**	**KYSP30**	..E	KYSP30
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	..E	KYS30	**..E**	**KYS30**	..T	KYS30
S3	..E	KYS30	**..T**	**KYS30**	..T	KYS30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–





● first choice
○ alternate choice

P	○	○
M		
K		
N		
S	●	●
H		

RPGN

catalogue number	D	S	KYS30	KYSP30
RPGN060200E	6	2,38	●	●
RPGN090300E	10	3,18	●	●
RPGN090300T01020	10	3,18	●	–
RPGN120400E	13	4,76	●	●
RPGN120400T01020	13	4,76	●	–

NOTE: A — Use these tools with the appropriate equipment/machines. Machines have to be covered for safety reasons: Hot flowing chips and loud noises are involved, which is common during the milling process.
B — Use only air flows as coolant method.
C — Higher RPMs are involved; use balanced toolholder for higher tool life and safer operation.
D — Consider increasing the fz in hard machining when smaller Ap are applied.

Recommended Starting Feeds [mm] • RPGN06..

Light Machining	General Purpose	Heavy Machining

At 3,18 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,12	**0,13**	0,17	0,09	**0,10**	0,13	0,08	**0,09**	0,11	0,07	**0,08**	0,10	0,07	**0,08**	0,10	..E

At 1,59 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,14	**0,15**	0,20	0,10	**0,11**	0,15	0,09	**0,10**	0,13	0,09	**0,09**	0,12	0,08	**0,09**	0,12	..E

At 0,79 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,18	**0,20**	0,26	0,14	**0,15**	0,19	0,12	**0,13**	0,17	0,11	**0,12**	0,16	0,11	**0,12**	0,15	..E

At 0,40 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,25	**0,27**	0,35	0,19	**0,20**	0,26	0,16	**0,18**	0,23	0,15	**0,17**	0,22	0,15	**0,16**	0,21	..E

Recommended Starting Feeds [mm] • RPGN09...

At 4,76 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,12	**0,13**	0,17	0,09	**0,10**	0,13	0,08	**0,09**	0,11	0,07	**0,08**	0,10	0,07	**0,08**	0,10	..E
..T	0,17	**0,20**	0,26	0,13	**0,15**	0,19	0,11	**0,13**	0,17	0,10	**0,12**	0,16	0,10	**0,12**	0,15	..T

At 2,38 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,14	**0,15**	0,20	0,10	**0,11**	0,15	0,09	**0,10**	0,13	0,09	**0,09**	0,12	0,08	**0,09**	0,12	..E
..T	0,20	**0,24**	0,30	0,15	**0,18**	0,22	0,13	**0,15**	0,19	0,12	**0,14**	0,18	0,12	**0,14**	0,18	..T

At 1,19 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,18	**0,20**	0,26	0,14	**0,15**	0,19	0,12	**0,13**	0,17	0,11	**0,12**	0,16	0,11	**0,12**	0,15	..E
..T	0,26	**0,31**	0,39	0,19	**0,23**	0,29	0,17	**0,20**	0,25	0,16	**0,19**	0,24	0,15	**0,19**	0,23	..T

At 0,60 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,25	**0,27**	0,35	0,19	**0,20**	0,26	0,16	**0,18**	0,23	0,15	**0,17**	0,22	0,15	**0,16**	0,21	..E
..T	0,35	**0,42**	0,53	0,26	**0,32**	0,40	0,23	**0,28**	0,35	0,21	**0,26**	0,32	0,21	**0,25**	0,32	..T

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [mm] • RPGN12..

Light Machining	General Purpose	Heavy Machining

At 6,35 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,12	**0,13**	0,17	0,09	**0,10**	0,13	0,08	**0,09**	0,11	0,07	**0,08**	0,10	0,07	**0,08**	0,10	..E
..T	0,17	**0,26**	0,29	0,13	**0,20**	0,22	0,11	**0,17**	0,19	0,10	**0,16**	0,18	0,10	**0,16**	0,17	..T

At 3,18 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,14	**0,15**	0,20	0,10	**0,11**	0,15	0,09	**0,10**	0,13	0,09	**0,09**	0,12	0,08	**0,09**	0,12	..E
..T	0,20	**0,31**	0,33	0,15	**0,23**	0,25	0,13	**0,20**	0,22	0,12	**0,19**	0,20	0,12	**0,18**	0,20	..T

At 1,59 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,18	**0,20**	0,26	0,14	**0,15**	0,19	0,12	**0,13**	0,17	0,11	**0,12**	0,16	0,11	**0,12**	0,15	..E
..T	0,26	**0,40**	0,44	0,19	**0,30**	0,33	0,17	**0,26**	0,29	0,16	**0,24**	0,27	0,15	**0,24**	0,26	..T

At 0,79 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	0,25	**0,27**	0,35	0,19	**0,20**	0,26	0,16	**0,18**	0,23	0,15	**0,17**	0,22	0,15	**0,16**	0,21	..E
..T	0,35	**0,55**	0,60	0,26	**0,41**	0,45	0,23	**0,36**	0,39	0,21	**0,33**	0,37	0,21	**0,33**	0,36	..T

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.



Indexable Milling • Indexable Thread Milling

TM Series **W2–W27**

TM24 ..... W4–W8

TM25 ..... W10–W16

TM40 ..... W17–W22

TM41 ..... W24–W27

KTMD U Series **W28–W37**

TMS • Thread Milling System **W38–W47**

Thread Milling • Application and Technical Information **W48–W55**

TM Series

The latest Kennametal indexable thread milling tools deliver longer tool life and higher productivity while offering a comprehensive range of thread styles and sizes:

- TM24 Series — Small-bore threading applications with one cutting edge per insert.
- TM25 Series — Standard threading applications with two cutting edges per insert.
- TM40 Series — Long-thread threading applications with two cutting edges per insert.
- TM41 Series — Large-pitch threading applications with two cutting edges per insert.

Features and Benefits

Cutter Body Offering

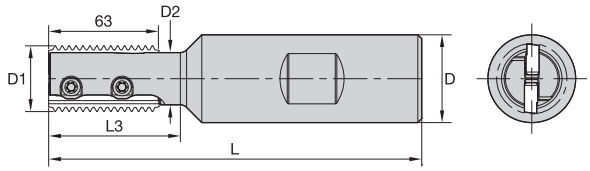
- Number of flutes:
  - TM24: 1–2 per body
  - TM25: 2–8 per body
  - TM40: 3–8 per body
  - TM41: 2–6 per body
- Short and long toolholders for multiple applications.
- Cutters available in parallel Weldon® and conical Weldon holders.
- Effective through coolant for each flute.
- Better chip evacuation.

Insert Offering

- Robust design.
- Inserts for ISO, UN, W, NPT, NPTF, and BSPT Thread Profiles.
- Pitch:
  - 0,50–2,50mm (TM24: 32–10 TPI)
  - 1,00–3,00mm (TM25: 20–8 TPI)
  - 1,00–3,00mm (TM40: 32–10 TPI)
  - 3,00–6,00mm (TM41: 8–4 TPI)
- Grades for most workpiece materials.
- Easy clamping systems.
- Fast indexing of inserts.



- 14–16mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





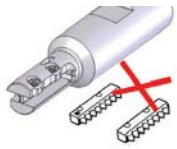
Thread Mill • Weldon Shank • Parallel Threads

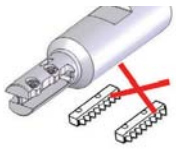
order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
5593149	**TM24D14L26Z1**	13,60	20,00	10,70	82,00	26,00	1	**TM25INSERTSCREW**	**DT8IP**
5593150	**TM24D15L30Z1**	15,10	20,00	11,90	85,00	30,00	1	**TM25INSERTSCREW**	**DT8IP**
5593151	**TM24D16L28Z2**	16,00	20,00	12,60	83,00	28,00	2	**TM25INSERTSCREW**	**DT8IP**
5593152	**TM24D16L36Z1**	16,00	20,00	12,60	91,00	36,00	1	**TM25INSERTSCREW**	**DT8IP**

NOTE: Torque value for insert screw is 4 Nm.
Through coolant is recommended, especially when D2 > 0.7 x nominal thread diameter.

Thread Application per Toolholder min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM24D14L26Z1	13.60	M16 x 2	M14.5 x 0.5; M15 x 0.75; M15 x 1; M15 x 1.25; M16 x 1.5; M16 x 1.75	–	11/16–12UN; 5/8–14UNS; 5/8–16UN; 5/8–18UNF; 5/8–20UN; 5/8–24UNEF; 5/8–28UN; 5/8–32UN	1 1/16–14; 3/4–12	3/8–19
TM24D15L30Z1	15.10	M18 x 2.5	M16 x 0.5; M17 x 0.75; M17 x 1; M17 x 1.25; M17 x 1.5; M18 x 1.75; M18 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 1 1/16–16UN; 1 1/16–20UN; 1 1/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–
TM24D16L28Z2	16.00	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 1 1/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–
TM24D16L36Z1	16.00	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 1 1/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–


Side with identification marks

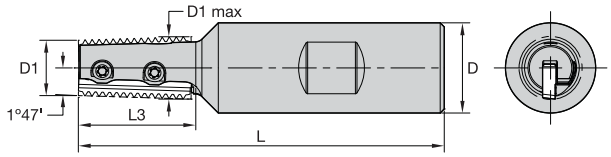

Always mount all inserts on the same side


Always mount all inserts on the same side


To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM24 blank insert.

- 12mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



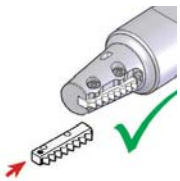


Thread Mill • Weldon Shank • Conical Threads

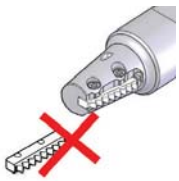
order number	catalogue number	D1	D1 max	D	L	L3	Z	insert screw	Torx Plus driver
5593153	TMT24D14L26Z1	11,50	13,90	20,00	81,00	26,00	1	TM25INSERTSCREW	DT8IP

NOTE: Torque value for insert screw is 4 Nm.

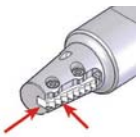
Thread Application per Toolholder				
	min thread Ø			
toolholder	D1 max	NPT	NPTF	BSPT
TMT24D14L26Z1	13,90	3/8–18	3/8–18	3/8–19



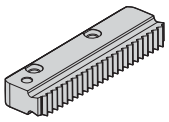
On Conical inserts, the identification mark must face up

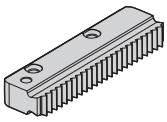


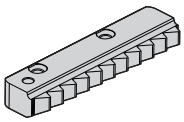
On Conical inserts, the identification mark must face up

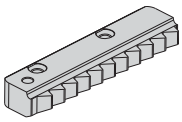


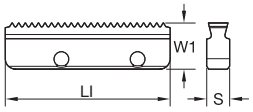
To mount insert correctly, push the insert toward the pocket walls

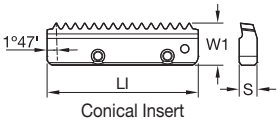

ISO Profiles


UN Profiles


BSF and BSP Profiles


NPT Profiles





Conical Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

ISO Profiles • Internal

catalogue number	thread pitch mm	LI	W1	S	number of teeth	KC610M	KC635M
TM24N050ISO	0,5	24,00	7,02	3,00	49	●	●
TM24N075ISO	0,75	24,00	7,02	3,00	33	●	●
TM24N100ISO	1,0	24,00	7,02	3,00	24	●	●
TM24N150ISO	1,5	24,00	7,02	3,00	16	●	●
TM24N125ISO	1,25	24,00	7,02	3,00	20	●	●
TM24N175ISO	1,75	24,00	7,02	3,00	14	●	●
TM24N200ISO	2,0	24,00	7,02	3,00	12	●	●
TM24N250ISO	2,5	24,00	7,02	3,00	10	●	●

UN Profiles • Internal

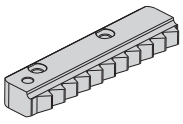
catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24N10UN	10	24,00	7,02	3,00	9	●	●
TM24N12UN	12	24,00	7,02	3,00	11	●	●
TM24N14UN	14	24,00	7,02	3,00	13	●	●
TM24N16UN	16	24,00	7,02	3,00	15	●	●
TM24N18UN	18	24,00	7,02	3,00	17	●	●
TM24N20UN	20	24,00	7,02	3,00	19	●	●
TM24N24UN	24	24,00	7,02	3,00	23	●	●
TM24N28UN	28	24,00	7,02	3,00	27	●	●
TM24N32UN	32	24,00	7,02	3,00	31	●	●

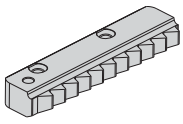
BSF and BSP Profiles • Internal and External

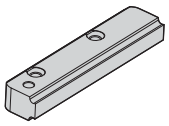
catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN14BSF	14	24,00	7,02	3,00	13	●	●
TM24EN19BSF	19	25,00	7,02	3,00	18	●	●

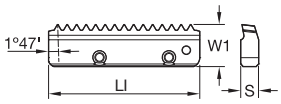
NPT Profiles • Internal and External

catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPT	18	24,00	7,02	3,00	17	●	●

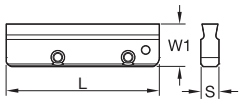

NPTF Profiles


BSPT Profiles


Blank Inserts



Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

NPTF Profiles • Internal and External

catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPTF	18	24,00	7,02	3,00	17	●	●

BSPT Profiles • Internal and External

catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN19BSPT	19	24,00	7,02	3,00	18	●	●

Blank/Plug-In Insert • Internal and External

catalogue number	L	W1	S
TM24ENBLANK	24,00	7,02	3,00

TM24 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

NOVO KNOWS CAD/CAM

With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalogue, and then manually inputting the tooling information from the catalogue into the CAD/CAM software.

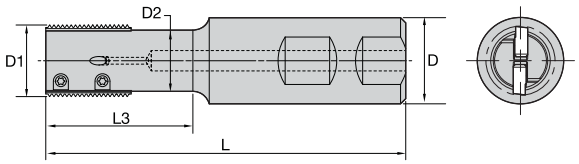
The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution.
The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. **kennametal.com/novo**



- 17–30mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





Thread Mill • Weldon Shank • Parallel Threads

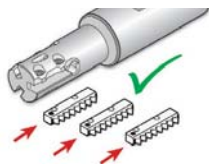
order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
3030845	TM25D17L26Z2	17,00	25,00	14,00	85,00	26,00	2	TM25INSERTSCREW	DT8IP
3030846	TM25D17L36Z2	17,00	25,00	14,00	95,00	36,00	2	TM25INSERTSCREW	DT8IP
3030848	TM25D20L37Z3	20,50	25,00	16,50	96,00	37,00	3	TM25INSERTSCREW	DT8IP
3030849	TM25D20L44Z3	20,50	25,00	16,50	103,00	44,00	3	TM25INSERTSCREW	DT8IP
3030850	TM25D22L43Z3	22,00	25,00	18,00	102,00	43,00	3	TM25INSERTSCREW	DT8IP
3030852	TM25D22L55Z3	22,00	25,00	18,00	114,00	55,00	3	TM25INSERTSCREW	DT8IP
3031703	TM25D30L55Z5	30,00	25,00	26,00	115,00	55,00	5	TM25INSERTSCREW	DT8IP
3031705	TMC25D30L80Z4	30,00	25,00	26,00	140,00	80,00	4	TM25INSERTSCREW	DT8IP

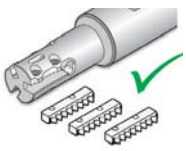
NOTE: Torque value for insert screw is 4 Nm.
Kennametal thread mill software: TM — CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

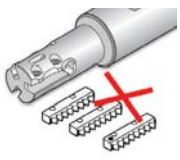
Thread Application per Toolholder

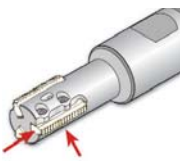
min thread Ø

toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF
TM25D17L26Z2 TM25D17L36Z2	17,00	M20 x 2.5	M19 x 1; M19 x 1.5; M20 x 2	–	7/8-10UNS; 13/16-12UN; 7/8-14UNF; 3/4-16UNF; 3/4-18UNS; 3/4-20UNEF	7/8-11; 7/8-12; 7/8-14; 7/8-16
TM25D20L37Z3 TM25D20L44Z3	20,50	M24 x 3.0	M22 x 1.; M23 x 1.5; M23 x 2.; M23.5 x 2.5	1-8	15/16-9UN; 1.0-10UNS; 15/16-12UN; 1.0-14UNS; 15/16-16UN; 7/8-18UNS; 7/8-20UNEF	1-11; 1-12; 1.14; 1.16
TM25D22L43Z3 TM25D22L55Z3	22,00	M27 x 3.0	M24 x 1.; M24 x 1.5; M25 x 2.; M25 x 2.5	–	11/16-8UN; 1.0-9UN; 1.0-10UNS; 1.0-12UNF; 1.0-14UNS; 1.0-16UN; 1.0-18UN; 15/16-20UNEF	1-11; 1-12; 1-14; 1-16
TM25D30L55Z5 TMC25D30L80Z4	30,00	–	M32 x 1.; M32 x 1.5; M33 x 2.; M33 x 2.5; M34 x 3	–	1 3/8-8UN; 1 3/8-9UN; 1 3/8-10UN; 1 5/16-12UN; 1 3/8-14UNS; 1 5/16-16UN; 1 5/16-18UNEF; 1 5/16-20UN	1 3/8-11; 1 3/8-12; 1 3/8-14; 1 3/8-16


Side with identification marks

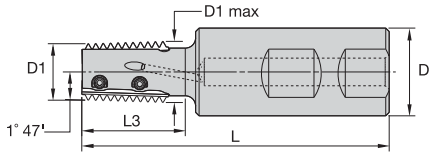

Side without identification marks

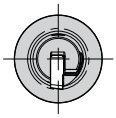

Always mount all inserts with identification marks on the same side


To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- 16–29mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





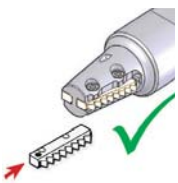


Thread Mill • Weldon Shank • Conical Threads

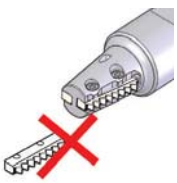
order number	catalogue number	D1	D1 max	D	L	L3	Z	insert screw	Torx Plus driver
3030847	**TMT25D17L26Z2**	15,45	17,00	25,00	85,00	26,00	2	**TM25INSERTSCREW**	**DT8IP**
3030851	**TMT25D22L43Z3**	20,30	22,00	25,00	102,00	43,00	3	**TM25INSERTSCREW**	**DT8IP**
3031704	**TMT25D28L43Z4**	26,40	28,00	25,00	103,00	43,00	4	**TM25INSERTSCREW**	**DT8IP**

NOTE: Torque value for insert screw is 4 Nm.
On conical inserts the identification mark must be face up.
Kennametal thread mill software: TM — CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

Thread Application per Toolholder min thread Ø				
toolholder	**D1 mm**	**NPT**	**NPTF**	**BSPT**
TMT25D17L26Z2	17,00	1/2–14; 3/4–14; 1–11.5; 2–11.5	1/2–14; 3/4–14; 1–11.5; 2–11.5	1/2–14; 3/4–14; 1–11; 1 1/4–11; 1 1/2–11; 2–11
TMT25D22L43Z3	22,00	3/4–14; 1–11.5; 2–11.5	3/4–14; 1–11.5; 2–11.5	3/4–14; 1–11; 1 1/4–11;1 1/2–11; 2–11; 2 1/2–11; 3–11; 4–11; 5–11; 6–11
TMT25D28L43Z4	28,00	1–11.5; 2–11.5	1–11.5; 2–11.5	1–11; 1 1/4–11; 1 1/2–11; 2–11; 2 1/2–11; 3–11; 4–11; 5–11; 6–11



On Conical inserts, the identification mark must face up



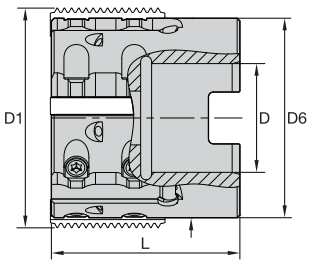
Side without identification marks

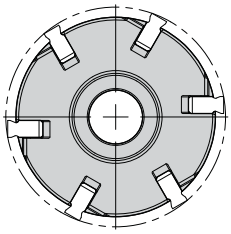


To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- 36–52mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





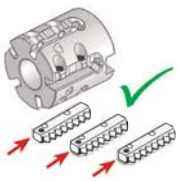


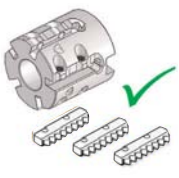
Thread Mill • Shell Mill • Parallel Threads

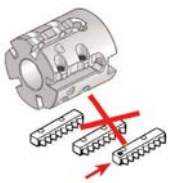
order number	catalogue number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593142	**TMS25D36L34Z5**	36,00	16,00	32,00	33,50	5	**TM25INSERTSCREW**	**DT8IP**	**MS5001**
5593143	**TMS25D44L38Z6**	44,00	22,00	40,00	38,00	6	**TM25INSERTSCREW**	**DT8IP**	**MS5002**
5593141	**TMS25D52L40Z8**	52,00	27,00	48,00	40,00	3	**TM25INSERTSCREW**	**DT8IP**	**MS5004**

NOTE: Torque value for insert screw is 4 Nm.
Kennametal thread mill software: TM — CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

Thread Application per Toolholder min thread Ø					
toolholder	**D1 mm**	**ISO (fine)**	**UN/UNF/UNEF/UNS**	**BSW**	**BSP(G)**
TMS25D36L34Z5	36,00	M38 x 1; M39 x 1.5; M39 x 2; M40 x 3	1 9/16–12UN; 1 5/8–14UNS; 1 9/16–16UN; 1 1/2–18UNEF; 1 1/2–20UN	1 3/4–16; 1 3/4–12	1 1/4–11
TMS25D44L38Z6	44,00	M48 x 1; M48 x 1.5; M48 x 2; M48 x 3	1 7/8–12UN; 1 13/16–16UN; 1 13/16–20UN; 1 15/16–8UN; 1 7/8–10UNS; 1 7/8–14UNS	2–16; 2–12	1 1/2–11
TMS25D52L40Z8	52,00	M55 x 1; M55 x 1.5; M55 x 2; M56 x 3	2 1/4–8UN; 2 1/4–10UN; 2 1/4–12UN; 2 1/4–14UN; 2 1/4–16UN; 2 1/4–18UN; 2 1/4–20UN	2 1/4–16; 2 1/4–12	2–11


Side with identification marks

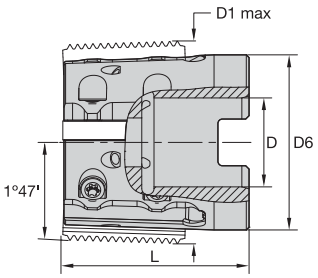

Side without identification marks

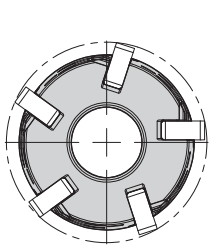

Always mount all inserts on the same side


To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- 35mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





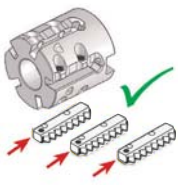


Thread Mill • Shell Mill • Conical Threads

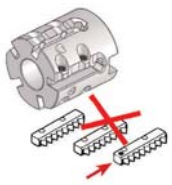
order number	catalogue number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593144	TMST25D36L34Z5	36,10	16,00	31,50	33,50	5	TM25INSERTSCREW	DT8IP	MS5001

NOTE: Torque value for insert screw is 4 Nm.
Kennametal thread mill software: TM — CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

Thread Application per Toolholder min thread Ø				
toolholder	D1 mm	NPT	NPTF	BSPT
TMST25D36L34Z5	34,50	1 1/4-11.5; 1 1/2-11.5; 2-11.5; 2 1/2-8 (and up)	1 1/4-11.5; 1 1/2-11.5; 2-11.5; 2 1/2-8; 3-8	1 1/2-6x11



Side with identification marks



Always mount all inserts on the same side

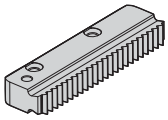


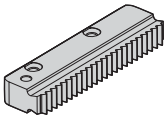
To mount insert correctly, push the insert toward the pocket walls*

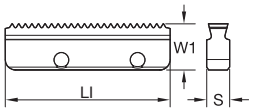
* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

NOTE: On conical inserts the identification mark must be face up.

• ISO metric screw thread style.


ISO Profiles


UN Profiles



● first choice
○ alternate choice

P		●	○
M		○	●
K		●	
N		●	
S			●
H		○	●

ISO Profiles • Internal

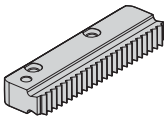
catalogue number	thread pitch mm	LI	W1	S	number of teeth	KC610M	KC635M
TM25N100ISO	1,0	25,00	7,62	3,56	24	●	●
TM25N150ISO	1,5	25,00	7,62	3,56	16	●	●
TM25N200ISO	2,0	25,00	7,62	3,56	12	●	●
TM25N250ISO	2,5	25,00	7,62	3,56	10	●	●
TM25N300ISO	3,0	25,00	7,62	3,56	8	●	●

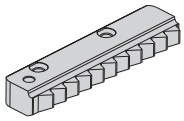
• Unified Thread Standard Style.

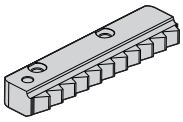
UN Profiles • Internal

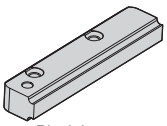
catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25N8UN	8	25,00	7,62	3,56	7	●	●
TM25N9UN	9	25,00	7,62	3,56	8	●	●
TM25N10UN	10	25,00	7,62	3,56	9	●	●
TM25N12UN	12	25,00	7,62	3,56	11	●	●
TM25N14UN	14	25,00	7,62	3,56	13	●	●
TM25N16UN	16	25,00	7,62	3,56	15	●	●
TM25N18UN	18	25,00	7,62	3,56	17	●	–
TM25N20UN	20	25,00	7,62	3,56	19	●	●

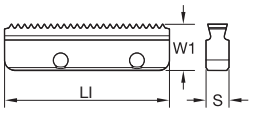
• British Standard Whitworth Thread Style.

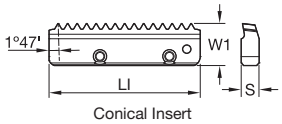

Whitworth Profiles


NPT Profiles

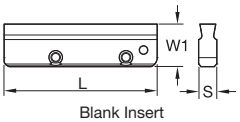

BSPT Profiles


Blank Inserts





Conical Insert



Blank Insert

● first choice
○ alternate choice

P		●	○
M		○	●
K		●	
N		●	
S			●
H		○	●

Whitworth Profiles • Internal/External

catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN11W	11	25,00	7,62	3,56	10	●	●
TM25EN12W	12	25,00	7,62	3,56	11	●	–
TM25EN14W	14	25,00	7,62	3,56	13	●	●

• National Pipe Thread Taper Style.

NPT Profiles • Internal/External

catalogue number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN115NPT	11.5	25,00	7,62	3,56	11	●	●
TM25EN14NPT	14	25,00	7,62	3,56	11	●	●

• British Standard Pipe Standard Thread Style.

BSPT Profiles • Internal/External

catalogue number	internal TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN11BSPT	11.0	25,00	7,62	3,56	10	●	–
TM25EN14BSPT	14.0	25,00	7,62	3,56	11	●	–

Blank Insert Form • Internal/External

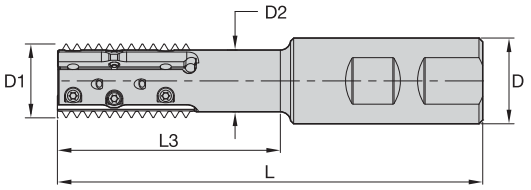
catalogue number	L	W1	S
TM25BLANK	25,00	5,59	3,56

TM25 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

- 22–30mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.







Thread Mill • Weldon Shank • Parallel Threads

order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593184	**TM40D22L43Z3**	22,00	25,00	18,00	102,00	43,00	3	**TM25INSERTSCREW**	**DT8IP**	**MS9000**
5593185	**TM40D22L65Z3**	22,00	25,00	18,00	124,00	65,00	3	**TM25INSERTSCREW**	**DT8IP**	**MS9000**
5593186	**TM40D30L55Z4**	30,00	32,00	26,00	117,00	55,00	4	**TM25INSERTSCREW**	**DT8IP**	**MS9000**
5593187	**TM40D30L80Z3**	30,00	32,00	26,00	142,00	80,00	3	**TM25INSERTSCREW**	**DT8IP**	**MS9000**

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder min thread Ø						
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM40D22L43Z3	22,00	M27 x 3	M24 x 1; M24 x 1.5; M25 x 2; M25 x 2.5	1 11/16–8UN; 1–9UN, 1–10UNS; 1–12UNF; 1–14YBS; 1–16UN; 1–18UN; 15/16–20UNEF	1–11; 1–12; 1–14; 1–16	3/4–14
TM40D22L65Z3	22,00	M27 x 3	M24 x 1; M24 x 1.5; M25 x 2; M25 x 2.5	1 11/16–8UN; 1–9UN; 1–10UNS; 1–12UNF; 1–14UNS; 1–16UN; 1–18UN; 15/16UNEF	1–11; 1–12; 1–14; 1–16	3/4–14
TM40D30L55Z4	30,00	–	M32 x 1; M32 x 1.5; M33 x 2; M33 x 2.5; M34 x 3	1 3/8–8UN; 1–9UN; 1 3/8–10UN; 15/16–12UN; 1 3/8–14UNS; 15/16–16UN; 15/16–18UNEF; 15/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16	1–11
TM40D30L80Z3	30,00	–	M32 x 1; M32 x 1.5; M33 x 2; M33 x 2.5; M34 x 3	1 3/8–8UN; 1 3/8–9UN; 1 3/8–10UN; 15/16–12UN; 1 3/8–14UNS; 15/16–16UN; 15/16–18UNEF; 15/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16	1–11



Side with identification marks



Side without identification marks



Always mount all inserts on the same side

* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

2 Step Clamping System

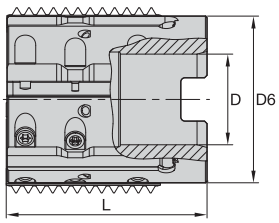
Step 1. Location Screw

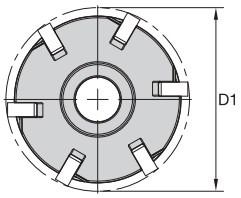


Step 2. Clamping Screw (2)



- 44–52mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





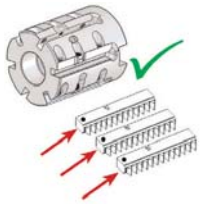


Thread Mill • Shell Mill • Parallel Threads

order number	catalogue number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593188	**TMS40D44L48Z6**	44,00	22,00	40,00	48,00	6	**TM25INSERTSCREW**	**DT8IP**	**MS5003**	**MS9000**
5593189	**TMS40D52L50Z8**	52,00	27,00	48,00	50,00	8	**TM25INSERTSCREW**	**DT8IP**	**–**	**MS9000**

NOTE: Torque value for insert screw is 4 Nm.

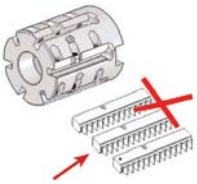
	Thread Application per Toolholder min thread Ø				
toolholder	D1 mm	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
TMS40D44L48Z6	44.00	M48x 1; M48 x 1.5; M48 x 2; M48 x 3	1 7/8–12UN; 1 13/16–16UN; 1 13/16–20UN; 1 15/16–8UN; 1 7/8–10UNS; 1 7/8–14UNS	2–16; 2–12	1 1/2–11
TMS40D52L50Z8	52.00	M55 x 1; M55 x 1.5; M55 x 2; M56 x 3	1 11/16–8UN; 1–9UN; 1–10UNS; 1–12UNF; 1–14UNS; 1–16UN; 1–18UN; 15/16–20UNEF	2 1/4–16; 2 1/4–12	2–11



Side with identification marks



Side without identification marks



Always mount all inserts on the same side

* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

2 Step Clamping System

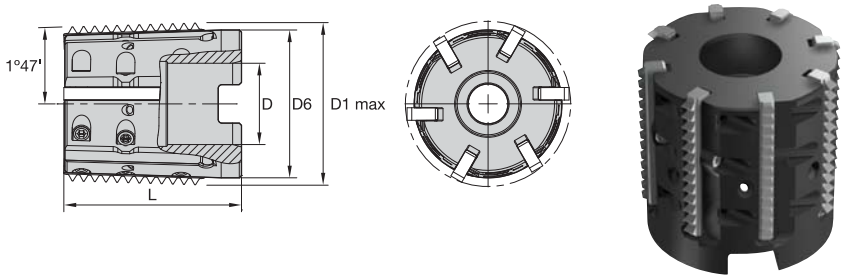
Step 1. Location Screw



Step 2. Clamping Screw (2)



- 45mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.

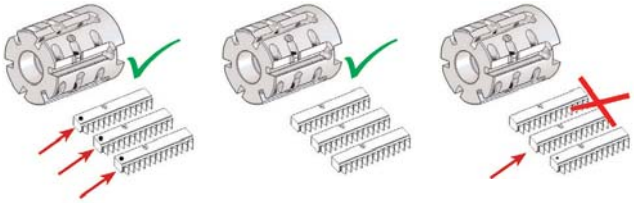


Thead Mill • Shell Mill Conical Threads

order number	catalogue number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593190	TMST40D45L48Z6	45,00	22,00	40,00	48,00	6	TM25INSERTSCREW	DT8IP	MS5003	MS9000

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMST40D45L48Z6	45,00	2–11.5; 2 1/2–8 (and up)	2–11.5; 2 1/2–8; 3–8	2–6 x 11



Side with identification marks

Side without identification marks

Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

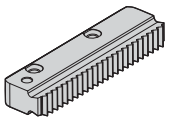
2 Step Clamping System

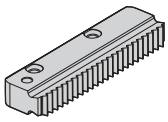
Step 1. Location Screw

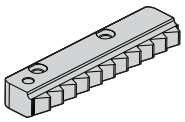


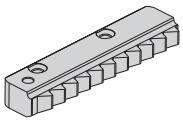
Step 2. Clamping Screw (2)




ISO Profiles

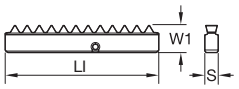

UN Profiles

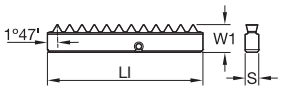

BSF and BSP Profiles


NPT Profiles

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○





Conical Inserts

ISO Profiles • Internal

catalogue number	thread pitch mm	LI	W1	S	KC610M	KC635M
TM40N100ISO	1,00	40,00	7,05	3,49	●	●
TM40N150ISO	1,50	40,00	7,05	3,49	●	●
TM40N200ISO	2,00	40,00	7,05	3,49	●	●
TM40N250ISO	2,50	40,00	7,05	3,49	●	–
TM40N300ISO	3,00	40,00	7,05	3,49	●	●

UN Profiles • Internal

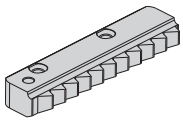
catalogue number	TPI	LI	W1	S	KC610M	KC635M
TM40N8UN	8	40,00	7,05	3,50	●	●
TM40N9UN	9	40,00	7,05	3,49	●	–
TM40N10UN	10	40,00	7,05	3,49	●	–
TM40N12UN	12	40,00	7,05	3,49	●	●
TM40N14UN	14	40,00	7,05	3,49	●	–
TM40N16UN	16	40,00	7,05	3,49	●	●
TM40N18UN	18	40,00	7,05	3,49	●	–
TM40N20UN	20	40,00	7,05	3,49	●	●

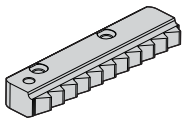
BSF and BSP Profiles • Internal and External

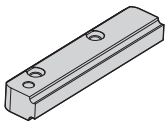
catalogue number	TPI	LI	W1	S	KC610M	KC635M
TM40EN11BSF	11	40,00	7,05	3,50	●	●
TM40EN12BSF	12	40,00	7,05	3,50	●	–
TM40EN14BSF	14	40,00	7,05	3,50	●	–
TM40EN16BSF	16	40,00	7,05	3,50	●	–

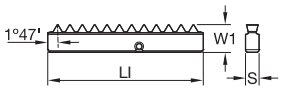
NPT Profiles • Internal and External

catalogue number	TPI	LI	W1	S	KC610M	KC635M
TM40EN008NPT	8.0	40,00	7,30	3,50	●	●
TM40EN115NPT	11.5	40,00	7,30	3,50	●	–

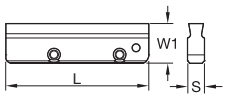

NPT Profiles


BSPT Profiles


Blank Inserts



Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

NPTF Profiles • Internal and External

catalogue number	TPI	LI	W1	S	KC610M	KC635M
TM40EN008NPTF	8.0	40,00	7,30	3,50	●	●
TM40EN115NPTF	11.5	40,00	7,30	3,50	●	–

BSPT Profiles • Internal and External

catalogue number	TPI	LI	W1	S	KC610M	KC635M
TM40EN011BSPT	11	40,00	7,30	3,50	●	●

Blank/Plug-In Insert • Internal and External

catalogue number	L	W1	S
TM40ENBLANK	40,00	7,05	3,49

TM40 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.



Carbide Recycling

Help preserve and protect our planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Programme.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly. Kennametal accepts any coated or non-coated carbide items, including inserts, drills, reamers, and taps.

By using the Kennametal Carbide Recycling Programme, you will receive:

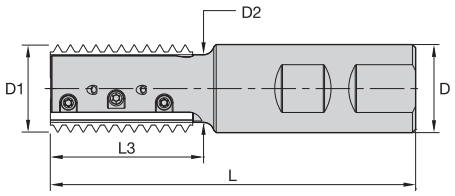
- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

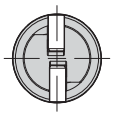
Programme is not currently available in all geographical areas.
For more information, please visit **kennametal.com/carbiderecycling**.

KENNAMETAL®

kennametal.com

- 21–58mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





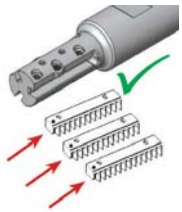


Thread Mill • Weldon Shank • Parallel Threads

order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593159	TM41D21L45Z1	21,20	25,00	16,00	105,00	45,00	1	TM25INSERTSCREW	DT8IP	MS9000
5593170	TM41D25L43Z2	24,50	25,00	19,20	104,00	43,00	2	TM25INSERTSCREW	DT8IP	MS9000
5593171	TM41D30L43Z3	30,00	32,00	24,20	106,50	43,00	3	TM25INSERTSCREW	DT8IP	MS9000
5593172	TM41D30L65Z3	30,00	32,00	24,20	128,50	65,00	3	TM25INSERTSCREW	DT8IP	MS9000
5593173	TM41D36L43Z5	36,00	32,00	28,30	106,00	43,00	5	TM25INSERTSCREW	DT8IP	MS9000
5593174	TM41D36L65Z4	36,00	32,00	28,30	128,00	65,00	4	TM25INSERTSCREW	DT8IP	MS9000

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder min thread Ø								
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSW/BSF	NPT	NPTF
TM41D21L45Z1	21,20	M30 x 3.5; M36 x 4	M28 x 3; M45 x 4	1 1/8–7; 1 3/8–6	1 1/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 1/4–7BSW	–	–
TM41D25L43Z2	24,50	M30 x 3.5; M36 x 4	M28 x 3; M45 x 4	1 1/8–7; 1 3/8–6	1 1/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 1/4–7BSW	–	–
TM41D30L43Z3	30,00	M36 x 4; M42 x 4.5	M34 x 3; M34 x 3.5; M45 x 4	1 3/8–6	1 3/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 3/4–7BSF; 1 1/2–6BSW	–	–
TM41D30L65Z3	30,00	M36 x 4; M42 x 4.5	M34 x 3; M34 x 3.5; M45 x 4	1 3/8–6	1 3/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 3/4–7BSF; 1 1/2–6BSW	–	–
TM41D36L43Z5	36,00	M42 x 4.5; M48 x 5; M56 x 5.5; M64 x 6	M40 x 3; M40 x 3.5; M42 x 4; M70 x 6	1 3/4–5; 2–4.5; 2 1/2–4	1 5/8–8UN; 1 5/8–6UN	1 5/8–8BSF; 1 3/4–7BSF; 1 7/8–6BSF	2 1/2–8	2 1/2–8
TM41D36L65Z4	36,00	M42 x 4.5; M48 x 5; M56 x 5.5; M64 x 6	M40 x 3; M40 x 3.5; M42 x 4; M70 x 6	1 3/4–5; 2–4.5; 2 1/2–4	1 5/8–8UN; 1 5/8–6UN	1 5/8–8BSF; 1 3/4–7BSF; 1 7/8–6BSF	2 1/2–8	2 1/2–8



Side with identification marks



Side without identification marks



Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

2 Step Clamping System

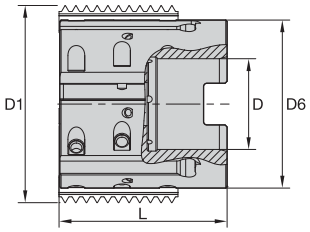
Step 1. Location Screw (2)

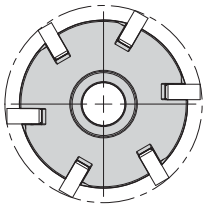


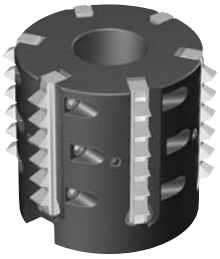
Step 2. Clamping Screw



- 48–58mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.





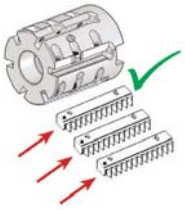


Thread Mill • Shell Mill • Parallel Threads

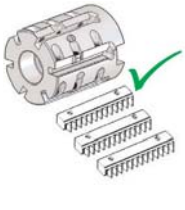
order number	catalogue number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593175	TMS41D48L50Z5	48,00	22,00	40,00	50,00	5	TM25INSERTSCREW	DT8IP	MS5003	MS9000
5593176	TMS41D58L50Z6	58,00	27,00	50,00	50,00	6	TM25INSERTSCREW	DT8IP	–	MS9000

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder min thread Ø								
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	NPT	NPTF
TMS41D48L50Z5	48,00	M56 x 5.5; M64 x 6	M55 x 4; M70 x 6;	2 1/4–4.5; 2 1/2–4	2 1/8–8UN; 2 1/8–6UN	2 1/4–8; 2 1/4–6	2 1/2–8	2 1/2–8
TMS41D58L50Z6	58,00	M68 x 6	M64 x 4; M70 x 6	2 3/4–4	2 1/8–8UN; 2 1/8–6UN	2 1/4–8; 2 1/4–6	2 1/2–8	2 1/2–8



Side with identification marks



Side without identification marks



Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

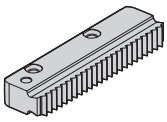
2 Step Clamping System

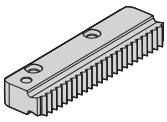
Step 1. Location Screw (2)

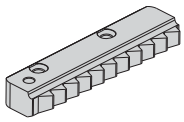


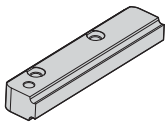
Step 2. Clamping Screw




ISO Profiles

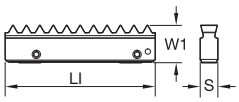

UN Profiles


NPT Profiles

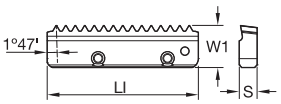

Blank Inserts

● first choice
○ alternate choice

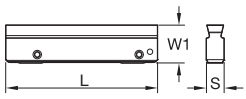
P		○	●
M			●
K		●	
N		●	
S		○	●
H		●	○



ISO Profiles
UN Profiles



Conical Insert



Blank Insert

ISO Profiles • Internal

catalogue number	thread pitch mm	LI	W1	S	KC610M	KC635M
TM41N300ISO	3,00	41,00	9,95	4,76	●	●
TM41N350ISO	3,50	41,00	9,95	4,76	●	●
TM41N400ISO	4,00	41,00	9,95	4,76	●	●
TM41N450ISO	4,50	41,00	9,95	4,76	●	●
TM41N500ISO	5,00	41,00	9,95	4,76	●	●
TM41N550ISO	5,50	41,00	9,95	4,76	●	●
TM41N600ISO	6,00	41,00	9,95	4,76	●	●

UN Profiles • Internal

catalogue number	TPI	LI	W1	S	KC610M	KC635M
TM41N4UN	4	41,00	9,95	4,76	●	●
TM41N45UN	4.5	41,00	9,95	4,76	●	●
TM41N5UN	5	41,00	9,95	4,76	●	●
TM41N6UN	6	41,00	9,95	4,76	●	●
TM41N7UN	7	41,00	9,95	4,76	●	●
TM41N8UN	8	41,00	9,95	4,76	●	●

NPT Profiles • Internal and External

catalogue number	TPI	LI	W1	S	KC610M	KC635M
TM41EN8NPT	8	41,00	9,95	4,76	●	●

Blank/Plug-In Insert • Internal and External

catalogue number	L	W1	S
TM41ENBLANK	41,00	9,95	4,76

TM41 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

KTMD U Series

Primary Application

With a wide range of insert thread sizes and grades for most materials, KTMD U is a multiflute, single-point, high-productivity, and economical solution for milling threads in deep-hole applications.



Features and Benefits

Smooth Cutting Action

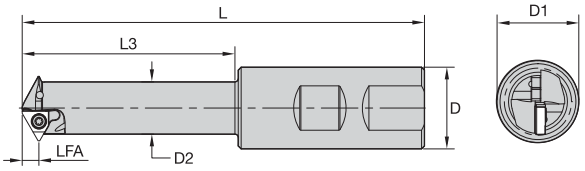
- Reduced load on the cutting edges due to single-point insert.
- Low cutting forces enable fast machining.
- Suitable for hard material applications.
- Wide range of applications, with partial profile insert (60°/55°).
- Pitch range 16–3 TPI (1,5–8mm).

Cost-Effective Solution

- Up to three cutting edges per insert.
- Very high feed per tooth.
- Fast machining.
- Multiflute — up to 7 cutting edges (inserts).

Comprehensive cutter bodies offering:

- Weldon®, steel, carbide, and shell mill cutters available.
- Long overhang capability.
- Through coolant capability.
- Diameter range 14,75–42mm (42–56mm shell mills).
- Improved chip evacuation and cooling.

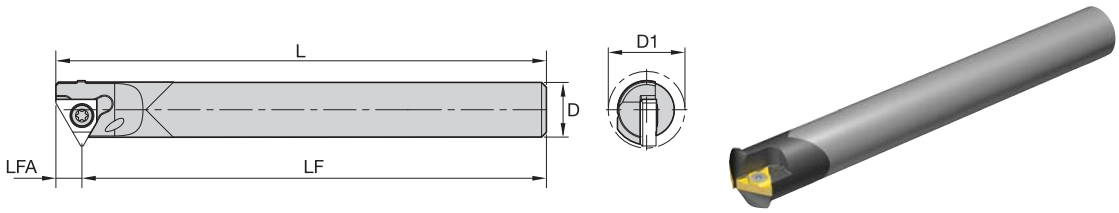




Thread Mill • U Style • Weldon® Shank • 1/4" IC

order number	catalogue number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx driver
5593078	KTMDUWD15L040Z1	14,75	16,00	11,00	95,00	45,40	5,40	1	7970	KTMDUSCREW1	DT8
5593079	KTMDUWD20L060Z2	20,65	25,00	16,00	123,00	65,40	5,40	2	6740	KTMDUSCREW1	DT8
5593100	KTMDUWD23L070Z2	23,00	25,00	17,70	135,00	75,40	5,40	2	6380	KTMDUSCREW1	DT8
5593101	KTMDUWD26L080Z3	26,00	25,00	20,40	147,00	85,40	5,40	3	6000	KTMDUSCREW1	DT8
5593103	KTMDUWD31L095Z4	31,00	32,00	25,40	164,00	100,40	5,40	4	5500	KTMDUSCREW1	DT8

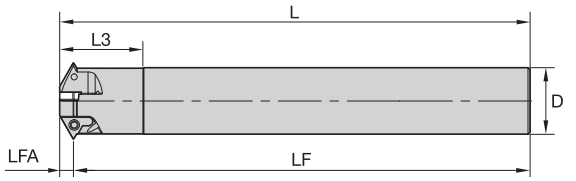
		Thread Application per Toolholder min thread Ø						
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	partial 55°	Trapez
KTMDUWD15L040Z1	14,75	M18 x 2.5; M24 x 3.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4–10	5/8–32UN; 5/8–28UN; 5/8–27UNS; 11/16–24UN; 11/16–20UN; 11/16–16UN; 3/4–14UNS; 3/4–12UN	3/8–19; 1/2–14; 1–11	11/16–14; 3/4–12; 7/8–11; 3/4–10; 1–8; 1 1/8–7	TR22 x 3; TR24 x 3
KTMDUWD20L060Z2	20,65	M24 x 3.0; M30 x 3.5	M22 x 0.5; M22 x 0.75; M22 x 1.0; M23 x 1.25; M23 x 1.5; M23 x 2.0	1–8UNC; 1 1/8 7 UNC; 1 3/8 6UNC	7/8–32UN; 7/8–28UN; 7/8–27UNS; 7/8–24UNS; 7/8–20UNEF; 1–18UNS; 15/16–16UN; 1–14UNS; 15/16–12UN; 1/10UNS	3/4–14; 1–11	1–26; 1–20; 1–16; 1–12; 1–10; 1 1/8–9; 1–8; 1 1/8–7	(TR26–TR60 x 3)
KTMDUWD23L070Z2	23,00	M27 x 3.0; M30 x 3.5; M36 x 4.0	M24 x 0.5; M24 x 0.75; M25 x 1.0; M25 x 1.25; M26 x 1.5; M26 x 2.0; M27 x 2.5	1 1/8–7	1–32UN; 1–28UN; 1–27UNS; 1–24UNS; 1–20UNEF; 1–18UNS; 1–16UN; 1–14UNS; 1–12UNF; 1 1/8–10UN; 1 1/8–8UN	3/4–14; 1–11	1–26; 1–20; 1–16; 11/16–12; 1 1/8–9; 1 1/8–7	–
KTMDUWD26L080Z3	26,00	M30 x 3.5; M36 x 4.0	M27 x 0.5; M27 x 0.75; M28 x 1.0; M28 x 1.25; M28 x 1.5; M29 x 2.0; M30 x 2.5; M30 x 3.0	1 1/4–7; 1 3/8–6	1 1/8–28UN; 1 1/8–24UNS; 1 1/8–20UN; 1 1/8–18UNEF; 1 1/8–16UN; 1 1/8–14UNS; 1 1/8–12UNF; 1 1/4–10UNS; 13/16–8UN	7/8–14; 1–11	1 1/8–26; 1 1/8–20; 1 3/8–16; 1 3/8–12; 1 3/16–8; 1 1/4–7	–
KTMDUWD31L095Z4	31,00	M36 x 4.0	M32 x 0.5; M32 x 0.75; M33 x 1.0; M33 x 1.25; M33 x 1.5; M34 x 2.0; M34 x 2.5; M35 x 3.0; M36 x 3.5	1 1/2–6	15/16–28UN; 1 3/8–24UNS; 15/16–20UN; 15/16–18UNEF; 15/16–16UN; 1 3/8–14UNS; 1 3/8–12UNF; 1 3/8–10UNS; 1 3/8–8UN	1 1/8–11	1 3/8–26; 1 3/8–20; 1 3/8–16; 1 3/8–12; 1 7/16–8	–



Thread Mill • U Style • Carbide Cylindrical Shank • 1/4" IC

order number	catalogue number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx driver
5593122	**KTMDUCD15L060Z1**	14,75	10,70	120,00	65,40	114,60	5,40	1	7970	**KTMDUSCREW1**	**DT8**
5593123	**KTMDUCD17L065Z2**	17,20	14,00	132,00	68,40	128,60	3,40	2	7380	**KTMDUSCREW1**	**DT8**
5593124	**KTMDUCD20L080Z2**	20,65	16,00	135,00	85,40	129,60	5,40	2	6740	**KTMDUSCREW1**	**DT8**

Thread Application per Toolholder min thread Ø									
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	partial 55°	Trapez
KTMDUCD15L060Z1	14,75	M18 x 2.5; M24 x 3.0; M30 x 3.5; M36 x 4.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4–10; 7/8–9; 1 1/8–7; 1 3/8–6	5/8–32UN; 5/8–28UN; 5/8–28UNS; 11/16–24UNEF; 11/16–20 UN; 11/16–16UN; 3/4–UNS; 11/16–12UN	1/2–14; 1–11	11/16–26; 11/16–20; 11/16–16; 11/16–14; 3/4–12; 7/8–11; 3/4–10; 7/8–9; 1–8; 1 1/8–7	TR22 x 3; TR24 x 3; TR20 x 4; TR22 x 5; TR24 x 5; TR26 x 5; TR28 x 5
KTMDUCD17L065Z2	17,20	M20 x 2.5; M22 x 2.5	M21 x 2.0	7/8–9	7/8–10UNS; 13/16–12UN	–	–	–
KTMDUCD20L080Z2	20,65	M24 x 3.0; M30 x 3.5; M36 x 4.0	M22 x 0.5; M22 x 0.75; M22 x 1.0; M23 x 1.25; M23 x 1.5; M23 x 2.0	1–8; 1 1/8–7; 1 3/8–6	7/8–32UN; 7/8–28UN; 7/8–27 UNSL; 7/8–24UNS; 7/8–20UNEF; 1–18–UNS; 15/16–16UN; 1–14UNS; 12UN;15/16–12UN; 1–10UNS	3/4–14; 1–11	1–26; 1–20; 1–16; 1–12; 1–10; 1 1/8–9; 1–8; 1 1/8–7	(TR26–TR60) x 3; TR28 x 4; (TR65–TR110) x 4; TR28 x 5



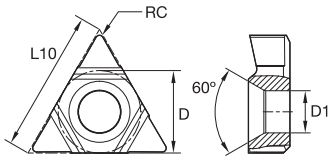


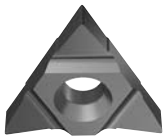
Thread Mill • U Style • Steel Cylindrical Shank • 1/4" IC




order number	catalogue number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx driver
5593128	KTMDUED23L086Z2	23,30	18,00	166,00	91,40	160,60	5,40	2	6340	KTMDUSCREW1	DT8
5593129	KTMDUED26L105Z3	26,00	20,00	186,00	110,40	180,60	5,40	3	6000	KTMDUSCREW1	DT8
5593131	KTMDUED31L115Z4	31,00	25,00	196,00	120,40	190,60	5,40	4	5500	KTMDUSCREW1	DT8

Thread Application per Toolholder min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	partial 55°
KTMDUED23L086Z2	23,30	M27 x 3.0; M30 x 3.5; M36 x 4.0	M24 x 0.5; M25 x 0.75; M25 x 1.0; M25 x 1.25; M26 x 1.5; M26 x 2.0; M27 x 2.5	1 1/8–7	1–32UN; 1–28UN; 1–27UN; 1–24UNS; 1–20UNEF; 1–18UNS; 1–16UN; 1–14UNS; 11/16–12UN; 1 1/8–10UNS; 1 1/8–8UN	3/4–14; 1–11	1–26; 1–20; 1 1/8–16; 1 1/8–12; 1 1/8–9; 1 1/8–7
KTMDUED26L105Z3	26,00	M30 x 3.5; M36 x 4.0	M27 x 0.5; M27 x 0.75; M28 x 1.0; M28 x 1.25; M28 x 1.5; M29 x 2.0; M30 x 2.5; M30 x 3.0	1 1/4–7; 1 3/8–6	1 1/8–28UN; 1 1/8–24UNS; 1 1/8–20UN; 1 1/8–18UNEF; 1 1/8–16UN; 1 1/8–14UNS; 1 1/8–12UNF; 1 3/8–10UNS; 1 7/16–8UN	7/8–14; 1–11	1 1/8–26; 1 1/8–20; 13/16–16; 13/16–12; 13/16–8; 1 1/4–7
KTMDUED31L115Z4	31,00	M36 x 4.0	M32 x 0.5; M32 x 0.75; M33 x 1.0; M33 x 1.25; M33 x 1.5; M34 x 2.0; M34 x 2.5; M35 x 3.0; M36 x 3.5	1 1/2–6	15/16–28UN; 1 1/2–24UNS; 1 1/2–20UN; 1 1/2–18UNEF; 1 3/8–16UN; 1 3/8–14UNS; 1 3/8–12UNF; 1 3/8–10UNS; 1 7/16–8UN	1 1/8–11	15/16–26; 15/16–20; 1 3/8–16; 1 3/8–12; 1 7/16–8





● first choice
○ alternate choice

P		●	○
M		○	●
K		●	
N		●	
S			●
H		○	●

KTMD • 1/4" IC • Partial Profile 60°

catalogue number	Thread Pitch min	Thread Pitch max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L0515N60	0.5	1.5	16	48	3,25	6,35	11,00	0,05	●	●
KTMDU11L1520N60	1.5	2.0	12	16	3,25	6,35	11,00	0,06	●	●
KTMDU11L2025N60	2.0	2.5	9	12	2,61	6,35	11,00	0,11	●	●
KTMDU11L2540N60	2.5	4.0	6	10	3,25	6,35	11,00	0,14	●	●
KTMDU11L2525N60	2.5	2.5	10	10	2,09	6,35	11,00	0,11	●	●

NOTE: KTMDU11L2525N60 can only be used with holder KTMDUCD17L065Z2.

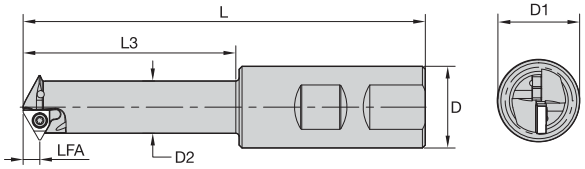
KTMD • 1/4" IC • Partial Profile 55°

catalogue number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L1107N55	7	11	3,25	6,35	11,00	0,24	●	●
KTMDU11L1612N55	12	16	3,25	6,35	11,00	0,08	●	●
KTMDU11L4816N55	16	48	3,25	6,35	11,00	0,11	●	●

KTMD • 1/4" IC

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

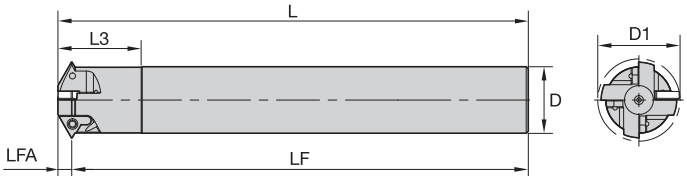




Thread Mill • U Style • Weldon® Shank • 3/8" IC

order number	catalogue number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx Plus driver
5593102	KTMDUWD36L095Z3	36,50	32,00	29,00	166,00	103,00	8,00	3	3900	KTMDUSCREW2	DT3IP
5593104	KTMDUWD42L120Z4	42,00	40,00	34,20	201,00	128,00	8,00	4	3430	KTMDUSCREW2	DT3IP

	Thread Application per Toolholder min thread Ø						
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	partial 55°
KTMDUWD36L095Z3	36,50	M42 x 4.5; M48 x 5.0; M56 x 5.5; M64 x 6.0	M39 x 1.5; M39 x 2.0; M40 x 2.5; M41 x 3.0; M42 x 3.5; M42 x 4.0	1 3/4–5; 2–4.5; 2 1/2–4	1 9/16–16UN; 1 5/8–14UNS; 1 9/16–12UN; 1 5/8–10UNS; 1 5/8–8UN; 1 5/8–6UN	1 1/4–11	1 5/8–16; 1 5/8–2 1 5/8–8; 2 1/4–6; 1 3/4–5
KTMDUWD42L120Z4	42,00	M48 x 5.0; M56 x 5.5; M64 x 6.0	M45 x 1.5; M45 x 2.0; M46 x 2.5; M48 x 3.0; M48 x 3.5; M48 x 4.0	2–4.5; 2 1/4–4	1 3/4–16UN;1 3/4–14UNS; 1 13/16–12UN; 113/16–8UN; 1 15/16–6UN	1 1/2–11	1 7/8–16; 1 7/8–12; 1 7/8–8; 1 7/8–6; 2–4.5

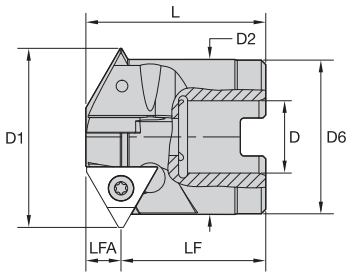


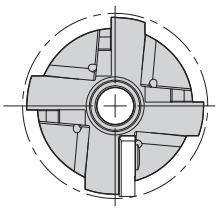


Thread Mill • U Style • Steel Cylindrical Shank • 3/8" IC

order number	catalogue number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593130	KTMDUED36L144Z3	36,50	28,00	222,00	152,00	214,00	8,00	3	3680	KTMDUSCREW2	DT3IP

	Thread Application per Toolholder min thread Ø						
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	partial 55°
KTMDUED36L144Z3	36,50	M42.5 x 4.5; M48 x 5.0; M56 x 5.5; M64 x 6.0	M39 x 1.5; M40 x 2.5; M41 x 3.0; M42 x 3.5; M42 x 4.0	1 3/4–5; 2–4.5; 2 1/2–4	1 9/16–16UN; 1 5/8–14UNS; 1 9/16–12UN; 1 5/8–10UNS; 1 5/8–UN; 1 5/8–6UN	1 1/4–11	1 5/8–16; 1 5/8–12; 1 5/8–8; 2 1/4–6; 1 3/4–5







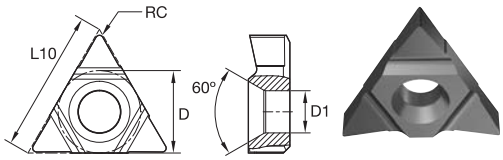
Thread Mill • U Style • Shell Mill • 3/8" IC





order number	catalogue number	D1	D	D2	D6	L	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593136	KTMDUSD42L400Z4	41,00	16,00	34,50	34,00	40,00	32,00	7,80	4	3430	KTMDUSCREW2	DT3IP
5593137	KTMDUSD48L400Z5	47,00	22,00	39,50	39,30	40,00	32,00	8,00	5	3210	KTMDUSCREW2	DT3IP
5593138	KTMDUSD56L400Z6	55,00	22,00	48,00	47,20	39,80	32,00	7,80	6	2970	KTMDUSCREW2	DT3IP

Thread Application per Toolholder min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	partial 55°
KTMDUSD42L400Z4	42,00	M48 x 5.0; M56 x 5.5; M64 x 6.0	M45 x 1.5; M45 x 2.0; M46 x 2.5; M48 x 3.0; M48 x 3.5; M48 x 4.0	2–4.5; 2 1/2–4	1 3/4–16UN; 1 3/4–14UNS; 1 13/16–12UN; 1 13/16–8UN; 1 15/16–6UN	1 1/2–11	1 7/8–16; 1 7/8–12; 1 7/8–8; 1 7/8–6; 2–4.5
KTMDUSD48L400Z5	48,00	M56 x 5.5; M64 x 6.0	M52 x 1.5; M52 x 2.0; M52 x 2.5; M52 x 3.0; M55 x 4.0	2 1/4–4.5; 2 1/2–4	2–16UN; 2–14UN; 2–12UN; 2 1/4–10UNS; 2 1/8–8UN; 2 1/8–6UN	1 3/4–11	2–16; 2 1/4–12; 2 1/4–8; 2 1/4–6; 3–5; 3 1/2–4.5; 2 1/4–4
KTMDUSD56L400Z6	56,00	M64 x 6.0	M60 x1.5; M60 x 2.0; M60 x 2.5; M60 x 3.0; M64 x 4.0	2 1/2–4	2 3/8–16UN; 2 3/8–14UN; 2 3/8–12UN; 2 1/2–10UNS; 2 3/8–8UN; 2 1/2–6UN	2–11	2 1/2–16; 2 1/2–12; 2 1/2–8; 2 3/4–6; 3–5; 3 1/2–4.5; 4 1/4–4



● first choice
○ alternate choice

P		●	○
M		○	●
K		●	
N		●	
S			●
H		○	●

KTMD • 3/8" IC • Partial Profile 60°

catalogue number	Thread Pitch min	Thread Pitch max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L1520N60	1.5	2.0	12	16	3,85	9,53	16,00	0,06	●	●
KTMDU16L2535N60	2.5	3.5	7	10	3,85	9,53	16,00	0,14	●	●
KTMDU16L4060N60	4.0	6.0	4	6	3,85	9,53	16,00	0,25	●	●

KTMD • 3/8" IC • Partial Profile 55°

catalogue number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L0604N55	5	6	3,85	9,53	16,00	0,27	●	●
KTMDU16L1107N55	7	11	3,85	9,53	16,00	0,24	●	●
KTMDU16L1612N55	12	16	3,85	9,53	16,00	0,08	●	–

KTMD • 3/8" IC

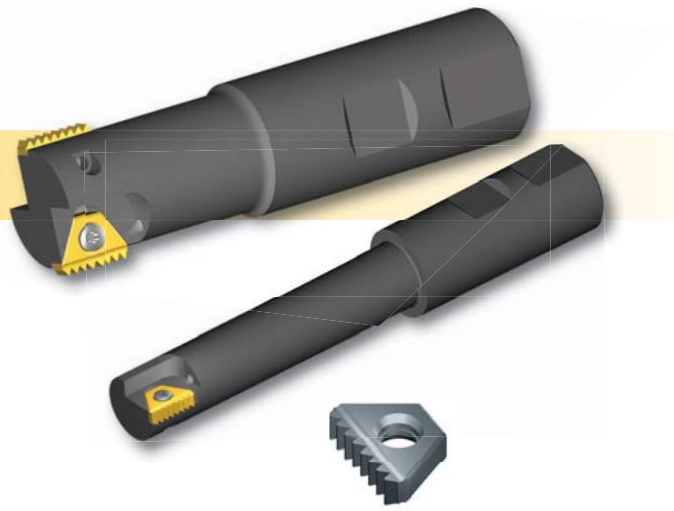
materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

TMS Series

Primary Application

The TMS series, a Kennametal Thread Milling System, is a versatile thread milling product with proven solutions. This tool is specially designed for internal and external threading on most types of workpiece materials. The cutter body utilises inserts with various profiles and pitches.



Features and Benefits

Proven solution and versatile indexable thread milling product family.

Comprehensive Offering of Cutter Bodies

- Standard Weldon®, Mini Weldon, long-thread Weldon, conical shank, and double-sided Weldon cutters are available.
- One tool is used for both right- and left-hand threads.
- All cutters have through coolant capability.

Double-Sided Weldon Cutter Bodies

- Provides faster machining capabilities.
- Good surface finish.

Inserts:

- Insert grades for most workpiece materials.
- Inserts for ISO, UN, BSPT, and NPT thread profiles.
- Indexable inserts.
- Economical and cost effective.
- Versatile application.

Internal Threads • Insert and Holder Recommendations

thread	tap hole fl (mm)	indexable insert	largest milling cutter
M11 x 0,75	10,19	STN10075ISO-I	9X1R .. STN10M
M12	10,11	STN10175ISO-I-C	9X1R015B20-STN10C
M12 x 1,00	10,92	STN10100ISO-I	9X1R .. STN10M
M14	11,84	STN11200ISO-I-C	11X1R .. STN11N
M16	13,84	STN11200ISO-I-C	11X1R .. STN11N
M20	17,29	STN16250ISO-I-C	15X1R020B16-STN16C
M20 x 1,50	18,38	STN11150ISO-I	11X1R .. STN11N
M20 x 1,00	18,92	STN11100ISO-I	11X1R .. STN11N
M24	20,75	STN22300ISO-I-C	18X1R030B25-STN22C
M24 x 2,00	21,84	STN16200ISO-I	17X1R022B16-STN16N
M24 x 1,50	22,38	STN11150ISO-I	11X1R .. STN11N
M24 x 1,50	22,38	STN16150ISO-I	17X1R022B16-STN16N
M27	23,75	STN22300ISO-I-C	18X1R030B25-STN22C
M30	26,21	STN27350ISO-I-C	25X1R040B25-STN27C
M30 x 2,00	27,84	STN16200ISO-I	22X1R025B25-STN16L
M33	29,21	STN27350ISO-I-C	25X1R040B25-STN27C
M33 x 2,00	30,84	STN16200ISO-I	22X1R025B25-STN16L
M33 x 1,50	31,38	STN16150ISO-I	22X1R025B25-STN16L
M35 x 1,50	33,38	STN16150ISO-I	22X1R025B25-STN16L
M36 x 2,00	33,84	STN16200ISO-I	22X1R025B25-STN16L
M42 x 2,00	39,84	STN27200ISO-I	30X1R052B25-STN27N
M45 x 2,00	42,84	STN27200ISO-I	37X1R .. STN27N or L
M48 x 2,00	45,84	STN27200ISO-I	37X1R058B32-STN27N or L
M55 x 2,00	52,84	STN27200ISO-I	37X1R .. STN27N or L
M56 x 2,00	53,84	STN27200ISO-I	37X1R .. STN27N or L
M72 x 2,00	69,84	STN27200ISO-I	37X1R .. STN27N or L

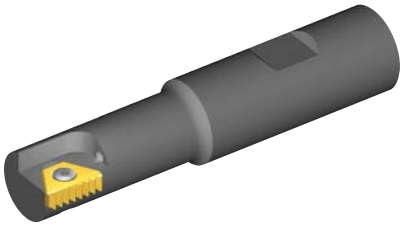
Internal Threads • Insert and Holder Recommendations

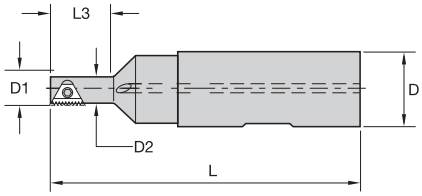
thread	tap hole fl (mm)	indexable insert	largest milling cutter
9/16 - 18UNF	12,76	STN1018UN-I	9X1R .. STN10M
5/8 - 24UNEF	14,73	STN1124UN-I	11X1R .. STN11N
5/8 - 18UNF	14,35	STN1118UN-I	11X1R .. STN11N
3/4 - 20UNEF	17,68	STN1120UN-I	11X1R .. STN11N
3/4 - 16UNF	17,33	STN1116UN-I	11X1R .. STN11N
7/8 - 14UNF	20,26	STN1114UN-I	11X1R .. STN11N
1 - 16UN	23,68	STN1616UN-I	18X1R030B25-STN22C
1 - 12UNF	23,11	STN1612UN-I	17X1R .. STN16N
1 1/8 - 12UNF	26,28	STN1612UN-I	22X1R .. STN16L
1 1/4 - 12UNF	29,46	STN1612UN-I	22X1R .. STN16L
1 3/8 - 12UNF	32,63	STN1612UN-I	22X1R .. STN16L

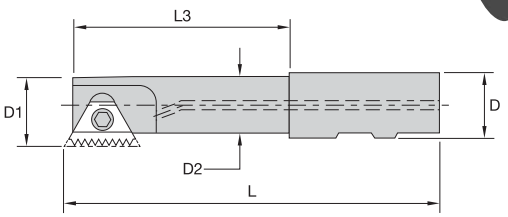
Whitworth Pipe Thread (Internal) to DIN 259

thread	tap hole fl (mm)	indexable insert	largest milling cutter
R 5/8	20,59	STN1614BSW	17X1R022B16-STN16N
R 3/4	24,12	STN1614BSW	20X1R043B20-STN16N
R 7/8	27,88	STN1614BSW	22X1R025B25-STN16L
R 1	30,29	STN1611BSW	22X1R025B25-STN16L

- For internal and external threading on most types of workpiece materials.
- One tool is used for both right-hand and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.







Thread Mill • Mini

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1132616	**9X1R012B12STN10M**	9,00	12,00	6,80	69,00	12,00	1	39935	STN10	**SN7T**	1,7	**DT7**
1191395	**9X1R017B20STN10M**	9,00	20,00	6,80	84,00	17,00	1	39935	STN10	**SN7T**	1,7	**DT7**

Thread Mill • Normal Shank • STN11

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1294964	**11X1R012B12STN11N**	11,50	12,00	8,90	70,00	12,00	1	36825	STN11	**SN2TPKG**	1,7	**DT8**
1130302	**11X1R020B20STN11N**	11,50	20,00	8,90	85,00	20,00	1	36825	STN11	**SN2TPKG**	1,7	**DT8**

Thread Mill • Normal Shank • STN16

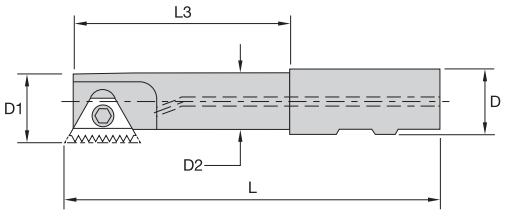
order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1130686	**17X1R022B16STN16N**	17,00	16,00	13,60	90,00	22,00	1	25750	STN16	**SN3TM**	2,3	**DT10**
1130740	**20X1R043B20STN16N**	20,00	20,00	16,60	95,00	43,00	1	23330	STN16	**SN3TPKG**	2,3	**DT10**

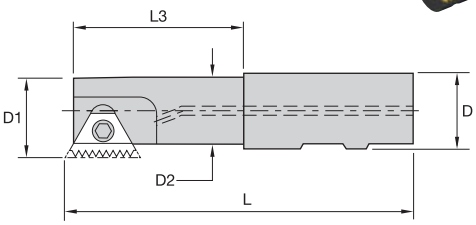
Thread Mill • Normal Shank • STN27

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1130969	**30X1R052B25STN27N**	30,00	25,00	24,00	110,00	52,00	1	12900	STN27	**SN5TM**	5,0	**TT25**
1131069	**37X1R058B32STN27N**	37,00	32,00	27,00	120,00	58,00	1	11600	STN27	**SN5TM**	5,0	**TT25**

- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.







Thread Mill • Normal Shank • STN.38



order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1178986	35X1R055B32STNB38N	35,00	32,00	31,00	115,00	55,00	1	11000	STNB38	SM7TPKG	6,5	TT30

Thread Mill • Long Shank • STN16



order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1130837	22X1R025B25STN16L	22,00	25,00	18,60	125,00	25,00	1	22230	STN16	SN3TPKG	2,3	DT10

Thread Mill • Long Shank • STN27



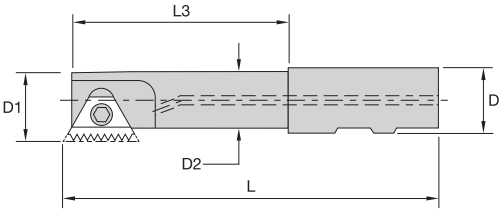
order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1130977	30X1R092B25STN27L	30,00	25,00	24,00	150,00	92,00	1	12900	STN27	SN5TM	5,0	TT25
1131086	37X1R098B32STN27L	37,00	32,00	31,00	160,00	98,00	1	11600	STN27	SN5TM	5,0	TT25

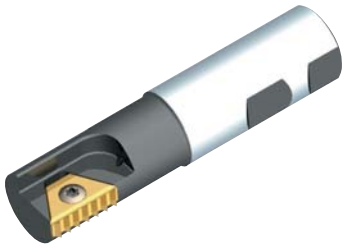
Thread Mill • Long Shank • STN38



order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1566071	46X1R100B40STNB38L	46,00	40,00	38,00	170,00	100,00	1	10000	STNB38	SM7TPKG	6,5	TT30

- Thread Milling System.



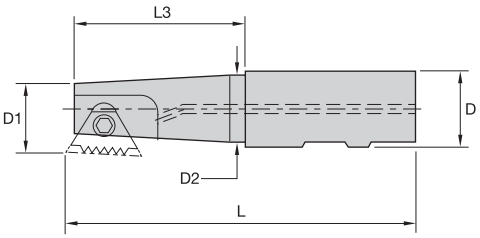


Thread Mill • Internal Coarse Pitch Thread

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176964	**15X1R020B16STN16C**	15,50	16,00	12,200	91,00	–	1	26550	STN16___C
1176967	**25X1R040B25STN27C**	25,00	25,00	19,000	98,00	40,00	1	22000	STN27___C

Spare Parts

D1	 insert screw	 Nm	 Torx driver	 Torx wrench
15,50	**SN3TPKG**	2,30	**DT10**	**–**
25,00	**SN5TM**	5,00	**–**	**TT25**





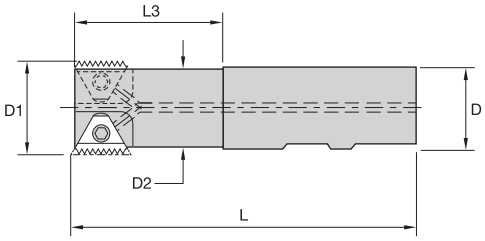
Thread Mill • Tapered Shank • Right Hand

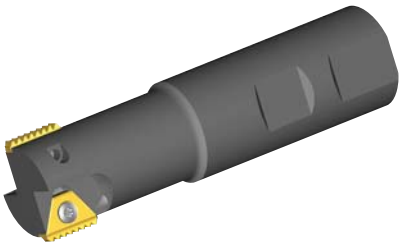
order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176970	**10X1R015B20STN11T**	9,90	20,00	7,40	77,00	15,50	1	36500	STN11
1132781	**15X1R022B16STN16T**	15,50	16,00	12,50	80,00	22,00	1	26550	STN16
1135826	**19X1R023B20STN16T**	19,00	20,00	15,00	85,00	23,00	1	24350	STN16

Spare Parts

D1	 insert screw	 Nm	 Torx driver
9,90	**SN2TPKG**	1,70	**DT8**
15,50	**SN3TPKG**	2,30	**DT10**
19,00	**SN3TM**	2,30	**DT10**

- Cutting diameter ranges from 26–42mm.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



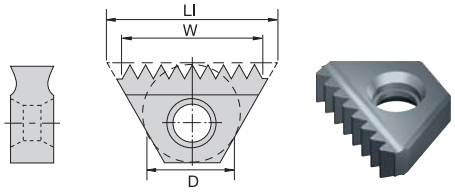


Thread Mill • Double Insert

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1
1124019	**26X2R043B25STN16D**	26,00	25,00	22,50	100,00	43,00	2	20530	STN16
1131118	**42X2R045B32STN27D**	42,00	32,00	36,00	120,00	45,00	2	10900	STN27

Spare Parts

D1	 insert screw	 Nm	 Torx driver	 Torx wrench
26,00	**SN3TPKG**	2,30	**DT10**	**–**
42,00	**SN5TM**	5,00	**–**	**TT25**



● first choice
○ alternate choice

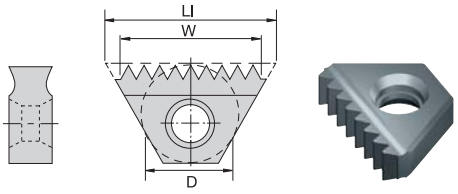
		KC610M	KC620M	KC635M
P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

Internal • UN Thread • Unified Thread Standard Style

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1018UNI	18	6,00	10,41	8,38	6	–	–	●
STN1020UNI	20	6,00	10,41	8,89	7	–	–	●
STN1114UNI	14	6,35	10,92	9,14	5	–	–	●
STN1116UNI	16	6,35	10,92	9,65	6	–	–	●
STN1118UNI	18	6,35	10,92	9,91	7	–	–	●
STN1120UNI	20	6,35	10,92	10,16	8	–	–	●
STN1124UNI	24	6,35	10,92	9,65	9	–	–	●
STN1612UNI	12	9,53	16,00	14,73	7	–	–	●
STN1614UNI	14	9,53	16,00	14,48	8	–	–	●
STN1616UNI	16	9,53	16,00	14,22	9	●	–	–
STN1624UNI	24	9,53	16,00	14,73	14	–	–	●
STN1627UNI	27	9,53	16,00	14,22	15	–	–	●
STN1632UNI	32	9,53	16,00	14,99	9	–	–	●

External • UN Thread • Unified Thread Standard Style

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118UNE	18	6,35	10,92	9,91	7	–	–	●
STN1614UNE	14	9,53	16,00	14,48	8	–	–	●
STN1616UNE	16	9,53	16,00	14,22	9	–	–	●
STN1620UNE	20	9,53	16,00	13,97	11	–	–	●
STN1624UNE	24	9,53	16,00	14,73	14	–	–	●



● first choice
○ alternate choice

		KC610M	KC620M	KC635M
P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

Internal • ISO Thread • ISO Metric Screw Thread Style

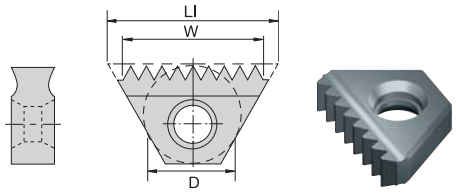
catalogue number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN10075ISOI	0,75	6,00	10,41	9,65	13	–	–	●
STN10100ISOI	1,0	6,00	10,41	8,89	9	–	●	●
STN10150ISOI	1,5	6,00	10,41	8,89	6	–	–	●
STN10125ISOI	1,25	6,00	10,41	8,64	7	–	–	●
STN11100ISOI	1,0	6,35	10,92	9,91	10	–	–	●
STN11150ISOI	1,5	6,35	10,92	10,41	7	–	–	●
STN16100ISOI	1,0	9,53	16,00	14,99	15	–	–	●
STN16150ISOI	1,5	9,53	16,00	14,99	10	–	–	●
STN16175ISOI	1,75	9,53	16,00	13,97	8	–	–	●
STN16200ISOI	2,0	9,53	16,00	13,97	7	–	–	●

External • ISO Thread • Metric Screw Thread Style • Coarse

catalogue number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN22300ISOIC	3,0	12,70	22,10	18,00	6	●	–	–
STN27350ISOIC	3,5	15,88	26,92	24,50	7	●	–	–

External • ISO Thread • ISO Metric Screw Thread Style

catalogue number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16150ISOE	1,5	9,53	16,00	14,99	10	●	●	–
STN27200ISOE	2,0	15,88	26,92	23,88	12	●	–	–



● first choice
○ alternate choice

P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

BSW Thread • British Standard Whitworth Thread Style

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1119BSW	19	6,35	10,92	9,40	7	–	–	●
STN1611BSW	11	9,53	16,00	13,97	6	●	–	●
STN1612BSW	12	9,53	16,00	14,73	7	–	–	●
STN1614BSW	14	9,53	16,00	14,48	8	●	–	●
STN2711BSW	11	15,88	26,92	23,11	10	–	–	●

NPS Thread • Nominal Pipe Size Style

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16115NPS	11.5	9,53	16,00	13,21	6	–	–	●
STN1614NPS	14.0	9,53	16,00	14,48	8	–	–	●

NPT Thread • National Pipe Thread Taper Style

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPT	18.0	6,35	10,92	9,91	7	–	–	●
STN16115NPT	11.5	9,53	16,00	13,21	6	–	–	●
STN1614NPT	14.0	9,53	16,00	14,48	8	–	–	●

NPTF Thread • National Pipe Thread Fine Style

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPTF	18.0	6,35	10,92	9,91	7	–	–	●
STN16115NPTF	11.5	9,53	16,00	13,21	6	–	–	●
STN1614NPTF	14.0	9,53	16,00	14,48	8	–	–	●

NOTE: NPTF = Dry Seal
NPT and NPTF inserts possess right- and left-hand edges.
Must order left-hand bar for left-hand inserts.

TMS Series

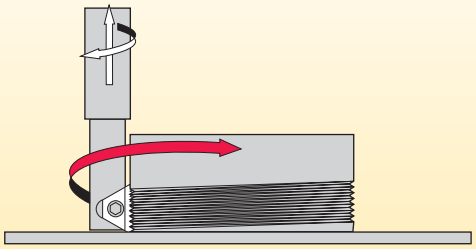
materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

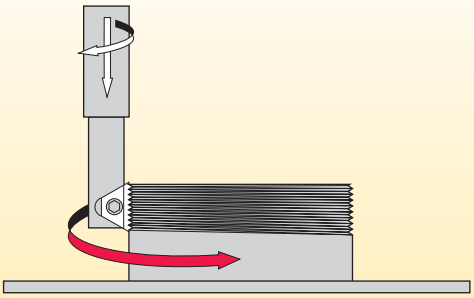
The Following Are a Few Thread Milling Methods (Work Directions)

NOTE: Climb milling results in lower cutting forces, better chip development, higher thread surface quality, and longer insert life. Therefore, it should be used whenever possible. But, in the case of some hardened materials or when milling certain difficult-to-machine exotic materials, conventional milling may be preferred.

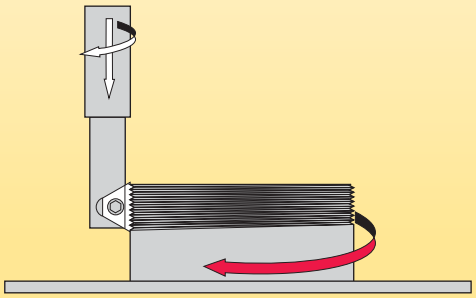
Methods of External Thread Milling



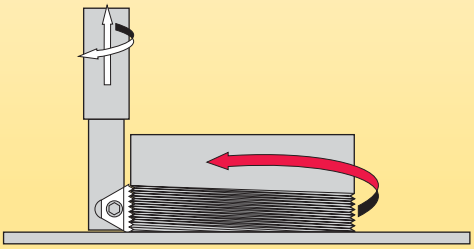
right-hand thread... conventional milling



left-hand thread... conventional milling

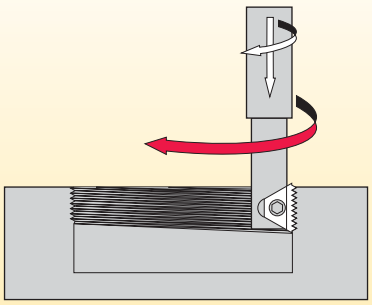


right-hand thread... climb milling

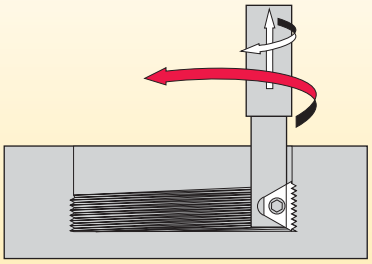


left-hand thread... climb milling

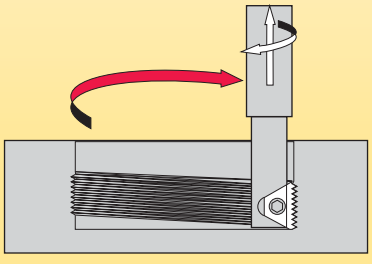
Methods of Internal Thread Milling



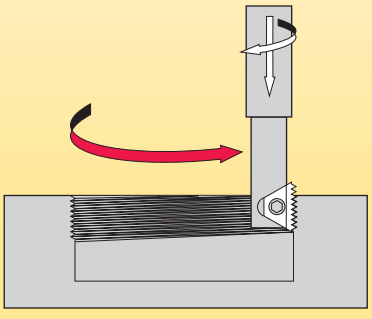
right-hand thread... conventional milling



left-hand thread... conventional milling



right-hand thread... climb milling



left-hand thread... climb milling

Application Guidelines

- All thread milling inserts are full profile or cresting type.
- Inserts are designed to mill full thread depth in one revolution or pass.
- When machining difficult materials, two passes may be desired. A 60% thread depth on the first pass and a 40% thread depth on the second pass is recommended.
- Thread relief grooves in blind holes are not necessary.
- Thread milling large parts requires considerably less horsepower compared to other threading methods.
- Thread milling produces short chips compared to stringy chips of other threading methods.
- One holder is suitable for many different thread pitches.
- PVD-coated inserts provide maximum tool life for a wide variety of materials.

Minimum Bore Diameters

UN-ISO-BSW

	TPI	48	32	24	20	16	12	10	8	7	6	5.5	5	4.5	4.5	4	4
	pitch mm	0,5	0,75	1,0	1,25	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	–	6,0	–
cutter	cutter diameter (D1 mm)	minimum bore diameter (D) (mm)															
K035TM1RW050-STN10	8,89	9,50	10,01	10,69	11,40												
K045TM1RW050-STN11N	11,43	11,99	12,50	13,21	13,89	14,50											
K049TM1RW037LT11S	12,45	13,00	13,49	14,20	14,91	15,49											
K061TM1RW062-STN16T	15,49	16,00	16,51	16,94	17,91	18,49	19,51										
K067TM2RW075-STN11D	17,02	17,60	18,21	19,00	19,61	19,99	21,01										
K075TM1RW075-STN16T	19,05	19,71	20,40	21,01	21,59	22,00	23,01										
K079TM1RW075-STN16N	20,07	20,70	21,41	22,00	22,61	23,01	24,00										
K087TM1RW100-STN16L	22,10	22,68	23,39	24,00	24,61	24,99	26,01										
K102TM2RW100-STN16D	25,91	26,70	27,41	27,99	28,70	29,31	30,30										
K118TM1RW100-STN27N	29,97	30,71	31,39	32,00	32,79	33,50	34,59	36,60	38,99	42,01	45,01	48,01					
K146TM1RW125-STN27N	37,08	38,00	38,61	39,50	40,41	41,00	42,01	43,99	46,48	49,00	51,99	55,50					
K165TM2RW125-STN27D	41,91	43,21	43,79	45,01	46,00	46,51	47,40	49,00	51,99	54,51	57,61	60,99					
–	35,05 (UN)	–	–	–	–	–	–	–	–	–	50,01	–	46,81	–	44,60	–	56,59
–	35,05 (ISO)	–	–	–	–	–	–	–	–	–	50,01	53,39	42,49	50,01	–	57,51	–
–	35,05 (BSW)	–	–	–	–	–	–	–	–	–	49,81	–	46,51	–	47,40	–	–

Cutting Data Recommendation

workpiece material	Cutting Speed — vc m/min	feed rate per revolution (mm)
	KC635M	
carbon steels <187 HB	90–210	0,10–0,20
carbon steels 187–220 HB	90–150	0,10–0,15
alloy steel 200–250 HB	60–130	0,10–0,15
alloy steel 250–325 HB	50–90	0,10–0,15
stainless steel, austenitic <210 HB	90–140	0,10–0,15
stainless steel, martensitic <321 HB	80–110	0,05–0,15
stainless steel, ferritic <245 HB	110–170	0,05–0,10
cast steel <140 HB	110–170	0,05–0,15
cast steel 220–302 HB	70–130	0,05–0,10
titanium alloys	60–120	0,03–0,08
high-temperature (nickel and iron base)	20–45	0,03–0,05
high-temperature (cobalt base)	15–30	0,03–0,05
cast iron	80–110	0,05–0,15
malleable iron	80–120	0,03–0,08

NOTE: Applications in this area may be machined with special inserts and cutter bodies. Quoted on request.

Understanding Thread Milling

In order to perform a thread milling operation, a milling machine with three-axis control, capable of helical interpolation, is required. Helical interpolation is a CNC function producing tool movement along a helical path. This helical travel combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (figure A) on the envelope of the cylinder combines a circular movement in the X and Y plane with a linear movement in the Z direction.

On most CNC systems, this function can be executed in two different ways:

- G02: helical interpolation in a clockwise direction
- G03: helical interpolation in an anti-clockwise direction

The thread milling operation (figure B) consists of circular rotation of the tool about its own axis together with an orbiting motion along the bore or workpiece circumference.

During one such orbit, the tool will move vertically one pitch length. These movements, combined with the insert geometry, create the required thread form.

There are two acceptable ways of approaching the workpiece with the tool to initiate production of the thread:

1. Along a tangential arc.
2. Along a tangential straight line.

NOTE: Climb milling is preferred.

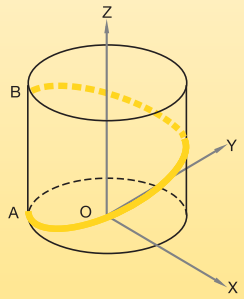
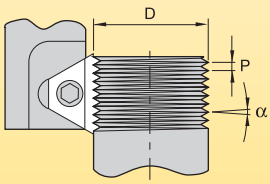


figure A



α - helix angle
D - external diameter
P - pitch

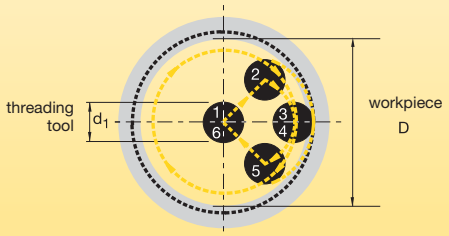
figure B

Tangential Approach (Arc)

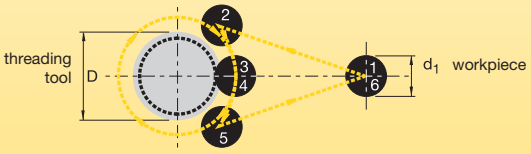
With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials.

Although it requires slightly more complex programming, this is the method recommended for machining the highest quality threads.

1–2:	rapid approach
2–3:	tool entry along tangential arc with simultaneous feed along Z-axis
3–4:	helical movement during one full orbit (360°)
4–5:	tool exit along tangential arc with continuing feed along the Z-axis
5–6:	rapid return



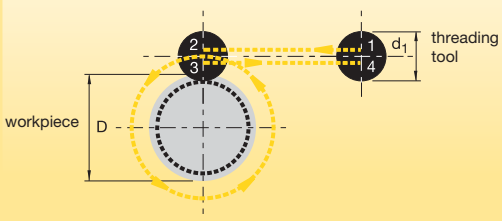
internal left-hand thread



external thread

Tangential Approach (Line)

This method is very simple and has all of the advantages of the tangential arc method. However, it is applicable only to external threads.



1–2:	radial entry with simultaneous feed along the Z-axis
2–3:	helical movement during one full orbit (360°)
3–4:	radial exit

Radial Approach

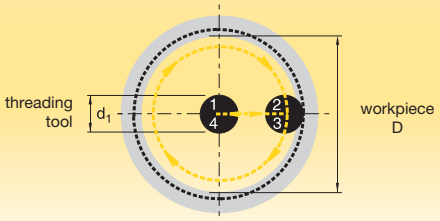
This radial approach is often considered the simplest. There are two characteristics worth noting about the radial approach:

a. A small vertical mark may be left at the entry (and exit) point. This is of no significance to the thread itself.

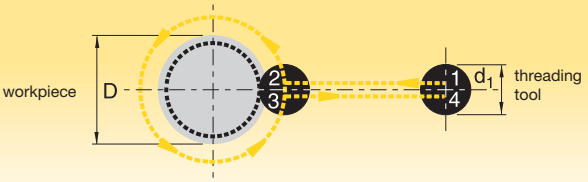
b. When using this method with very hard materials, there may be a tendency for the tool to vibrate as it approaches the full cutting depth.

1–2:	radial entry
2–3:	helical movement during one full orbit (360°)
3–4:	radial exit

NOTE: Radial feed during entry to the full profile depth should be only 1/3 of the subsequent circular feed.



internal thread



external thread

Calculation of Feed Rates at the Cutting Edge

The first step is to calculate the tool feed rate at the cutting edge:

$$F_1 = fz \times Z \times n$$

F_1 = tool feed rate at the cutting edge (mm/min)
fz = mm per tooth (feed rate)
Z = number of effective inserts in cutter
n = rotational speed (spindle RPM)

The rotational speed (RPM) is calculated by the following formula:

$$RPM = \frac{1000 \times Vc}{\pi \times d_1}$$

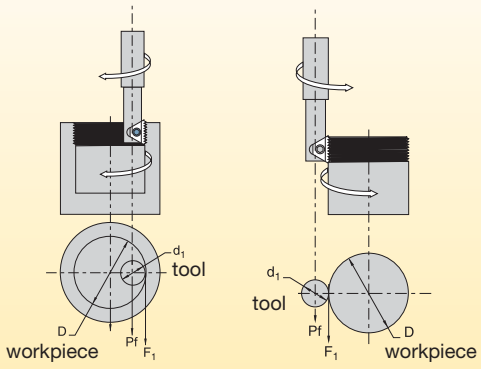
SFM = cutting speed, surface feet per minute
d_1 = cutter diameter, over insert
π = 3,1416

Calculation of Programme Feed Rate

On most CNC machines, the feed rate required for programming is at the centreline of the tool. When dealing with linear tool movement, the feed rate at the cutting edge and the centreline are identical. With circular tool movement this is not the case. The following equations define the relationship between feed rates at the cutting edge and at the tool centreline.

$$P_1 = F_1 + \frac{(F_1 \times d_1)}{D}$$

P_1 = programme feed rate (mm/min)
D = major diameter (external thread)
D = minor diameter (internal thread)
d_1 = cutting diameter, over insert



external thread internal thread

tool workpiece

Step-by-Step Thread Milling Example

thread: internal right hand 11/4 x 16 UN–2B–RH(21)
material: AISI 4140 (300 HB)
thread diameters: D (minimum bore dia.) = 30mm
Do (nominal dia.) = 31,75mm
thread length: 12,77mm

For best thread quality, the cutter with the largest d1 (cutter diameter) should be used. This cutter diameter can be found in the table on page W49, as a function of pitch and minimum bore diameter "D". The result for the above example is that any cutter diameter 25mm or smaller can be utilised.

A cutter with a smaller d1 will perform the thread milling operation in less time. The smaller d1 may result in less tool rigidity, so it should be used with caution on very tough materials.

Find the appropriate normal-length shank cutter diameter on pages W40–W43
Use the minimum bore diameter table below for reference.

pitch (TPI)	24	20	16	12
pitch mm	1,0	1,25	1,5	2,0
cutter dia. d_1	minimum bore diameter D			
17,02	19,00	19,61	19,99	21,01
19,05	21,01	21,59	22,00	23,01
20,07	22,00	22,61	23,01	24,00

Figure B: cutter selected: K079TMIRW075STN16N
outer dimensions: d_1 = 20,07mm, R_t (radius of tool) = $d_1 \div 2$ = 10,035mm

Choosing Insert Size

The insert IC is defined by the selected cutter (STN16).
Use the appropriate insert table on pages W44–W46.

insert IC	a (mm)	pitch (TPI)	internal thread catalogue number	b thread length (mm)	number of teeth	grade KC610M	grade KC620M	external thread catalogue number	b thread length (mm)	number of teeth	grade KC610M	grade KC620M	cutter type
		32	STN16 32UN-I	14,99	19	□	□	STN16 32UN-E	14,99	19	□	□	
		28	STN16 28UN-I	14,48	16	■	■	STN16 28UN-E	14,48	16	□	□	
		27	STN16 27UN-I	14,22	15	□	■	STN16 27UN-E	14,22	15	■	□	
		24	STN16 24UN-I	13,97	14	□	□	STN16 24UN-E	14,73	14	■	□	
9,53	16	20	STN16 20UN-I	13,97	11	■	■	STN16 20UN-E	13,97	11	■	■	STN16
		18	STN16 18UN-I	14,22	10	■	■	STN16 18UN-E	14,22	10	■	■	
		16	STN16 16UN-I	14,22	9	■	■	STN16 16UN-E	14,22	9	■	■	
		14	STN16 14UN-I	14,48	8	■	■	STN16 14UN-E	14,48	8	■	■	
		13	STN16 13UN-I	13,72	7	□	□	STN16 13UN-E	13,72	7	□	□	
		12	STN16 12UN-I	14,73	7	■	■	STN16 12UN-E	14,73	7	■	■	□

insert selected: STN16 16UN-I
■ stock standard
□ non-stock standard

Step-by-Step Thread Milling Example

Calculate the feed rates:

First, find the RPM.

$$RPM = \frac{1000 \times Vc}{\pi \times d_1} = \frac{1000 \times 150}{\pi \times 20} = 2387 \text{ RPM}$$

Next, calculate the feed rate at the insert cutting edge (F_1):

(using the chosen feed per tooth of 0,1mm.)

$$F_1 = F_z \times Z \times N = 0{,}1 \times 1 \times 2387 = 238{,}7 \text{ mm/min}$$

Finally, calculate the feed rate at the cutter centreline (F_2):

$$F_2 = \frac{F_1 \times (D - d_1)}{D} = \frac{238{,}7 \times (30-20)}{30} = 79{,}57 \text{ mm/min}$$

Select the thread milling method.

Climb milling (preferred) see page W48.

Calculate the radius of the tangential arc R_e:

$$R_e = \frac{(R_i - C_L)^2 + R_O^2}{2 \times R_O} = \frac{(15-0{,}5)^2 + 15{,}875^2}{2 \times 15{,}875}$$

R_e = 14,55mm

Calculate the angle (β):

$$\beta = 90° + \arcsin \frac{R_O - R_e}{R_e}$$

$$\beta = 90° + \arcsin \frac{15{,}875 - 14{,}55}{14{,}55}$$

β = 90° + 5.17° = 95,2° = 95° 12'

Calculate the movement along the Z-axis during the entry approach from point "A" to point "B" ($Z\alpha$). (NOTE: P = pitch)

$$Z_\alpha = P \text{ (mm)} \times \frac{\alpha°}{360°} = \frac{1{,}578}{4} = 0{,}394\text{mm because } \alpha = 90°$$

Calculate the "X" and "Y" values at the start of the entry approach.

X = 0Y = $R_i + C_L$ = 15 + 0,5 = 15,5mm

Define Z-axis location at the start of the entry approach. (NOTE: L = length of thread)

Z = (L + Z_α) = 12,7 + 0,3945 = 13,0945mm

Define the starting point.

$X_a = 0$

$Y_a = 0$

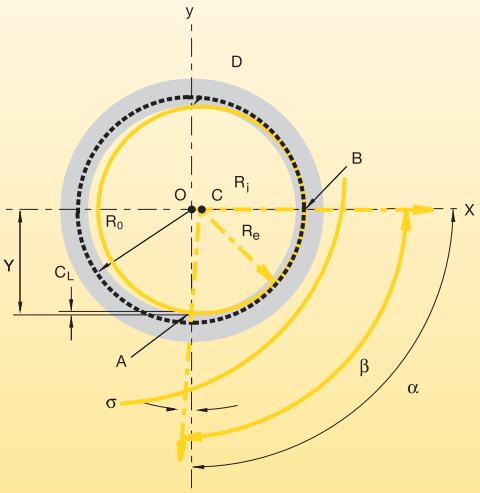
CNC Programme (Fanuc 11M)

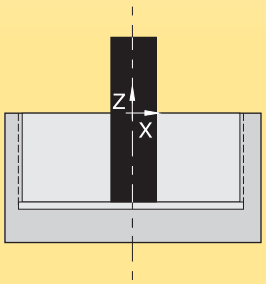
```
%
N10G90G00G57X0.000Y0.000
N20G43H10Z0.M3S2417
N30G91G00X0.Y0.Z–0.5156
N40G41D60X0.000Y–0.5710Z0.
N50G03X0.6250Y0.5710Z0.0156R0.5733F3.206
N60G03X0.Y0.Z0.0625I–0.625J0.
N70G03X–0.625Y0.5710Z0.0156R0.5733
N80G00G40X0.Y–0.5710Z0.
N90G49G57G00Z8.0M5
N100M30
%
```

$$R_i = \frac{D}{2} \qquad R_O = \frac{D_O}{2}$$

D = minor diameter **D_O = nominal diameter**

α 90°





Step-by-Step Thread Milling Example

Appendix A

Derivation of Formulas for Internal Thread Milling

R_e, β, and X can be found by a geometric analysis of the entry path.

This entry path is defined by the tool traveling along a circular path, with a radius of R_e about the point C.

$$R_e = \frac{(R_i - C_L)^2 + R_o^2}{2R_o}$$

Triangle OAC enables us to simply solve for R_e.
Note that OAC is a right angle triangle, and that:

$OA = R_i - C_L$
$CA = R_e$
$OC = R_o - R_e$

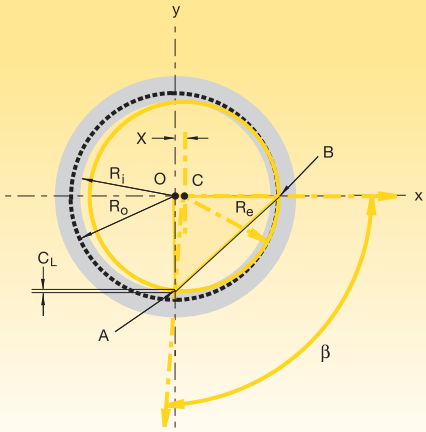
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

$$(R_i - C_L)^2 + (R_o - R_e)^2 = R_e^2$$

Simplifying, we get:

$$R_e = \frac{(R_i - C_L)^2 + R_o^2}{2R_0}$$



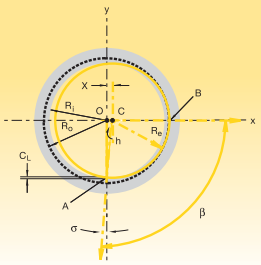
Find the angle β.

$\beta = 90° + \sigma$

$\sin \sigma = \frac{OC}{CA} = \frac{(R_o - R_e)}{R_e}$

$\sigma = \text{arc sin} \left(\frac{R_o - R_e}{R_e}\right)$

Therefore, $\beta = 90° + \text{arc sin} \left(\frac{R_o - R_e}{R_e}\right)$



Appendix B

Derivation of Formulas for External Thread Milling

R_e, β, and X can be found by a geometric analysis of the entry path.

This entry path is defined by the tool traveling along a circular path, with a radius of R_e about the point C.

$$R_e = \frac{(R_o - C_L)^2 + R_i^2}{2R_i}$$

Triangle OAC enables us to simply solve for R_e.
Note that OAC is a right angle triangle, and that:

$OA = R_o - C_L$
$CA = R_e$
$OC = R_e - R_i$

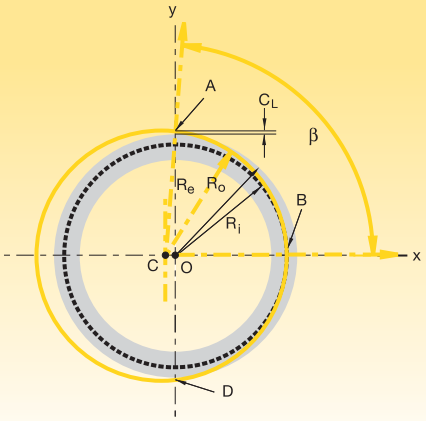
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

$$(R_o - C_L)^2 + (R_e - R_i)^2 = R_e^2$$

Simplifying, we get:

$$R_e = \frac{(R_o - C_L)^2 + R_i^2}{2R_i}$$

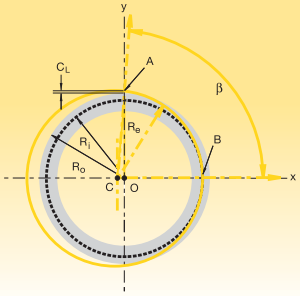


Find the angle β.

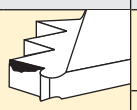
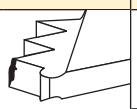
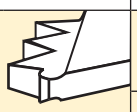
β can be easily found using the same triangle:

$\sin \beta = \frac{AO}{AC} = \frac{(R_o + C_L)}{R_e}$

$\beta = \text{arc sin} \left(\frac{R_o + C_L}{R_e}\right)$



Thread Mill Troubleshooting

problem	possible cause	solution
excessive insert flank wear 	• Cutting speed too high.	• Reduce cutting speed.
	• Chip is too thin.	• Increase feed rate.
	• Insufficient coolant.	• Increase coolant quantity/pressure.
chipping of cutting edge 	• Chip is too thick.	• Reduce feed rate. • Use the tangential arc method of entrance. • Increase RPM.
	• Vibration.	• Check rigidity.
material build-up on the cutting edge 	• Cutting speed too slow.	• Increase cutting speed.
	• Chip thickness too small.	• Increase feed rate.
chatter/vibration	• Feed rate is too high.	• Reduce the feed.
	• Profile is too deep (coarse pitch threads).	• Execute two passes, each with increased cutting depth. • Execute two passes, each cutting only half the thread length.
	• Thread length is too long.	• Execute two passes, each cutting only half of the thread length.
insufficient thread accuracy	• Tool deflection.	• Reduce feed rate. • Execute a zero cut.

Insert Tolerance Classes

thread designation	standard designation	tolerance class
UN	ANSI B 1.174	2A/2B
UNJ	MIL-S-8879A	3A/3B
ISO	R262 (DIN 13)	6g/6H
NPT	USAS B2.1 : 1968	standard NPT
NPTF	ANSI B 1.20.3-1976	standard
BSW	B.S. 84 : 1956, DIN 259, ISO 228/1 : 1982	medium class A
BSPT	B.S. 21 : 1985	standard BSPT
ACME	ANSI B1/5 : 1988	3G
PG	DIN 40430	standard
TR	DIN 103	7e/7H


ORIGIN
ABS/0
mm
OFF
ON

Indexable Milling • Technical Information • Recommended Starting Speeds

Overview Wrenches X2–X3

Technical Information X4–X20

Recommended Starting Speeds X22–X37

NOTE: Kennametal screw drivers, bits, torque wrenches, and bit drivers can be ordered separately, if needed.








drive size	1/4" bit 25mm length	order number	1/4" bit extended length	order number	screw driver	order number	Flag-Type Screw Driver	order number	Allen key	order number	T-Handle Screw Driver	order number
hex 1,5	–	–	–	–	170.270	**1126021**	–	–	170.000	**1138273**	–	–
hex 2,0	–	–	–	–	170.222	**1191006**	–	–	170.001	**1138280**	–	–
hex 2,5	170.179	**1138851**	–	–	170.224	**1138870**	–	–	170.002	**1138297**	–	–
hex 3,0	170.180	**1150198**	BTQSW3L90	**6205876**	170.225	**1138879**	–	–	170.003	**1138307**	THW3M	**2229285**
hex 3,5	–	–	–	–	–	–	–	–	–	–	THW35M	**1931555**
hex 3,5/Torx 15,0	–	–	–	–	–	–	FT1535	**1021609**	–	–	–	–
hex 4,0/Torx 15,0	–	–	–	–	–	–	FT154	**1021611**	–	–	–	–
hex 4,0	170.181	**1138857**	–	–	170.226	**1191007**	–	–	170.004	**1138315**	THW4M	**1931556**
hex 5,0	–	–	–	–	–	–	–	–	170.005	**1138323**	170.135	**1138748**
hex 6,0	–	–	–	–	–	–	–	–	170.006	**1138331**	170.136	**1138755**
hex 8,0	–	–	–	–	170.229	**1191010**	–	–	170.008	**1135984**	–	–
hex 9,0	–	–	–	–	–	–	–	–	170.009	**2272577**	–	–
hex 10,0	–	–	–	–	–	–	–	–	–	–	–	–
hex 12,0	–	–	–	–	–	–	–	–	–	–	–	–
hex 5/64	–	–	–	–	–	–	–	–	–	–	KW078	**1022575**
hex 3/32	–	–	–	–	–	–	–	–	–	–	KW093	**1022581**
hex 7/64	–	–	–	–	–	–	–	–	–	–	KW109	**1022537**
hex 1/8	–	–	–	–	–	–	–	–	–	–	–	–
hex 5/32	–	–	–	–	–	–	–	–	–	–	KW156	**1022565**
hex 3/16	–	–	–	–	–	–	–	–	–	–	KW187	**1022579**
hex 7/32	–	–	–	–	–	–	–	–	–	–	–	–
Torx 5	–	–	–	–	–	–	FT5	**1021589**	KT5	**1099677**	–	–
Torx 6	BT6	**1962981**	–	–	DT6	**1022463**	FT6	**1126361**	KT6	**1022691**	–	–
Torx 7	BT7	**1963853**	–	–	DT7	**1022485**	FT7	**1021591**	KT7	**1022693**	–	–
Torx 8	BT8	**1963855**	–	–	DT8	**1022487**	FT8	**1021593**	KT8	**1022695**	–	–
Torx 9	BT9	**1963854**	–	–	DT9	**1022489**	FT9	**1020533**	KT9	**1022697**	–	–
Torx 10	BT10	**1963856**	–	–	DT10	**1022491**	FT10	**1099651**	KT10	**1022699**	–	–
Torx 10/15	–	–	–	–	–	–	FT1015	**1099652**	–	–	–	–
Torx 15	170.182	**2261642**	170.177	**1138829**	DT15	**1022493**	FT15	**1021605**	KT15	**1022701**	TT15	**1022315**
Torx 15	–	–	BTQT15L90	**6205877**	–	–	–	–	–	–	–	–
Torx 20	170.176	**1138822**	BTQT20L90	**6205878**	–	–	FT20	**1021607**	KT20	**1022703**	TT20	**1022317**
Torx 25	–	–	170.259	**1994579**	–	–	–	–	KT25	**1022725**	TT25	**1022519**
Torx 25	–	–	BTQT25L90	**6205879**	–	–	–	–	–	–	–	–
Torx 27	170.256	**1984243**	170.257	**1985840**	–	–	–	–	KT27	**1022727**	–	–
Torx 30	–	–	–	–	–	–	–	–	KT30	**1099676**	TT30	**1022521**
Torx 40	–	–	–	–	–	–	–	–	–	–	–	–
Torx 45	–	–	–	–	–	–	–	–	KT45	**1018227**	–	–
Torx Plus 7	–	–	–	–	DT7IP	**3644073**	–	–	–	–	–	–
Torx Plus 8	–	–	–	–	DT8IP	**2388424**	–	–	K8IP	**2388488**	TTP8	**1931553**
Torx Plus 9	–	–	–	–	DT9IP	**2269913**	–	–	K9IP	**1985786**	TTP9	**1985792**
Torx Plus 10	–	–	–	–	DT10IP	**2388425**	–	–	K10IP	**2388489**	TTP10	**2504383**
Torx Plus 15	–	–	BTQTP15L90	**6205880**	DT15IP	**2269914**	–	–	K15IP	**1867353**	TTP15	**1931554**
Torx Plus 20	–	–	BTQTP20L90	**6205891**	DT20IP	**2388427**	–	–	K20IP	**2388491**	TTP20	**1994291**
Torx Plus 25	BT25IP	**2244316**	BTQTP25L90	**6205892**	DT25IP	**2269915**	–	–	K25IP	**2050113**	TTP25	**4064258**
Torx Plus 27	BT27IP	**2244317**	BTE27IP	**2244319**	–	–	–	–	K27IP	**1985787**	TTP27	**1985793**
Torx Plus 30	–	–	–	–	DT30IP	**2388426**	–	–	K30IP	**2388490**	–	–





Torque-Controlled Wrenches • 0,6–5,4 Nm (5.3–47.8 in. lbs.)

Order Number	Catalogue Number	Drive Size	Description
3641463	DTQ0615	–	Torque Control Wrench Handle 0.6–1.5 Nm
3641464	DTQ1530	–	Torque Control Wrench Handle 1.5–3.0 Nm
3641465	DTQ3054	–	Torque Control Wrench Handle 3.0–5.4 Nm
3641466	BTQT6	T6	Blade for screw driver
3641467	BTQT7	T7	Blade for screw driver
3641468	BTQT8	T8	Blade for screw driver
3641469	BTQT9	T9	Blade for screw driver
3641470	BTQT10	T10	Blade for screw driver
3641471	BTQT15	T15	Blade for screw driver
3641472	BTQT20	T20	Blade for screw driver
3641473	BTQT25	T25	Blade for screw driver
3641474	BTQ6IP	Torx Plus 6	Blade for screw driver
3641475	BTQ7IP	Torx Plus 7	Blade for screw driver
3641476	BTQ8IP	Torx Plus 8	Blade for screw driver
3641477	BTQ9IP	Torx Plus 9	Blade for screw driver
3641478	BTQ10IP	Torx Plus 10	Blade for screw driver
3641479	BTQ15IP	Torx Plus 15	Blade for screw driver
3641481	BTQW3M	hex 3mm	Blade for screw driver
3641480	DTQCAP	–	Cover Cap





Torque-Controlled Wrenches • 5–14 Nm (3.7–10.3 in. lbs.)

Order Number	Catalogue Number	Drive Size	Description
6197561	DTQ50140	hex 1/4"	T-handle torque wrench, adjustable 5–14 Nm
6205876	BTQSW3L90	hex 3mm	Bit Hex 3mm L = 90mm
6205877	BTQT15L90	T15	Bit Torx 15 L = 90mm
6205878	BTQT20L90	T20	Bit Torx 20 L = 90mm
6205879	BTQT25L90	T25	Bit Torx 25 L = 90mm
6205880	BTQTP15L90	Torx Plus 15	Bit Torx Plus 15 L = 90mm
6205891	BTQTP20L90	Torx Plus 20	Bit Torx Plus 20 L = 90mm
6205892	BTQTP25L90	Torx Plus 25	Bit Torx Plus 25 L = 90mm



Bit Adaptor

Order Number	Catalogue Number	Drive Size	Description
1963869	DRIVER	hex 1/4"	Bit Adaptor suitable for standard and extended length 1/4" drive bits

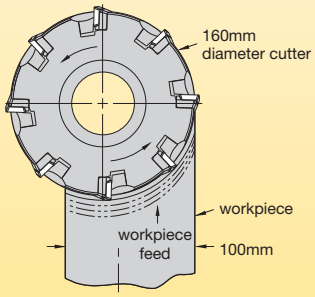
Workpiece dimensions determine the best face mill diameter to select.

Cutter-to-part width-of-cut ratio should be approximately 3:2 or 1 1/2 times the part width. For example, if the width of cut is 100mm, choose a 160mm diameter cutter. If the width is extremely wide, select a cutter diameter that matches the spindle capacity and take multiple passes. For example, if the width of cut is 610mm and the machine has a standard #50 taper spindle, you should use an 200mm diameter cutter and take five passes, at slightly less than 125mm per pass, or four passes at 160mm per pass, depending on horsepower and rigidity.

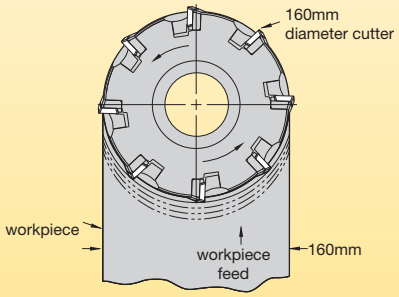
An undesirable situation is when the cutter diameter is about equal to the width of cut. The chip being formed at the entrance and exit of the cut will be very thin. The thin chips formed cannot carry away heat as well as thicker chips; therefore, the heat is transferred back into the insert causing premature edge failure. Work-hardening is also more likely to occur in the entry and exit area.

When the proper cutter diameter is not available, proper cutter positioning will provide positive results.

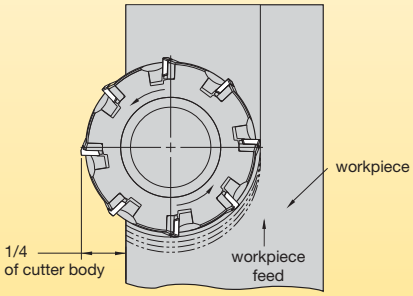
- Position cutter with approximately 1/4 of the cutter body outside the workpiece and make two passes.
- Produces negative angle of entry (desirable).
- Can result in longer tool life.



desirable



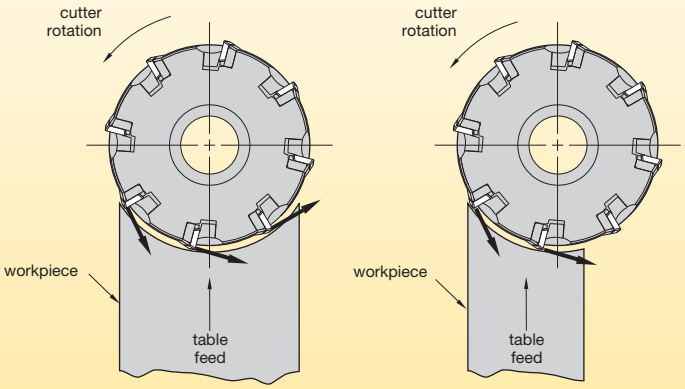
undesirable



cutter position

Cutter Positioning/Cutting Forces

The cutting forces are constantly changing as the inserts move through the cut. We should understand that in changing the position of the cutter in relation to the workpiece, we can re-direct the cutting forces. This is important to ensure a safe operation based on fixture design, workpiece design, and workpiece considerations.



Pitch, or density, refers to the number of inserts in a cutter. Cutters can be classified as having either coarse, medium, or fine pitch. When designing a cutter, the engineer must take the depth of cut and feed per tooth into consideration. He then must provide the necessary chip clearance in the body so that the chip can pass without restricting its formation. For this reason, cutters designed for heavy metal removal have maximum chip clearance. This, therefore, restricts the number of inserts in the cutter, making it a coarse pitch cutter.

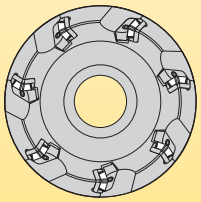
In medium pitch cutters, the chip clearance area in the body is usually slightly smaller than a coarse pitch cutter. And, in fine pitch cutters, the chip clearance is considerably less.

Coarse pitch is recommended for general purpose milling where adequate horsepower is available, and where maximum depth of cut is required.

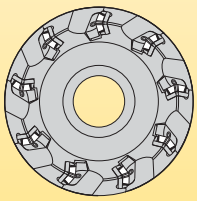
Medium pitch is recommended when moderate feed per insert is required, and where it is more advantageous to have more than one insert in the cut. Medium pitch also reduces entry shock and cutting pressure while maintaining feed rates.

Fine pitch is ideal when milling a severely interrupted surface such as a manifold block. Fine pitch cutters are capable of higher inch/mm per minute feed rates than medium or coarse pitch cutters. They also experience higher cutting forces and greater horsepower consumption than medium or coarse pitch cutters do.

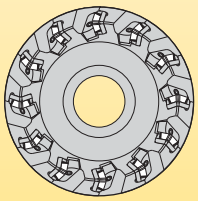
Differential pitch is a differential-pitch milling cutter with unequally spaced inserts. This configuration breaks up the harmonics that result from equally spaced inserts, greatly reducing the chance of vibration. Most cutters use this design regardless of the cutter pitch.



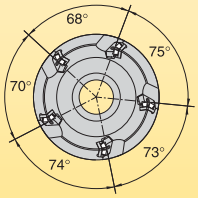
coarse pitch



medium pitch



fine pitch



differential pitch

Lead Angles/Cutting Forces on Workpiece and Fixturing

Cutting forces produced during the milling process are constantly changing as the insert moves through the cut. Understanding the relationship of these forces will help ensure safe operation by preventing workpiece movement during the cut. For example, fixture design and clamp positioning are determined by the cutting forces produced in milling. Equally important is an understanding of the effect lead angle has on cutting force direction, actual chip thickness, and tool life.

90° Lead Angle

Advantages:

- When 90° shoulder is required.
- Can be a problem solver on thin wall workpieces.

Disadvantages:

- Highest radial cutting forces.
- High entry shock load.
- Increased chance of bur on insert exit side of part.

75° and 70° Lead Angle

Advantages:

- For general milling applications and relatively rigid conditions.
- Good relation of insert size and maximum depth of cut.
- Reduced entry shock load.

Disadvantages:

- Higher radial forces can cause problems in weak machine/workpiece/fixture conditions.

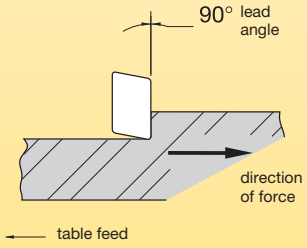
45° Lead Angle

Advantages:

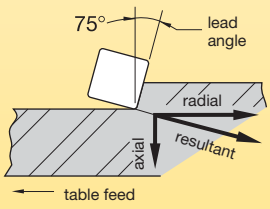
- Well-balanced axial and radial cutting forces.
- Less breakout on workpiece corner.
- Entry shock minimised.
- Less radial forces directed into spindle bearings.
- Higher feed rates possible.

Disadvantages:

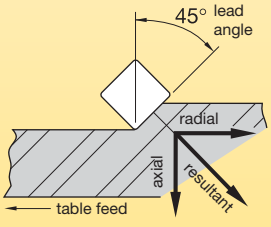
- Reduced maximum depth of cut due to lead angle.
- Larger body diameter can cause fixture clearance problems.



90° lead



75° and 70° lead



45° lead

(continued)

(continued)

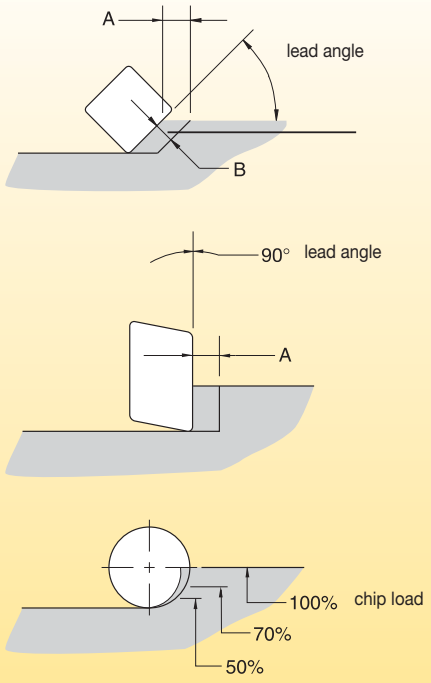
Lead Angle/Chip Thickness

Chip thickness is affected by lead angle. The greater the lead angle, the thinner the chip will be since it's distributed over a greater length of the cutting edge. To achieve greater productivity and problem-free milling, use a lead angle cutter whenever possible.

lead angle	feed per tooth	actual chip thickness "B"
90°	A	A
75°	A	.96 x A
70°	A	.94 x A
60°	A	.86 x A
45°	A	.707 x A

example:

90°	0,25mm	0,25mm
75°	0,25mm	0,24mm
70°	0,25mm	0,24mm
60°	0,25mm	0,22mm
45°	0,25mm	0,18mm



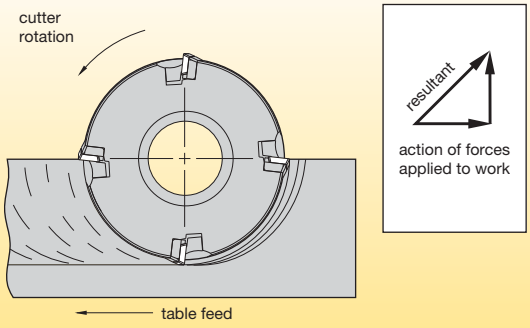
On round inserts, the chip load and lead angle vary with the depth of cut.

lead angle/chip thickness

Conventional Milling

For many years, it was common practice to mill against the direction of the feed due to the use of high-speed steel cutters and an absence of backlash-eliminating devices. The milling procedure became known as conventional, or up-milling.

In conventional milling, friction and rubbing occur as the insert enters into the cut, resulting in chip welding and heat dissipation into the insert and workpiece. Resultant forces in conventional milling are against the direction of the feed. Work-hardening is also likely to occur.

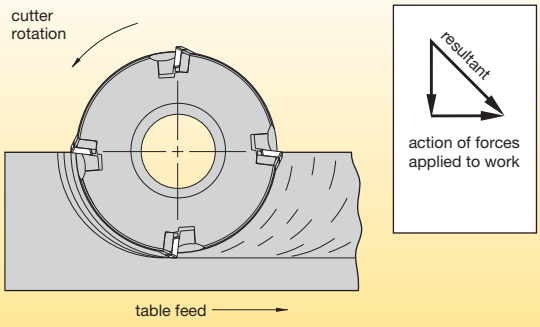


conventional milling

Climb Milling (preferred)

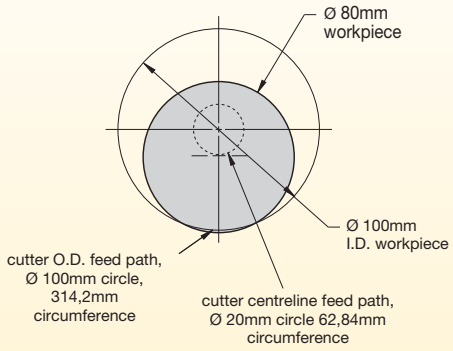
Climb milling is normally recommended. The insert enters the workpiece material with some chip load and produces a chip that thins as it exits the cut. This reduces the heat by dissipating it into the chip. Work-hardening is minimised.

Climb milling forces tend to push the workpiece toward the fixture and in the direction of the feed. Climb milling is preferred over conventional milling in most situations.

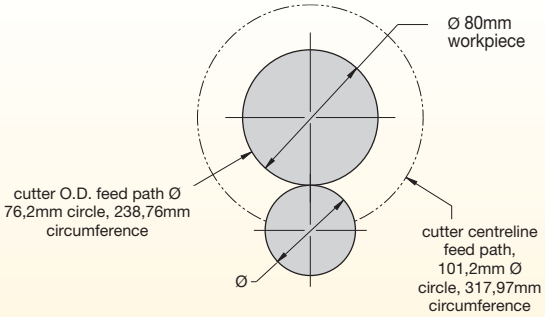


climb milling

Circular Interpolation: Consists of a cutter rotating about its own axis while traveling in an orbiting motion about an I.D. or O.D. workpiece circumference without any vertical shift during the operation. This orbiting movement utilises the "X" and "Y" axis.



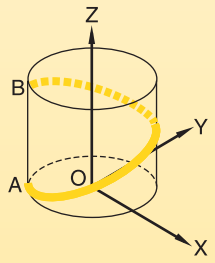
I.D. circular interpolation



O.D. circular interpolation

Helical Interpolation: This application requires a milling machine with three-axis control capability. The operation consists of a cutter rotating about its own axis together in an orbiting motion about an ID or OD workpiece circumference in the "X" and "Y" plane. The circular movement about the "X" and "Y" plane, with a simultaneous linear movement in the Z-axis plane (which is perpendicular to the "X" and "Y" plane), creates the helical movement. For example, the path from point A to point B on the envelope of the cylinder combines a circular movement in the "X" and "Y" plane with a linear movement in the "Z" direction. On most CNC systems, this function can be executed in two different ways:

- GO2: helical interpolation in a clockwise direction.
- GO3: helical interpolation in an anti-clockwise direction.



helical interpolation

Calculation of Feed Rate for Circular and Helical Interpolation: On most CNC machines, the feed rate required for programming contour (circular or helical) milling is calculated based on the centreline of the tool. When dealing with linear tool movement, the feed rate at the cutting edge and centreline are identical, but with circular tool movement, this is not the case.

Calculate Feed Rate at the Cutting Edge: First calculate the tool feed rate at the cutting edge with the following formula.

$F_1 = fz \times z \times n$

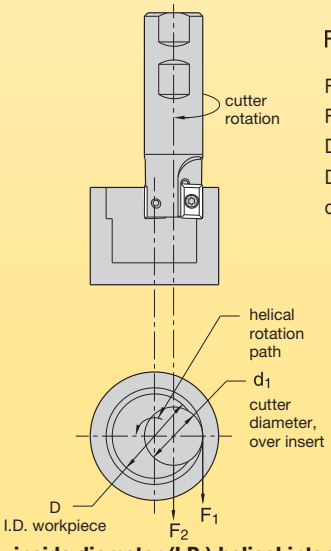
F_1 = tool feed rate at the cutting edge (mm/min)

f_z = mm per tooth (chip load)

Z = number of effective inserts in the cutter

n = revolutions per minute

Calculation of the Feed Rate at the Tool Centreline: Use the following equations to define the relationship between feed rates at the cutting edge and at the tool centreline.



inside diameter (I.D.) helical interpolation

$$F_2 = \frac{F_1 \times (D - d_1)}{D}$$

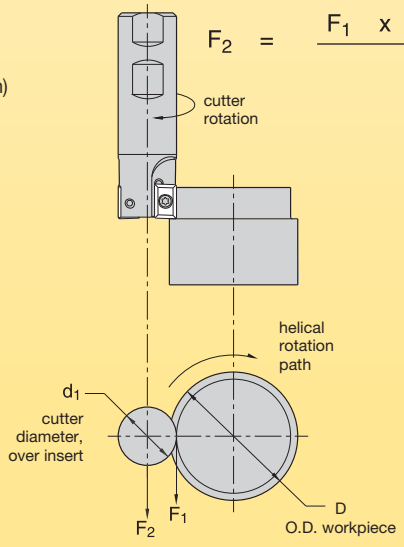
F_1 = tool feed rate at the cutting edge (mm/min)

F_2 = tool centreline feed rate (mm/min)

D = O.D. workpiece diameter

D = I.D. workpiece diameter

d_1 = cutter diameter, over insert



outside diameter (O.D.) helical interpolation

$$F_2 = \frac{F_1 \times (d_1 + D)}{D}$$

(continued)

(continued)

In I.D. contour applications, you will find the tool centreline feed is always less than the cutting edge feed rate.

Example for I.D.

D = 100mm (4") I.D. workpiece
d_1 = 80mm (3") cutter diameter
fz = 0,2 mm/tooth (.008 IPT)
n = 637 RPM
z = 7 effective inserts

1. Calculate feed rate at the cutting edge.

$F_1 = fz \times z \times n$
$F_1 = 0.2 \times 7 \times 637 = 892$ mm/min (008 x 7 x 637 = 35.7 in./min)

2. Calculate feed rate at the tool centreline.

$$F_2 = \frac{F_1 \times (D - d_1)}{D}$$

$$F_2 = \frac{35.7 \times (4.0 - 3.0)}{4.0} = 8.9 \text{ in./min}$$

$$F_2 = \frac{892 \times (100 - 80)}{100} = 178 \text{ mm/min}$$

To have (F_1) 892 mm/min at the cutting edge feed rate, we must programme the machine tool for (F_2) 178 mm/min at the tool centreline feed rate. This is a difference of approximately 75% less feed than the cutting edge feed rate (F_1).

In O.D. contour applications, you will find the tool centreline feed rate is always larger than the cutting edge feed rate.

Example for O.D.

D = 125mm (5") O.D. workpiece
d_1 = 50mm (2") cutter diameter
f_z = 0,2 mm/tooth (.008 IPT)
n = 955 RPM
z = 5 effective teeth

1. Calculate feed rate at the cutting edge.

$F_1 = fz \times z \times n$
$F_1 = 0.2 \times 5 \times 955 = 955$ mm/min (.008 x 5 x 955 = 38.2 in./min)

2. Calculate feed rate at the tool centreline.

$$F_2 = \frac{F_1 \times (d_1 + D)}{D}$$

$$F_2 = \frac{38.2 \times (2 + 5)}{5} = 53.5 \text{ in./min}$$

$$F_2 = \frac{955 \times (50 + 125)}{125} = 1{,}337 \text{ mm/min}$$

To have (F_1) 38.2 in/min (955 mm/min) at the cutting edge feed rate, we must programme the machine tool for (F_2) 53.5in/min (1,337 mm/min) at the tool centreline feed rate. This translates to an increase of about 40% more feed rate than the cutting edge feed rate (F_1).

Large Surfaces

Interpolating with a smaller cutter may be faster than using a large diameter cutter. Also, keep the cutter in contact with the workpiece rather than exiting and re-entering.

Maximise Metal Removal Rate

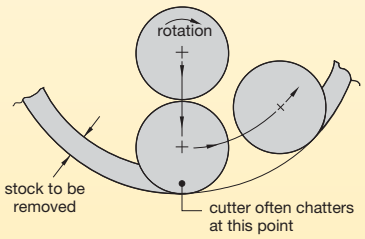
Concentrate on Metal Removal Rate (MRR), not just on higher vc (cutting speeds). Increasing spindle speed without increasing chip load will not improve MRR. However, by doubling fz, MRR does increase and horsepower consumption only increases by approximately 50%.

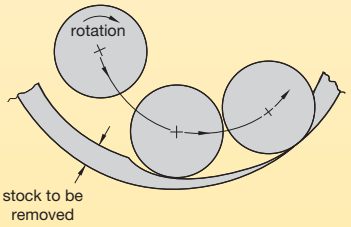
Preset

Use cutter preset areas for proper setting of cutters rather than indexing cutters at the machine, if possible.

Ramp In and Out

As shown below, ramping gradually into the cut will provide greater tool life. Also, by keeping the cutter constantly moving when entering and exiting the cut, dwell marks will be eliminated on the workpiece.

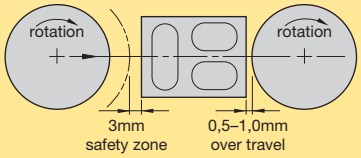




Safety and Over Travel

Programme the milling cutter to rapid advance up to the part, within a range of 3mm before engaging the workpiece. This allows the machine to reach its proper operating parameters before actual chip making begins.

Rapid advance to the next cutting location, when the cutter is 0,5mm to 1mm past the edge of the part. If the spindle has built-in tilt or programmed runout, the cutter can be advanced to the next cutting location while the back half of the cutter is still over the finished milled surface.



to find	given	formula
Vc	D n	$Vc = \frac{\pi \times D \times n}{1000}$
n	D Vc	$n = \frac{1000 \times Vc}{\pi \times D}$
Vf	fz n z	**Vf = fz x z x n**
fz	z Vf n	$fz = \frac{Vf}{z \times n}$

given	calculated
D = 125 mm cutter diameter Z = 8 teeth in cutter Vc = 200 mm/min fz = 0,2 mm	$n = \frac{1000 \times 200}{3.1416 \times 125} = 510$ RPM **Vf = 0,20 x 8 x 510 = 816 mm/min**

legend

Vc = surface feed per minute

n = revolutions per minute

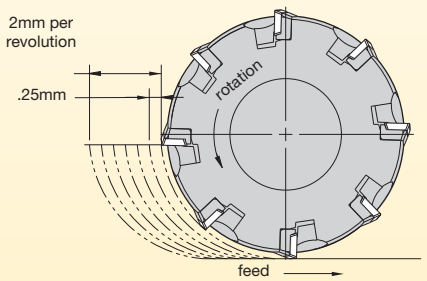
D = cutter diameter

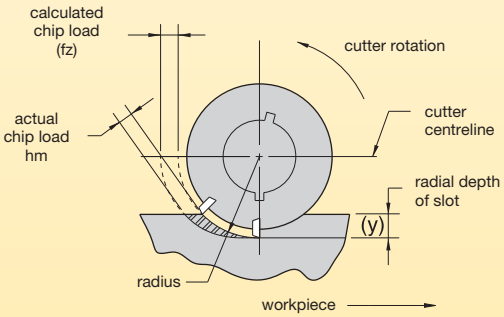
Vf = feed (mm per minute)

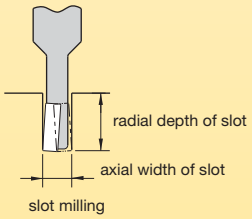
fz = mm per tooth (chip load)

z = number of effective teeth or inserts in cutter

π = 3.1416







Slotting or Periphery Milling

True or actual chip load on the cutting edge of the insert is equal to the programmed chip load only when 50% or more of the cutter's diameter is engaged in the cut (lead angle not considered). Anything less than half the diameter of the cutter means that the actual chip load is reduced by some percentage. The smaller the radial depth of cut, the greater the decrease in actual chip load.

It's very important to maintain a chip load which is great enough to ensure heat dissipation and prevent work hardening. A sufficient chip load will also create stability between the cutter and the workpiece.

The formulas shown below are used to determine the programmed chip load, or feed rate necessary to obtain the desired load on the insert cutting edge as it enters the workpiece. These formulas should be applied whenever an arbour mounted slotting cutter is being used, or when less than half the diameter of a face mill or end mill is engaged in the cut. The lighter the radial depth of cut, the more important it becomes to apply these productivity formulas.

Productivity Formulas

$$\text{chip load (fz)} = \frac{\left(\frac{\sqrt{(\text{dia.} - y) \times (y)}}{\text{radius}}\right) \times \left(\frac{vf}{n}\right)}{z}$$

or

$$Vf = \frac{n \times z \times fz}{\left(\frac{\sqrt{(\text{dia.} - y) \times (y)}}{\text{radius}}\right)}$$

Operations such as **periphery milling with a light radial depth of cut or slotting with an arbour mounted cutter** require a calculation for feed rate compensation to maintain the proper chip load on the insert edge at entry into the cut. The calculated chip load and actual chip load can be dramatically different, depending on the radial depth and the cutter diameter. For instance, the actual chip load on entry for a 20mm diameter cutter taking a 0.3mm radial depth cut is only 23% of the calculated chip load. It is not uncommon to encounter built-up edge, work-hardening, or chatter problems if the following formula is not applied. Minimal cutter runout is critical to obtaining an equal chip load on each flute of the cutter too. A side benefit to applying this formula is increased productivity as feed rates can increase dramatically.

Formulas — Horsepower

Metal Removal Rate

The Metal Removal Rate (MRR) calculation is a good basis for determining metalcutting efficiency.

MRR = doc x woc x Vf = mm^3/min.

Horsepower Consumption

Milling cutters can consume significant amounts of horsepower. Very often it is the lack of horsepower that is the limiting factor when deciding on a particular operation. On applications where large diameter cutters or heavy stock removal is necessary, it's advantageous to first calculate the necessary horsepower requirements.

NOTE: Spindle efficiency "E" varies from 75 to 90%.

(E = .75 to .90)

A suitable formula for calculating horsepower (HP_c) at the cutter is:

$$HP_c = \frac{MRR}{K}$$

example:
width of cut (woc) 42mm
depth of cut (doc) 5mm
feed (vf) . . . . . 1092 mm/min
4140 220 HB . . . . . "K" factor 1.56

MRR = 5 x 42 x 1092 = 229320 mm^3/min

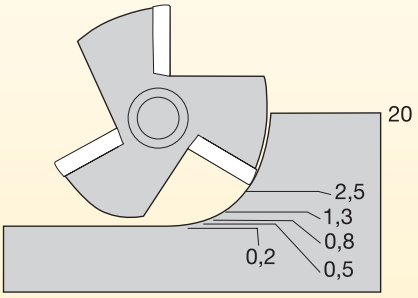
For horsepower at the motor (HP_m), use formula:

$$HPm = \frac{HPc}{E}$$

In determining horsepower consumption, "K" factors must be used. The "K" factor is a power constant that represents the number of cubic inches of metal per minute that can be removed by one horsepower.

NOTE: "K" factors vary depending on the hardness of the material.

radial depth of cut	actual chip load (fz)	feed required (Vf) to maintain fz = 0,1	increase
20	0,1	140	0%
2,5	0,05	292	109%
1,3	0,04	389	178%
0,8	0,03	498	256%
0,5	0,02	607	335%
0,3	0,015	859	515%



40mm end mill – 6 flutes
30 m/min (vc) 230 RPM
0,1mm (fz) 140 mm/min (Vf)

"K" Factors

workpiece material	hardness	"K" factor
steels, and wrought and cast irons (plain carbon alloy steels, and tool steels) 40mm end mill – 6 flutes 30 m/min (vc) 230 RPM 0,1mm (fz) 140 mm/min (Vf)	85–200	1.64
	201–253	1.56
	254–286	1.28
	287–327	1.10
	328–371	.88
	372–481	.69
	482–560	.59
	561–615	.54
precipitation hardening stainless steels	150–450	1.27–.42
cast irons (grey, ductile, and malleable)	150–175	2.27
	110–190	2.0
	176–200	1.89
	201–250	1.52
	251–300	1.27
	301–320	1.19
stainless steels, and wrought and cast irons (ferritic, austenitic, and martensitic)	135–275	1.54–.76
	286–421	.74–.50
titanium	250–375	1.33–.87
high-temperature alloys, nickel, cobalt base	200–360	.83–.48
iron base	180–320	.91–.53
nickel alloys	80–360	.91–.53
aluminium alloys	30–150 (500 kg)	6.25–3.33
magnesium alloys	40–90 (500 kg)	10.0–6.67
copper	150	3.33
copper alloys	100–150	3.33
	151–243	2.0

Over the past 50 years, Metal Removal Rates (MRR) and power constants have served as the conventional values used to calculate horsepower. Although this is a relatively common method of calculating horsepower, a more accurate method has been developed when milling with high shear cutters. This new approach utilises the following information:

1. calculating tangential force (F_t)
2. ultimate material strength
3. cross-sectional area of the chip
4. number of inserts in the cut
5. machinability factor
6. tool wear factor
7. calculating torque
8. calculating horsepower at cutter
9. calculating horsepower at motor

Tangential Force, Torque, and Horsepower Calculations in Face Milling with High Shear Milling Cutters

1. Calculation of tangential force (N)

Calculation of tangential force is important since it produces torque at the spindle and accounts for the greatest portion of machining power at the cutting tool. Using this tangential force formula is a quick way to determine the approximate forces that fixtures, part wall sections, or spindle bearings will endure. Tangential force is calculated with the following formula:

$$F_t = S \times A \times Z_c \times C_m \times C_w \text{ (N)}$$

where: S = ultimate strength of the work material (N/mm^2)
A = cross-sectional area of the chip removed by the milling insert (mm^2)
Z_c = number of inserts in cut
C_m = machinability factor
C_w = tool wear factor

2. Ultimate material strength (N/mm^2)

The approximate relationship between the ultimate material strength and hardness of the most commonly used work materials such as steels, irons (for example: grey cast iron), titanium alloys (Ti – 6Al – 4V), and aluminium alloys (2024, 5052) can be expressed by the empirical formula:

$$S = 5 \times HB \text{ (N/mm}^2\text{)}$$

Where HB = Brinell hardness numbers obtained, primarily, at the 3000-kgf load. When testing soft metals such as aluminium alloys, the 500-kgf load is used. Hardness obtained at the 500-kgf load should be converted into the hardness equivalent of the 3000-kgf load by using the load factor of 1.15. For example, 130 HB at the 500-kgf load is equivalent to 150 HB at the 3000-kgf load (130 x 1.15 = 150). If hardness is given in Rockwell “B” or Rockwell “C” numbers, see the Material Listing Overview on page Y191.

3. Cross-sectional area of the chip (A)

Cross-sectional area of the chip (Fig. 1) is defined by:

where: A = d f (mm^2)
d = axial depth of cut (mm)
fz = feed per tooth (mm)

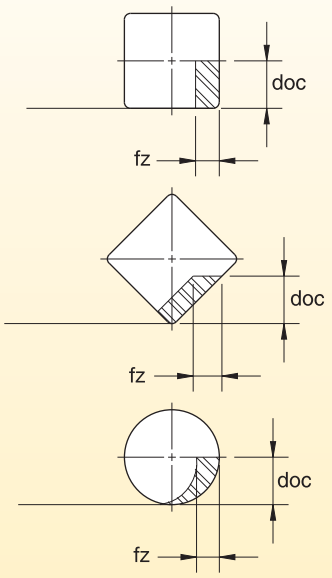


Figure 1: Cross-sectional area of the chip and insert’s shape

4. Number of inserts in cut (Zc)

The number of inserts in the cut (simultaneously engaged with work material) depends on the number of inserts in the cutter “Z” and the engagement angle (α). This relationship is shown by the formula:

$$Z_c = \frac{Z \times \alpha^\circ}{360^\circ}$$

The engagement angle depends on the width of cut “W” and cutter diameter “D”. This angle is found from the geometry of figure 2 (formulas to calculate engagement angle and the number of inserts in the cut at any width of cut are given in the appendix on page X20).

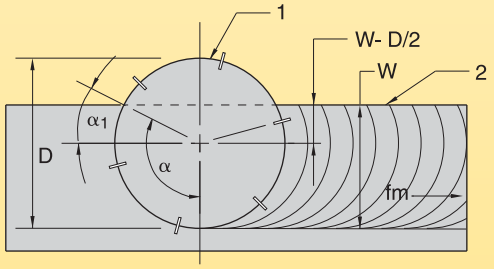


Figure 2: Schematic for calculating the number of inserts in cut

1 = milling cutter
2 = workpiece
α = engagement angle
α_1 = the angle between cutter centreline and cutter radius to the peripheral point of exit or entry
W = width of cut (woc)
D = cutter diameter
fm = workpiece feed motion

(continued)

(continued)

If the width of cut equals cutter diameter (W/D = 1.0), the engagement angle $\alpha = 180°$ and $Z_c = \frac{Z \times 180°}{360°} = 0.5Z$.

If the width of cut is equal to half of the cutter diameter (W/D = 0.5), the engagement angle $\alpha = 90°$ and $Z_c = \frac{Z \times 90°}{360°} = 0.25Z$.

The values of Z_c depending on the given W/D ratios, are shown in table 1.

Table 1

W/D	.88	.80	.75	.67	.56	.38	.33	.19	.125
Z_c	.38Z	.35Z	.33Z	.30Z	.27Z	.21Z	.20Z	.14Z	.12Z

5. Machinability factor (C_m)

Machinability factor is used to indicate degree of difficulty in machining various workpiece materials. Table 2 shows machinability factor values for some of the most common workpiece materials.

Table 2

workpiece material	C_m W/D≤.67	.67<W/D<1.0	W/D=1.0
carbon and alloy steels	1.0	1.15	1.3
stainless steel	2.0	2.15	2.3
grey cast iron	1.0	1.15	1.3
titanium alloys	1.0	1.20	1.4
aluminium alloys	1.0	1.05	1.1

The values of C_m are based on milling tests with a torque dynamometer at different cutting conditions. It has been found that machinability factor depends on type of work material and the ratio of radial width of cut to cutter diameter (W/D).

This ratio determines the uniformity of the chip thickness. When W/D = 1.0, the chip at the point of entry starts off at zero thickness. It increases to a maximum thickness at the centreline of the cutter, and thins off to zero again at the point of exit. This type of cut generates maximum friction at the cutting edge, and machinability factor reaches its maximum value. The optimal cutting conditions are obtained when W/D = 2/3 = .67. The thickness of the chip is practically uniform, the friction is minimal, and machinability factor decreases to its minimum value.

More extensive testing will determine machinability factors for a larger variety of work materials and improve the accuracy for calculating tangential force and power consumption.

6. Tool wear factor (C_w)

For milling with sharp cutting tools (short time operation), tool wear factor $C_w = 1.0$. For a longer operation (before the inserts are indexed), the following tool wear factors are considered:

- light face milling $C_w = 1.1$
- general face milling $C_w = 1.2$
- heavy-duty face milling $C_w = 1.3$

7. Calculation of torque (Nm)

The torque "T" generated by tangential force is calculated using the following formula:

$T = F_t \times D/2$ (Nm)

where D = cutter diameter (m)

8. Calculating horsepower (HP_c or HP_m)

The machining power at the cutter (sharp edges) is calculated by either of these two formulas:

$$HP_c = \frac{F_t \times Vc}{10{,}000}$$

or

$$HP_c = \frac{T \times n}{1{,}600}$$

where vc = peripheral cutting speed (m/min)
n = spindle speed (RPM)
10000 and 1600 = conversion factors

9. The required power at the motor is calculated using the following formula (HP_m):

$$HP_m = \frac{HP_c}{E}$$

where E = machine tool efficiency factor (E = .75–.90)

NOTE: Spindle efficiency varies from 75–90%.

(continued)

(continued)

Example for Calculating Horsepower

given values:

milling cutter KSOM125R06OF07:

effective diameter	D = 125mm
number of inserts	Z = 6

workpiece material:
alloy steel AISI 4140
hardness 220 HB

machining conditions:

spindle speed	n = 458 RPM
cutting speed	Vc = 180 m/min
machine feed rate	Vf = 824 mm/min
mm per tooth (chip load)	fz = 0,3mm
axial depth of cut	doc = 4mm
radial width of cut	woc = 90mm
W/D ratio	W/D = 0,72

Step-By-Step Calculations

1. Calculating tangential force

1.1 ultimate strength of the workpiece material
$S = 5 \times HB = 5 \times 220 = 1100\ N/mm^2$

1.2 cross-sectional area of the chip
$A = doc \times fz = 4 \times 0,3 = 1,2\ mm^2$

1.3 number of inserts in cut:
width of cut-to-diameter ratio (w/d)
W/D = 90 / 125 = 0,72 (See Table 1, page X12)
Now use Z_c value shown in Table 1 under 0,72.
Zc = 0,33 x Z = 0,33 x 6 = 2 inserts in cut.

NOTE: Z = number of inserts in cutter.

1.4 tangential force
$Ft = S \times A \times Z_c \times C_m \times C_w$
$Ft = 1100 \times 1,2 \times 2 \times 1.1 \times 1.1 = 3194\ N$

NOTE: $C_m = 1.1$ and $C_w = 1.1$

2. Calculating torque at the cutter

$$T = (F_t \times D)/2 = \frac{3,194 \times 0,125}{2} = 199,6\ Nm$$

3. Calculating horsepower

- At the cutter...reference formulas in paragraph 8 on page X12.

$$HP_c = \frac{F_t \times Vc}{10,000} = \frac{3,194 \times 458}{10,000} = 57,5hp$$

or

$$HP_c = \frac{T \times RPM}{1,600} = \frac{1,996 \times 458}{1,600} = 57,5hp$$

- At the motor...reference formula in paragraph 9 on page X12.
- Where E = machine tool efficiency factor (E = .75 to .90).

$$HP_m = \frac{HP_c}{E} = \frac{57,5}{.8} = 71,9\ hp$$

Surface finish may be an important specification on a machined part. Finishes produced by indexable insert cutters usually range from 0.80–3.2 (32–150) Ra. This broad range can be affected by several variables such as work material, machine rigidity, spindle alignment, fixturing, insert nose geometry, insert wear, cutting feed and speed, heat-generated chip welding, and chatter.

Good finishes will result when you use the right combination of cutter geometry, insert style, and cutting speeds and feeds for the material being milled. It is also important to have the part adequately fixtured, and the machine properly maintained.

Figure 1 illustrates that finer finishes can be obtained by using a larger corner radius, flat, or wiper on the insert. This tends to wipe out or reduce feed marks. In addition to the corner geometry of the insert, it is important to correctly set each insert relative to the other inserts. For example, if all of the inserts have the same corner geometry, and are set in the cutter body to a face height of approximately 0,025mm relative to each other, the finish produced will be better than if the inserts were set to within 0,07mm.

Improved finishes can also be obtained by increasing speeds and reducing feeds. Be aware, however, that increased speed also increases cutting temperatures, and may reduce insert edge life.

Finish will not necessarily be the same on all areas of the milled surface. Figure 2 shows that the Ra finish will be lower on the area where the feed marks are close to each other, and higher where feed marks are farther apart.

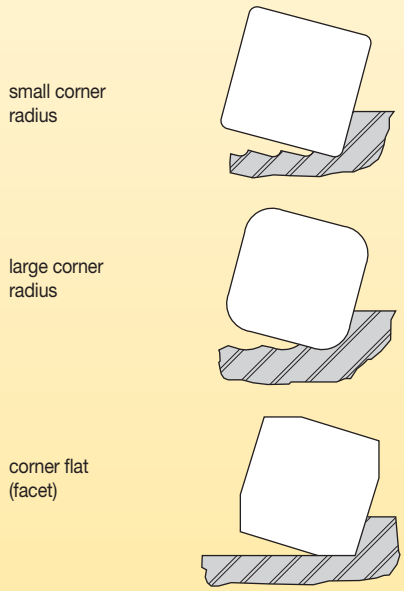


Figure 1: Larger insert corner radii or flats produce finer milling finishes.

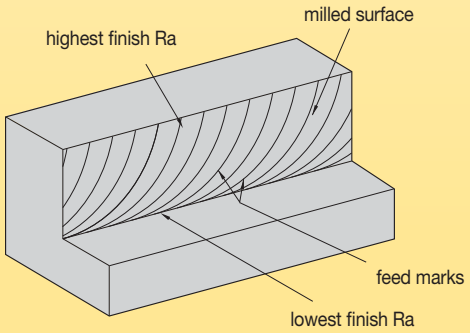


Figure 2: Quality of Ra finish corresponds to the distance between feed marks.

In figure 3, the Ra value will be lower near the outside diameter of the cut where the feed marks are at their closest, and higher at the centre where the feed marks are farthest apart. Peaks produced are highest at the centre of the cutter as it is positioned in the cut, and lowest at the outside diameter of the cutter, as illustrated below in figures 3 and 4.

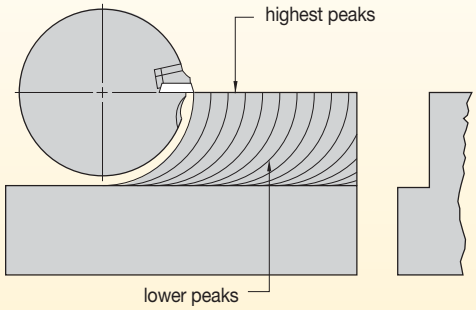


Figure 3: Ra finish is higher at the widest feed marks.

Both finish and flatness are affected by feed marks. A taper will be produced from the high peaks down to the low peaks.

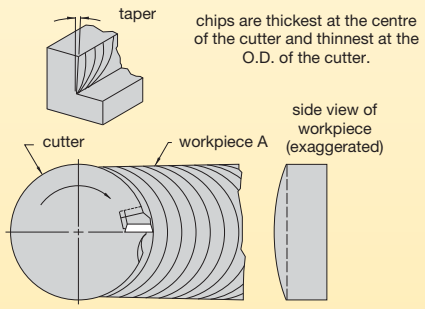


Figure 4: A taper is produced from the high peaks to the low ones.

Flatness also affects part tolerance. This effect is more predominant in side milling both sides of a part as shown in figure 5.

An obvious solution to obtaining a more consistent and improved surface finish with a minimum of taper is to reduce or flatten the peaks between feed marks. This can be done by introducing an insert with a corner configuration capable of wiping out or reducing these peaks. Shown in figure 5 is an exaggerated change in part width due to flatness and taper.

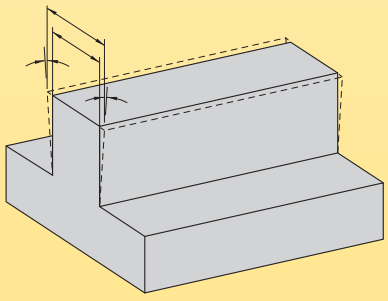


Figure 5: Flatness affects part tolerance more when milling both sides of a part.

(continued)

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Figures 6 and 7 compare the feed marks produced with a nose radius insert to those produced with a wiper insert. A wiper insert with a large radius for wiping out or reducing peaks (figure 7) has been effective in producing finishes below 2.5 Ra. Figures 6 and 7 show the wiper insert is designed to "top off" the peaks of the feed marks. An improved surface finish, surface flatness, and reduced taper will result.

Wiper inserts are normally set at 0,025–0,04mm above the highest positioned insert in the cutter to ensure a good wiping action. Kennametal wiper inserts are typically designed to fit into any pocket in the cutter body. This means one or more wiper inserts can be used. Interchangeable wipers can be used to share the load on the periphery of the cut in feed per tooth.

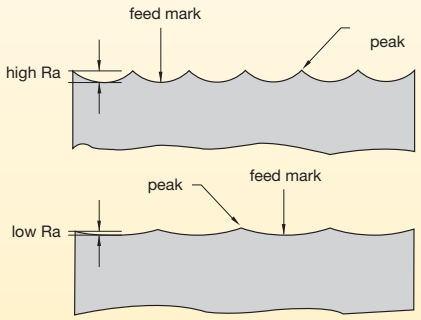

Figure 6: Peaks produced with a standard radii insert (top) compared to those produced with a large radius wiper insert (bottom).

Poor Surface Finish

cause	solution
cutter runout	Check for high insert, dirt in the pockets, or dirty spindle and cutter mounting face. Also, look for burs on the cutter and damaged cutter pocket.
worn or chipped insert	Index insert.
feed per revolution exceeding flat on wiper	Reduce feed rate or install wiper with greater effective insert facet width.
wiper insert is set too high	Set the wiper insert 0,025–0,04mm above highest insert.
chatter	Check rigidity of machine and table fixturing. Check arbour and spindle, adjust feed rates, adjust RPM, or reduce cut width. Consider cutter with fewer pockets.

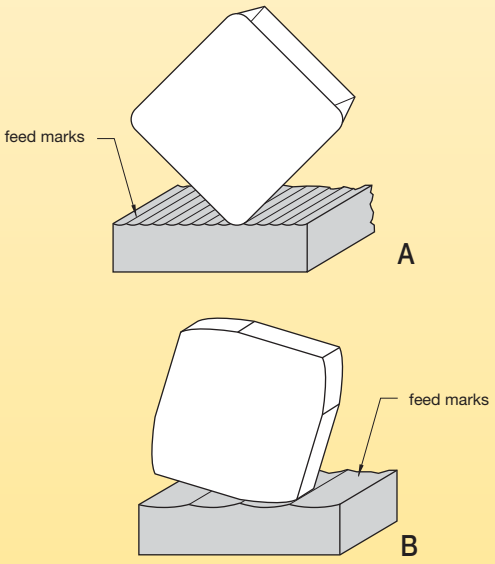

Figure 7: Feed marks produced with a nose radius insert (A) compared to marks produced with a wiper insert (B).

(continued)

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Measuring Finish Produced in a Milling Operation

Do not rely on your eye or fingernail to determine surface finish. Fingernails are about 25 times as thick as the stylus tip of a surface measuring instrument. They will skid across surface peaks, missing the valleys. Use a surface measuring instrument since the appearance of the surface finish may be deceiving. For example, reflected light on a uniformly milled surface pattern will look smoother than a random pattern. Also, a shiny surface will appear smoother than a dull surface.

Placement of the measuring device in a specific area on the milled surface will affect the reading. Also, a surface finish measured perpendicular to the feed direction is better than measuring parallel to the feed direction. This is usually the case regardless of workpiece condition and material (see figure 8).

Changing the cut-off width of the surface measuring instrument will affect the Ra value of the measurement.

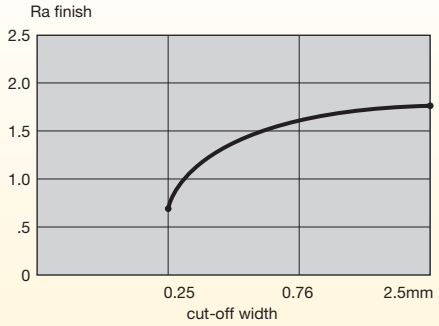


Figure 10: Finish quality is directly proportional to the cut-off width.

Surface Profile Record

Figure 9 shows the variation in roughness created by increasing the cut-off width on the instrument. The greater the cut-off, (see figure 9), the higher the Ra finish. For example, figure 10 illustrates that a 0,25mm cut-off width will produce a 0.6 Ra finish; whereas, a 0,76mm cut-off width will produce a 2.0 Ra finish.

Also, figure 10 demonstrates that most measuring devices are provided with 0,25mm, 0,76mm, and 2,54mm cut-offs. In most cases, the 0,76mm width cut-off is preferred.

Figure 11 shows the standard surface symbols specifying maximum and minimum roughness, waviness, and lay, which is the direction in which the measurement is taken.

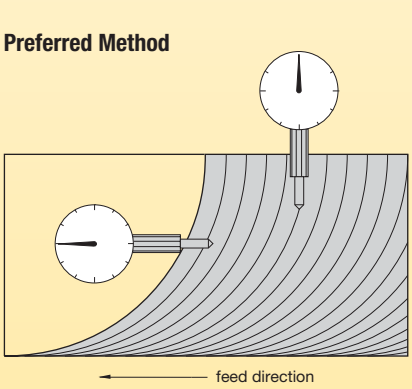


Figure 8: Measuring surface finish

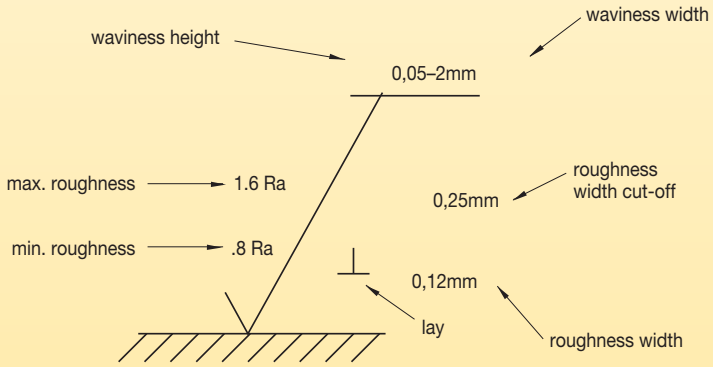


Figure 11: Standard surface symbols

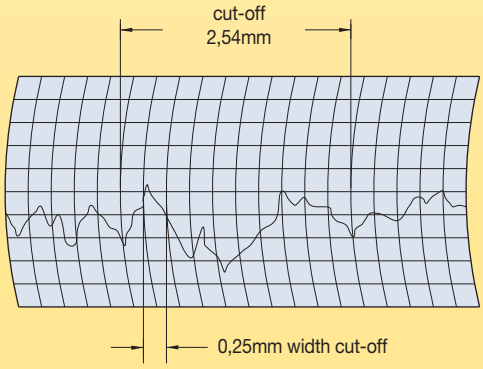


Figure 9: Increasing the cut-off width creates a variation in roughness.

Troubleshooting Introduction

Troubleshooting should be performed in a sequential method to identify and solve your milling problems. These problems can be recognised as premature insert edge failure, part appearance, machine noise or vibration, and the cutter's appearance. Successful troubleshooting requires that we correctly identify the problem, then take the necessary corrective action one step at a time. The five key areas of concern are:

1. cutting tool material (grade)
2. cutter/adaptor
3. machine
4. workpiece
5. set-up/fixturing

This section will discuss possible causes and will recommend corrective actions for each of the five areas listed. Remember, if more than one step is taken concurrently, the real cause of the problem may never be discovered. Always perform one corrective measure at a time.

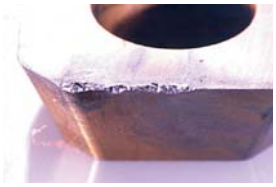
Edge Condition Problems and Solutions

Chipping:

Appears like normal flank wear to the untrained eye. Actually, normal flank wear lands have a fine, smooth wear pattern, while a land formed by chipping has a saw-toothed, uneven surface. If chipping is not detected soon enough, it may be perceived as depth-of-cut notching.

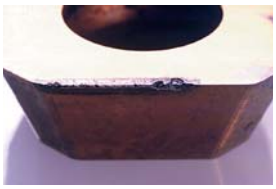
Chipping can also be caused by recutting of chips. A good example of this would be a slotting operation where chip clearance or chip gullet space does not allow the chips to evacuate cleanly. In this instance, packing of the chips also occurs.

In most cases, by changing to a stronger grade and/or to a different edge preparation such as a larger hone or T-land, or from a 90° cutter geometry to a lead angle cutter geometry, will resolve the problem.

problem	cause	solution
chipping 	• chatter	• Check system rigidity for proper part clamping. • Correct worn gibs/bearings. • Check for improper cutter mounting.
	• edge prep	• Use largest hone or T-land possible.
	• grade	• Use a tougher grade.
	• built-up edge	• Increase speed.
	• feed	• Reduce feed per tooth.
	• recutting chips	• Choose cutter geometry with correct pitch for chip clearance. • Use air blast or coolant to remove chips.

Depth-of-cut notching:

Appears when chipping or localised wear at the depth-of-cut line on the rake face and flank of the insert occurs. Notching is primarily caused by the condition of the workpiece material. Material conditions prone to depth-of-cut notch include: an abrasive workpiece skin of scale, abrasive properties of high-temperature alloys like Inconel®, a work-hardened outer layer resulting from a previous machining operation, or heat-treated material above 55 HRC.

problem	cause	solution
depth-of-cut notching 	• cutter geometry	• Change to a lead angle cutter.
	• grade	• Use a more wear-resistant grade of carbide.
	• feed	• Reduce feed per tooth.
	• speed	• Reduce speed.
	• edge-prep	• Use honed or T-land inserts.
	• programming	• Vary depth of cut on very abrasive materials.

Thermal cracks:

These cracks run perpendicular to the insert's cutting edge and are caused by the extreme temperature variations involved in milling. In one revolution of a milling cutter, the insert starts to cut and the temperature quickly rises as the insert enters the cut. The varying chip thickness also changes the temperature throughout the cut. When the insert comes out of the cut, air or coolant flow rapidly cools the insert before it re-enters the cut.

These temperature variations create heat stresses in the insert which can result in thermal cracks. To the untrained eye, advanced thermal cracking could appear as chipping.

problem	cause	solution
thermal cracks 	• speed and feed	• Reduce cutting edge temperature by reducing the cutting speed and possibly the feed per tooth.
	• coolant	• Shut off coolant.
	• grade	• Use coated grade designed for wet milling.

Built-up edge:

This condition involves the adhesion of layers of workpiece material to the top surface of the insert. Hardened pieces of the adhered material periodically break free, leaving an irregularly shaped depression along the cutting edge. This causes damage to the part and insert. Cutting forces also will be increased due to built-up edge.

problem	cause	solution
built-up edge 	• speed	• Increase SFM.
	• feed	• Increase feed per tooth.
	• coolant	• Use mist or flood coolant to avoid chips sticking to the insert when machining stainless steel and aluminium alloys.
	• grade	• Use sharp edge PVD inserts.
		• Higher speeds require diamond-tipped inserts or diamond-coated inserts on certain non-ferrous alloys.
	• edge-prep	• Use sharp edge, positive rake PVD inserts, or polished inserts.

Crater wear:

A relatively smooth, regular depression is produced on the insert's rake face. Crater wear occurs in two ways:

1. Material adhering to the insert's top surface is dislodged, carrying away minute fragments of the top surface of the insert.
2. Frictional heat builds up from the flow of chips over the top surface of the insert. Eventually, this heat buildup softens the insert behind the cutting edge and removes minute particles of the insert until a crater forms.

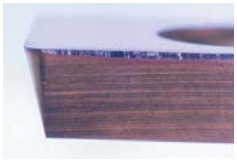
Crater wear is rarely encountered in milling, but can appear when machining certain steel and cast iron alloys. If crater wear becomes severe, there is a risk that the cutting edge will break, destroying the insert.

problem	cause	solution
crater wear 	• grade	• Use a more wear-resistant grade.
	• speed	• Reduce cutting speed.
	• edge-prep	• Use smaller T-land or increase feed to proper range for T-land.

Flank wear:

Uniform flank wear is the preferred method of insert failure because it can be predicted. Excessive flank wear increases cutting forces and contributes to poor surface finish. When wear occurs at an unacceptable rate or becomes unpredictable, the key elements that must be investigated are speed, feed, grade, and insert/cutter geometry.

NOTE: Inserts should be indexed for roughing applications when flank wear reaches 0,38–0,50mm. For finish applications, inserts should be indexed once flank wear reaches 0,25–0,38mm, if not sooner.

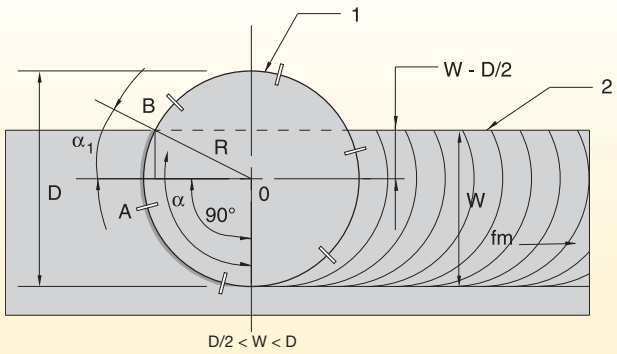
problem	cause	solution
flank wear 	• speed	• Check this area first. Recalculate SFM (Vc) to assure correctness. • Speed should be reduced without changing feed per tooth.
	• feed	• Increase feed per tooth (feed should be high enough to avoid the pure rubbing, which occurs with small chip thickness).
	• grade	• Use more wear-resistant grade. • Change to a coated grade if you are now using an uncoated grade.
	• insert geometry	• Inspect insert to determine if proper style is being used in the cutter.

Multiple factors:

When wear, chipping, thermal cracking, and breakage occur at once, the machine operator must look beyond the normal feed, speed, and depth-of-cut adjustments to find the root cause of the problem. Speed, feed, and depth-of-cut parameters should be re-examined for accuracy, but the system's rigidity should also be closely inspected for loose or worn parts as well.

problem	cause	solution
multiple factors 	• system rigidity	• Check system for loose cutter mounting. • Improve fixture and cutter rigidity. • Check for worn hardware or improper insert installation. • Reduce the gauge length of the cutter and arbour assembly.
	• feed	• Reduce feed rate to relieve cutting forces.
	• cutter geometry	• If possible, use a lead angle cutter to redirect cutting forces away from the insert nose.
	• insert/grade	• If possible, use a larger nose radius. • Use T-land insert. • Use a tougher grade of carbide.

Appendix • Engagement Angle and Number of Inserts in Cut

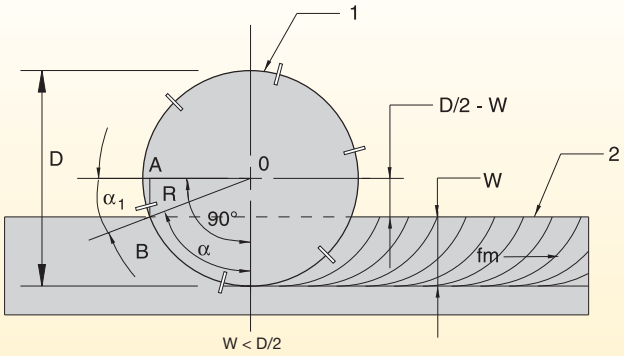


$$Z_c = \frac{Z \times \alpha^\circ}{360^\circ} \qquad \alpha = 90^\circ + \alpha_1$$

$$\sin \alpha_1 = \frac{AB}{OB} = \frac{W - D/2}{D/2} = \frac{2(W - D/2)}{D} = \frac{2W - D}{D};$$

$$\alpha_1 = \arcsin \frac{2W - D}{D};$$

$$Z_c = \frac{Z\left(90^\circ + \arcsin \frac{2W - D}{D}\right)}{360^\circ}$$



$$Z_c = \frac{Z \times \alpha^\circ}{360^\circ} \qquad \alpha = 90^\circ - \alpha_1$$

$$\sin \alpha_1 = \frac{AB}{OB} = \frac{D/2 - W}{D/2} = \frac{2(D/2 - W)}{D} = \frac{D - 2W}{D};$$

$$\alpha_1 = \arcsin \frac{D - 2W}{D}$$

$$Z_c = \frac{Z\left(90^\circ - \arcsin \frac{D - 2W}{D}\right)}{360^\circ}$$

D = cutter diameter
W = width of cut (woc)
α = engagement angle
α_1 = angle between cutter centreline and cutter radius to the peripheral point of exit or entry
Z = number of inserts in cutter
Z_c = number of inserts in cut

Service and Support

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BEST-IN-CLASS SUPPORT TOOLS AND TECHNOLOGY	Materials database. Application calculators. Tooling performance experts.



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Netherlands	English	0800 0201 130	eu.techsupport@kennametal.com
New Zealand	English	0800 450 941	ap-kmt.techsupport@kennametal.com
Norway	English	800 10080	na.techsupport@kennametal.com
Poland	Polish	0080 04411887	eu.techsupport@kennametal.com
Russia (landline)	Russian	8800 5556394	eu.techsupport@kennametal.com
Russia (cell phone)	Russian	+7 8005556394	eu.techsupport@kennametal.com
Singapore	English	1800 6221031	ap-kmt.techsupport@kennametal.com
South Africa	English	0800 981643	na.techsupport@kennametal.com
Sweden	English	020799246	na.techsupport@kennametal.com
Taiwan	English	0800 666 197	ap-kmt.techsupport@kennametal.com
Thailand	English	1800 4417820	ap-kmt.techsupport@kennametal.com
UK	English	0800 032 8339	na.techsupport@kennametal.com
Ukraine	Russian	0800502664	eu.techsupport@kennametal.com
USA	English	800 835 3668	na.techsupport@kennametal.com

Numbers shown only serve the originating country listed.

Metric • Face Milling, Contour Milling, Profiling and Die & Mould

Material Group		GH1			GH2			K110M			K115M			K313			KBK50			KC410M*		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	350	**260**	160	300	**220**	145	155	**145**	140	220	**180**	145	230	**205**	180	1200	**800**	600	–	–	–
	2	295	**220**	145	260	**190**	125	140	**125**	120	180	**145**	110	–	–	–	1200	**800**	600	–	–	–
	3	240	**190**	140	220	**175**	120	120	**110**	95	110	**90**	70	–	–	–	1200	**800**	600	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KC422M*			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	–	–	–	–	–	–	–	–	330	**295**	260	–	–	–	395	**340**	325	–	–	–
	2	–	–	–	–	–	–	–	–	–	310	**275**	240	–	–	–	330	**290**	240	–	–	–
	3	–	–	–	–	–	–	–	–	–	275	**240**	205	–	–	–	305	**260**	210	–	–	–
	4	–	–	–	360	**265**	215	295	**240**	205	240	**205**	160	–	–	–	270	**220**	180	–	–	–
	5	–	–	–	360	**265**	215	–	–	–	205	**160**	125	–	–	–	220	**205**	180	–	–	–
	6	–	–	–	350	**240**	190	–	–	–	160	**125**	110	–	–	–	200	**150**	120	–	–	–
M	1	–	–	–	–	–	–	–	–	–	330	**275**	240	–	–	–	245	**215**	200	–	–	–
	2	–	–	–	–	–	–	–	–	–	275	**220**	160	–	–	–	220	**190**	155	–	–	–
	3	–	–	–	–	–	–	–	–	–	220	**180**	145	–	–	–	170	**145**	115	–	–	–
K	1	–	–	–	230	**205**	180	355	**320**	290	440	**330**	220	325	**295**	260	275	**245**	220	450	**320**	230
	2	–	–	–	210	**185**	160	275	**245**	230	330	**260**	180	250	**230**	210	215	**190**	180	390	**245**	190
	3	–	–	–	140	**115**	90	235	**210**	190	145	**110**	70	210	**190**	175	180	**160**	145	300	**220**	155
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	265	**205**	170	190	**155**	110	170	**120**	95	–	–	–	145	**110**	85	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

(continued)

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

(continued)

Metric • Face Milling, Contour Milling, Profiling, and Die & Mould

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	265	**240**	215	275	**240**	205	310	**275**	260	155	**145**	120	–	–	–	–	–	–	545	**475**	445
	2	215	**190**	180	240	**205**	160	265	**230**	190	145	**130**	125	–	–	–	–	–	–	335	**305**	275
	3	190	**180**	170	205	**180**	160	240	**205**	170	130	**120**	110	–	–	–	–	–	–	305	**275**	245
	4	170	**155**	145	180	**160**	145	215	**180**	145	120	**110**	95	–	–	–	–	–	–	230	**210**	190
	5	180	**170**	155	160	**145**	125	180	**160**	145	110	**95**	90	–	–	–	–	–	–	310	**275**	250
	6	155	**145**	130	125	**110**	90	155	**120**	95	95	**90**	85	–	–	–	–	–	–	190	**160**	–
M	1	180	**170**	155	275	**220**	180	205	**180**	160	125	**110**	95	–	–	–	–	–	–	245	**220**	185
	2	155	**145**	130	180	**145**	125	185	**155**	130	115	**100**	90	–	–	–	–	–	–	220	**190**	170
	3	110	**95**	85	145	**125**	110	140	**120**	95	85	**70**	–	–	–	–	–	–	–	175	**155**	140
K	1	–	–	–	–	–	–	–	–	–	–	–	–	505	**460**	410	350	**305**	260	355	**320**	290
	2	–	–	–	–	–	–	–	–	–	–	–	–	400	**355**	330	275	**240**	210	280	**250**	230
	3	–	–	–	–	–	–	–	–	–	–	–	–	335	**300**	275	230	**205**	175	235	**210**	190
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400			KD1410*			KD1415*			KD1425*		
P	1	355	**310**	295	265	**240**	215	275	**240**	205	310	**275**	260	–	–	–	–	–	–	–	–	–
	2	300	**260**	215	215	**190**	180	240	**205**	160	265	**230**	190	–	–	–	–	–	–	–	–	–
	3	275	**235**	190	190	**180**	170	205	**180**	160	240	**205**	170	–	–	–	–	–	–	–	–	–
	4	245	**205**	160	170	**155**	145	180	**160**	145	215	**180**	145	–	–	–	–	–	–	–	–	–
	5	205	**185**	160	180	**170**	155	160	**145**	125	180	**160**	145	–	–	–	–	–	–	–	–	–
	6	180	**140**	110	155	**145**	130	125	**110**	90	155	**120**	95	–	–	–	–	–	–	–	–	–
M	1	235	**205**	185	180	**170**	155	275	**220**	180	205	**180**	160	–	–	–	–	–	–	–	–	–
	2	210	**180**	150	155	**145**	130	180	**145**	125	185	**155**	130	–	–	–	–	–	–	–	–	–
	3	155	**140**	110	110	**95**	85	145	**125**	110	140	**120**	95	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

(continued)

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

(continued)

Metric • Face Milling, Contour Milling, Profiling, and Die & Mould

Material Group		KTPK20			KY3500			KYS30			KYSP30			MP91M			SC3025			SC6525		
P	1	440	**360**	305	–	**–**	–	–	**–**	–	–	**–**	–	415	**295**	170	–	**–**	–	445	**305**	170
	2	270	**230**	190	–	**–**	–	–	**–**	–	–	**–**	–	365	**260**	145	–	**–**	–	390	**270**	145
	3	245	**205**	175	–	**–**	–	–	**–**	–	–	**–**	–	325	**230**	125	–	**–**	–	350	**240**	125
	4	180	**155**	130	–	**–**	–	–	**–**	–	–	**–**	–	245	**175**	95	–	**–**	–	250	**175**	95
	5	250	**210**	175	–	**–**	–	910	**730**	545	910	**730**	545	–	**–**	–	–	**–**	–	190	**145**	95
	6	155	**125**	–	–	**–**	–	910	**730**	545	910	**730**	545	–	**–**	–	–	**–**	–	170	**120**	70
M	1	290	**235**	200	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	240	**215**	170
	2	260	**220**	180	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	230	**190**	145
	3	190	**160**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	175	**155**	110
K	1	275	**235**	190	965	**875**	780	–	**–**	–	–	**–**	–	440	**305**	175	475	**330**	180	470	**325**	175
	2	220	**180**	155	760	**685**	635	–	**–**	–	–	**–**	–	340	**240**	140	400	**275**	145	365	**250**	140
	3	180	**155**	125	–	**–**	–	–	**–**	–	–	**–**	–	310	**220**	125	330	**230**	125	–	**–**	–
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	–	**–**	–	–	**–**	–	805	**660**	510	805	**660**	510	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	805	**660**	510	805	**660**	510	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	1170	**955**	730	1170	**955**	730	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
H	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	125	**95**	60	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	115	**85**	50	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

Material Group		SP4019			SP6519			X400			X500			X700		
P	1	380	**275**	170	355	**260**	155	310	**230**	145	325	**240**	155	–	**–**	–
	2	330	**240**	145	310	**230**	140	275	**205**	125	290	**215**	140	–	**–**	–
	3	295	**210**	125	275	**200**	120	240	**180**	115	250	**185**	120	–	**–**	–
	4	230	**160**	95	210	**150**	90	180	**130**	85	190	**145**	90	–	**–**	–
	5	180	**130**	85	170	**125**	85	–	**–**	–	155	**120**	85	160	**125**	85
	6	155	**110**	60	145	**100**	60	–	**–**	–	130	**95**	60	140	**100**	60
M	1	335	**240**	145	325	**235**	140	–	**–**	–	300	**220**	140	310	**230**	140
	2	300	**215**	130	280	**205**	125	–	**–**	–	265	**190**	120	275	**205**	125
	3	240	**175**	110	235	**170**	100	–	**–**	–	215	**155**	95	230	**170**	100
K	1	395	**290**	175	355	**265**	170	–	**–**	–	310	**265**	205	–	**–**	–
	2	305	**220**	140	290	**210**	130	–	**–**	–	265	**215**	155	–	**–**	–
	3	280	**205**	125	265	**190**	120	–	**–**	–	205	**170**	120	–	**–**	–
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
H	1	120	**90**	60	–	**–**	–	115	**85**	55	–	**–**	–	–	**–**	–
	2	110	**80**	50	–	**–**	–	95	**70**	40	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

*Recommended for wet machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Metric • Shoulder Milling, Slotting, and Thread Mills

Material Group		GH1			GH2			K110M			K115M			K313			KBK50			KC410M*		
P	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	6	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
M	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
K	1	290	**215**	135	250	**185**	120	130	**120**	115	185	**150**	120	190	**170**	150	1000	**665**	500	–	**–**	–
	2	245	**185**	120	215	**160**	105	115	**105**	100	150	**120**	90	–	**–**	–	1000	**665**	500	–	**–**	–
	3	200	**160**	115	185	**145**	100	100	**90**	80	90	**75**	60	–	**–**	–	1000	**665**	500	–	**–**	–
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
H	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

Material Group		KC422M *			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	**–**	–	–	**–**	–	–	**–**	–	275	**245**	215	–	**–**	–	330	**285**	270	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	260	**230**	200	–	**–**	–	275	**240**	200	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	230	**200**	170	–	**–**	–	255	**215**	175	–	**–**	–
	4	–	**–**	–	300	**220**	180	245	**200**	170	200	**170**	135	–	**–**	–	225	**185**	150	–	**–**	–
	5	–	**–**	–	300	**220**	180	–	**–**	–	170	**135**	105	–	**–**	–	185	**170**	150	–	**–**	–
	6	–	**–**	–	290	**200**	160	–	**–**	–	135	**105**	90	–	**–**	–	165	**125**	100	–	**–**	–
M	1	–	**–**	–	–	**–**	–	–	**–**	–	275	**230**	200	–	**–**	–	205	**180**	165	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	230	**185**	135	–	**–**	–	185	**160**	130	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	185	**150**	120	–	**–**	–	140	**120**	95	–	**–**	–
K	1	–	**–**	–	190	**170**	150	295	**265**	240	365	**275**	185	270	**245**	215	230	**205**	185	375	**265**	190
	2	–	**–**	–	175	**155**	135	230	**205**	190	275	**215**	150	210	**190**	175	180	**160**	150	325	**205**	160
	3	–	**–**	–	115	**95**	75	195	**175**	160	120	**90**	60	175	**160**	145	150	**135**	120	250	**185**	130
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
H	1	–	**–**	–	220	**170**	140	160	**130**	90	140	**100**	80	–	**–**	–	120	**90**	70	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

*Recommended for wet machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Metric • Shoulder Milling, Slotting, and Thread Mills

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	220	**200**	180	230	**200**	170	260	**230**	215	130	**120**	100	–	–	–	–	–	–	455	**395**	370
	2	180	**160**	150	200	**170**	135	220	**190**	160	120	**110**	105	–	–	–	–	–	–	280	**255**	230
	3	160	**150**	140	170	**150**	135	200	**170**	140	110	**100**	90	–	–	–	–	–	–	255	**230**	205
	4	140	**130**	120	150	**135**	120	180	**150**	120	100	**90**	80	–	–	–	–	–	–	190	**175**	160
	5	150	**140**	130	135	**120**	105	150	**135**	120	90	**80**	75	–	–	–	–	–	–	260	**230**	210
	6	130	**120**	110	105	**90**	75	130	**100**	80	80	**75**	70	–	–	–	–	–	–	160	**135**	–
M	1	150	**140**	130	230	**185**	150	170	**150**	135	105	**90**	80	–	–	–	–	–	–	205	**185**	155
	2	130	**120**	110	150	**120**	105	155	**130**	110	95	**85**	75	–	–	–	–	–	–	185	**160**	140
	3	90	**80**	70	120	**105**	90	115	**100**	80	70	**60**	–	–	–	–	–	–	–	145	**130**	115
K	1	–	–	–	–	–	–	–	–	–	–	–	–	420	**385**	340	290	**255**	215	295	**265**	240
	2	–	–	–	–	–	–	–	–	–	–	–	–	335	**295**	275	230	**200**	175	235	**210**	190
	3	–	–	–	–	–	–	–	–	–	–	–	–	280	**250**	230	190	**170**	145	195	**175**	160
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400			KD1410*			KD1415*			KD1425*		
P	1	295	**260**	245	230	**200**	170	260	**230**	215	130	**120**	100	–	–	–	–	–	–	–	–	–
	2	250	**215**	180	200	**170**	135	220	**190**	160	120	**110**	105	–	–	–	–	–	–	–	–	–
	3	230	**195**	160	170	**150**	135	200	**170**	140	110	**100**	90	–	–	–	–	–	–	–	–	–
	4	205	**170**	135	150	**135**	120	180	**150**	120	100	**90**	80	–	–	–	–	–	–	–	–	–
	5	170	**155**	135	135	**120**	105	150	**135**	120	90	**80**	75	–	–	–	–	–	–	–	–	–
	6	150	**115**	90	105	**90**	75	130	**100**	80	80	**75**	70	–	–	–	–	–	–	–	–	–
M	1	195	**170**	155	230	**185**	150	170	**150**	135	105	**90**	80	–	–	–	–	–	–	–	–	–
	2	175	**150**	125	150	**120**	105	155	**130**	110	95	**85**	75	–	–	–	–	–	–	–	–	–
	3	130	**115**	90	120	**105**	90	115	**100**	80	70	**60**	–	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

(continued)

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Technical Information

(continued)

Metric • Shoulder Milling, Slotting, and Thread Mills

Material Group		KTPK20			KY3500			KYS30			KYSP30			MP91M			SC3025			SC6525		
P	1	365	**300**	255	–	–	–	–	–	–	–	–	–	345	**245**	140	–	–	–	370	**255**	140
	2	225	**190**	160	–	–	–	–	–	–	–	–	–	305	**215**	120	–	–	–	325	**225**	120
	3	205	**170**	145	–	–	–	–	–	–	–	–	–	270	**190**	105	–	–	–	290	**200**	105
	4	150	**130**	110	–	–	–	–	–	–	–	–	–	205	**145**	80	–	–	–	210	**145**	80
	5	210	**175**	145	–	–	–	760	**610**	455	760	**610**	455	–	–	–	–	–	–	160	**120**	80
	6	130	**105**	–	–	–	–	760	**610**	455	760	**610**	455	–	–	–	–	–	–	140	**100**	60
M	1	240	**195**	165	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	200	**180**	140
	2	215	**185**	150	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	190	**160**	120
	3	160	**135**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	145	**130**	90
K	1	230	**195**	160	805	**730**	650	–	–	–	–	–	–	365	**255**	145	395	**275**	150	390	**270**	145
	2	185	**150**	130	635	**570**	530	–	–	–	–	–	–	285	**200**	115	335	**230**	120	305	**210**	115
	3	150	**130**	105	–	–	–	–	–	–	–	–	–	260	**185**	105	275	**190**	105	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	670	**550**	425	670	**550**	425	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	670	**550**	425	670	**550**	425	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	975	**795**	610	975	**795**	610	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	105	**80**	50	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	95	**70**	40	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		SP4019			SP6519			X400			X500			X700		
P	1	315	**230**	140	295	**215**	130	260	**190**	120	270	**200**	130	–	–	–
	2	275	**200**	120	260	**190**	115	230	**170**	105	240	**180**	115	–	–	–
	3	245	**175**	105	230	**165**	100	200	**150**	95	210	**155**	100	–	–	–
	4	190	**135**	80	175	**125**	75	150	**110**	70	160	**120**	75	–	–	–
	5	150	**110**	70	140	**105**	70	–	–	–	130	**100**	70	135	**105**	70
	6	130	**90**	50	120	**85**	50	–	–	–	110	**80**	50	115	**85**	50
M	1	280	**200**	120	270	**195**	115	–	–	–	250	**185**	115	260	**190**	115
	2	250	**180**	110	235	**170**	105	–	–	–	220	**160**	100	230	**170**	105
	3	200	**145**	90	195	**140**	85	–	–	–	180	**130**	80	190	**140**	85
K	1	330	**240**	145	295	**220**	140	–	–	–	260	**220**	170	–	–	–
	2	255	**185**	115	240	**175**	110	–	–	–	220	**180**	130	–	–	–
	3	235	**170**	105	220	**160**	100	–	–	–	170	**140**	100	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	100	**75**	50	–	–	–	95	**70**	45	–	–	–	–	–	–
	2	90	**65**	40	–	–	–	80	**60**	35	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Metric • Face Milling, Contour Milling, Profiling, and Die & Mould

Material Group		GH1			GH2			K110M			K115M			K313			KBK50*			KC410M		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	280	**210**	130	240	**175**	115	125	**115**	110	175	**145**	115	185	**165**	145	1200	**800**	600	–	–	–
	2	235	**175**	115	210	**150**	100	110	**100**	95	145	**115**	90	–	–	–	1200	**800**	600	–	–	–
	3	190	**150**	110	175	**140**	95	95	**90**	75	90	**70**	55	–	–	–	1200	**800**	600	–	–	–
N	1	1150	**895**	385	1150	**910**	385	485	**455**	430	350	**265**	175	765	**670**	575	–	–	–	1170	**1035**	955
	2	1150	**895**	385	1150	**910**	385	390	**350**	310	235	**175**	145	–	–	–	–	–	–	1035	**955**	880
	3	850	**790**	285	850	**700**	285	390	**350**	310	235	**175**	145	–	–	–	–	–	–	1035	**955**	880
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	70	**55**	45	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KC422M			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	–	–	–	–	–	–	–	–	265	**235**	210	–	–	–	315	**270**	260	–	–	–
	2	–	–	–	–	–	–	–	–	–	250	**220**	190	–	–	–	265	**230**	190	–	–	–
	3	–	–	–	–	–	–	–	–	–	220	**190**	165	–	–	–	245	**210**	170	–	–	–
	4	–	–	–	290	**210**	170	235	**190**	165	190	**165**	130	–	–	–	215	**175**	145	–	–	–
	5	–	–	–	290	**210**	170	–	–	–	165	**130**	100	–	–	–	175	**165**	145	–	–	–
	6	–	–	–	280	**190**	150	–	–	–	130	**100**	90	–	–	–	160	**120**	95	–	–	–
M	1	–	–	–	–	–	–	–	–	–	265	**220**	190	–	–	–	195	**170**	160	–	–	–
	2	–	–	–	–	–	–	–	–	–	220	**175**	130	–	–	–	175	**150**	125	–	–	–
	3	–	–	–	–	–	–	–	–	–	175	**145**	115	–	–	–	135	**115**	90	–	–	–
K	1	–	–	–	185	**165**	145	285	**255**	230	350	**265**	175	260	**235**	210	220	**195**	175	360	**255**	185
	2	–	–	–	170	**150**	130	220	**195**	185	265	**210**	145	200	**185**	170	170	**150**	145	310	**195**	150
	3	–	–	–	110	**90**	70	190	**170**	150	115	**90**	55	170	**150**	140	145	**130**	115	240	**175**	125
N	1	1030	**910**	840	–	–	–	615	**550**	505	–	–	–	–	–	–	–	–	–	–	–	–
	2	910	**840**	730	–	–	–	555	**510**	470	–	–	–	–	–	–	–	–	–	–	–	–
	3	910	**840**	730	–	–	–	555	**510**	470	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	40	**30**	25	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	40	**30**	25	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	50	**40**	25	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	70	**50**	30	–	–	–
H	1	–	–	–	210	**165**	135	150	**125**	90	135	**95**	75	–	–	–	115	**90**	70	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for dry machining only.

(continued)

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

(continued)

Metric • Face Milling, Contour Milling, Profiling, and Die & Mould

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	210	**190**	170	220	**190**	165	250	**220**	210	125	**115**	95	–	–	–	–	–	–	435	**380**	355
	2	170	**150**	145	190	**165**	130	210	**185**	150	115	**105**	100	–	–	–	–	–	–	270	**245**	220
	3	150	**145**	135	165	**145**	130	190	**165**	135	105	**95**	90	–	–	–	–	–	–	245	**220**	195
	4	135	**125**	115	145	**130**	115	170	**145**	115	95	**90**	75	–	–	–	–	–	–	185	**170**	150
	5	145	**135**	125	130	**115**	100	145	**130**	115	90	**75**	70	–	–	–	–	–	–	250	**220**	200
	6	125	**115**	105	100	**90**	70	125	**95**	75	75	**70**	70	–	–	–	–	–	–	150	**130**	–
M	1	145	**135**	125	220	**175**	145	165	**145**	130	100	**90**	75	–	–	–	–	–	–	195	**175**	150
	2	125	**115**	105	145	**115**	100	150	**125**	105	90	**80**	70	–	–	–	–	–	–	175	**150**	135
	3	90	**75**	70	115	**100**	90	110	**95**	75	70	**55**	–	–	–	–	–	–	–	140	**125**	110
K	1	–	–	–	–	–	–	–	–	–	–	–	–	405	**370**	330	280	**245**	210	285	**255**	230
	2	–	–	–	–	–	–	–	–	–	–	–	–	320	**285**	265	220	**190**	170	225	**200**	185
	3	–	–	–	–	–	–	–	–	–	–	–	–	270	**240**	220	185	**165**	140	190	**170**	150
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	55	**50**	50	–	–	–	30	**30**	25	–	–	–	–	–	–	–	–	–	–	–	–
	2	55	**50**	50	–	–	–	30	**30**	25	–	–	–	–	–	–	–	–	–	–	–	–
	3	50	**45**	40	–	–	–	45	**30**	25	–	–	–	–	–	–	–	–	–	–	–	–
	4	55	**50**	40	65	**50**	45	50	**45**	30	–	–	–	–	–	–	–	–	–	65	**50**	30
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400			KD1410			KD1415			KD1425		
P	1	285	**250**	235	355	**310**	290	–	–	–	310	**275**	260	–	–	–	–	–	–	–	–	–
	2	240	**210**	170	290	**260**	210	–	–	–	265	**230**	190	–	–	–	–	–	–	–	–	–
	3	220	**190**	150	270	**230**	190	–	–	–	240	**205**	170	–	–	–	–	–	–	–	–	–
	4	195	**165**	130	240	**195**	160	–	–	–	215	**180**	145	–	–	–	–	–	–	–	–	–
	5	165	**150**	130	195	**185**	160	165	**140**	115	180	**160**	145	–	–	–	–	–	–	–	–	–
	6	145	**110**	90	175	**135**	105	145	**105**	75	155	**120**	95	–	–	–	–	–	–	–	–	–
M	1	190	**165**	150	215	**190**	175	200	**165**	135	205	**180**	160	–	–	–	–	–	–	–	–	–
	2	170	**145**	120	195	**170**	140	170	**140**	115	185	**155**	130	–	–	–	–	–	–	–	–	–
	3	125	**110**	90	150	**130**	100	140	**105**	80	140	**120**	95	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	3850	**3365**	2870	3850	**3365**	2870	730	**1585**	3905
	2	–	–	–	–	–	–	–	–	–	–	–	–	1535	**1435**	1345	3850	**3365**	2870	730	**1585**	3905
	3	–	–	–	–	–	–	–	–	–	–	–	–	1535	**1435**	1345	1535	**1435**	1345	370	**490**	570
S	1	40	**30**	30	45	**40**	30	40	**30**	25	–	–	–	–	–	–	–	–	–	–	–	–
	2	40	**30**	30	45	**40**	30	40	**30**	25	–	–	–	–	–	–	–	–	–	–	–	–
	3	50	**40**	30	50	**45**	30	50	**40**	25	–	–	–	–	–	–	–	–	–	–	–	–
	4	65	**50**	30	70	**55**	40	55	**50**	30	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	130	**95**	70	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Metric • Face Milling, Contour Milling, Profiling, and Die & Mould

Material Group		KTPK20			KY3500*			KYS30*			KYSP30*			SC3025			SC6525			SP4019		
P	1	350	**290**	245	–	–	–	–	–	–	–	–	–	355	**245**	135	445	**305**	170	305	**220**	135
	2	215	**185**	150	–	–	–	–	–	–	–	–	–	310	**215**	115	390	**270**	145	265	**190**	115
	3	195	**165**	140	–	–	–	–	–	–	–	–	–	280	**190**	100	350	**240**	125	235	**170**	100
	4	145	**125**	105	–	–	–	–	–	–	–	–	–	200	**140**	75	250	**175**	95	185	**130**	75
	5	200	**170**	140	–	–	–	–	–	–	–	–	–	150	**115**	75	190	**145**	95	145	**105**	70
	6	125	**100**	–	–	–	–	–	–	–	–	–	–	135	**95**	55	170	**120**	70	125	**90**	50
M	1	230	**190**	160	–	–	–	–	–	–	–	–	–	190	**170**	135	240	**215**	170	270	**190**	115
	2	210	**175**	145	–	–	–	–	–	–	–	–	–	185	**150**	115	230	**190**	145	240	**170**	105
	3	150	**130**	–	–	–	–	–	–	–	–	–	–	140	**125**	90	175	**155**	110	190	**140**	90
K	1	220	**190**	150	–	–	–	–	–	–	–	–	–	375	**260**	140	470	**325**	175	315	**230**	140
	2	175	**145**	125	–	–	–	–	–	–	–	–	–	290	**200**	110	365	**250**	140	245	**175**	110
	3	145	**125**	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	225	**165**	100
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2780	**1585**	385
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2780	**1585**	385
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2230	**1255**	285
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	60	**45**	25
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	50	**40**	25
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	55	**45**	25
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	80	**55**	35
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	95	**70**	50
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	90	**65**	40
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		SP6519			X400			X500			X700		
P	1	285	**210**	125	250	**185**	115	260	**190**	125	–	–	–
	2	250	**185**	110	220	**165**	100	230	**170**	110	–	–	–
	3	220	**160**	95	190	**145**	90	200	**150**	95	–	–	–
	4	170	**120**	70	145	**105**	70	150	**115**	70	–	–	–
	5	135	**100**	70	–	–	–	125	**95**	70	130	**100**	70
	6	115	**80**	50	–	–	–	105	**75**	50	110	**80**	50
M	1	260	**190**	110	–	–	–	240	**175**	110	250	**185**	110
	2	225	**165**	100	–	–	–	210	**150**	95	220	**165**	100
	3	190	**135**	80	–	–	–	170	**125**	75	185	**135**	80
K	1	285	**210**	135	–	–	–	250	**210**	165	–	–	–
	2	230	**170**	105	–	–	–	210	**170**	125	–	–	–
	3	210	**150**	95	–	–	–	165	**135**	95	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–
S	1	50	**40**	25	–	–	–	50	**30**	25	50	**40**	25
	2	50	**30**	20	–	–	–	45	**30**	20	45	**30**	20
	3	50	**40**	25	–	–	–	50	**40**	25	50	**40**	25
	4	75	**55**	35	–	–	–	70	**50**	30	70	**50**	35
H	1	–	–	–	90	**70**	45	–	–	–	–	–	–
	2	–	–	–	75	**55**	30	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Metric • Shoulder and Slotting Cutters, Thread Mills

Material Group		GH1			GH2			K110M			K115M			K313			KBK50*			KC410M		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	230	**170**	110	200	**150**	95	105	**95**	90	150	**120**	95	150	**135**	120	800	**530**	400	–	–	–
	2	195	**150**	95	170	**130**	85	90	**85**	80	120	**95**	70	–	–	–	800	**530**	400	–	–	–
	3	160	**130**	90	150	**115**	80	80	**70**	65	70	**60**	50	–	–	–	800	**530**	400	–	–	–
N	1	960	**750**	320	960	**755**	320	405	**380**	360	290	**220**	150	635	**555**	480	–	–	–	970	**865**	795
	2	960	**750**	320	960	**755**	320	330	**290**	255	195	**150**	120	–	–	–	–	–	–	865	**795**	730
	3	710	**655**	235	710	**585**	235	330	**290**	255	195	**150**	120	–	–	–	–	–	–	865	**795**	730
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	60	**50**	35	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KC422M			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	–	–	–	–	–	–	–	–	220	**195**	170	–	–	–	265	**230**	215	–	–	–
	2	–	–	–	–	–	–	–	–	–	210	**185**	160	–	–	–	220	**190**	160	–	–	–
	3	–	–	–	–	–	–	–	–	–	185	**160**	135	–	–	–	205	**170**	140	–	–	–
	4	–	–	–	240	**175**	145	195	**160**	135	160	**135**	110	–	–	–	180	**150**	120	–	–	–
	5	–	–	–	240	**175**	145	–	–	–	135	**110**	85	–	–	–	150	**135**	120	–	–	–
	6	–	–	–	230	**160**	130	–	–	–	110	**85**	70	–	–	–	130	**100**	80	–	–	–
M	1	–	–	–	–	–	–	–	–	–	220	**185**	160	–	–	–	165	**145**	130	–	–	–
	2	–	–	–	–	–	–	–	–	–	185	**150**	110	–	–	–	150	**130**	105	–	–	–
	3	–	–	–	–	–	–	–	–	–	150	**120**	95	–	–	–	110	**95**	75	–	–	–
K	1	–	–	–	150	**135**	120	235	**210**	190	290	**220**	150	215	**195**	170	185	**165**	150	300	**210**	150
	2	–	–	–	140	**125**	110	185	**165**	150	220	**170**	120	170	**150**	140	145	**130**	120	260	**165**	130
	3	–	–	–	90	**75**	60	155	**140**	130	95	**70**	50	140	**130**	115	120	**110**	95	200	**150**	105
N	1	860	**755**	700	–	–	–	510	**455**	420	–	–	–	–	–	–	–	–	–	–	–	–
	2	755	**700**	610	–	–	–	465	**430**	390	–	–	–	–	–	–	–	–	–	–	–	–
	3	755	**700**	610	–	–	–	465	**430**	390	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	30	**30**	20	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	30	**30**	20	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	40	**30**	20	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	55	**40**	30	–	–	–
H	1	–	–	–	175	**135**	110	130	**105**	70	110	**80**	65	–	–	–	95	**70**	55	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

(continued)

(continued)

Metric • Shoulder and Slotting Cutters, Thread Mills

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	175	**160**	145	185	**160**	135	210	**185**	170	105	**95**	80	–	–	–	–	–	–	365	**315**	295
	2	145	**130**	120	160	**135**	110	175	**150**	130	95	**90**	85	–	–	–	–	–	–	225	**205**	185
	3	130	**120**	110	135	**120**	110	160	**135**	110	90	**80**	70	–	–	–	–	–	–	205	**185**	165
	4	110	**105**	95	120	**110**	95	145	**120**	95	80	**70**	65	–	–	–	–	–	–	150	**140**	130
	5	120	**110**	105	110	**95**	85	120	**110**	95	70	**65**	60	–	–	–	–	–	–	210	**185**	170
	6	105	**95**	90	85	**70**	60	105	**80**	65	65	**60**	55	–	–	–	–	–	–	130	**110**	–
M	1	120	**110**	105	185	**150**	120	135	**120**	110	85	**70**	65	–	–	–	–	–	–	165	**150**	125
	2	105	**95**	90	120	**95**	85	125	**105**	90	75	**70**	60	–	–	–	–	–	–	150	**130**	110
	3	70	**65**	55	95	**85**	70	90	**80**	65	55	**50**	–	–	–	–	–	–	–	115	**105**	90
K	1	–	–	–	–	–	–	–	–	–	–	–	–	335	**310**	270	230	**205**	170	235	**210**	190
	2	–	–	–	–	–	–	–	–	–	–	–	–	270	**235**	220	185	**160**	140	190	**170**	150
	3	–	–	–	–	–	–	–	–	–	–	–	–	225	**200**	185	150	**135**	115	155	**140**	130
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	50	**45**	40	–	–	–	30	**25**	20	–	–	–	–	–	–	–	–	–	–	–	–
	2	50	**45**	40	–	–	–	30	**25**	20	–	–	–	–	–	–	–	–	–	–	–	–
	3	40	**35**	30	–	–	–	35	**30**	20	–	–	–	–	–	–	–	–	–	–	–	–
	4	50	**40**	30	50	**40**	35	45	**35**	25	–	–	–	–	–	–	–	–	–	55	**40**	25
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400			KD1410			KD1415			KD1425		
P	1	285	**250**	235	295	**255**	240	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	240	**210**	170	245	**215**	175	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	220	**190**	150	230	**190**	155	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	195	**165**	130	200	**165**	130	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	165	**150**	130	165	**150**	130	135	**115**	95	–	–	–	–	–	–	–	–	–	–	–	–
	6	145	**110**	90	150	**110**	90	120	**90**	65	–	–	–	–	–	–	–	–	–	–	–	–
M	1	190	**165**	150	180	**160**	150	170	**135**	110	–	–	–	–	–	–	–	–	–	–	–	–
	2	170	**145**	120	165	**145**	115	145	**115**	95	–	–	–	–	–	–	–	–	–	–	–	–
	3	125	**110**	90	125	**110**	85	115	**90**	70	–	–	–	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	3210	**2805**	2390	3850	**3365**	2870	3210	**2805**	2390	610	**1320**	3250
	2	–	–	–	–	–	–	–	–	–	1280	**1195**	1120	1535	**1435**	1345	1280	**1195**	1120	610	**1320**	3250
	3	–	–	–	–	–	–	–	–	–	1280	**1195**	1120	1535	**1435**	1345	1280	**1195**	1120	310	**410**	470
S	1	40	**30**	30	35	**30**	25	30	**30**	20	–	–	–	–	–	–	–	–	–	–	–	–
	2	40	**30**	30	35	**30**	25	30	**30**	20	–	–	–	–	–	–	–	–	–	–	–	–
	3	50	**40**	30	45	**35**	25	40	**30**	20	–	–	–	–	–	–	–	–	–	–	–	–
	4	65	**50**	30	55	**50**	30	50	**40**	25	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	110	**80**	60	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Metric • Shoulder and Slotting Cutters, Thread Mills

Material Group		KTPK20			KY3500*			KYS30*			KYSP30*			SC3025			SC6525			SP4019		
P	1	290	**240**	205	–	–	–	–	–	–	–	–	–	–	–	–	295	**205**	110	250	**185**	110
	2	180	**150**	130	–	–	–	–	–	–	–	–	–	–	–	–	260	**180**	95	220	**160**	95
	3	165	**135**	115	–	–	–	–	–	–	–	–	–	–	–	–	230	**160**	85	195	**140**	85
	4	120	**105**	90	–	–	–	–	–	–	–	–	–	–	–	–	170	**115**	65	150	**110**	65
	5	170	**140**	115	–	–	–	–	–	–	–	–	–	–	–	–	130	**95**	65	120	**90**	55
	6	105	**85**	–	–	–	–	–	–	–	–	–	–	–	–	–	110	**80**	50	105	**70**	40
M	1	190	**155**	130	–	–	–	–	–	–	–	–	–	–	–	–	160	**145**	110	225	**160**	95
	2	170	**150**	120	–	–	–	–	–	–	–	–	–	–	–	–	150	**130**	95	200	**145**	90
	3	130	**110**	–	–	–	–	–	–	–	–	–	–	–	–	–	115	**105**	70	160	**115**	70
K	1	185	**155**	130	–	–	–	–	–	–	–	–	–	315	**220**	120	310	**215**	115	265	**190**	115
	2	150	**120**	105	–	–	–	–	–	–	–	–	–	270	**185**	95	245	**170**	90	205	**150**	90
	3	120	**105**	85	–	–	–	–	–	–	–	–	–	220	**150**	85	–	–	–	190	**135**	85
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2315	**1320**	320
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2315	**1320**	320
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1855	**1050**	235
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	50	**35**	20
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	40	**30**	20
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	45	**35**	20
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	65	**50**	30
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	80	**60**	40
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	70	**50**	30
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		SP6519			X400			X500			X700		
P	1	235	**170**	105	210	**150**	95	215	**160**	105	–	–	–
	2	210	**150**	90	185	**135**	85	190	**145**	90	–	–	–
	3	185	**130**	80	160	**120**	75	170	**125**	80	–	–	–
	4	140	**100**	60	120	**90**	55	130	**95**	60	–	–	–
	5	110	**85**	55	–	–	–	105	**80**	55	110	**85**	55
	6	95	**70**	40	–	–	–	90	**65**	40	90	**70**	40
M	1	215	**155**	90	–	–	–	200	**150**	90	210	**150**	90
	2	190	**135**	85	–	–	–	175	**130**	80	185	**135**	85
	3	155	**110**	70	–	–	–	145	**105**	65	150	**110**	70
K	1	235	**175**	110	–	–	–	210	**175**	135	–	–	–
	2	190	**140**	90	–	–	–	175	**145**	105	–	–	–
	3	175	**130**	80	–	–	–	135	**110**	80	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–
S	1	45	**30**	20	–	–	–	40	**30**	20	40	**30**	20
	2	40	**30**	20	–	–	–	35	**30**	15	35	**30**	20
	3	45	**30**	20	–	–	–	40	**30**	20	40	**30**	20
	4	65	**50**	30	–	–	–	60	**45**	30	60	**45**	30
H	1	–	–	–	75	**55**	35	–	–	–	–	–	–
	2	–	–	–	65	**50**	30	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Metric • Extra Fine Pitch Cutters from Platforms Mill 16™, HexaCut™, KSSR™ • Dry Machining

Material Group		KC514M			KC524M			KCK15			KCK20			KCPK30			KY3500		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	275	**180**	130	430	**305**	220	320	**210**	145	320	**210**	145	280	**250**	230	925	**845**	750
	2	215	**155**	110	370	**240**	180	240	**175**	120	240	**175**	120	230	**205**	180	730	**660**	610
	3	180	**130**	110	290	**215**	155	210	**145**	115	210	**145**	115	185	**170**	155	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Metric • Extra Fine Pitch Cutters from Platforms Mill 16™, HexaCut™, KSSR™ • Wet Machining

Material Group		KC514M			KC524M			KCK15			KCK20			KCPK30			KY3500*		
P	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	6	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
M	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
K	1	220	**145**	105	345	**245**	175	255	**170**	115	255	**170**	115	225	**200**	185	–	**–**	–
	2	170	**125**	90	295	**190**	145	190	**140**	95	190	**140**	95	185	**165**	145	–	**–**	–
	3	145	**105**	90	230	**170**	125	170	**115**	90	170	**115**	90	150	**135**	125	–	**–**	–
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
H	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Metric • High Speed Cutting • Face Milling, Round Insert, Profiling, Chamfer, and Die & Mould

Material Group		GH1			GH2		
P	1	–	–	–	–	–	–
	2	–	–	–	–	–	–
	3	–	–	–	–	–	–
	4	–	–	–	–	–	–
	5	–	–	–	–	–	–
	6	–	–	–	–	–	–
M	1	–	–	–	–	–	–
	2	–	–	–	–	–	–
	3	–	–	–	–	–	–
K	1	280	**210**	130	240	**175**	115
	2	235	**175**	115	210	**150**	100
	3	190	**150**	110	175	**140**	95
N	1	2930	**1655**	385	2635	**1510**	385
	2	2930	**1655**	385	2635	**1510**	385
	3	2345	**1315**	285	2050	**1170**	285
S	1	–	–	–	–	–	–
	2	–	–	–	–	–	–
	3	–	–	–	–	–	–
	4	–	–	–	–	–	–
H	1	–	–	–	–	–	–
	2	–	–	–	–	–	–
	3	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Metric • High Speed Cutting • Shoulder and Slotting Cutters, Thread Mills

Material Group		GH1			GH2		
P	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
	5	–	**–**	–	–	**–**	–
	6	–	**–**	–	–	**–**	–
M	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
K	1	230	**170**	110	200	**150**	95
	2	195	**150**	95	170	**130**	85
	3	160	**130**	90	150	**115**	80
N	1	2440	**1380**	320	2195	**1260**	320
	2	2440	**1380**	320	2195	**1260**	320
	3	1950	**1095**	235	1710	**970**	235
S	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
H	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

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1017282	IVSN432 K9	B151–152
1017296	ISSN533 K9	B108–109
1017298	ICSN533 K9	B61–63, B66–67, B72
1017300	ISSN633 K9	B108–110, B114–115, B119
1017334	ICSN633 K9	B61–63, B67–68, B72
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*Visit **kennametal.com** for additional contact information for locations.*



Turning Icons

 Shank: KM-TS™ (ISO 26622)	 Shank: KM4X™	 Shank: VDI Shank	 DIN Number 69880	 Through Coolant
 Through Coolant: 100 bar	 Through Coolant: 1500 psi	 Through Coolant: 80 bar	 Through Coolant: 1200 psi	 ISO: 26622
 ISO: 10889	 Turning	 Profiling	 Facing	 Face Grooving
 Chamfering	 Back Boring	 Threading	 Grooving	 Cut-Off
 I.D. Turning	 I.D. Chamfering	 I.D. Facing	 I.D. Grooving	 I.D. Face Grooving
 Deep Grooving	 I.D. Internal Threading			

Holemaking Icons

 Countersinking/ Stroke Chamfering	 Taper Drilling	 Counterboring	 Drilling	 Drilling: Inclined Entry
 Drilling: Inclined Exit	 Drilling: Exit Offset	 Drilling: Flat Bottom	 Drilling: Stacked Plates	 Drilling: Convex
 Drilling: Blind Hole	 Drilling: Concave	 Drilling: Chain	Drilling: Cross Hole	Drilling: Half Cylinder
Drilling: Corner Drilling 45°	Reaming: Through Hole	Reaming: Blind Hole	Reaming: Through Cross	Reaming: Blind and Cross Holes
Reaming: Interrupted Cut	Drilling Depth: 1 x D	Drilling Depth: 3 x D	Drilling Depth: 5 x D	Drilling Depth: 8 x D
Drilling Depth: 10 x D	Drilling Depth: 12 x D	Drilling Depth: 7 x D	Drilling Depth: 4 x D	Drilling Depth: 1.5 x D

(continued)

(Holemaking Icons — continued)

Corner Style: Corner Chamfer	Corner Style: Square End	Shank: Cylindrical Plain	Shank: Cylindrical Plain ≤h6	Shank: Cylindrical Weldon®
Shank: Cylindrical Whistle Notch	Shank: Cylindrical Whistle Notch ≤h6	Shank: Cylindrical Whistle Notch 2°	Shank: Cylindrical with Flat	Flat Shank
SK Shank: Rübig	Shank: SK BT JIS B 6339	Shank: SK CAT(CV) ANSI B5.50	Shank: SK DV DIN 69871	Shank: Cylindrical Whistle Notch with Drive and Flange
Shank: Cylindrical with Flat and Flange	KM™ Shank	Shank: HSK DIN 69893	Shank: HSK DIN 69893 Form A	Shank: KM-TS™ (ISO 26622)
Shank: KM-XMZ	Shank: ER	Helix Angle: 0°	Helix Angle: 15°	Helix Angle: 30°
Tip Angle: 118°	Tip Angle: 130°	Balance (G 6.3/25,000)	Balance (G 6.3/10,000)	Balance (G 6.3/6,000)
Balance (G 16/20,000)	DIN Number 6537	DIN Number 6535	DIN Number 69893	DIN Number 69090-3
Drilling: No Coolant	Through Coolant: Radial: Drilling	Through Coolant: Radial: Reaming	Through Coolant: Radial: Indexable Drilling	Flood Coolant: Drilling
Through Coolant: MQL (Minimum Quantity Lubricant): Drilling	Through Coolant: Axial: Drilling	Through Coolant: Axial: Reaming	Through Coolant: Coolant Entry AD	Through Coolant: Coolant Entry AD/B
Tool Dimensions: 2 Flute/2 Margin/ Coolant	Tool Dimensions: 2 Flute/2 Margin/ No Coolant	Tool Dimensions: 2 Flute/3 Margin/ Coolant	Tool Dimensions: 2 Flute/4 Margin/ Coolant	Tool Dimensions: 2 Flute/4 Margin/ No Coolant
Tool Dimensions: 2 Flute/4 Margin/ X/Coolant	Tool Dimensions: 3 Flute/3 Margin/ Coolant	Tool Dimensions: 3 Flute/3 Margin/ No Coolant	Tool Dimensions: Flute Configuration: 2	Tool Dimensions: Flute Configuration: 3
Tool Dimensions: Flute Configuration: 4				

Tapping Icons

Countersinking/ Stroke Chamfering	Drilling: Flat Bottom	Drilling: Blind	Tapping: Through Hole	Tapping: Blind Hole
Threading: Through Hole	HSS-E: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardnes	HSS-E-PM: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness (PM = Powder Metal Steel)	HM: (Carbide)	Drilling Depth: 2xD
Chamfer Form B (3.5–5.5)	Chamfer Form C (2–3)	Chamfer Form D (3.5–5)	Chamfer Form E (1.5–2)	Plug Chamfer Form B (3–5)
Tapping Helix Angle: 0º	Tapping Helix Angle: 10º	Tapping Helix Angle: L8º	Tapping Helix Angle: 15º	Tapping Helix Angle: L15º
Tapping Helix Angle: 25º	Tapping Helix Angle: 30º	Tapping Helix Angle: 42º	Tapping Helix Angle: 45º	Multipurpose Taps: Spiral Point
Tension/ Compression	DIN Number 371	DIN Number 374	DIN Number 376	DIN Number 5156
DIN Number 2174	Through Coolant: Radial: Tapping	Flood Coolant: Tapping	Through Coolant: Axial: Tapping	Manufacturer's Specs: ISO 2
Manufacturer's Specs: ISO 3	Manufacturer's Specs: JIS	Class of Fit: 2B	Class of Fit: 3B	Class of Fit: 6H
Class of Fit: 6HX	Class of Fit: 6G	Class of Fit: 2BX	Class of Fit: 3BX	Unified Fine Thread
Unified Course Thread	American Tapered Pipe Thread for Threads with Dryseal Material	American Tapered Pipe Thread for Threads without Dryseal Material	Whitworth Pipe Thread	Unified Course Thread: J Profile
Unified Fine Thread: J Profile	ISO Metric Coarse Thread	ISO Metric Fine Thread		

Solid End Milling Icons

Face Milling	Helical Milling	Plunge Milling	Plunge Milling: Ball Nose	Ramping: Blank
Ramping: Up to 3°	Slotting: Ball Nose	Slotting: Ball Nose with AP Dimension	Slotting: Square End	Slotting: Square End with AP Dimension
Trochoidal Milling	Trochoidal Milling: Ball Nose	Side Milling/Shoulder Milling: Ball Nose	Side Milling/ Shoulder Milling: Ball Nose with AE/AP Dimensions	Side Milling/ Shoulder Milling: Square End
Side Milling/ Shoulder Milling: Square End with AE/AP Dimensions	Side Milling/ Shoulder Milling: Eased Chamfer	Side Milling/ Shoulder Milling: Eased Chamfer with AE/AP Dimensions	Side Milling/ Shoulder Milling: Fine Finishing	Side Milling/ Shoulder Milling: Fine Finishing with AE/AP Dimensions
Side Milling/ Shoulder Milling: Finishing	Side Milling/ Shoulder Milling: Finishing with AE/AP Dimensions	Side Milling/ Shoulder Milling: Thin Wall Solid End Milling	Side Milling/ Shoulder Milling: Radius	Side Milling/ Shoulder Milling: Radius with AE/AP Dimensions
3D Profiling	3D Profiling with AE/AP Dimensions	3D Profiling with Square End Mill	Corner Style: Ball Nose	Corner Style: Corner Chamfer
Corner Style: Corner Radius	Corner Style: Square End	Corner Style: Torus	Shank: Cylindrical Plain	Shank: Cylindrical Weldon®
Shank: SK BT JIS B 6339	Shank: SK CAT(CV) ANSI B5.50	Shank: HSK: CAT: Drawbar Thread: 5/8–11 UNC	Shank: HSK A/ DIN69893	Shank: Safe-Lock™ ≤h6
Shank: Safe-Lock™	Shank: PSC Shank	Duo-Lock™ Connection	Helix Angle: 0°	Helix Angle: 15°
Helix Angle: 20°	Helix Angle: 25°	Helix Angle: 30°	Helix Angle: 35°	Helix Angle: 38°
Helix Angle: 40°	Helix Angle: 45°	Helix Angle: 50°	Helix Angle: 60°	Helix Angle: 43°
Helix Angle: 36°	Helix Angle: 35°/38°	Helix Angle: 37°/39°	Balance (G 2.5/25,000)	DIN Number 6527
DIN Number 6528	Drilling: Through Coolant	Through Coolant	Through Coolant: Axial: Solid End Mill	Tool Dimensions: Flute Configuration: X (Variable)

(continued)

(Solid End Milling Icons — continued)

Tool Dimensions: Flute Configuration: 2	Tool Dimensions: Flute Configuration: 3	Tool Dimensions: Flute Configuration: 4	Tool Dimensions: Flute Configuration: 5	Tool Dimensions: Flute Configuration: 6
Tool Dimensions: Flute Configuration: 1	Tool Dimensions: Flute Configuration: 12	ISO 26622		

Indexable Milling Icons

Counterboring	Spiral Circular	Face Milling	Helical Milling	Plunge Milling
Plunge Milling: Ball Nose	Ramping: Blank	Slotting: Ball Nose	Slotting: Side	Slotting: Side with AE/AP Dimensions
Slotting: Side Milling: Ball Nose	Slotting: Square End	Slotting: T	Slotting: T with AP Dimension	Side Milling/ Shoulder Milling: Ball Nose
Side Milling/ Shoulder Milling: Bottom Shouldering	Side Milling/ Shoulder Milling: Square End	Side Milling/ Shoulder Milling: Eased Chamfer	Slotting: Shoulder Profiling	Slotting: Shoulder
3D Profiling	3D Profiling with Square End Mill	PCD Tool	Pocketing	Shank: Cylindrical Plain
Shank: Cylindrical Weldon®	Shank: Cylindrical Weldon 2 Flat	Shank: Screw-On	Shank: HSK DIN 69893	Shell Mill Shank
Milling: Through Coolant	Through Coolant: Pressurised Air Coolant: Radial: Indexable Milling			

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Grey Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminium	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, ALMgSiPb
N2	Low-Silicon Aluminium Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAlSiCu4, GDAlSi10Mg
N3	High-Silicon Aluminium Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AlSi17Cu4, G-AlSi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass	–	–	–	–	Lexan®, Hostalen™, Polystyrol, Makrolon®
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–
C1	CFRP, CFRP/CFRP	–	–	–	–	–
C2	CFRP/Non-Ferrous	–	–	–	–	–
C3	CFRP/High Temp	–	–	–	–	–
C4	CFRP/Stainless Steel	–	–	–	–	–
C5	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

P0 Workpiece Materials Listing • Steel • P0

P0 Low-Carbon Steels, Long Chipping *Content: C <.25%* *Tensile Strength RM (MPa)*: <530* *Hardness (HB): <125*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
1013	USt 34-1	–	–	G10130	–	–	–	1233	–	–	1.0055	–
1010	C 10	045 M 10	S 10 C	G10100	C 10	XC 10	C 10	–	–	–	1.0301	–
1008	DD 11 (StW 22)	HR 3	SPHD	–	DD 11	1 C	–	–	–	–	1.0332	–
1020	C 22	050 A 20	S 22 C	G10200	1 C 22	C 20	C 20	1450	–	–	1.0402	–
1025	C 25	070 M 26	S 22 C	G10250	1 C 25	C 25	C 25	–	–	–	1.0406	–
1012	B 500 H	–	S 12 C	G10120	B 500 B	XC 12	B 500 B	1332	–	–	1.0439	–
1018	C16.8	080 A 17	–	G10180	–	–	–	–	–	–	1.0453	–
1108	10 S 20	210 M 15	–	G 11080	10 S 20	10 F 1	CF 10 S 20	–	–	–	1.0721	–
1010	Ck 10	040 A 10	S 10 C	G10100	2 C 10	XC 10	C 10	1265	–	–	1.1121	–
1022	20 Mn 5	120 M 19	SMn 420	G 10220	20 Mn 5	20 M 5	G 22 Mn 3	–	–	–	1.1133	–
1015	Ck 15	080 M 15	S 15 C	G 10150	2 C 15	XC 15	C 15	1370	–	–	1.1141	–
1021	22 B 2	–	SWRCHB 220	G10210	C 22 BE 69	21 B 3	–	–	–	–	1.5508	–
–	PS 275 TM	S 275 M	–	–	S 275 M	S 275 M	S 275 M	–	–	–	1.8818	–
–	DI-MC 355 B	–	–	–	S 355 M	E 355	S 355 M	–	–	–	1.8823	–
–	DI-MC 420 B	S 420 M	–	–	S 420 M	E 420	S 420 M	–	–	–	1.8825	–
–	S 460 M	S 460 M	–	–	S 460 M	E460; S460M	S460M	–	–	–	1.8827	–
–	BTStE 355 TM	S 355 ML	–	–	S 355 ML	E 355	S 355 ML	–	–	–	1.8834	–
–	BTStE 420 TM	S 420 MI	–	–	S 420 ML	E 420	S 420 ML	–	–	–	1.8836	–
–	St E 320-3Z	–	–	–	S 320 GD + ZA	–	–	–	–	–	1.0250	–

P1 Workpiece Materials Listing • Steel • P1

P1 Low-Carbon Steels, Short Chipping, Free Machining *Content: C <.25%* *Tensile Strength RM (MPa)*: <530* *Hardness (HB): <125*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	R St 34-2/ S 205 G2T	34/20CR	–	K02502	–	–	–	–	–	–	1.0034	–
–	St 33	HR 15	SS 330	K01400	–	A 33	Fe 320	–	–	–	1.0035	–
A 570 Gr. 33	USt 37-2	4360-40 B	SS 34	K 02502	S 235 JR G1	E 24-2	Fe 360 BFU	1311	–	–	1.0036	–
–	St 37-2	HS 37/23	STKR 400	K02702	S 235 JR	E 28-2	Fe 430 C	1412	–	–	1.0037	–
A 570 Gr. 36	R St 37-2/S235 JRG2	4260-40 C	SS 34	K 02502	S235 JR G 2	E 24-2 NE	Fe 360 BFN	1312	–	–	1.0038	–
–	S 235 JRH	S 235 JRH	–	–	S235JRH	E 24-2	S 235 JRH	–	–	–	1.0039	–
–	R St 42-1	–	–	K02507	–	–	–	–	–	–	1.0077	–
–	S235J2G3/Fe 360 D1	S 235 J 2 G 3	–	K01501	S 235 J2 G3	E 24-4	S 235 J2G3	1313	–	–	1.0161	–
–	C 10 Pb	–	–	–	C 10 GPb	–	–	–	–	–	1.0302	–
–	QSt 32-3	–	SWRCH6R	–	CB 4 FF KD	–	CB 4 F U	–	–	–	1.0303	–
–	St 35.8	–	STPT 38	K01201	–	–	–	–	–	–	1.0305	–
–	St 37-2	360	STKM 12 A	K02504	S 235 JR	E 24-2	Fe 360	1412	–	–	1.0308	–
–	C10D	–	SWRM 10	–	C 10 D	FM 10	C 10 D	–	–	–	1.0310	–
–	C12D	–	SWRM 12	–	C 12 D	–	C 12 D	–	–	–	1.0311	–
–	R St 15	FeP05	–	–	Fe P05	FeP05	FeP05	–	–	–	1.0312	–
–	D 6-2	0 1 5 A 03	SWRM 6	G10050	C 4 D	–	3 CD 5	–	–	–	1.0314	–
–	St 37.8	–	STB 35	–	–	–	Fe 37	–	–	–	1.0315	–
–	St 13	CR 3	SPCD	–	–	–	–	–	–	–	1.0333	–
–	D D 13 (StW 24)	H S 3	SPHE	–	D D 13	3C	–	–	–	–	1.0335	–
–	USt 4/DC 04 G	–	–	–	D C 04 G 1	–	–	–	–	–	1.0336	–
–	Ro St 4/DC 04 GT	–	–	–	DC 04 GT	–	–	–	–	–	1.0337	–
–	St 4	DC 04/FeP04	SPCE	–	Fe P04	Fe 14	DC04/FeP04	–	–	–	1.0338	–
–	DC01Cu	–	–	–	DC 01 Cu	–	–	–	–	–	1.0344	–
–	RR St 3	CR 3	SPCD	–	Fe P03	F 13	DC 03/FeP 03	–	–	–	1.0347	–
–	U H I/P 195GH	–	SGV 480	–	P 195 Gh	–	–	–	–	–	1.0348	–
–	St 14 Cu 3	–	–	–	DC 04 Cu	–	–	–	–	–	1.0354	–
–	–	3 CR	–	–	D D 12	D D 12	–	–	–	–	1.0398	–
1015	C 15	080 M 15	S 15 C	G10170	C 15	C 12	C 15	1350	–	–	1.0401	–
–	LSt 45.8	–	–	–	C 16	–	C 16	–	–	–	1.0407	–
–	C15D	–	SWRM 15	–	C 15 D	FM 15	C 15 D	–	–	–	1.0413	–
–	C20D	–	SWRM 20	–	C 20 D	FM 20	C 20 D	–	–	–	1.0414	–
–	C26D	–	SWRH 27	–	C 26 D	FM 26	C 26 D	–	–	–	1.0415	–
–	C18D	–	SWRM 17	–	C 18 D	FM 18	C 18 D	–	–	–	1.0416	–
–	RSt 44-2	440	–	G10160	–	–	–	–	–	–	1.0419	–
–	P265 NB	–	SG 295	–	P 265 NB	BS 2	–	–	–	–	1.0423	–
–	P 265 GH	151-400	SG 30	K02801	P 265 GH	A42CP	P 265 GH	1430	–	–	1.0425	–
–	C 22.3	–	–	–	C 22 G 1	–	–	–	–	–	1.0427	–
–	BSt 420 S	–	–	–	Fe B 400	–	–	–	–	–	1.0428	–
–	C 21	–	SFVC 1	K03504	P 305 GH	–	–	–	–	–	1.0432	–
–	GS-45	A1	SC 450	J03001	GE 230	E23-45M	–	1305	–	–	1.0446	–
–	TStE 275 (S 275 NL)	40EE	–	–	S 275 NL	S 275 NL	S 275 NL	–	–	–	1.0491	–
–	St 42.8	–	STPT 42	–	–	–	Fe 42	–	–	–	1.0498	–
–	S 335 N (StE 355)	50 E	–	–	S 355 N	E 355	S 355 N	2134	–	–	1.0545	–
–	S 355 NL (TStE 355)	50 E E	–	–	S 355 NL	E 355	S 355 N L	2135	–	–	1.0546	–
–	R 7 S 6/C 7 RG 2	–	–	–	C 7 RG 2	–	–	–	–	–	1.0709	–
B1112	9 S 20	220 M 07	SUM 21	G 11120	–	–	CF 9 S 22	–	–	–	1.0711	–
1213	9 SMn 28/11 SMn 30	230 M 07	SUM 22	G 12130	11 SMn 28	S 250	CF 9 SMn 28	1912	–	–	1.0715	–
12L13	9 SMnPb 28	–	SUM 22 L	G 12134	11 SMnPb 28	S 250 Pb	CF 9 SMnPb 28	1914	–	–	1.0718	–
–	15 S 22/15 S 20	En32M	SUM 32	–	15 S 22	–	–	1922	–	–	1.0723	–
–	15 SMn 13	15 SMn 13	–	–	15 SMn 13	15 SMn 13	–	–	–	–	1.0725	–
1215	9 SMn 36/11 S Mn 37	240 M 07	SUM 25	G 12150	11 SMn 37	S 300	CF 9 SMn 36	–	–	–	1.0736	–
12L14	9 SMnPb 36/11 SMnPb 37	–	–	G 12144	11 SMnPb 37	S 300 Pb	CF 9 SMnPb 36	1926	–	–	1.0737	–
–	11 SMnPbTe 37	11 SMn 37	–	–	11 SMn 37	–	–	–	–	–	1.0738	–
–	15 SPb 20/15 SPb 22	–	–	–	15 SPb 22	–	–	–	–	–	1.0753	–
–	36 SMn 14	36SMn14	–	–	36SMn14	36SMn14	–	–	–	–	1.0764	–
–	C10D2	–	–	–	C 10 D 2	FM 10	C 10 D 2	–	–	–	1.1114	–
–	Cq 10 (C 10 C)	–	SWRCH 10 K	–	C 10 KD	–	–	–	–	–	1.1122	–
–	C15D2	–	–	–	C 15 D 2	FM 15	C 15 D 2	–	–	–	1.1126	–
–	C 18D2	–	–	–	C 18 D 2	FM 18	C 18 D 2	–	–	–	1.1129	–

(continued)

P1 Workpiece Materials Listing • Steel • P1 *(continued)*

P1 Low-Carbon Steels, Short Chipping, Free Machining *Content: C <.25%* *Tensile Strength RM (MPa)*: <530* *Hardness (HB): <125*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GS-16 Mn 5	–	–	–	G 17 Mn 5	G 17 Mn 5	G17Mn5	–	–	–	1.1131	–
–	C20D2	–	–	–	C 20 D 2	FM 20	C20D 2	–	–	–	1.1137	–
–	C26D2	–	–	–	C 26 D 2	FM 26	C26D 2	–	–	–	1.1139	–
–	GC 16 E/GS-Ck 16	–	–	–	GC 16 E	–	–	–	–	–	1.1142	–
–	C 16 E	C 16 E	–	–	C 16 E	XC 18	–	–	–	–	1.1148	–
–	Cm 22	070 M 20	C 22 R (3 C 22)	–	3 C 22	XC 18 u	C 22 R	–	–	–	1.1149	–
–	Ck 22	050 A 20	S 22 C	G10230	2 C 22	XC 25	C 20	–	–	–	1.1151	–
–	Cq 22	–	SWRCH20K	–	C 21 KD	–	CB 20 FF	–	–	–	1.1152	–
–	Ck 25	070 M 26	S 25 C	G10250	2 C 25	XC 25	C 25	–	–	–	1.1158	–
–	C2D1	–	–	–	C 2 D 1	–	C 2 D 1	–	–	–	1.1185	–
–	19 MnVS 6	–	–	–	19 MnVS 6	–	–	–	–	–	1.1301	–
–	PS 275 TM	S 275 M	–	–	S 275 M	S 275 M	S 275 M	–	–	–	1.8818	–
–	DI-MC 355 B	–	–	–	S 355 M	E 355	S 355 M	–	–	–	1.8823	–
–	DI-MC 420 B	S 420 M	–	–	S 420 M	E 420	S 420 M	–	–	–	1.8825	–
–	S 460 M	S 460 M	–	–	S 460 M	E460;S460M	S460M	–	–	–	1.8827	–
–	BTStE 355 TM	S 355 ML	–	–	S 355 ML	E 355	S 355 ML	–	–	–	1.8834	–
–	BTStE 420 TM	S 420 MI	–	–	S 420 ML	E 420	S 420 ML	–	–	–	1.8836	–
–	S 235 J 0 W (Allwesta 360)	S 235 J 0 W	SMA 400 BW	–	S 235 JO W	S 235 J 0 W	–	–	–	–	1.8958	–
–	S 355 J 0 W (Allwesta 510)	WR 50 B	SMA 490 BW	–	S 235 JO W	E24W-3	S 235 JO W	–	–	–	1.8959	–
–	WTSt 37-2/S235JRW	WR 50 B	SMA 41 A	K11538	S 235 JR W	E 24 W-2	–	–	–	–	1.8960	–
–	WTSt 37-3	WR 50 C	SMA 50 A	–	S 235 J2 W	S 235 J 2 W	Fe 360 D FF	–	–	–	1.8961	–
–	USt 42-2	–	SS 41	–	–	HS 18-0-2-10	–	–	–	–	1.0040	–
–	St 37-2	–	–	–	S 235 JRC	E 24-2	S 235 JRC	–	–	–	1.0120	–
–	S 235 JR G1F	–	–	–	S 235 JRG 1 F	–	–	–	–	–	1.0160	–
–	St 12	DC 01/Fe P01	SPCC	–	Fe P01	DC 01/fe P01	DC 01/FeP0 1	–	–	–	1.0330	–
–	GS-38	A1	–	–	GE 200	230-400M	–	1306	–	–	1.0420	–
–	GS-20 Mn 5	–	SMnC 420	H15220	–	–	–	–	–	–	1.1120	–
–	G 20 Mn 5	–	–	–	G 20 Mn 5	–	G 20 Mn 5	–	–	–	1.6220	–

P2 Workpiece Materials Listing • Steel • P2

P2 Medium- and High-Carbon Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: >530* *Hardness (HB): <220 (HRC): <25*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S 355 JR	En 50 B	SM 490 YA	–	S 1207	E36-2	Fe 510 BFN	–	–	–	1.0045	–
1035	C 35	060 A 35	S 35 C	G 10350	1 C 35	CC 35	C 35	1550	–	–	1.0501	–
1045	GS-C 45	080 M 46	S 45 C	G10450	1 C 45	CC 45	C 45	1650	–	–	1.0503	–
1040	C 40	080 M 40	S 40 C	G 10 400	1 C 40	C 40	C 40	–	–	–	1.0511	–
1046	S 355 K 2 G 4 Cu	–	–	G10460	S 355 K2 G4 Cu	–	–	–	–	–	1.0519	–
1030	C30	080 M 30	SUP 7	G 10 300	1 C 30	C C 32	C 30	–	–	–	1.0528	–
1055	C 55	070 M 55	S 55 C	J05000	1 C 55	C 55	C 55	1655	–	–	1.0535	–
1551	C 50 Pb	–	–	G15510	C 50 G Pb	–	–	–	–	–	1.0542	–
–	GS-60	A3	–	–	GE 300	320-560M	C 45	1606	–	–	1.0558	–
1037	36 Mn4	170 H 36	–	G10370	–	–	–	–	–	–	1.0561	–
–	PSt 52-3 (S 355 J2 G3 F)	–	–	–	S 355 J2 G3 F	–	FE 510 C	–	–	–	1.0572	–
–	S 355 J2H (RoSt 52-3)	50D	–	–	S355J2H	–	S355J2H	–	–	–	1.0576	–
1060	C 60	080 A 62	S 60 C-CSP	G 10600	1 C 60	AF 70 C 55	C 60	–	–	–	1.0601	–
1070	C 67	CS 70	S 70 C -CSP	G10700	1 CS 67	C 68	C 67	–	–	–	1.0603	–
1074	C 75	CS 80	–	G10740	1 CS 75	C 75	C 75	–	–	–	1.0605	–
1059	C58D	–	S 58 C	G10590	C 58 D	FM 58	C 58 D	–	–	–	1.0609	–
1075	C76D	–	–	G10750	C 76 D	FM 76	C 76 D	–	–	–	1.0614	–
1080	C86D	CS 80	–	G10860	C 86 D	FM 86	C 86 D	–	–	–	1.0616	–
1095	C92D	95 CS	–	G10950	C 92 D	–	C 92 D	–	–	–	1.0618	–
1110	U 10 S 10	–	SUM 12	G11100	–	–	–	–	–	–	1.0702	–
11L08	10 SPb 20	–	–	G 11084	10 SPb 20	10 Pb F 2	CF 10 SPb 20	–	–	–	1.0722	–
1140	35 S 20	212 M 36	–	G 11400	35 S 20	35 MF 4	–	1957	–	–	1.0726	–
1146	45 S 20	212 M 44	–	G 11460	45 S 20	45 MF 4	–	1973	–	–	1.0727	–
1151	60 S 20	–	–	G11510	60 S 20	60 MF 4	–	–	–	–	1.0728	–
1141	36 Mn 6	212 M 36	S Mn 443	G 11410	–	–	–	–	–	–	1.1127	–
1039	40 Mn 4	150 M 36	–	G10390	–	35 M 5	–	–	–	–	1.1157	–
1536	34 Mn 5	En15B	SS 55	G15360	–	–	–	–	–	–	1.1166	–
1030	Cq 35	–	F.1133 (C 35 DF)	G 10300	C 35 KD	–	CB 35	–	–	–	1.1172	–
1034	Ck 34	080 M 34	S 34 C	G 10340	2 C 34	–	C 34	–	–	–	1.1173	–
1038 H	Ck 38	–	–	G 10380	–	XF 38	–	–	–	–	1.1176	–
1030	Ck 30	080 M 30	S 30 C	G 10300	2 C 30	XC 32	C 30	–	–	–	1.1178	–
1034	Ck 35	080 M 36	S 35 C	G 10340	2 C 35	XC 38 H1	C 35	1572	–	–	1.1181	–
1035	Cf 35	060 A 35	S 35 C	G 10350	C 35 G	XC 38 TS	C 35	1572	–	–	1.1183	–
1040	Ck 40	080 A 40	S 40 C	G 10400	2 C 40	XC 42 H1	C 40	–	–	–	1.1186	–
1045	Cf 45	060 A 47	S 45 C	G10450	C 45 G	XC 42 TS	C 43	1672	–	–	1.1193	–
1055	Ck 55	070 M 55	S 55 C	G10550	2 C 55	XC 55 H1	C 55	1655	–	–	1.1203	–
1050	Ck 50	080 M 50	S 50 C	G10500	2 C 50	XC 48 H1	C 50	1674	–	–	1.1206	–
1055	Cm 55	070 M 55	–	G 10550	3 C 55	XC 55 H1	C 55 R	–	–	–	1.1209	–
1053	Ck 53	En43C	S 53 C	G 10530	–	–	–	–	–	–	1.1210	–
1050	Cf 53	060 A 57	S 50 C	G 10500	C 53 G	XC 48 TS	C 48	1674	–	–	1.1213	–
1060	Ck 60	060 A 62	S 58 C	G 10640	2 C 60	XC 60	C 60	1678	–	–	1.1221	–
1552	52 Mn 5	–	–	G15520	–	–	–	–	–	–	1.1226	–
1065	FD (Federstahldraht)	095 A 65	–	G10650	C 68 D	–	–	–	–	–	1.1230	–
1070	Ck 67	060 A 67	S 70 C-CSP	G 10700	C 67 S	XC 68	C 70	1770	–	–	1.1231	–
1069	Ck 68	–	–	G10690	C 70 D	–	–	–	–	–	1.1234	–
1080	Ck 75	060 A 78	C 75	G 10800	C 75 S	XC 75	C 75	1774	–	–	1.1248	–
–	Cf 70	–	–	–	C 70 G	XC 70	–	–	–	–	1.1249	–
1090	Ck 85	–	SK 5 -CSP	G 10900	C 85 S	XC 90	C 90	–	–	–	1.1269	–
1085	90 Mn 4	080 A 83	SUP4	G 10850	–	–	–	–	–	–	1.1273	–
1095	Ck 101	060 A 96	SUP_4	G 10950	C 100 S	XC 100	C 100	1870	–	–	1.1274	–
1050	C 50	080 M 50	S 50 C	G 10 500	1 C 50	C 50	C 50	1674	–	–	1.0540	–
–	St 52-3 G	4360-50 B	SM 50 YB	–	S 355 J 2 G 3	E 36-3	Fe 510 B	2132	–	–	1.0570	–
1078	C78D	–	SWRH 77 B	G10780	C 78 D	FM 78	C 78 D	–	–	–	1.0620	–
1035	Cm 35	080 M 36	–	G 10350	3 C 35	38 H1 k	C 35 R	1572-03	–	–	1.1180	–
1566	66 Mn 4	–	–	G15660	–	–	–	–	–	–	1.1260	–
1084	C 85 W	–	SK 5	G10840	C 90 U	Y3 90	–	–	–	–	1.1830	–

NOTE: For legend, see page Y217.

P3 Workpiece Materials Listing • Steel • P3

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
1330	GS-30 Mn 5	120 M 36	SMn 433 H; SCMn 2	K13300	–	35 M 5	–	1330	–	–	1.1165	–
1330	28 Mn 6	150 M 28	SCMn 1	G 13300	28 Mn 6	35 M 5	C 28 Mn	–	–	–	1.1170	–
1335	36 Mn 5	150 M 36	SMn 438(H)	G13350	–	40 M 5	–	2120	–	–	1.1167	–
1345	StSch 90 C/GP 280 GH	–	–	G13450	GP 280 GH	GP 280 GH	GP 280 GH	–	–	–	1.0625	–
1513	P265	HR 40/30	–	G15130	–	12 M 5	–	–	–	–	1.0424	–
4142	43 CrMo 4	–	–	G41420	–	43 Cr Mo 4	–	–	–	–	1.3563	–
4147	48 CrMo 4	817 M 40	SNC 836	H41470	–	48 CrMo 4	–	–	–	–	1.3565	–
4419	GS-22 Mo 4	243-430	SCPH 11	G44190	G 20 Mo 5	G20Mo5	G 22 Mo 5	–	–	–	1.5419	–
4520	16 Mo 5	1503-245-420	SBC 690	K11522	–	–	16 Mo 5	–	–	–	1.5423	–
5015	15 Cr 3	523 M15	SCr 415 H	G50150	15 Cr 2	12 C 3	–	–	–	–	1.7015	–
5046	44 Cr 2	–	–	H50460	46 Cr 1 KD	44 Cr 2	–	–	–	–	1.3561	–
5115	16 MnCr 5	527 M 17	SCR 415	G 51150	16 MnCr 5 KD	16 MC 5	16 MnCr 5	2173	–	–	1.7131	–
5117	17 Cr 3	17 Cr 3	–	G51170	(15 Cr 2 KD)	18 C 3	–	–	–	–	1.7016	–
5130	28 Cr 4	530 A 30	–	G51300	28 Cr 4	30 CD 4	–	–	–	–	1.7030	–
5140	41 Cr 4	530 M 40	SCr 440 H	G51400	41 Cr 4	42 C 4	41 Cr 4	–	–	–	1.7035	–
5140	42 Cr 4	530 A 40	SCr 440	–	40 NiCrMo 3	42 C 4 TS	40 NiCrMo 3	2245	–	–	1.7045	–
9255	51 Si 7	250 A 53	–	G92550	–	51 S 7	48 Si 7	2090	–	–	1.0903	–
9255	55 Si 7	250 A 53	SKH 1; SKT 4	G92550	55 NiCrMoV 7	55 S 7	55 Si 8	2085	–	–	1.0904	–
9260	60 Si 7	251 A 60	–	G92600	60 Si 7	60 S 7	60 Si 7	–	–	–	1.5027	–
9262	60 SiCr 7	250 A 61	SUP 7	G92620	60 SiCr 8	60 SC 7	60 SiCr 8	–	–	–	1.0961	–
9262	60 SC 7	–	–	G92620	60 SiCr 8	61 SC 7	60 SiCr 8	–	–	–	1.5092	–
9262	60 SiCr 7	–	–	–	60 SiCr 8	–	–	–	–	–	1.7108	–
15B21 H	19 MnB 4	170 H 20	SWRCHB 420	H15211	19 MnB 4	20 MB 5	–	–	–	–	1.5523	–
15B21 H	20 MnB 5	–	SWRCHB 620	–	20 MnB 5	20 MnB 5	20 MnB 5	–	–	–	1.5530	–
50B40	37 CrB 1	120 M 36	SMnC 3 H	H50401	38 Cr 2	–	35 CB 1	–	–	–	1.7007	–
5130 H	34 Cr 4	530 A 32	SCr 430 H	G51300	34 Cr 4 KD	32 C 4	34 Cr 4 KB	–	–	–	1.7033	–
5132 H	37 Cr 4	530 A 36	SCr 435 H	G51320	37 Cr 4	38 C 4	36 CrMn 4	–	–	–	1.7034	–
A 204 Gr. A	15 Mo 3	1501-240	STFA 12	K11820	16 Mo 3	15 D3	16 Mo 3 KW	2912	–	–	1.5415	–
A 350-LF 5	10 Ni 14	503	SL 3 N 26	K31718	12 Ni 14	12Ni14	18 Ni 14 KT	–	–	–	1.5637	–
A 387 Gr. 12 Cl. 2	16 CrMo 4 4	–	–	K11564	–	–	A 18 CrMo 4 5 KW	–	–	–	1.7337	–
A 570 Gr. 36	St 37-3	4360-40 C	–	K01501	S 235 J2 G3	Fe 360 D1(2); E 24-3	Fe 360 D1(2)	1312	–	–	1.0116	–
A 570 Gr. 40	St 44-2	4360-43 B	SM 41 B	K 02502	S 275 JR	E 28-2	Fe 430 BFN	1412	–	–	1.0044	–
A 570 Gr. 50	St 50-2	4360-50 B	SS 50	–	E 295	A 50-2	Fe 490	2172	–	–	1.0050	–
A 573 Gr. 70	St 44-3	4360-43 C	SM 41 B	–	Fe 430 D1(2); S 275 J2 G3 (4)	Fe 430 D1(2); E 28-4	Fe 430 D FF	1414	–	–	1.0144	–
A 633 Gr. C	St E 355	P 355 N	SM 50 YB	K12000	P 355 N	E 355 R/FP	Fe E 355 KG	2132	–	–	1.0562	–
A 633 Gr. E	St E 420	S 420 N	SM 50 C	K02002	FeE 420 KGN	E 420-I	Fe E 420 KG	2143	–	–	1.8902	–
A 633 Gr. E	St E 460	P 460 N	SM 53 B	K02900	P 460 N	E 460-I	Fe E 460 KG	2143	–	–	1.8905	–
A-6	C 67 W	–	–	T30106	–	Y1 70	–	–	–	–	1.1744	–
E 52100	100 Cr 6	535 A 99	SUJ 2	G52986	100 Cr 6	100 C 6	100 Cr 6	2258	–	–	1.3505	–
O 2	90 MnCrV 8	BO 2	–	T31502	90 Mn V 8	90 MV 8	90 MnVCr 8 KU	–	–	–	1.2842	–
P21	90 Cr 3	–	–	T51621	–	–	–	–	–	–	1.2056	–
P3	10 NC 6	–	–	T51603	15 NiCr 6	10 NC 6	–	–	–	–	1.5713	–
P6	15 NiCr 14	–	SNC 22	T51606	–	10 NC 12	–	–	–	–	1.2735	–
T 8	C 80 W2	BW 1B	SKC 3	T12008	–	Y1 80	C 80 KU	–	–	–	1.1625	–
W 108	C 80 W1	–	–	T72301	C 80 U	Y1 90	C 80 KU	1880	–	–	1.1525	–
W 110	C 105 W1	B W 1 A	–	T72301	C 105 U	Y 105	C 100 KU	1880	–	–	1.1545	–
W 112	C 125 W	–	–	–	C 125 U	–	–	–	–	–	1.1563	–
W 112	C 125 W	–	SK 2	T72301	C 120 U	Y2 120	C 120 KU	–	–	–	1.1663	–
W 210	100 V 1	BW 2	SKS 43	T72302	100 V 2	Y1 105 V	102 V 2 KU	–	–	–	1.2833	–
–	St 50-1	–	–	–	–	–	–	–	–	–	1.0052	–
–	S 235 JO/ Fe 360 C	En 40C	–	–	S 235 JO	E24-3	Fe 360 CFN	–	–	–	1.0114	–
–	QSt 37-3	–	SWRCH 12R	–	–	–	–	–	–	–	1.0123	–
–	S 275 J0	En43C; S275J0	–	–	S 275 J0/ Fe 430 C	S 275 J0; E 28-3	S275J0; Fe430CFN	–	–	–	1.0143	–
–	S 275 J2 G4/ Fe 430 D 2	S 275 J2 G4	–	–	S 275 J2 G4	E28-4; S 275 J2 G4	S 275 J2 G4	1414	–	–	1.0145	–
–	Ro St 44-2	43C	–	–	S 275 J0 H	–	S 275 J0 H	–	–	–	1.0149	–
–	St 37.0	–	STPG 38	–	P 235 T1	–	–	–	–	–	1.0254	–
–	C9D	–	SWRM 8	–	C 9 D	FM 9	C 9 D	–	–	–	1.0304	–
–	C7D	C 7 D	SWRM 8	G10060	C 7 D	FM 8	C 7 D	–	–	–	1.0313	–
–	P235 GH	P 235 GH	SPV 50	K02503	P 235 GH	A 37 CP	Fe E 235	1330	–	–	1.0345	–
–	C 25 Pb	–	–	–	C 25 GPb	–	–	–	–	–	1.0411	–
–	L 245 MB	430	–	K03006	L 245 MB	L 245 MB	–	–	–	–	1.0418	–
–	P310 NB	224-410	SG 325	K02100	P280GH	BS 2	P 275 N	2103	–	–	1.0426	–
–	L 290 MB	–	–	–	L290MB	L 290 MB	–	–	–	–	1.0429	–
–	H III/P285NH	–	Sm 38	–	P 285 NH	–	–	–	–	–	1.0435	–
–	P310 NB	224-430	SG 325	K02100	P305GH	P 275 N	P 275 N	2103	–	–	1.0436	–
–	A St 41	P 275 N	STK 400	K02100	S 275 N	BS 3	P 275 N	2103	–	–	1.0437	–
–	B 500 A	–	SD 490	–	B 500 A	–	B 500 A	–	–	–	1.0438	–
–	H IV/P295NH	–	SG 37	K03102	–	–	Fe 460-2 KW	–	–	–	1.0445	–
–	StE 240.7	–	–	–	L 245 NB	L 245 NB	–	–	–	–	1.0457	–
–	TStE 255	–	–	K11535	–	–	–	–	–	–	1.0463	–
–	15 Mn 3 Al	–	–	–	C 14 GAl	–	–	–	–	–	1.0468	–
–	19 Mn 6/P 355 GH	P 355 GH	SGV 46	K03300	P355GH	A 52 CP	Fe E355-2	2101	–	–	1.0473	–
–	17 Mn 4/P 295 GH	224-460B	SG 37	K03501	P 295 GH	A 48 CP	Fe E 295	2102	–	–	1.0481	–
–	19 Mn 5	224-460	SG 37	K 03102	–	A 52 CP; AP; FP	Fe 460- 2 KW	–	–	–	1.0482	–
–	L 290 AG	–	–	–	L290GA	TS E 290	–	–	–	–	1.0483	–
–	L 290 NB	–	–	–	L290NB	L 290 NB	–	–	–	–	1.0484	–
–	21 Mn 6	–	–	K12320	–	–	–	–	–	–	1.0485	–
–	St E 285	P 275 N	SM 41 A	K 01802	P 275 N	P 275 N	Fe E 285 KG	–	–	–	1.0486	–
–	W St E 285	P 275 N	–	K 01802	P 275 NH	P 275 N	Fe E 285 KW	–	–	–	1.0487	–
–	T St E 285	P 275 NL 1	SLA 235 A	K 01803	P 275 NL 1	P 275 NL 1	Fe E 285 KT	–	–	–	1.0488	–
–	H 300/ZSt E 300	H280LA	–	–	H 280 LA	E 280 C	–	–	–	–	1.0489	–
–	S 275 NH	S 275 NH	–	–	S 275 NH	–	S 275 NH	–	–	–	1.0493	–
–	S 275 NLH	S275NLH	–	–	S 275 NLH	–	S275NLH	–	–	–	1.0497	–
–	C 35 Pb/C 35 GPb	–	–	–	C 35 Pb	–	–	–	–	–	1.0502	–
–	St E 315/P 315N	–	SM 50 A	K11506	P 315 N	–	Fe E 315 KG	–	–	–	1.0505	–
–	W St E 315	–	SNC 1	K02404	P 315 NH	–	Fe E 315 KW	2107	–	–	1.0506	–
–	St 55	–	STKM 16A	–	–	–	Fe 540	–	–	–	1.0507	–
–	T St E315	–	SLA 325 A	K02404	P 315 NL	–	–	2106	–	–	1.0508	–
–	C 40 Pb	–	–	–	C 40 G Pb	–	–	–	–	–	1.0512	–
–	C38D	–	SWRH 37	–	C 38 D	FM 38	C 38 D	–	–	–	1.0516	–
–	C48D	–	SWRH 48	–	C 48 D	FM 48	C 48 D	–	–	–	1.0517	–
–	C56D	–	–	–	C 56 D	FM 56	C 56 D	–	–	–	1.0518	–
–	S 355 NH	S 355 NH	–	–	S 355 NH	–	S 355 NH	–	–	–	1.0539	–
–	C42D	–	SWRH 42 B	–	C 42 D	FM 42	C 42 D	–	–	–	1.0541	–
–	S 355 JO H	50 C	–	–	S 355 JO H	–	S 355 JO H	–	–	–	1.0547	–
–	ZStE 340/ H 340	H 320 L A	–	–	H 320 LA	E 315 C	–	–	–	–	1.0548	–
–	S 335 NLH	50 EE	–	–	S 355 N LH	–	S 355 N L H	–	–	–	1.0549	–
–	S 355 JO	En 50 C; S 355 JO	SM 520 M	–	S 355 JO	S 355 JO; E 36-3	S 355 JO; Fe 510 C FN	–	–	–	1.0553	–
–	GS-70	50 C	–	–	S 355 JO C	E 36-3	Fe 510 C	–	–	–	1.0554	–

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	ZStE 420/H 420	46/40HR, HS, CS	–	–	H 400 LA	H 400 LA	–	–	–	–	1.0556	–
–	P355 NB	–	SG 365	–	P 355 NB	BS 4	–	–	–	–	1.0557	–
–	W St E 355	P 355 NH	–	K01600	P 355 NH	P 355 NH	Fe E 355 KW	–	–	–	1.0565	–
–	T St E355	P 355 NL1	SLA 37	–	P 355 NL1	P 355 NL1	Fe E 355 KT	–	–	–	1.0566	–
–	P355 QH1	P 355 QH	–	–	P 355 QH	P 355 QH	–	–	–	–	1.0571	–
–	S 355 J 2 G 4	S 355 J 2 G 4	–	–	S 355 J 2 G 4	S 355 J 2 G 4	S 355 J 2 G 4	–	–	–	1.0577	–
–	L 360 MB	–	–	–	L 360 MB	L 360 MB	–	–	–	–	1.0578	–
–	St 52.4	–	STS 49	–	–	–	–	–	–	–	1.0581	–
–	L 360 NB/StE 360.7	–	–	–	L360NB	L 360 NB	–	–	–	–	1.0582	–
–	S 355 J 2 G 3 Cu/St 52-3 Cu3	–	–	–	S 355 J2 G3 Cu + CR	–	–	–	–	–	1.0585	–
–	C50D	–	–	–	C 50 D	FM 50	C 50 D	–	–	–	1.0586	–
–	QSt 52-3 Cu 3	–	–	–	S 355 J2 G3 Cu C	–	–	–	–	–	1.0587	–
–	D 53-2	–	SWRH 52 B	–	C 52 D	FM 52	C 52 D	–	–	–	1.0588	–
–	S 355 J 2 G 4 Cu	–	–	–	S 355 J2 G4 Cu	–	–	–	–	–	1.0592	–
–	S355k2G3/Fe 510 DD1 (MULTIST)	S 355 K 2 G 3	SM 520 C	K02505	S 355 K 2 G 3	E36-4	S 355 K 2 G 3	–	–	–	1.0595	–
–	S355K2G4/Fe 510 DD 2 (MULTIST)	S 355 K 2 G 4	–	–	S 355 K 2 G 4	S 355 K 2 G 4	S 355 K 2 G 4	–	–	–	1.0596	–
–	C62D	–	SWRH 62 B	–	C 62 D	FM 62	C 62 D	–	–	–	1.0611	–
–	C66D	–	–	–	C 66 D	FM 66	C 66 D	–	–	–	1.0612	–
–	C68D	–	SWRH 67 B	–	C 68 D	FM 68	C 68 D	–	–	–	1.0613	–
–	C70D	–	–	–	C 70 D	FM 70	C 70 D	–	–	–	1.0615	–
–	C72D	–	SWRH 72 B	–	C 72 D	FM 72	C 72 D	–	–	–	1.0617	–
–	GS-C 25	–	SCPH 1	–	GP 240 GH	GP 240 GH	GP 240 Gh	–	–	–	1.0619	–
–	C80D	–	–	–	C 80 D	FM 80	C 80 D	–	–	–	1.0622	–
–	C82D	–	SWRH 82 B	–	C 82 D	FM 82	C 82 D	–	–	–	1.0626	–
–	35 SPb 20	35 SPb 20	–	–	35 SPb 20	35 SPb 20	–	–	–	–	1.0756	–
–	45 SPb 20	–	–	–	46 SPb 20	–	–	–	–	–	1.0757	–
–	38 SMnPb 28	38 SMnPb 28	–	–	38 SMnPb 28	38 SMnPb 28	–	–	–	–	1.0761	–
–	44 SMn 28	44 SMn 28	–	–	44 SMn 28	44 SMn 28	–	–	–	–	1.0762	–
–	44 SMnPb 28	44 SMnPb 28	–	–	44 SMnPb 28	44 SMnPb 28	–	–	–	–	1.0763	–
–	36 SMnPb 14	36 SMnPb 14	–	–	36 SMnPb 14	36 SMnPb 14	–	–	–	–	1.0765	–
–	QSt E 690 TM (S 700 MC)	–	–	–	S 700 MC	S 690 MC	S 700 MC	–	–	–	1.0966	–
–	QSt E 260 N 7 S 260 NC	–	AE 275 NC	–	S 260 NC	–	S 260 NCX	–	–	–	1.0971	–
–	QSt E 300 TM/S 315 MC	43 F35 HR, HS, CS	–	–	S 315 MC	E 315 D	S 315 MC	–	–	–	1.0972	–
–	QSt E 300 N 7/ S 315 NC	–	AE 340 NC	–	S 315 NC	–	S 315 NC	–	–	–	1.0973	–
–	QSt E340 TM	HR 40/30	–	–	S 340 MC	E 335 D	–	–	–	–	1.0974	–
–	QSt E340 N	–	–	–	S 340 NC	–	Fe E 355 TD	–	–	–	1.0975	–
–	QSt E 360TM	–	–	–	S 355 MC	E 355 D	Fe E 355 TM	–	–	–	1.0976	–
–	QSt E360 N	–	–	–	S 355 NC	–	Fe E 355 TD	–	–	–	1.0977	–
–	QSt E380 TM	–	–	–	S 380 MC	E 390 D	–	–	–	–	1.0978	–
–	QSt E380 N	–	–	–	S 380 NC	–	Fe E 380 TD	–	–	–	1.0979	–
–	QSt E420 TM	HR 50 F 45	–	–	S 420 MC	E 430 D	Fe E 420 TM	–	–	–	1.0980	–
–	QSt E 420 N	–	–	–	S 420 NC	–	Fe E 420 TD	–	–	–	1.0981	–
–	QSt E 460 TM	50/45 HR	–	–	S 460 MC	E 445 D	–	–	–	–	1.0982	–
–	QSt E 460 N	–	–	–	S 460 NC	–	Fe E 460 TD	–	–	–	1.0983	–
–	QSt E500 TM	–	–	–	S 500 MC	E 490 D	Fe E 490 TM	2662	–	–	1.0984	–
–	QSt E500 N	–	–	–	S 500 NC	–	–	–	–	–	1.0985	–
–	QSt E550 TM	60/55 HS	–	–	S 550 MC	E 560 D	Fe E 560 TM	–	–	–	1.0986	–
–	QSt E550 N	–	–	–	S 550 NC	–	–	–	–	–	1.0987	–
–	EStE 285	P 275 NL 2	STK 400	–	P 275 NL 2	P 275 NL 2	P 275 NL 2	–	–	–	1.1104	–
–	EStE 315	–	–	–	S 315 NL 1	–	–	–	–	–	1.1105	–
–	EStE 355	P 355 NL 2	STK 500	–	P 355 NL 2	P 355 NL 2	P 355 NL 2	–	–	–	1.1106	–
–	C5D2	–	–	–	C 5 D 2	FM 6	C 5 D 2	–	–	–	1.1111	–
–	C8D2	–	–	–	C 8 D 2	FM 8	C 8 D 2	–	–	–	1.1113	–
–	C 10 E W/RSD 11	–	–	–	C 10 EW	–	–	–	–	–	1.1115	–
–	C32D2	–	–	–	C 32 D 2	FM 32	C 32 D 2	–	–	–	1.1143	–
–	C36D2	–	–	–	C 36 D 2	FM 36	C 36 D 2	–	–	–	1.1145	–
–	C40D2	–	–	–	C 40 D 2	FM 40	C 40 D 2	–	–	–	1.1153	–
–	C42D2	–	–	–	C 42 D 2	FM 42	C 42 D 2	–	–	–	1.1154	–
–	C46D2	–	–	–	C 46 D 2	FM 46	C46D 2	–	–	–	1.1162	–
–	C 25 R	C 25 R	–	–	C 25 R	C 25 R	C 25 R	–	–	–	1.1163	–
–	C48D2	–	–	–	C 48 D 2	FM 48	C48 D 2	–	–	–	1.1164	–
–	20 Mn 6	150 M 19	–	–	–	20 M 5	20 Mn 6	–	–	–	1.1169	–
–	C50D2	–	–	–	C 50 D 2	FM 50	C50D 2	–	–	–	1.1171	–
–	C 30 R	C 30 R	C 30 R (3 C 30)	–	C 30 R	C 30 R	C 30 R	–	–	–	1.1179	–
–	C3D1	–	–	–	C 3 D 1	–	C 3 D 1	–	–	–	1.1187	–
–	C40R/Cm 40	C 40 R	–	–	C 40 R	C 40 R	C 40	–	–	–	1.1189	–
–	Ck 45	080 M 46	S 45 C	–	2 C 45	XC 42	C 40	1672	–	–	1.1191	–
–	Cq 45	–	SWRCH45K	–	C 45 KD	–	–	–	–	–	1.1192	–
–	C 45 R	080 M 46	S 50 C	–	C 45 R	XC 48 H1u	C 45 R	1672	–	–	1.1201	–
–	C52D2	–	–	–	C 52 D 2	FM 52	C 52 D 2	–	–	–	1.1202	–
–	C 53 R/Cm 53	–	–	–	C 53 R	–	–	–	–	–	1.1205	–
–	C 10 R	C 10 R	–	–	C 10 R	C 10 R	–	–	–	–	1.1207	–
–	C 16 R	C 16 R	–	–	C 16 R	C 16 R	–	–	–	–	1.1208	–
–	C58D2	–	–	–	C 58 D 2	FM 58	C 58 D 2	–	–	–	1.1212	–
–	C62D2	–	–	–	C 62 D 2	FM 62	C 62 D 2	–	–	–	1.1222	–
–	Cm 60	C 60 R	–	–	3 C 60	C 60 R	C 60 R	–	–	–	1.1223	–
–	C60D2	–	–	–	C 60 D 2	FM 60	C 60 D 2	–	–	–	1.1228	–
–	C68D2	–	–	–	C 68 D 2	FM 68	C 68 D 2	–	–	–	1.1232	–
–	C66D2	–	–	–	C 66 D 2	FM 66	C 66 D 2	–	–	–	1.1236	–
–	C50R	C 50 R	–	–	C 50 R	FM 50	C 50 R	–	–	–	1.1241	–
–	C72D2	–	–	–	C 72 D 2	FM 72	C 72 D 2	–	–	–	1.1242	–
–	C70D2	–	–	–	C 70 D 2	FM 70	C 70 D 2	–	–	–	1.1251	–
–	C78D2	–	–	–	C 78 D 2	FM 78	C 78 D 2	–	–	–	1.1252	–
–	C76D2	–	–	–	C 76 D 2	FM 76	C 76 D 2	–	–	–	1.1253	–
–	C80D2	–	–	–	C 80 D 2	FM 80	C 80 D 2	–	–	–	1.1255	–

NOTE: For legend, see page Y217.

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	C82D2	–	–	–	C 82 D 2	FM 82	C 82 D 2	–	–	–	1.1262	–
–	C86D2	–	–	–	C 86 D 2	FM 86	C 86 D 2	–	–	–	1.1265	–
–	C88D2	–	–	–	C 88 D 2	–	C 88 D 2	–	–	–	1.1272	–
–	C92D2	–	–	–	C 92 D 2	–	C 92 D 2	–	–	–	1.1282	–
–	C98D2	–	–	–	C 98 D 2	–	C 98 D 2	–	–	–	1.1283	–
–	46 MnVS 6	–	–	–	46 MnVS 6	–	–	–	–	–	1.1304	–
–	C 90 U	–	–	–	C90U	–	–	–	–	–	1.1535	–
–	85 Cr 1	–	–	–	–	Y1 100 C 2	–	–	–	–	1.2004	–
–	140 Cr 3	–	SKS 8	–	140 Cr 2	Y2 140 C	–	–	–	–	1.2008	–
–	21 MnCr 5	–	SCR 420 H	–	21 MnCr 5	20 NC 5	–	–	–	–	1.2162	–
–	40 CrMnNiMo 8 6 4	–	–	–	40 CrMnNiMo 8-6-4	–	–	–	–	–	1.2738	–
–	16 CrNiMo 6	820A16	–	–	–	16 NCD 6	16NiCrMo6	–	–	–	1.3531	–
–	100 CrMn 7 3	–	–	–	100 CrMnMo 7	100 CD 7	–	–	–	–	1.3536	–
–	100 CrMo 7	–	SUS 4	K19965	100 CrMo 7	100 CD 7	100CrMo7	–	–	–	1.3537	–
–	100 CrMnMo 8	–	–	–	–	100 CrMnMo 8	–	–	–	–	1.3539	–
–	46 Si 7	–	–	–	45 Si	46 S 7	–	–	–	–	1.5024	–
–	55 Si 7	250 A 53	–	G92550	56 Si 7	55 S 7	55 Si 8	2085	–	–	1.5026	–
–	37 MnSi 5	–	–	–	–	38 MS 5	–	F.130.A	–	–	1.5122	–
–	15 MnMoV 4 5	–	–	–	15 MnMoV 4-5	15 MDV 4.05	–	–	–	–	1.5402	–
–	11 MnMo 4 5	–	–	K11123	11 MnMo 45 KE	–	–	–	–	–	1.5425	–
–	13 MnMo 6 5	–	–	K11424	11 MnMo 65 KE	–	–	–	–	–	1.5426	–
–	35 B 2	–	SWRCHB 237	–	C 35 B	35 B 3	–	–	–	–	1.5511	–
–	24 Ni 8	–	SCPL 21	J22501	G 9 Ni 10	22 N 8	G9Ni10	–	–	–	1.5633	–
–	10 NiCr 5 4	10NiCr5-4	–	–	10 NiCr 5-4	10 NiCr 5-4	–	–	–	–	1.5805	–
–	18 MnMoNi 5 5	–	–	–	18 MnMoNi 5-5	–	–	–	–	–	1.6308	–
–	20 MnMoNi 4 5	–	SQV 2 B	K12539	20 MnMoNi 4-5	–	–	–	–	–	1.6311	–
–	15 MnCrMoNiV 5 3	–	–	–	15 MnCrMoNiV 5-3	–	–	–	–	–	1.6920	–
–	17 CrS 3	17 CrS3	–	–	17 CrS 3	17 CrS 3	–	–	–	–	1.7014	–
–	28 CrS 4	–	–	–	28CrS4	28CrS4	–	–	–	–	1.7036	–
–	34 CrS 4	34 CrS 4	–	–	34 CrS 4	34 CrS 4	34 CrS 4	–	–	–	1.7037	–
–	41 CrS 4	41 CrS 4	–	–	41 CrS 4	41 CrS 4	41 CrS 4	2245	–	–	1.7039	–
–	38 Cr 4	–	–	–	38 Cr 4	–	38 Cr 4	–	–	–	1.7043	–
–	16 CrMo 4	18 CrMo4	SCM 418 H	–	18 CrMo 4	15 CD 3.5	18 CrMo 4	–	–	–	1.7242	–
–	12 CrMo 11 10	–	–	–	–	–	–	–	–	–	1.7305	–
–	22 CrMoS 3 5	–	–	–	22 CrMoS 3-5	22 CrMoS 3-5	–	–	–	–	1.7333	–
–	12 CrMo 19 5	3606-625	SCMV 6	K41545	X 12 CrMo 5	Z 10 CD 5.05	16 CrMo 20 5	–	–	–	1.7362	–
–	X 7 CrMo 6 1	B 5	–	S50281	CM 5-IG	–	–	–	–	–	1.7373	–
–	51 CrMoV 4	–	–	–	51 CrMoV 4	51 CDV 4	51 CrMoV 4	–	–	–	1.7701	–
–	21 CrMoV 5 7	–	–	K14073	21 CrmoV 5-7	20 CDV 5.07	–	–	–	–	1.7709	–
–	20 CrMoVTiB 4 10	–	–	–	20 CrMoVTiB 4-10	20 CrMoVTiB 4-10	–	–	–	–	1.7729	–
–	PS 275 TMK	S 275 ML	–	–	S 275 ML	S 275 ML	S 275 ML	–	–	–	1.8819	–
–	S 500 M	–	–	–	S 500 m	–	–	–	–	–	1.8829	–
–	BTStE 460 TM	S 460 ML	–	–	S 460 ML	E 460	S 460 ML	–	–	–	1.8838	–
–	S 500 ML	–	–	–	S 500 ML	–	–	–	–	–	1.8839	–
–	S 275 MH	–	–	–	S 275 MH	–	S 275 MH	–	–	–	1.8843	–
–	S 275 MLH	–	–	–	S 275 MLH	–	S 275 MLH	–	–	–	1.8844	–
–	S 355 MH	–	–	–	S 355 MH	–	S 355 MH	–	–	–	1.8845	–
–	S 355 MLH	–	–	–	S 355 MLH	–	S 355 MLH	–	–	–	1.8846	–
–	S 420 MH	–	–	–	S 420 MH	–	S 420 MH	–	–	–	1.8847	–
–	S 420 MLH	–	–	–	S 420 MLH	–	S 420 MLH	–	–	–	1.8848	–
–	S 460 MH	–	–	–	S 460 MH	–	S 460 MH	–	–	–	1.8849	–
–	StE 460	S 460 N	–	–	S 460 N	E 460	S 460N	–	–	–	1.8901	–
–	TStE 460	S 460 L	–	–	S 460 NL	E460	S 460 NL	–	–	–	1.8903	–
–	S 550 Q	–	–	–	S 550 Q	E 550	S 550 Q	–	–	–	1.8904	–
–	S 460 Q	55 F	–	–	S 460 Q	E 460	S 460 Q	–	–	–	1.8908	–
–	S 420 NL/TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	–	–	–	1.8912	–
–	S 620 Q	–	–	–	S 620 Q	E 620	S 620 Q	–	–	–	1.8914	–
–	T St E 460/P460NL1	P 460 NL 1	–	K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	–	–	–	1.8915	–
–	S 460 QL1	55 F	–	–	S 460 QL 1	–	–	–	–	–	1.8916	–
–	T St E 500	–	–	K02001	–	E 500 T-I	–	–	–	–	1.8917	–
–	EStE 460/P460NI2	P 460 NL 2	–	–	P 460 NL 2	P 460 NL 2	P 460 NL 2	–	–	–	1.8918	–
–	EStE 500/S500NL1	–	–	–	S 500 NL 1	–	–	–	–	–	1.8919	–
–	TStE 690 VA/S690G1QL	–	–	–	S 690 G 1 QL	–	–	–	–	–	1.8920	–
–	TStE 690 VB/S690G2QL	–	–	K11646	S 690 G 2 QL	–	–	–	–	–	1.8921	–
–	S 690 G 4 QL/TStE 690 VC	–	–	–	S 690 G 4 QL	–	–	–	–	–	1.8922	–
–	S 590 QL/TStE 590 V	–	–	–	S 590 QL	–	–	–	–	–	1.8923	–
–	S 500 Q (StE 500 V)	–	–	–	S 500 Q	E 500	S 500 Q	2614	–	–	1.8924	–
–	S 890 QL 1 (EStE 90 V)	–	–	–	S 890 QL 1	–	–	–	–	–	1.8925	–
–	S 690 QL (TStE 690 V)	–	SHY 685 NS	–	S 690 QL	–	–	–	–	–	1.8928	–
–	S 690 Q/StE 690 V	–	SHY 685 N	–	S 690 Q	E 690	S 690 Q	–	–	–	1.8931	–
–	WSt E 420/P420NH	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420 KW	–	–	–	1.8932	–
–	S 960 QL/TStE 960 V	–	–	–	S 960 QL	–	–	–	–	–	1.8933	–
–	WSt E 460/P460NH	P 460 NH	–	K02900	P 460 NH	P 460 NH	Fe E 460 KW	–	–	–	1.8935	–
–	S 960 Q	–	–	–	S 960 Q	E 960 T-II	S 960 Q	–	–	–	1.8941	–
–	S 355 J 0 WP	WR 50 A	–	–	S 355 J0 WP	E 36 W-A3	S 355 J0 WP	–	–	–	1.8945	–
–	S 355 J 2 WP	S 355 J 2 WP	–	–	S 355 J2 WP	E36W-A4	S 355 J2 WP	–	–	–	1.8946	–
–	L 415 QB	–	–	–	L 415 QB	L 415 QB	–	–	–	–	1.8947	–
–	L 360 QB	–	–	–	L 360 QB	L 360 QB	–	–	–	–	1.8948	–
–	L 450 QB	–	–	–	L 450 QB	L 450 QB	–	–	–	–	1.8952	–
–	S 460 NH (FGS 47)	–	–	–	S 460 NH	–	S 460 NH	–	–	–	1.8953	–
–	L 485 QB	–	–	–	L 485 QB	L 485 QB	–	–	–	–	1.8955	–
–	S 460 NLH/FG S 47	–	–	–	S 460 NLH	–	S460NLH	–	–	–	1.8956	–
–	L 555 QB	–	–	–	L 555 QB	L 555 QB	–	–	–	–	1.8957	–
–	9 CrNiCuP 3 2 4	WR 50 A	SPA-H	K11430	–	–	–	–	–	–	1.8962	–
–	WTSt 52-3	WR 50 C	SMA 58 W	K11430	S 355 J 2 G 1 W	E 36 W-A2	–	–	–	–	1.8963	–
–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	–	1.8965	–

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S 355 K 2 G 1 W	S 355 K 2 G 1 W	SMA 490 CW	–	S 355 K2 G1 W	S 355 K2 G1 W	S 355 K 2 G 1 W	–	–	–	1.8966	–
–	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	S 355 K2G2W	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	–	1.8967	–
–	QStE 600 TM/S 600 MC	–	–	–	S 600 MC	E 620 D	S 600 MC	–	–	–	1.8969	–
–	StE 415..7/L 415 NB	–	–	–	L 415 NB	L 415 NB	–	–	–	–	1.8972	–
–	StE 415.7 TM/L 415 MB	–	–	–	L 415 MB	L 415 MB	–	–	–	–	1.8973	–
–	S 700 MC (QStE 690 TM)	–	–	–	S 700 MC	E 690 D	S 700 MC	–	–	–	1.8974	–
–	L 450 MB/StE 445.7 TM	–	–	–	L 450 MB	L 450 MB	–	–	–	–	1.8975	–
–	S 650 MC (QStE 650 TM)	–	–	–	S 650 MC	E 620 D	S 650 MC	–	–	–	1.8976	–
–	L 485 MB/StE 480.7 TM	–	–	–	L 485 MB	L 485 MB	–	–	–	–	1.8977	–
–	StE 550.7 TM/L 555 MB	–	–	–	L 555 MB	L 555 MB	–	–	–	–	1.8978	–
–	St 60-2	4360-55 E	SM 58	–	E 335	A 60-2	Fe 60-2	1650	–	–	1.0060	–
–	St 70-2	E 360	–	–	E 360	A 70-2	Fe 70-2	1655	–	–	1.0070	–
–	C4D	–	–	–	C 4 D	FM 5	C 4 D	–	–	–	1.0300	–
–	C 22 8	–	–	–	P 250 GH	–	–	–	–	–	1.0460	–
–	H 260/ZSt E 260	H 240 LA	–	–	H 240 LA	E 240 C	–	–	–	–	1.0480	–
–	C32D	–	SWRH 32	K02701	C 32 D	FM 32	C 32 D	–	–	–	1.0530	–
–	ZStE 380/H 380	H 360 L A	–	–	H 360 LA	E 355 C	–	–	–	–	1.0550	–
–	C60D	–	–	–	C 60 D	FM 60	C 60 D	–	–	–	1.0610	–
–	38 SMn 28	38 SMn 28	–	–	38 SMn 28	38 SMn 28	–	–	–	–	1.0760	–
–	QSt E 260 TM/5260 MC	–	–	–	S 260 MC	41 S 7	Fe E 275 TM	–	–	–	1.0970	–
–	C3D2	–	–	–	C 3 D 2	FM 5	C 3 D 2	–	–	–	1.1110	–
–	C38D2	–	–	–	C 38 D 2	FM 38	C 38 D 2	–	–	–	1.1150	–
–	C 42 E Al/Ck 42 Al	–	–	–	S 355 G15	–	–	–	–	–	1.1190	–
–	C56D2/D 55-2	–	–	–	C 56 D 2	FM 56	C 56 D 2	–	–	–	1.1220	–
–	C 70 W1	–	–	–	CT 70	C 70 E 2 U	C 70 K U	–	–	–	1.1520	–
–	C 45 W	–	–	–	C 45 U	Y3 42	–	–	–	–	1.1730	–
–	C 60 W	–	SK 7	–	–	Y3 55	–	–	–	–	1.1740	–
–	100 CrMn 6	–	–	K19195	100 CrMn 6	100 CM 6	–	–	–	–	1.3520	–
–	28 B 2	–	SWRCHB 26	–	C 30 B	20 B 3	–	–	–	–	1.5510	–
–	St E 380	–	SM 50 B	–	S 380 N	–	Fe E 390 KG	–	–	–	1.8900	–
–	TStE 380/S380NL	–	–	–	S 380 NL	–	Fe E 390 KT	2117	–	–	1.8910	–
–	S 890 Q	–	–	–	S 890 Q	S 890 Q	S 890 Q	–	–	–	1.8940	–
–	46 Si 7	–	–	–	45 Si	46 S 7	–	–	–	–	1.5024	–
–	55 Si 7	250 A 53	–	G92550	56 Si 7	55 S 7	55 Si 8	2085	–	–	1.5026	–
–	37 MnSi 5	–	–	–	–	38 MS 5	–	F.130.A	–	–	1.5122	–
–	15 MnMoV 4 5	–	–	–	15 MnMoV 4-5	15 MDV 4.05	–	–	–	–	1.5402	–
–	11 MnMo 4 5	–	–	K11123	11 MnMo 45 KE	–	–	–	–	–	1.5425	–
–	13 MnMo 6 5	–	–	K11424	11 MnMo 65 KE	–	–	–	–	–	1.5426	–
–	35 B 2	–	SWRCHB 237	–	C 35 B	35 B 3	–	–	–	–	1.5511	–
–	24 Ni 8	–	SCPL 21	J22501	G 9 Ni 10	22 N 8	G9Ni10	–	–	–	1.5633	–
–	10 NiCr 5 4	10NiCr5-4	–	–	10 NiCr 5-4	10 NiCr 5-4	–	–	–	–	1.5805	–
–	18 MnMoNi 5 5	–	–	–	18 MnMoNi 5-5	–	–	–	–	–	1.6308	–
–	20 MnMoNi 4 5	–	SQV 2 B	K12539	20 MnMoNi 4-5	–	–	–	–	–	1.6311	–
–	15 MnCrMoNiV 5 3	–	–	–	15 MnCrMoNiV 5-3	–	–	–	–	–	1.6920	–
–	17 CrS 3	17 CrS3	–	–	17 CrS 3	17 CrS 3	–	–	–	–	1.7014	–
–	28 CrS 4	–	–	–	28CrS4	28CrS4	–	–	–	–	1.7036	–
–	34 CrS 4	34 CrS 4	–	–	34 CrS 4	34 CrS 4	34 CrS 4	–	–	–	1.7037	–
–	41 CrS 4	41 CrS 4	–	–	41 CrS 4	41 CrS 4	41 CrS 4	2245	–	–	1.7039	–
–	38 Cr 4	–	–	–	38 Cr 4	–	38 Cr 4	–	–	–	1.7043	–
–	16 CrMo 4	18 CrMo4	SCM 418 H	–	18 CrMo 4	15 CD 3.5	18 CrMo 4	–	–	–	1.7242	–
–	12 CrMo 11 10	–	–	–	–	–	–	–	–	–	1.7305	–
–	22 CrMoS 3 5	–	–	–	22 CrMoS 3-5	22 CrMoS 3-5	–	–	–	–	1.7333	–
–	12 CrMo 19 5	3606-625	SCMV 6	K41545	X 12 CrMo 5	Z 10 CD 5.05	16 CrMo 20 5	–	–	–	1.7362	–
–	X 7 CrMo 6 1	B 5	–	S50281	CM 5-IG	–	–	–	–	–	1.7373	–
–	51 CrMoV 4	–	–	–	51 CrMoV 4	51 CDV 4	51 CrMoV 4	–	–	–	1.7701	–
–	21 CrMoV 5 7	–	–	K14073	21 CrmoV 5-7	20 CDV 5.07	–	–	–	–	1.7709	–
–	20 CrMoVTiB 4 10	–	–	–	20 CrMoVTiB 4-10	20 CrMoVTiB 4-10	–	–	–	–	1.7729	–
–	PS 275 TMK	S 275 ML	–	–	S 275 ML	S 275 ML	S 275 ML	–	–	–	1.8819	–
–	S 500 M	–	–	–	S 500 m	–	–	–	–	–	1.8829	–
–	BTStE 460 TM	S 460 ML	–	–	S 460 ML	E 460	S 460 ML	–	–	–	1.8838	–
–	S 500 ML	–	–	–	S 500 ML	–	–	–	–	–	1.8839	–
–	S 275 MH	–	–	–	S 275 MH	–	S 275 MH	–	–	–	1.8843	–
–	S 275 MLH	–	–	–	S 275 MLH	–	S 275 MLH	–	–	–	1.8844	–
–	S 355 MH	–	–	–	S 355 MH	–	S 355 MH	–	–	–	1.8845	–
–	S 355 MLH	–	–	–	S 355 MLH	–	S 355 MLH	–	–	–	1.8846	–
–	S 420 MH	–	–	–	S 420 MH	–	S 420 MH	–	–	–	1.8847	–
–	S 420 MLH	–	–	–	S 420 MLH	–	S 420 MLH	–	–	–	1.8848	–
–	S 460 MH	–	–	–	S 460 MH	–	S 460 MH	–	–	–	1.8849	–
–	StE 460	S 460 N	–	–	S 460 N	E 460	S 460N	–	–	–	1.8901	–
–	TStE 460	S 460 L	–	–	S 460 NL	E460	S 460 NL	–	–	–	1.8903	–
–	S 550 Q	–	–	–	S 550 Q	E 550	S 550 Q	–	–	–	1.8904	–
–	S 460 Q	55 F	–	–	S 460 Q	E 460	S 460 Q	–	–	–	1.8908	–
–	S 420 NL/TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	–	–	–	1.8912	–
–	S 620 Q	–	–	–	S 620 Q	E 620	S 620 Q	–	–	–	1.8914	–
–	T St E 460/P460NL1	P 460 NL 1	–	K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	–	–	–	1.8915	–
–	S 460 QL1	55 F	–	–	S 460 QL 1	–	–	–	–	–	1.8916	–
–	T St E 500	–	–	K02001	–	E 500 T-I	–	–	–	–	1.8917	–
–	EStE 460/P460NI2	P 460 NL 2	–	–	P 460 NL 2	P 460 NL 2	P 460 NL 2	–	–	–	1.8918	–
–	EStE 500/S500NL1	–	–	–	S 500 NL 1	–	–	–	–	–	1.8919	–
–	TStE 690 VA/S690G1QL	–	–	–	S 690 G 1 QL	–	–	–	–	–	1.8920	–
–	TStE 690 VB/S690G2QL	–	–	K11646	S 690 G 2 QL	–	–	–	–	–	1.8921	–
–	S 690 G 4 QL/TStE 690 VC	–	–	–	S 690 G 4 QL	–	–	–	–	–	1.8922	–
–	S 590 QL/TStE 590 V	–	–	–	S 590 QL	–	–	–	–	–	1.8923	–
–	S 500 Q (StE 500 V)	–	–	–	S 500 Q	E 500	S 500 Q	2614	–	–	1.8924	–
–	S 890 QL 1 (EStE 90 V)	–	–	–	S 890 QL 1	–	–	–	–	–	1.8925	–
–	S 690 QL (TStE 690 V)	–	SHY 685 NS	–	S 690 QL	–	–	–	–	–	1.8928	–
–	S 690 Q/StE 690 V	–	SHY 685 N	–	S 690 Q	E 690	S 690 Q	–	–	–	1.8931	–

NOTE: For legend, see page Y217.

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	WSt E 420/P420NH	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420 KW	–	–	–	1.8932	–
–	S 960 QL/TStE 960 V	–	–	–	S 960 QL	–	–	–	–	–	1.8933	–
–	WSt E 460/P460NH	P 460 NH	–	K02900	P 460 NH	P 460 NH	Fe E 460 KW	–	–	–	1.8935	–
–	S 960 Q	–	–	–	S 960 Q	E 960 T-II	S 960 Q	–	–	–	1.8941	–
–	S 355 J 0 WP	WR 50 A	–	–	S 355 J0 WP	E 36 W-A3	S 355 J0 WP	–	–	–	1.8945	–
–	S 355 J 2 WP	S 355 J 2 WP	–	–	S 355 J2 WP	E36W-A4	S 355 J2 WP	–	–	–	1.8946	–
–	L 415 QB	–	–	–	L 415 QB	L 415 QB	–	–	–	–	1.8947	–
–	L 360 QB	–	–	–	L 360 QB	L 360 QB	–	–	–	–	1.8948	–
–	L 450 QB	–	–	–	L 450 QB	L 450 QB	–	–	–	–	1.8952	–
–	S 460 NH (FGS 47)	–	–	–	S 460 NH	–	S 460 NH	–	–	–	1.8953	–
–	L 485 QB	–	–	–	L 485 QB	L 485 QB	–	–	–	–	1.8955	–
–	S 460 NLH/FG S 47	–	–	–	S 460 NLH	–	S460NLH	–	–	–	1.8956	–
–	L 555 QB	–	–	–	L 555 QB	L 555 QB	–	–	–	–	1.8957	–
–	9 CrNiCuP 3 2 4	WR 50 A	SPA-H	K11430	–	–	–	–	–	–	1.8962	–
–	WTSt 52-3	WR 50 C	SMA 58 W	K11430	S 355 J 2 G 1 W	E 36 W-A2	–	–	–	–	1.8963	–
–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	–	1.8965	–
–	S 355 K 2 G 1 W	S 355 K 2 G 1 W	SMA 490 CW	–	S 355 K2 G1 W	S 355 K2 G1 W	S 355 K 2 G 1 W	–	–	–	1.8966	–
–	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	S 355 K2G2W	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	–	1.8967	–
–	QStE 600 TM/S 600 MC	–	–	–	S 600 MC	E 620 D	S 600 MC	–	–	–	1.8969	–
–	StE 415..7/L 415 NB	–	–	–	L 415 NB	L 415 NB	–	–	–	–	1.8972	–
–	StE 415.7 TM/L 415 MB	–	–	–	L 415 MB	L 415 MB	–	–	–	–	1.8973	–
–	S 700 MC (QStE 690 TM)	–	–	–	S 700 MC	E 690 D	S 700 MC	–	–	–	1.8974	–
–	L 450 MB/StE 445.7 TM	–	–	–	L 450 MB	L 450 MB	–	–	–	–	1.8975	–
–	S 650 MC (QStE 650 TM)	–	–	–	S 650 MC	E 620 D	S 650 MC	–	–	–	1.8976	–
–	L 485 MB/StE 480.7 TM	–	–	–	L 485 MB	L 485 MB	–	–	–	–	1.8977	–
–	StE 550.7 TM/L 555 MB	–	–	–	L 555 MB	L 555 MB	–	–	–	–	1.8978	–
–	St 60-2	4360-55 E	SM 58	–	E 335	A 60-2	Fe 60-2	1650	–	–	1.0060	–
–	St 70-2	E 360	–	–	E 360	A 70-2	Fe 70-2	1655	–	–	1.0070	–
–	C4D	–	–	–	C 4 D	FM 5	C 4 D	–	–	–	1.0300	–
–	C 22 8	–	–	–	P 250 GH	–	–	–	–	–	1.0460	–
–	H 260/ZSt E 260	H 240 LA	–	–	H 240 LA	E 240 C	–	–	–	–	1.0480	–
–	C32D	–	SWRH 32	K02701	C 32 D	FM 32	C 32 D	–	–	–	1.0530	–
–	ZStE 380/H 380	H 360 L A	–	–	H 360 LA	E 355 C	–	–	–	–	1.0550	–
–	C60D	–	–	–	C 60 D	FM 60	C 60 D	–	–	–	1.0610	–
–	38 SMn 28	38 SMn 28	–	–	38 SMn 28	38 SMn 28	–	–	–	–	1.0760	–
–	QSt E 260 TM/5260 MC	–	–	–	S 260 MC	41 S 7	Fe E 275 TM	–	–	–	1.0970	–
–	C3D2	–	–	–	C 3 D 2	FM 5	C 3 D 2	–	–	–	1.1110	–
–	C38D2	–	–	–	C 38 D 2	FM 38	C 38 D 2	–	–	–	1.1150	–
–	C 42 E Al/Ck 42 Al	–	–	–	S 355 G15	–	–	–	–	–	1.1190	–
–	C56D2/D 55-2	–	–	–	C 56 D 2	FM 56	C 56 D 2	–	–	–	1.1220	–
–	C 70 W1	–	–	–	CT 70	C 70 E 2 U	C 70 K U	–	–	–	1.1520	–
–	C 45 W	–	–	–	C 45 U	Y3 42	–	–	–	–	1.1730	–
–	C 60 W	–	SK 7	–	–	Y3 55	–	–	–	–	1.1740	–
–	100 CrMn 6	–	–	K19195	100 CrMn 6	100 CM 6	–	–	–	–	1.3520	–
–	28 B 2	–	SWRCHB 26	–	C 30 B	20 B 3	–	–	–	–	1.5510	–
–	St E 380	–	SM 50 B	–	S 380 N	–	Fe E 390 KG	–	–	–	1.8900	–
–	TStE 380/S380NL	–	–	–	S 380 NL	–	Fe E 390 KT	2117	–	–	1.8910	–
–	S 890 Q	–	–	–	S 890 Q	S 890 Q	S 890 Q	–	–	–	1.8940	–

P4 Workpiece Materials Listing • Steel • P4

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 570 Gr. 40	St 44-2	4360-43 B	SM 41 B	K 02502	S 275 JR	E 28-2	Fe 430 BFN	1412	–	–	1.0044	–
–	S 235 J0/Fe 360 C	En 40C	–	–	S 235 J0	E24-3	Fe 360 CFN	–	–	–	1.0114	–
A 570 Gr. 36	St 37-3	4360-40 C	–	K01501	S 235 J2 G3	Fe 360 D1(2); E 24-3	Fe 360 D1(2)	1312	–	–	1.0116	–
–	QSt 37-3	–	SWRCH 12R	–	–	–	–	–	–	–	1.0123	–
–	S 275 J0	En43C; S275J0	–	–	S 275 J0/Fe 430 C	S 275 J0; E 28-3	S275J0; Fe430CFN	–	–	–	1.0143	–
A 573 Gr. 70	St 44-3	4360-43 C	SM 41 B	–	Fe 430 D1(2); S 275 J2 G3 (4)	Fe 430 D1(2); E 28-4	Fe 430 D FF	1414	–	–	1.0144	–
–	S 275 J2 G4/Fe 430 D 2	S 275 J2 G4	–	–	S 275 J2 G4	E28-4; S 275 J2 G4	S 275 J2 G4	1414	–	–	1.0145	–
–	Ro St 44-2	43C	–	–	S 275 J0 H	–	S 275 J0 H	–	–	–	1.0149	–
–	St 37.0	–	STPG 38	–	P 235 T1	–	–	–	–	–	1.0254	–
–	C9D	–	SWRM 8	–	C 9 D	FM 9	C 9 D	–	–	–	1.0304	–
–	C7D	C 7 D	SWRM 8	G10060	C 7 D	FM 8	C 7 D	–	–	–	1.0313	–
–	L 210 GA	–	–	–	L 210 GA	TS E 220 class 2	–	–	–	–	1.0319	–
–	USD 7/C 8 G1 W	–	–	–	C 8 G 1 W	–	–	–	–	–	1.0323	–
–	RSD 7/C8G2W	–	–	–	C 8 G 2 W	–	–	–	–	–	1.0324	–
–	RSD 10 Si/C10WSi	–	–	–	C 10 W Si	–	–	–	–	–	1.0339	–
–	P235 GH	P 235 GH	SPV 50	K02503	P 235 GH	A 37 CP	Fe E 235	1330	–	–	1.0345	–
–	RRSD 10/C10 W	–	–	–	C 10 W	–	–	–	–	–	1.0351	–
–	St 45.8	–	STB 410	K02727	–	–	–	–	–	–	1.0405	–
–	C 25 Pb	–	–	–	C 25 GPb	–	–	–	–	–	1.0411	–
–	L 245 MB	430	–	K03006	L 245 MB	L 245 MB	–	–	–	–	1.0418	–
1513	P265	HR 40/30	–	G15130	–	12 M 5	–	–	–	–	1.0424	–
–	P310 NB	224-410	SG 325	K02100	P280GH	BS 2	P 275 N	2103	–	–	1.0426	–
–	L 290 MB	–	–	–	L290MB	L 290 MB	–	–	–	–	1.0429	–
–	H III/P285NH	–	Sm 38	–	P 285 NH	–	–	–	–	–	1.0435	–
–	P310 NB	224-430	SG 325	K02100	P305GH	P 275 N	P 275 N	2103	–	–	1.0436	–
–	A St 41	P 275 N	STK 400	K02100	S 275 N	BS 3	P 275 N	2103	–	–	1.0437	–
–	B 500 A	–	SD 490	–	B 500 A	–	B 500 A	–	–	–	1.0438	–
–	GS-45	–	SC 450	–	–	–	–	–	–	–	1.0443	–
–	H IV/P295NH	–	SG 37	K03102	–	–	Fe 460-2 KW	–	–	–	1.0445	–

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	StE 240.7	–	–	–	L 245 NB	L 245 NB	–	–	–	–	1.0457	–
–	HIII/L 235 GA	–	–	–	L 235 GA	–	–	–	–	–	1.0458	–
–	L 245 GA/RRStE 240.7	–	–	–	L 245 GA	TS E 250	–	–	–	–	1.0459	–
–	St E255	–	–	K01800	–	–	–	–	–	–	1.0461	–
–	TStE 255	–	–	K11535	–	–	–	–	–	–	1.0463	–
–	15 Mn 3 Al	–	–	–	C 14 GAl	–	–	–	–	–	1.0468	–
–	21 Mn 4	–	–	–	–	–	20 Mn 4	–	–	–	1.0469	–
–	19 Mn 6/P 355 GH	P 355 GH	SGV 46	K03300	P355GH	A 52 CP	Fe E355-2	2101	–	–	1.0473	–
–	17 Mn 4/P 295 GH	224-460B	SG 37	K03501	P 295 GH	A 48 CP	Fe E 295	2102	–	–	1.0481	–
–	19 Mn 5	224-460	SG 37	K 03102	–	A 52 CP; AP; FP	Fe 460- 2 KW	–	–	–	1.0482	–
–	L 290 AG	–	–	–	L290GA	TS E 290	–	–	–	–	1.0483	–
–	L 290 NB	–	–	–	L290NB	L 290 NB	–	–	–	–	1.0484	–
–	21 Mn 6	–	–	K12320	–	–	–	–	–	–	1.0485	–
–	St E 285	P 275 N	SM 41 A	K 01802	P 275 N	P 275 N	Fe E 285 KG	–	–	–	1.0486	–
–	W St E 285	P 275 N	–	K 01802	P 275 NH	P 275 N	Fe E 285 KW	–	–	–	1.0487	–
–	T St E 285	P 275 NL 1	SLA 235 A	K 01803	P 275 NL 1	P 275 NL 1	Fe E 285 KT	–	–	–	1.0488	–
–	H 300/ZSt E 300	H280LA	–	–	H 280 LA	E 280 C	–	–	–	–	1.0489	–
–	S 275 NH	S 275 NH	–	–	S 275 NH	–	S 275 NH	–	–	–	1.0493	–
–	S 275 NLH	S275NLH	–	–	S 275 NLH	–	S275NLH	–	–	–	1.0497	–
–	L 360 GA	–	–	–	L 360 GA	–	–	–	–	–	1.0499	–
–	C 35 Pb/C 35 GPb	–	–	–	C 35 Pb	–	–	–	–	–	1.0502	–
–	St E 315/P 315N	–	SM 50 A	K11506	P 315 N	–	Fe E 315 KG	–	–	–	1.0505	–
–	W St E 315	–	SNC 1	K02404	P 315 NH	–	Fe E 315 KW	2107	–	–	1.0506	–
–	St 55	–	STKM 16A	–	–	–	Fe 540	–	–	–	1.0507	–
–	T St E315	–	SLA 325 A	K02404	P 315 NL	–	–	2106	–	–	1.0508	–
–	C 40 Pb	–	–	–	C 40 G Pb	–	–	–	–	–	1.0512	–
–	C38D	–	SWRH 37	–	C 38 D	FM 38	C 38 D	–	–	–	1.0516	–
–	C48D	–	SWRH 48	–	C 48 D	FM 48	C 48 D	–	–	–	1.0517	–
–	C56D	–	–	–	C 56 D	FM 56	C 56 D	–	–	–	1.0518	–
–	StSch 700 (R 0 700)	–	–	–	R 0700	–	–	–	–	–	1.0521	–
–	StSch800 (R 0 800)	–	–	–	R 0800	–	–	–	–	–	1.0524	–
–	Cf 45 Pb	–	–	–	–	–	C 46	–	–	–	1.0526	–
–	C32D	–	SWRH 32	K02701	C 32 D	FM 32	C 32 D	–	–	–	1.0530	–
–	GL-A 40 (S 390 G 1 S)	–	–	–	S 390 G 1 S	–	–	–	–	–	1.0532	–
–	S 355 NH	S 355 NH	–	–	S 355 NH	–	S 355 NH	–	–	–	1.0539	–
–	C42D	–	SWRH 42 B	–	C 42 D	FM 42	C 42 D	–	–	–	1.0541	–
–	Schienen 60 F(R 0600/ St Sch 60)	–	–	–	R 0600	–	–	–	–	–	1.0544	–
–	S 355 J0 H	50 C	–	–	S 355 J0 H	–	S 355 J0 H	–	–	–	1.0547	–
–	ZStE 340/H 340	H 320 L A	–	–	H 320 LA	E 315 C	–	–	–	–	1.0548	–
–	S 335 NLH	50 EE	–	–	S 355 N LH	–	S 355 N L H	–	–	–	1.0549	–
–	GS-52	A2	–	–	GE 260	–	–	–	–	–	1.0552	–
–	S 355 J0	En 50 C;S 355 J0	SM 520 M	–	S 355 J0	S 355 J0; E 36-3	S 355 J0; Fe 510 C FN	–	–	–	1.0553	–
–	GS-70	50 C	–	–	S 355 J0 C	E 36-3	Fe 510 C	–	–	–	1.0554	–
–	GS-62	–	–	–	S 355 GO 1	–	–	–	–	–	1.0555	–
–	ZStE 420/H 420	46/40HR,HS,CS	–	–	H 400 LA	H 400 LA	–	–	–	–	1.0556	–
–	P355 NB	–	SG 365	–	P 355 NB	BS 4	–	–	–	–	1.0557	–
–	GS-62.3	–	–	–	S 355 GO 2	–	–	–	–	–	1.0559	–
A 633 Gr. C	St E 355	P 355 N	SM 50 YB	K12000	P 355 N	E 355 R/FP	Fe E 355 KG	2132	–	–	1.0562	–
–	N 80	–	–	–	–	–	–	–	–	–	1.0564	–
–	W St E 355	P 355 NH	–	K01600	P 355 NH	P 355 NH	Fe E 355 KW	–	–	–	1.0565	–
–	T St E355	P 355 NL1	SLA 37	–	P 355 NL1	P 355 NL1	Fe E 355 KT	–	–	–	1.0566	–
–	32 Mn 3	–	–	–	–	–	–	–	–	–	1.0567	–
–	P355 QH1	P 355 QH	–	–	P 355 QH	P 355 QH	–	–	–	–	1.0571	–
–	ZStE 460/H 460	–	–	–	–	–	–	–	–	–	1.0574	–
–	S 355 J 2 G 4	S 355 J 2 G 4	–	–	S 355 J 2 G 4	S 355 J 2 G 4	S 355 J 2 G 4	–	–	–	1.0577	–
–	L 360 MB	–	–	–	L 360 MB	L 360 MB	–	–	–	–	1.0578	–
–	St 52.4	–	STS 49	–	–	–	–	–	–	–	1.0581	–
–	L 360 NB/StE 360.7	–	–	–	L360NB	L 360 NB	–	–	–	–	1.0582	–
–	S 355 J 2 G 3 Cu/St 52-3 Cu3	–	–	–	S 355 J2 G3 Cu + CR	–	–	–	–	–	1.0585	–
–	C50D	–	–	–	C 50 D	FM 50	C 50 D	–	–	–	1.0586	–
–	QSt 52-3 Cu 3	–	–	–	S 355 J2 G3 Cu C	–	–	–	–	–	1.0587	–
–	D 53-2	–	SWRH 52 B	–	C 52 D	FM 52	C 52 D	–	–	–	1.0588	–
–	FStE 355 OS 3/S355G03	–	–	K12000	S 355 G03	–	–	–	–	–	1.0591	–
–	S 355 J 2 G 4 Cu	–	–	–	S 355 J2 G4 Cu	–	–	–	–	–	1.0592	–
–	S355k2G3/Fe 510 DD1 (MULTIST)	S 355 K 2 G 3	SM 520 C	K02505	S 355 K 2 G 3	E36-4	S 355 K 2 G 3	–	–	–	1.0595	–
–	S355K2G4/Fe 510 DD 2 (MULTIST)	S 355 K 2 G 4	–	–	S 355 K 2 G 4	S 355 K 2 G 4	S 355 K 2 G 4	–	–	–	1.0596	–
–	C 30 Pb	–	–	–	C 3 0 GPb	–	–	–	–	–	1.0598	–
–	C 60 Pb	–	–	–	C 60 GPb	–	–	–	–	–	1.0602	–
–	C 67 GPb/C 67 Pb	–	–	–	C 67 GPb	–	–	–	–	–	1.0606	–
–	C 75 GPb/C 75 Pb	–	–	–	C 75 GPb	–	–	–	–	–	1.0607	–

NOTE: For legend, see page Y217.

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	C62D	–	SWRH 62 B	–	C 62 D	FM 62	C 62 D	–	–	–	1.0611	–
–	C66D	–	–	–	C 66 D	FM 66	C 66 D	–	–	–	1.0612	–
–	C68D	–	SWRH 67 B	–	C 68 D	FM 68	C 68 D	–	–	–	1.0613	–
–	C70D	–	–	–	C 70 D	FM 70	C 70 D	–	–	–	1.0615	–
–	C72D	–	SWRH 72 B	–	C 72 D	FM 72	C 72 D	–	–	–	1.0617	–
–	GS-C 25	–	SCPH 1	–	GP 240 GH	GP 240 GH	GP 240 Gh	–	–	–	1.0619	–
–	GP 240 GR	–	–	–	GP 240 GR	GP 240 GR	GP 240 GR	–	–	–	1.0621	–
–	C80D	–	–	–	C 80 D	FM 80	C 80 D	–	–	–	1.0622	–
–	StSch 900 A (R 0900)	–	–	–	R 0900	–	–	–	–	–	1.0623	–
–	StSch 900 B (R 0900 Mn)	–	–	–	R 0900 Mn	–	–	–	–	–	1.0624	–
1345	StSch 90 C/GP 280 GH	–	–	G13450	GP 280 GH	GP 280 GH	GP 280 GH	–	–	–	1.0625	–
–	C82D	–	SWRH 82 B	–	C 82 D	FM 82	C 82 D	–	–	–	1.0626	–
–	C88D	–	–	–	C 88 D	–	C 88 D	–	–	–	1.0628	–
–	StSch 1200 (R 1200)	–	–	–	R 1200	–	–	–	–	–	1.0631	–
–	C 61/60 Mn 3	–	–	–	C 61	–	C 61	–	–	–	1.0642	–
–	C 85/85 Mn 3	–	–	–	C 85	–	C 85	–	–	–	1.0647	–
–	35 SPb 20	35 SPb 20	–	–	35 SPb 20	35 SPb 20	–	–	–	–	1.0756	–
–	45 SPb 20	–	–	–	46 SPb 20	–	–	–	–	–	1.0757	–
–	38 SMnPb 28	38 SMnPb 28	–	–	38 SMnPb 28	38 SMnPb 28	–	–	–	–	1.0761	–
–	44 SMn 28	44 SMn 28	–	–	44 SMn 28	44 SMn 28	–	–	–	–	1.0762	–
–	44 SMnPb 28	44 SMnPb 28	–	–	44 SMnPb 28	44 SMnPb 28	–	–	–	–	1.0763	–
–	36 SMnPb 14	36 SMnPb 14	–	–	36 SMnPb 14	36 SMnPb 14	–	–	–	–	1.0765	–
9255	51 Si 7	250 A 53	–	G92550	–	51 S 7	48 Si 7	2090	–	–	1.0903	–
9255	55 Si 7	250 A 53	SKH 1; SKT 4	G92550	55 NiCrMoV 7	55 S 7	55 Si 8	2085	–	–	1.0904	–
–	StSch 1100 (R 1100 Cr)	–	–	–	R 1100 Cr	–	–	–	–	–	1.0915	–
9262	60 SiCr 7	250 A 61	SUP 7	G92620	60 SiCr 8	60 SC 7	60 SiCr 8	–	–	–	1.0961	–
–	QSt E 690 TM (S 700 MC)	–	–	–	S 700 MC	S 690 MC	S 700 MC	–	–	–	1.0966	–
–	QSt E 260 N 7 S 260 NC	–	AE 275 NC	–	S 260 NC	–	S 260 NCX	–	–	–	1.0971	–
–	QSt E 300 TM/S 315 MC	43 F35 HR,HS,CS	–	–	S 315 MC	E 315 D	S 315 MC	–	–	–	1.0972	–
–	QSt E 300 N 7/S 315 NC	–	AE 340 NC	–	S 315 NC	–	S 315 NC	–	–	–	1.0973	–
–	QSt E340 TM	HR 40/30	–	–	S 340 MC	E 335 D	–	–	–	–	1.0974	–
–	QSt E340 N	–	–	–	S 340 NC	–	Fe E 355 TD	–	–	–	1.0975	–
–	QSt E 360TM	–	–	–	S 355 MC	E 355 D	Fe E 355 TM	–	–	–	1.0976	–
–	QSt E360 N	–	–	–	S 355 NC	–	Fe E 355 TD	–	–	–	1.0977	–
–	QSt E380 TM	–	–	–	S 380 MC	E 390 D	–	–	–	–	1.0978	–
–	QSt E380 N	–	–	–	S 380 NC	–	Fe E 380 TD	–	–	–	1.0979	–
–	QSt E420 TM	HR 50 F 45	–	–	S 420 MC	E 430 D	Fe E 420 TM	–	–	–	1.0980	–
–	QSt E 420 N	–	–	–	S 420 NC	–	Fe E 420 TD	–	–	–	1.0981	–
–	QSt E 460 TM	50/45 HR	–	–	S 460 MC	E 445 D	–	–	–	–	1.0982	–
–	QSt E 460 N	–	–	–	S 460 NC	–	Fe E 460 TD	–	–	–	1.0983	–
–	QSt E500 TM	–	–	–	S 500 MC	E 490 D	Fe E 490 TM	2662	–	–	1.0984	–
–	QSt E500 N	–	–	–	S 500 NC	–	–	–	–	–	1.0985	–
–	QSt E550 TM	60/55 HS	–	–	S 550 MC	E 560 D	Fe E 560 TM	–	–	–	1.0986	–
–	QSt E550 N	–	–	–	S 550 NC	–	–	–	–	–	1.0987	–
–	FStE 355 OS 3/S355G04	–	–	–	S 355 G04	–	–	–	–	–	1.1102	–
–	EStE 285	P 275 NL 2	STK 400	–	P 275 NL 2	P 275 NL 2	P 275 NL 2	–	–	–	1.1104	–
–	EStE 315	–	–	–	S 315 NL 1	–	–	–	–	–	1.1105	–
–	EStE 355	P 355 NL 2	STK 500	–	P 355 NL 2	P 355 NL 2	P 355 NL 2	–	–	–	1.1106	–
–	C5D2	–	–	–	C 5 D 2	FM 6	C 5 D 2	–	–	–	1.1111	–
–	USD 5/C 8 E1 W	–	–	–	C 8 E 1 W	–	–	–	–	–	1.1112	–
–	C8D2	–	–	–	C 8 D 2	FM 8	C 8 D 2	–	–	–	1.1113	–
–	C 10 E W/RSD 11	–	–	–	C 10 EW	–	–	–	–	–	1.1115	–
–	USD 6/C 8 E2 W	–	–	–	C 8 E 2 W	–	–	–	–	–	1.1116	–
–	G 24 Mn 4/GS 24 Mn 4	–	–	–	G 24 Mn 4	–	–	–	–	–	1.1136	–
–	C32D2	–	–	–	C 32 D 2	FM 32	C 32 D 2	–	–	–	1.1143	–
–	C36D2	–	–	–	C 36 D 2	FM 36	C 36 D 2	–	–	–	1.1145	–
–	C38D2	–	–	–	C 38 D 2	FM 38	C 38 D 2	–	–	–	1.1150	–
–	C 25 R	C 25 R	–	–	C 25 R	C 25 R	C 25 R	–	–	–	1.1163	–
–	C48D2	–	–	–	C 48 D 2	FM 48	C48 D 2	–	–	–	1.1164	–
1330	GS-30 Mn 5	120 M 36	SMn 433 H; SCMn 2	K13300	–	35 M 5	–	1330	–	–	1.1165	–
1335	36 Mn 5	150 M 36	SMn 438(H)	G13350	–	40 M 5	–	2120	–	–	1.1167	–
–	G 40 Mn 5/GS 40 Mn 5	–	–	–	G 40 Mn 5	–	–	–	–	–	1.1168	–
–	20 Mn 6	150 M 19	–	–	–	20 M 5	20 Mn 6	–	–	–	1.1169	–
–	C50D2	–	–	–	C 50 D 2	FM 50	C50D 2	–	–	–	1.1171	–
–	Ck 38 Pb	–	–	–	25 Mn 4	–	–	–	–	–	1.1177	–
–	C 30 R	C 30 R	C 30 R (3 C 30)	–	C 30 R	C 30 R	C 30 R	–	–	–	1.1179	–
–	Ck 35 Pb	–	–	–	S 355 G 13	–	–	–	–	–	1.1182	–
–	Ck 36	–	–	–	S 355 G 14	–	–	–	–	–	1.1184	–
–	C3D1	–	–	–	C 3 D 1	–	C 3 D 1	–	–	–	1.1187	–
–	C40R/Cm 40	C 40 R	–	–	C 40 R	C 40 R	C 40	–	–	–	1.1189	–
–	C52D2	–	–	–	C 52 D 2	FM 52	C 52 D 2	–	–	–	1.1202	–
–	C 53 R/Cm 53	–	–	–	C 53 R	–	–	–	–	–	1.1205	–
–	C 10 R	C 10 R	–	–	C 10 R	C 10 R	–	–	–	–	1.1207	–
–	C 16 R	C 16 R	–	–	C 16 R	C 16 R	–	–	–	–	1.1208	–
–	C58D2	–	–	–	C 58 D 2	FM 58	C 58 D 2	–	–	–	1.1212	–
–	Ck 53 Pb	–	–	–	C 90 S	–	–	–	–	–	1.1217	–
–	C62D2	–	–	–	C 62 D 2	FM 62	C 62 D 2	–	–	–	1.1222	–
–	Cm 60	C 60 R	–	–	3 C 60	C 60 R	C 60 R	–	–	–	1.1223	–
–	C60D2	–	–	–	C 60 D 2	FM 60	C 60 D 2	–	–	–	1.1228	–
–	C68D2	–	–	–	C 68 D 2	FM 68	C 68 D 2	–	–	–	1.1232	–
–	C66D2	–	–	–	C 66 D 2	FM 66	C 66 D 2	–	–	–	1.1236	–
–	C50R	C 50 R	–	–	C 50 R	FM 50	C 50 R	–	–	–	1.1241	–
–	C72D2	–	–	–	C 72 D 2	FM 72	C 72 D 2	–	–	–	1.1242	–
–	C70D2	–	–	–	C 70 D 2	FM 70	C 70 D 2	–	–	–	1.1251	–
–	C78D2	–	–	–	C 78 D 2	FM 78	C 78 D 2	–	–	–	1.1252	–
–	C76D2	–	–	–	C 76 D 2	FM 76	C 76 D 2	–	–	–	1.1253	–
–	C80D2	–	–	–	C 80 D 2	FM 80	C 80 D 2	–	–	–	1.1255	–
–	C82D2	–	–	–	C 82 D 2	FM 82	C 82 D 2	–	–	–	1.1262	–
–	C86D2	–	–	–	C 86 D 2	FM 86	C 86 D 2	–	–	–	1.1265	–
–	C88D2	–	–	–	C 88 D 2	–	C 88 D 2	–	–	–	1.1272	–
–	C92D2	–	–	–	C 92 D 2	–	C 92 D 2	–	–	–	1.1282	–
–	C98D2	–	–	–	C 98 D 2	–	C 98 D 2	–	–	–	1.1283	–
–	46 MnVS 6	–	–	–	46 MnVS 6	–	–	–	–	–	1.1304	–
–	C 90 U	–	–	–	C90U	–	–	–	–	–	1.1535	–
–	C 110 W	–	–	–	C 110 U	–	–	–	–	–	1.1554	–
–	C 120 U	–	–	–	C120U	–	–	–	–	–	1.1555	–
T 8	C 80 W2	BW 1B	SKC 3	T12008	–	Y1 80	C 80 KU	–	–	–	1.1625	–
–	C 105 W2	–	SK 3	–	–	–	–	–	–	–	1.1645	–
–	C 135 W	–	SK 1	–	–	Y2 140	C 140 KU	–	–	–	1.1673	–
A-6	C 67 W	–	–	T30106	–	Y1 70	–	–	–	–	1.1744	–

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	125 Cr 1	–	–	–	125 Cr 2	Y2 120 C	–	–	–	–	1.2002	–
–	85 Cr 1	–	–	–	–	Y1 100 C 2	–	–	–	–	1.2004	–
–	140 Cr 3	–	SKS 8	–	140 Cr 2	Y2 140 C	–	–	–	–	1.2008	–
–	105 Cr 4	–	SKC 11	–	–	–	–	–	–	–	1.2057	–
–	21 MnCr 5	–	SCR 420 H	–	21 MnCr 5	20 NC 5	–	–	–	–	1.2162	–
–	35 CrMo 7	–	–	–	35 CrMo 7	–	–	–	–	–	1.2302	–
–	48 CrMoV 67	–	–	–	–	45 CDV 6	–	–	–	–	1.2323	–
P6	15 NiCr 14	–	SNC 22	T51606	–	10 NC 12	–	–	–	–	1.2735	–
–	40 CrMnNiMo 8 6 4	–	–	–	40 CrMnNiMo 8-6-4	–	–	–	–	–	1.2738	–
–	57 NiCrMoV 7 7	–	–	–	55 NiCrMoV 7	–	–	–	–	–	1.2744	–
–	70 MnMoCr 8	–	–	–	70 MnMoCr 8	–	–	–	–	–	1.2824	–
–	95 MnWCr 5	–	–	–	95 MnWCr 5	–	–	–	–	–	1.2825	–
–	60 MnSi 4	–	–	–	–	60 MSC 4	–	–	–	–	1.2826	–
–	101 Cr 6	–	–	–	–	–	102 Cr 6 KU	–	–	–	1.3514	–
–	16 CrNiMo 6	820A16	–	–	–	16 NCD 6	16NiCrMo6	–	–	–	1.3531	–
–	100 CrMn 7 3	–	–	–	100 CrMnMo 7	100 CD 7	–	–	–	–	1.3536	–
–	100 CrMo 7	–	SUS 4	K19965	100 CrMo 7	100 CD 7	100CrMo7	–	–	–	1.3537	–
–	100 CrMnMo 8	–	–	–	–	100 CrMnMo 8	–	–	–	–	1.3539	–
5046	44 Cr 2	–	–	H50460	46 Cr 1 KD	44 Cr 2	–	–	–	–	1.3561	–
4142	43 CrMo 4	–	–	G41420	–	43 Cr Mo 4	–	–	–	–	1.3563	–
4147	48 CrMo 4	817 M 40	SNC 836	H41470	–	48 CrMo 4	–	–	–	–	1.3565	–
–	46 Si 7	–	–	–	45 Si	46 S 7	–	–	–	–	1.5024	–
9259H	51 Si 7	–	–	–	50 Si 7	–	48 Si 7	2090	–	–	1.5025	–
–	55 Si 7	250 A 53	–	G92550	56 Si 7	55 S 7	55 Si 8	2085	–	–	1.5026	–
9260	60 Si 7	251 A 60	–	G92600	60 Si 7	60 S 7	60 Si 7	–	–	–	1.5027	–
–	65 Si 7	–	SUP 7	–	–	–	–	–	–	–	1.5028	–
–	12 Mn 8	–	–	–	11 Mn 8 KE	–	–	–	–	–	1.5086	–
9262	60 SC 7	–	–	G92620	60 SiCr 8	61 SC 7	60 SiCr 8	–	–	–	1.5092	–
–	37 MnSi 5	–	–	–	–	38 MS 5	–	F.130.A	–	–	1.5122	–
–	50 MnSi 4	–	–	K04800	–	–	–	–	–	–	1.5131	–
–	15 MnMoV 4 5	–	–	–	15 MnMoV 4-5	15 MDV 4.05	–	–	–	–	1.5402	–
A 204 Gr. A	15 Mo 3	1501-240	STFA 12	K11820	16 Mo 3	15 D3	16 Mo 3 KW	2912	–	–	1.5415	–
4419	GS-22 Mo 4	243-430	SCPH 11	G44190	G 20 Mo 5	G20Mo5	G 22 Mo 5	–	–	–	1.5419	–
–	20 MnMo 3 5	–	–	K12121	–	–	–	–	–	–	1.5421	–
–	G 18 Mo 5	–	–	–	G18Mo5	–	G 18 Mo5	–	–	–	1.5422	–
4520	16 Mo 5	1503-245-420	SBC 690	K11522	–	–	16 Mo 5	–	–	–	1.5423	–
–	11 MnMo 4 5	–	–	K11123	11 MnMo 45 KE	–	–	–	–	–	1.5425	–
–	13 MnMo 6 5	–	–	K11424	11 MnMo 65 KE	–	–	–	–	–	1.5426	–
–	13 MnMo 8 5	–	–	K11423	11 MnMo 85 KE	–	–	–	–	–	1.5427	–
–	35 B 2	–	SWRCHB 237	–	C 35 B	35 B 3	–	–	–	–	1.5511	–
15B21 H	19 MnB 4	170 H 20	SWRCHB 420	H15211	19 MnB 4	20 MB 5	–	–	–	–	1.5523	–
15B21 H	20 MnB 5	–	SWRCHB 620	–	20 MnB 5	20 MnB 5	20 MnB 5	–	–	–	1.5530	–
–	24 Ni 8	–	SCPL 21	J22501	G 9 Ni 10	22 N 8	G9Ni10	–	–	–	1.5633	–
A 350-LF 5	10 Ni 14	503	SL 3 N 26	K31718	12 Ni 14	12Ni14	18 Ni 14 KT	–	–	–	1.5637	–
P3	10 NC 6	–	–	T51603	15 NiCr 6	10 NC 6	–	–	–	–	1.5713	–
–	10 NiCr 5 4	10NiCr5-4	–	–	10 NiCr 5-4	10 NiCr 5-4	–	–	–	–	1.5805	–
–	18 MnMoNi 5 5	–	–	–	18 MnMoNi 5-5	–	–	–	–	–	1.6308	–
–	20 MnMoNi 4 5	–	SQV 2 B	K12539	20 MnMoNi 4-5	–	–	–	–	–	1.6311	–
–	10 NiMnMo 6 5	–	–	K11160	–	–	–	–	–	–	1.6312	–
–	16 NiCrMO 12 6	–	–	–	–	16 NCD 13	–	–	–	–	1.6782	–
–	15 MnCrMoNiV 5 3	–	–	–	15 MnCrMoNiV 5-3	–	–	–	–	–	1.6920	–
50B40	37 CrB 1	120 M 36	SMnC 3 H	H50401	38 Cr 2	–	35 CB 1	–	–	–	1.7007	–
–	13 Cr 2	–	–	–	–	–	–	–	–	–	1.7012	–
–	17 CrS 3	17 CrS3	–	–	17 CrS 3	17 CrS 3	–	–	–	–	1.7014	–
5015	15 Cr 3	523 M15	SCr 415 H	G50150	15 Cr 2	12 C 3	–	–	–	–	1.7015	–
5117	17 Cr 3	17 Cr 3	–	G51170	(15 Cr 2 KD)	18 C 3	–	–	–	–	1.7016	–
5130 H	34 Cr 4	530 A 32	SCr 430 H	G51300	34 Cr 4 KD	32 C 4	34 Cr 4 KB	–	–	–	1.7033	–
5132 H	37 Cr 4	530 A 36	SCr 435 H	G51320	37 Cr 4	38 C 4	36 CrMn 4	–	–	–	1.7034	–
5140	41 Cr 4	530 M 40	SCr 440 H	G51400	41 Cr 4	42 C 4	41 Cr 4	–	–	–	1.7035	–
–	28 CrS 4	–	–	–	28CrS4	28CrS4	–	–	–	–	1.7036	–
–	34 CrS 4	34 CrS 4	–	–	34 CrS 4	34 CrS 4	34 CrS 4	–	–	–	1.7037	–
–	41 CrS 4	41 CrS 4	–	–	41 CrS 4	41 CrS 4	41 CrS 4	2245	–	–	1.7039	–
–	38 Cr 4	–	–	–	38 Cr 4	–	38 Cr 4	–	–	–	1.7043	–
5140	42 Cr 4	530 A 40	SCr 440	–	40 NiCrMo 3	42 C 4 TS	40 NiCrMo 3	2245	–	–	1.7045	–
–	54 SiCr 6	–	–	–	–	54 SC 6	–	–	–	–	1.7102	–
–	67 SiCr 5	–	–	–	67 SiCr 5	–	67 SiCr 5	–	–	–	1.7103	–
9262	60 SiCr 7	–	–	–	60 SiCr 8	–	–	–	–	–	1.7108	–
–	52 SiCrNi 5	–	–	–	–	52 SCN 5	–	–	–	–	1.7117	–
5115	16 MnCr 5	527 M 17	SCR 415	G 51150	16 MnCr 5 KD	16 MC 5	16 MnCr 5	2173	–	–	1.7131	–
–	49 CrMo 4	–	SCM 445	–	–	–	–	–	–	–	1.7238	–
–	16 CrMo 4	18 CrMo4	SCM 418 H	–	18 CrMo 4	15 CD 3.5	18 CrMo 4	–	–	–	1.7242	–
–	10 CrMo 11	–	–	–	–	12 CD 10	–	–	–	–	1.7276	–
–	16 CrMo 9 3	–	–	–	–	20 CD 8	–	–	–	–	1.7281	–
–	22 CrMoS 3 5	–	–	–	22 CrMoS 3-5	22 CrMoS 3-5	–	–	–	–	1.7333	–
A 387 Gr. 12 Cl. 2	16 CrMo 4 4	–	–	K11564	–	–	A 18 CrMo 4 5 KW	–	–	–	1.7337	–
–	12 CrMo 8 5	–	–	K21509	–	–	–	–	–	–	1.7358	–
–	12 CrMo 19 5	3606-625	SCMV 6	K41545	X 12 CrMo 5	Z 10 CD 5.05	16 CrMo 20 5	–	–	–	1.7362	–
–	X 7 CrMo 6 1	B 5	–	S50281	CM 5-IG	–	–	–	–	–	1.7373	–
–	12 CrMo 9 10	–	–	–	–	12 CrMo 9-10	–	–	–	–	1.7375	–
–	SG-CrMo 9	–	–	S50480	–	–	–	–	–	–	1.7388	–
–	51 CrMoV 4	–	–	–	51 CrMoV 4	51 CDV 4	51 CrMoV 4	–	–	–	1.7701	–
–	21 CrMoV 5 7	–	–	K14073	21 CrmoV 5-7	20 CDV 5.07	–	–	–	–	1.7709	–
–	20 CrMoVTiB 4 10	–	–	–	20 CrMoVTiB 4-10	20 CrMoVTiB 4-10	–	–	–	–	1.7729	–
6150	50 CrV 4	735 A 50	SUP 10	G61500	51 CrV 4	50 CV 4	50 CrV 4	2230	–	–	1.8159	–
–	PS 275 TMK	S 275 ML	–	–	S 275 ML	S 275 ML	S 275 ML	–	–	–	1.8819	–
–	S 355 G1 M	–	–	–	S 355 G 1 M	–	–	–	–	–	1.8822	–
–	BTStE 460 TM	S 460 ML	–	–	S 460 ML	E 460	S 460 ML	–	–	–	1.8838	–
–	S 500 ML	–	–	–	S 500 ML	–	–	–	–	–	1.8839	–

NOTE: For legend, see page Y217.

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S 275 MH	–	–	–	S 275 MH	–	S 275 MH	–	–	–	1.8843	–
–	S 275 MLH	–	–	–	S 275 MLH	–	S 275 MLH	–	–	–	1.8844	–
–	S 355 MH	–	–	–	S 355 MH	–	S 355 MH	–	–	–	1.8845	–
–	S 355 MLH	–	–	–	S 355 MLH	–	S 355 MLH	–	–	–	1.8846	–
–	S 420 MH	–	–	–	S 420 MH	–	S 420 MH	–	–	–	1.8847	–
–	S 420 MLH	–	–	–	S 420 MLH	–	S 420 MLH	–	–	–	1.8848	–
–	S 460 MH	–	–	–	S 460 MH	–	S 460 MH	–	–	–	1.8849	–
–	S 460 MLH	–	–	–	S 460 MLH	–	S 460 MLH	–	–	–	1.8850	–
–	FStE 355 OS 4/ S420G5Q	–	–	–	S 420 G 2	–	–	–	–	–	1.8853	–
–	P 550 QL	–	–	–	P 550 QL	–	–	–	–	–	1.8878	–
–	StE 460	S 460 N	–	–	S 460 N	E 460	S 460N	–	–	–	1.8901	–
A 633 Gr. E	St E 420	S 420 N	SM 50 C	K02002	FeE 420 KGN	E 420-I	Fe E 420 KG	2143	–	–	1.8902	–
–	TStE 460	S 460 L	–	–	S 460 NL	E460	S 460 NL	–	–	–	1.8903	–
–	S 550 Q	–	–	–	S 550 Q	E 550	S 550 Q	–	–	–	1.8904	–
A 633 Gr. E	St E 460	P 460 N	SM 53 B	K02900	P 460 N	E 460-I	Fe E 460 KG	2143	–	–	1.8905	–
–	BGH 8906	55 F	–	–	S 460 QL	S 460 QL	S 460 QL	–	–	–	1.8906	–
–	St E 500	–	SM 58	K02001	–	–	–	–	–	–	1.8907	–
–	S 460 Q	55 F	–	–	S 460 Q	E 460	S 460 Q	–	–	–	1.8908	–
–	S 420 NL/TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	–	–	–	1.8912	–
–	EStE 420/ S420NL1	–	STK 540	–	–	–	–	–	–	–	1.8913	–
–	S 620 Q	–	–	–	S 620 Q	E 620	S 620 Q	–	–	–	1.8914	–
–	T St E 460/ P460NL1	P 460 NL 1	–	K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	–	–	–	1.8915	–
–	S 460 QL1	55 F	–	–	S 460 QL 1	–	–	–	–	–	1.8916	–
–	T St E 500	–	–	K02001	–	E 500 T-I	–	–	–	–	1.8917	–
–	EStE 460/ P460Nl2	P 460 NL 2	–	–	P 460 NL 2	P 460 NL 2	P 460 NL 2	–	–	–	1.8918	–
–	EStE 500/ S500NL1	–	–	–	S 500 NL 1	–	–	–	–	–	1.8919	–
–	TStE 690 VB/ S690G2QL	–	–	K11646	S 690 G 2 QL	–	–	–	–	–	1.8921	–
–	S 690 G 4 QL/ TStE 690 VC	–	–	–	S 690 G 4 QL	–	–	–	–	–	1.8922	–
–	S 590 QL/TStE 590 V	–	–	–	S 590 QL	–	–	–	–	–	1.8923	–
–	S 500 Q (StE 500 V)	–	–	–	S 500 Q	E 500	S 500 Q	2614	–	–	1.8924	–
–	S 890 QL 1 (EStE 90 V)	–	–	–	S 890 QL 1	–	–	–	–	–	1.8925	–
–	S 690 QL (TStE 690 V)	–	SHY 685 NS	–	S 690 QL	–	–	–	–	–	1.8928	–
–	TStE 690 VD/ S690G3QL	–	–	–	S 690 G 3 QL	–	–	–	–	–	1.8929	–
–	S 690 Q/StE 690 V	–	SHY 685 N	–	S 690 Q	E 690	S 690 Q	–	–	–	1.8931	–
–	WSt E 420/ P420NH	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420 KW	–	–	–	1.8932	–
–	S 960 QL/TStE 960 V	–	–	–	S 960 QL	–	–	–	–	–	1.8933	–
–	WSt E 460/ P460NH	P 460 NH	–	K02900	P 460 NH	P 460 NH	Fe E 460 KW	–	–	–	1.8935	–
–	P420 QH	–	–	–	P 420 QH	–	–	–	–	–	1.8936	–
–	TStE 770 V/ S770QL	–	–	–	S 770 QL	–	–	–	–	–	1.8938	–
–	EStE 790 V/ S790QL1	–	–	–	S 790 QL 1	–	–	–	–	–	1.8939	–
–	S 960 Q	–	–	–	S 960 Q	E 960 T-II	S 960 Q	–	–	–	1.8941	–
–	S 550 G 1 QL 1/ EStE 550 VA	–	–	–	S 550 G 1 QL 1	–	–	–	–	–	1.8944	–
–	S 355 J 0 WP	WR 50 A	–	–	S 355 J0 WP	E 36 W-A3	S 355 J0 WP	–	–	–	1.8945	–
–	S 355 J 2 WP	S 355 J 2 WP	–	–	S 355 J2 WP	E36W-A4	S 355 J2 WP	–	–	–	1.8946	–
–	L 415 QB	–	–	–	L 415 QB	L 415 QB	–	–	–	–	1.8947	–
–	L 360 QB	–	–	–	L 360 QB	L 360 QB	–	–	–	–	1.8948	–
–	L 450 QB	–	–	–	L 450 QB	L 450 QB	–	–	–	–	1.8952	–
–	S 460 NH (FGS 47)	–	–	–	S 460 NH	–	S 460 NH	–	–	–	1.8953	–
–	EStE620VA/S 620 G 1 QL 1	–	–	–	S 620 G 1 QL 1	–	–	–	–	–	1.8954	–
–	L 485 QB	–	–	–	L 485 QB	L 485 QB	–	–	–	–	1.8955	–
–	S 460 NLH/FG S 47	–	–	–	S 460 NLH	–	S460NLH	–	–	–	1.8956	–
–	L 555 QB	–	–	–	L 555 QB	L 555 QB	–	–	–	–	1.8957	–
–	9 CrNiCuP 3 2 4	WR 50 A	SPA-H	K11430	–	–	–	–	–	–	1.8962	–
–	WTSt 52-3	WR 50 C	SMA 58 W	K11430	S 355 J 2 G 1 W	E 36 W-A2	–	–	–	–	1.8963	–
–	EStE 690 VA	–	–	–	S 690 G1 QL1	–	–	–	–	–	1.8964	–
–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	–	1.8965	–
–	S 355 K 2 G 1 W	S 355 K 2 G 1 W	SMA 490 CW	–	S 355 K2 G1 W	S 355 K2 G1 W	S 355 K 2 G 1 W	–	–	–	1.8966	–
–	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	S 355 K2G2W	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	–	1.8967	–
–	QStE 600 TM/S 600 MC	–	–	–	S 600 MC	E 620 D	S 600 MC	–	–	–	1.8969	–
–	StE 415..7/L 415 NB	–	–	–	L 415 NB	L 415 NB	–	–	–	–	1.8972	–
–	StE 415.7 TM/L 415 MB	–	–	–	L 415 MB	L 415 MB	–	–	–	–	1.8973	–
–	S 700 MC (QStE 690 TM)	–	–	–	S 700 MC	E 690 D	S 700 MC	–	–	–	1.8974	–
–	L 450 MB/StE 445.7 TM	–	–	–	L 450 MB	L 450 MB	–	–	–	–	1.8975	–
–	S 650 MC (QStE 650 TM)	–	–	–	S 650 MC	E 620 D	S 650 MC	–	–	–	1.8976	–
–	L 485 MB/StE 480.7 TM	–	–	–	L 485 MB	L 485 MB	–	–	–	–	1.8977	–
–	StE 550.7 TM/L 555 MB	–	–	–	L 555 MB	L 555 MB	–	–	–	–	1.8978	–

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 570 Gr. 50	St 50-2	4360-50 B	SS 50	–	E 295	A 50-2	Fe 490	2172	–	–	1.0050	–
–	St 60-2	4360-55 E	SM 58	–	E 335	A 60-2	Fe 60-2	1650	–	–	1.0060	–
–	St 70-2	E 360	–	–	E 360	A 70-2	Fe 70-2	1655	–	–	1.0070	–
–	C4D	–	–	–	C 4 D	FM 5	C 4 D	–	–	–	1.0300	–
–	C 22 8	–	–	–	P 250 GH	–	–	–	–	–	1.0460	–
–	H 260/ZSt E 260	H 240 LA	–	–	H 240 LA	E 240 C	–	–	–	–	1.0480	–
–	ZStE 380/H 380	H 360 L A	–	–	H 360 LA	E 355 C	–	–	–	–	1.0550	–
–	GL-E - 40 (S 390 G 3 S)	–	–	–	S 390 G 3 S	–	–	–	–	–	1.0560	–
–	C60D	–	–	–	C 60 D	FM 60	C 60 D	–	–	–	1.0610	–
–	C 64/64 Mn 3	–	–	–	C 64	–	–	–	–	–	1.0640	–
–	38 SMn 28	38 SMn 28	–	–	38 SMn 28	38 SMn 28	–	–	–	–	1.0760	–
–	QSt E 260 TM/5260 MC	–	–	–	S 260 MC	41 S 7	Fe E 275 TM	–	–	–	1.0970	–
–	C3D2	–	–	–	C 3 D 2	FM 5	C 3 D 2	–	–	–	1.1110	–
1330	28 Mn 6	150 M 28	SCMn 1	G 13300	28 Mn 6	35 M 5	C 28 Mn	–	–	–	1.1170	–
–	C 42 E Al/Ck 42 Al	–	–	–	S 355 G15	–	–	–	–	–	1.1190	–
–	C56D2/D 55-2	–	–	–	C 56 D 2	FM 56	C 56 D 2	–	–	–	1.1220	–
–	C 70 W1	–	–	–	CT 70	C 70 E 2 U	C 70 K U	–	–	–	1.1520	–
–	C 70 W2	–	–	–	C 70 U	–	–	–	–	–	1.1620	–
–	C 45 W	–	–	–	C 45 U	Y3 42	–	–	–	–	1.1730	–
–	C 60 W	–	SK 7	–	–	Y3 55	–	–	–	–	1.1740	–
–	100 CrMn 6	–	–	K19195	100 CrMn 6	100 CM 6	–	–	–	–	1.3520	–
–	28 B 2	–	SWRCHB 26	–	C 30 B	20 B 3	–	–	–	–	1.5510	–
5130	28 Cr 4	530 A 30	–	G51300	28 Cr 4	30 CD 4	–	–	–	–	1.7030	–
–	S 420 G1 M	–	–	–	P 550 M	–	–	–	–	–	1.8830	–
–	St E 380	–	SM 50 B	–	S 380 N	–	Fe E 390 KG	–	–	–	1.8900	–
–	TStE 380/ S380NL	–	–	–	S 380 NL	–	Fe E 390 KT	2117	–	–	1.8910	–
–	TStE 690 VA/ S690G1QL	–	–	–	S 690 G 1 QL	–	–	–	–	–	1.8920	–
–	WSt E 380/ P380Nh	–	–	–	P 380 NH	–	Fe E 390 KW	2116	–	–	1.8930	–
–	S 890 Q	–	–	–	S 890 Q	S 890 Q	S 890 Q	–	–	–	1.8940	–

P5 Workpiece Materials Listing • Steel • P5

P5 Ferritic, Martensitic, and PH Stainless Steels *Tensile Strength RM (MPa)*: 600–900* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
410 S	X 7 Cr 14	–	–	–	–	–	–	–	–	–	1.4001	–
405	X 6 CrAl 13	405 S 17	SUS 405	S40500	X 6 CrAl 13	Z 6 CA 13	X 6 CrAl 13	2302	–	–	1.4002	–
–	X 2 CrNi 1 2	–	–	–	Hyfab3/12	CLC4003	F12N(Mn<1,50)	–	–	–	1.4003	–
416	X 12CrS 13	416 S 21	SUS416	S41600	X 12 CrS 13	Z 12 CF 13	X12CrS13	2380	–	–	1.4005	ATI 416™
410	X 12Cr 13	410 S 21	SUS410	S 41000	(X 12 Cr 13 KD)	Z 12 C 13	X12Cr13	2302	–	–	1.4006	ATI 410™
414	GX 8 CrNi 1 3	410 C 21	SCS 1	S41400	GX 7 CrNiMo 12-1	Z 12 CN 13 M	GX 12 Cr 13	–	–	–	1.4008	–
–	X 8 Cr 14	–	SUS Y 410	S41080	X 8 Cr 13 KE	–	–	–	–	–	1.4009	B13Fe
–	GX 12 Cr 1 2	–	–	–	GX12Cr12	GX12Cr12	–	–	–	–	1.4011	–
–	N 3 2 0 (LW)	–	–	–	3S62	–	–	–	–	–	1.4014	–
–	X 8 Cr 18	–	SUS Y 430	S43080	–	–	–	–	–	–	1.4015	B17Fe
430	X 8 Cr 17	430 S 15	SUS430	S 43000	X 8 Cr 17	Z8C17	X8Cr17	2320	–	–	1.4016	ATI 430™
–	X 6 CrNi 17 1	–	–	–	X6CrNi17-1	F17N	X6CrNi17-1	–	–	–	1.4017	–
420	X20Cr13	420 S 37	SUS 420J1	S42000	X 20 Cr 13	Z20C13	X20Cr13	2303	–	–	1.4021	ATI 420™
403	X 15 Cr 13	420 S 29	SUS 410 J1	J91201	X 15 Cr 13	Z 12 C 13 M	X 12 Cr 13	2301	–	A403M	1.4024	ATI 403™
–	GX 20 Cr 1 4	420 C 29	SCS 2	–	–	Z 20 C 13 M	–	–	–	A743-4	1.4027	–
420	X 40 Cr 13	–	SUS 420 J2	S42080	X 40 Cr 13	Z 40 C 14	X 40 Cr 14	2304	–	–	1.4031	–
–	GX 120 Cr 29	425 C 11	–	–	–	–	–	–	–	F30C	1.4086	–
430 F	X 12 CrMoS 17	441 S 29	SUS 430 F	S 43020	X 14 CrMoS 17	Z 10 CF 17	X 10 CrS 17	2383	–	–	1.4104	–
430	X 4 CrMoS 18	–	SUS 430F	–	X 6 CrMoS 17	Z 6 CDF 18 - 02	–	–	–	–	1.4105	–
–	X 2 CrMoSiS 18 2 1	–	–	J91151	–	–	–	–	–	CA15	1.4106	–
–	GX 8 CrNi 1 2	–	–	–	GX 8 CrNi 12	GX8CrNi 12	G X 8 CrNi 12	–	–	–	1.4107	–
434	X 6CrMo 17	434 S 17	SUS434	S43400	434S17	Z8CD17-01	X8CrMo17	2325	–	–	1.4113	AL 434
–	X 15 CrMo 13	–	–	–	–	–	–	–	–	–	1.4119	–
–	GX 70 CrMo 29 2	–	–	–	–	Z 60 CD 29.2 M	–	–	–	–	1.4136	–
–	X 2 CrNi 24 12	309 S 93	–	–	X 2 CrNi 24 13 KE	Z 2 CN 24-14	–	–	–	–	1.4332	CN23/12-IG
–	X 5 NiCr 32 21	–	–	S33200	–	–	–	–	–	B536	1.4333	H521
–	GX 5 CrNiMo 16 5	–	–	–	GX 4 CrNiMo 16-5-1	GX4CrNiMo 16-5-1	G X 4 CrNiMo 16-5-1	–	–	–	1.4405	–
–	ERO 4411 A	–	–	–	GX 4 CrNiMo 16-5-2	GX 4 CrNiMo 16-5-2	–	–	–	–	1.4411	–
–	X 38 CrMo 14	–	–	–	–	–	–	–	–	–	1.4419	–
–	X 8 CrTi 18	–	–	–	X 6 Cr 18 KE	–	–	–	–	–	1.4502	–
430 Nb	X 6 CrNb 17	–	SUS 430 LX	–	X 3 CrNb 17	Z 8 CNb 17	X 6 CrNb 17	–	–	–	1.4511	AXC525
409	X 6 CrTi 12	409 S 19	SUH 409	S40900	X 5 CrTi 12	Z 6 CT 12	X 6 CrTi 12	–	–	–	1.4512	–
–	X 6 CrNiTi 12	–	–	–	X 6 CrNiTi 12	X 6 CrNiTi 12	X 6 CrNiTi 12	–	–	–	1.4516	–
–	X 2 CrTi 17	–	SUS 430 LX	–	X 2 CrTi 17	F 20T	X 2 CrTi 17	–	–	–	1.4520	–
–	X 8 CrMoTi 17	–	–	–	X 2 CrMoTiS 18 2	X2CrMoTiS18-2	–	–	–	–	1.4523	1802
–	GX 5 CrNiCu 16 4	–	–	–	GX 5 CrNiCu 16-4	GX 5 CrNiCu 16-4	–	–	–	–	1.4525	–
–	X 6 CrMoNb 17 1	–	–	–	X 6 CrMoNb 17-1	X6CrMoNb 17-1	F 17 MNb	–	–	–	1.4526	–
904 L	X 1 NiCrMoCuN 25 20 5	904 S 13	–	N08904	X 1 NiCrMoCuN 25 20 5	Z 1 NCDU 25 20	–	2562	–	–	1.4539	ATI 904L™
348	X 5 CrNiNb 18 10	S 527	–	J92640	–	–	X 6 CrNiNb 18 11	–	–	–	1.4546	ATI 348™
–	X 5 CrNiNb 19 9	–	SUS Y 347	S34780	X 5 CrNiNb 20 10 KE	Z 6 CNNb 20-10	–	–	–	–	1.4551	–
–	GX 7 NiCrMoCuNb 42 20	–	–	–	GX 7 NiCrMoCuNb 4220	–	–	–	–	–	1.4559	–
–	X 5 CrNiMoNb 19 12	318 S 96	–	S31980	X 5 CrNiMoNb 19 12 03 KE	Z 4 CNDSNb 19-12-03	–	–	–	–	1.4576	–
–	X 2 CrAlTi 18 2	–	–	–	X 2 CrAlTi 18-2	DMV 59	X 2 CrAlTi 18-2	–	–	–	1.4605	–
–	X 10 CrAl 7	–	–	–	X 10 CrAl 7	–	–	–	–	–	1.4713	–

NOTE: For legend, see page Y217.

(continued)

P5 ■ Workpiece Materials Listing • Steel • P5 *(continued)*

P5 Ferritic, Martensitic, and PH Stainless Steels *Tensile Strength RM (MPa)*: 600–900* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 215 Cr 12	–	–	–	–	–	–	–	–	–	1.4721	–
H-12	X 10 CrAl 13	BH 12	SUS 405	T20812	X 10 CrAl 13	Z 10 C 13	X 10 CrAl 12	–	–	–	1.4724	–
430	X 10 CrAl 18	(430 S 15)	SUH 21	S43000	–	Z 10 CAS 18	(X 8 Cr 17)	–	–	–	1.4742	–
446	X 10 CrAl 25	–	SUH 442	S44600	X 10 CrAl 24	Z 10 CAS 24	X 16 Cr 26	2322	–	–	1.4762	–
–	GX 40 CrNiSi 27 4	–	–	J92605	–	–	–	–	–	–	1.4823	–
–	X 12 CrNi 22 12	311 S 94	SUS Y 309	S30980	X 15 CrNi 23 13	–	X 16 CrNi 23 14	–	–	309	1.4829	–
–	X 9 CrNiSiNCe 21 11 2	–	–	–	X 9 CrNiSiNCe 21-11-2	–	–	–	–	–	1.4835	–
314	X 15 CrNiSi 25 20	314 S 25	SUH 310	S31400	X 15 CrNiSi 25 20	Z 15 CNS 25.20	X 16 CrNiSi 25 20	–	–	–	1.4841	Cronifer® 2520
–	X 12 CrNi 25 20	310 S 94	–	S31080	X 12 CrNi 26 21 KE	Z 12 CN 26-21	–	–	–	–	1.4842	–
–	CrNi 25 20	–	SCS 18	S31400	–	–	–	–	–	–	1.4843	–
310 S	X 12 CrNi 25 21	310 S 24	SUS 310 S	S31008	X 8 CrNi 25 21	Z 12 CN 25.20	X 6 CrNi 25 20	2361	–	–	1.4845	ATI 310S™
HK	X 40 CrNiSi 25 20	310 C 40	SCH 21	J94204	–	–	GX 40 CrNi 26 20	–	–	–	1.4848	–
–	GX 40 NiCrSiNb 38-18	–	–	–	3072.76	–	–	–	–	–	1.4849	–
–	GX 10 NiCrNb 32 20	–	–	J95151	–	–	–	–	–	–	1.4859	–
330	X 12 NiCrSi 35 16	NA 17	SUH 330	N08330	X 12 NiCrSi 35 1 6	Z 12 NCS 37.18	–	–	–	–	1.4864	–
–	X40NiCrSi38-18	330 C 40	SCH15/SCH16	J94605	330C11/330C40/331C40	–	GX50NiCr39-19	–	–	–	1.4865	–
–	GX 50 CrNi 30-30	–	–	N08801	–	Z5NCT3220	–	–	–	–	1.4868	–
B163	X 10 NiCrAlTi 32 20	NA 15	NCF800(TP)	–	NA15(H)	Z10NC32.21	–	–	B163	–	1.4876	B163
–	X 6 NiCrNbCe 32 27	–	–	–	X 6 NiCrNbCe 32-27	–	–	–	–	–	1.4877	–
–	X 12 NiCrSi 35 19	–	–	N08830	X1 0 NiCrSi 35 19	–	–	–	–	–	1.4886	330
–	X 10 NiCrSiNb 35 22	–	–	–	X10NiCrSiNb35-22	–	–	–	–	–	1.4887	–
–	X 10 CrMoV 9 1	–	–	S59180	X 10 CrMoV 9-1	–	–	–	–	–	1.4903	–
–	X 20 CrMoV 12 1	–	–	–	X 20 CrMoV 11-1	–	X 20 CrMoV 12 01 KW	2317	–	–	1.4922	–
–	GX 22 CrMoV 12 1	–	–	–	G-X 22 CrMoV 12 1	GX23CrMoV12-1	G X 23 CrMoV 12-1	–	–	–	1.4931	–
422	X 20 CrMoWV 12 1	–	SUH 616	S42200	–	–	X 22 CrMoWV 12 1	–	–	–	1.4935	–
661	X 12 CrCoNi 21 20	–	SUH 661	R30155	–	–	–	–	–	–	1.4971	–
R30155	X 12 CrCoNiMoWNb 21 20 20	–	–	R30155	X 12 CrCoNiMoWNb 21 20 20	Z 12 CKNDWNb 21.20.20	N-155	–	–	–	1.4974	–
–	X 40 CoCrNi 20 20	–	–	–	–	Z 42 CNKDWNb	–	–	–	–	1.4977	–
403	X 6 Cr 13	403 S 17	SUS 403	S 40300	X 6 Cr 13	Z 6 C 13	X 6 Cr 13	2301	–	A240	1.4000	ATI 410S™
439	X 6 CrTi 17	–	SUS 430 LX	S 43035	X 8 CrTi 1 7	Z 8 CT 1 7	X 6 CrTi 17	–	–	–	1.4510	430 Ti
–	X 22 CrMoV 1 -1 = ST12T	–	–	–	–	–	–	–	–	A437-76 Grade B4B	–	ATI FV448™
409 Cb	–	–	–	–	–	–	–	–	–	–	–	ATI 409Cb™
436 S	–	–	–	–	–	–	–	–	–	–	–	ATI 436S™
439 HP	–	–	–	S43035	–	–	–	–	–	–	–	ATI 439 HP™
441 HP	–	–	–	–	–	–	–	–	–	–	–	ATI 441 HP™
–	–	–	–	S44735	–	–	–	–	–	A240	–	AL 29-4C®
–	–	–	–	–	–	–	–	–	–	B625	–	ATI E-BRITE®
403Cb	–	–	–	–	–	–	–	–	–	–	–	T656
420 modified	–	–	–	–	–	–	–	–	–	–	–	Stavax ESR
–	–	–	–	–	–	–	–	–	–	–	–	420HC
–	–	–	–	–	–	–	–	–	–	–	–	CPM 154
–	–	–	–	–	–	–	–	–	–	–	–	CPM® S30V®
–	–	–	–	–	–	–	–	–	–	–	–	CPM® S35VN®
420 V	–	–	–	–	–	–	–	–	–	–	–	CPM® S90V®
–	–	–	–	–	–	–	–	–	–	–	–	M390
422	–	–	–	S42200	–	–	–	–	–	–	–	616

P6

Workpiece Materials Listing • Steel • P6

P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels *Tensile Strength RM (MPa)*: 900–1350*
Hardness (HB): 350–450 (HRC): 35–48

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	17-7 PH	301 S 81	SUS 631	S17700	X 7 CrNiAl 17-7	X7CrNiAl17-7; Z9CNA17-07	X 7 CrNiAl 17-7	2388	–	A693	1.4564	ATI 17-7™
–	GX 22 CrNi 17	ANC 2	–	J91803	–	Z 20 CN 17.2 M	–	–	–	CB30	1.4059	–
–	GX 30 CrSi 6	–	–	–	–	–	–	–	–	–	1.4710	–
–	GX 4 CrNi 13 4	–	–	–	GX 4 CrNi 13-4	GX 4 CrNi 13-4	GX 4 CrNi 13-4	–	–	–	1.4317	–
–	GX 40 CrSi 17	–	–	–	–	–	GX 35 Cr 17	–	–	–	1.4740	–
–	GX 40 CrSi 24	–	SCH 1	–	–	–	GX 35 Cr 13	–	–	–	1.4745	–
–	GX 40 CrSi 28	452 C 11	SCH 2	J92605	–	–	GX 35 Cr 28	–	–	CC50	1.4776	–
–	X 105 CrCoMo 18 2	–	–	–	–	–	–	–	–	–	1.4528	N690
440 C	X 105CrMo 17	–	SUS 440C	S44004	X 105 CrMo 17	Z 100 CD 17	X 105 CrMo 17	–	–	–	1.4125	ATI 440C™
–	X 110 CrMoV 15	–	SUS 430 LX	–	–	Z 4 CN b 17	X 6 CrNb 17	–	–	–	1.4111	–
5718.9	X 12 CrNiMo 12	S.151	–	S64152	–	Z12CNDV12	–	–	–	–	1.4939	ATI Jethete™ M152
–	X 12 CrNiMoV 12 3	–	–	–	X 12 CrNiMoV 12-3	X 12 CrNiMoV 12-3	–	–	–	–	1.4938	T522
–	X 15 TN	–	–	–	420S25	Z40CDV16-02	X40CrMoVN16-2	–	–	F899	1.4123	X 15 TN
15-5 PH	X 15 U 5 W	–	–	S15500	–	Z6CNU15.05	–	–	–	A564/ A693/A705	1.4545	ATI 15-5™
–	X 19 CrMoNbVN 11 1	–	–	–	–	Z 21 CDNbV 11	–	–	–	–	1.4913	Jethete X19
431	X 19 CrNi 17 2	431 S 29	SUS 431	S 43100	X 19 CrNi 17 2	Z 15 CN 16.02	X 16 CrNi 16	2321	–	–	1.4057	431 (HT)
–	X 20 CrMo 17 1	–	–	–	–	–	–	–	–	–	1.4115	B17MoFe
420F Mod	X 22 CrMoNiS 13 1	–	–	–	–	–	–	–	–	–	1.4121	Bioline 4C27A
–	X 22 CrMoV 12 1	762	–	–	X 22 CrMoV 12-1	Z 21 CDV 12	X 22 CrMoV 12 1	–	–	–	1.4923	Jethete X20
420	X 29 CrS 13	416 S 37	SUS 416	–	X 29 CrS 13	Z29CF13	X 29 CrS 13	–	–	–	1.4029	–
–	X 3 CrNiCuTi 12 9	–	–	S45500	–	–	X 6 CrNiNb 18 11	–	–	–	1.4543	ATI 455™
13-8 PH	X 3 CrNiMoAl 13 8 2	–	–	S13800	–	Z4 CNDAT 13 09	–	–	–	–	1.4534	ATI 13-8Mo™
420 F	X 30 Cr 13	420 S 45	SUS420J2	S42020	X 30 Cr 13	Z 30 C 13	X 30 Cr 13	2304	–	CA40	1.4028	–
–	X 30CrMoN 15 1	–	–	–	420S45	Z33C13	–	2304	–	–	1.4108	N360
–	X 35 CrMo 17	–	–	–	X 39 CrMo 17 1	X39CrMo17-1	X 35 CrMo 17	–	–	–	1.4122	–
–	X 4 CrNiCuNb 16 4	–	–	J92200	–	Z 4 CNUNb 16.4 M	–	–	–	–	1.4540	–
415 M	X 4 CrNiMo 16 5 1	–	–	–	X 4 CrNiMo 16 5 1	Z 6 CND 16.05.01	–	2387	–	–	1.4418	APX4
–	X 40 CrNi 25 21	310 S 98	SCH 13	–	–	–	–	–	–	–	1.4846	–
–	X 40 CrSiMo 10 2	–	SUH3	–	X 40 CrSiMo 10-2	Z40CSD10	–	–	–	–	1.4731	–
420	X 45 Cr 13	(420 S45)	–	–	X 45 Cr 13	Z 40 C 14	X 40 Cr 14	–	–	–	1.4034	–
–	X 45 CrMoV 15	–	–	–	X 50 CrMoV 15	Z 50 CD 15	X 50 CrMo V 15	–	–	–	1.4116	UGI 4116N
HNV3	X 45 CrSi 9 3	–	SUH1	–	401S45	Z45CS9	X45CrSi8	–	HNV3	–	1.4718	–
HNV 2	X 45 SiCr 4	–	–	S64006	–	–	–	–	–	–	1.4704	–
CA 6-NM	X 5 CrNi 134	425 C 11	SCS 5	J91540	X 3 CrNiMo 13 4	Z 4 CDN 13.4	X 6 CrNi 13 04	2385	–	–	1.4313	–
630	X 5 CrNiCuNb 16 4	–	SUS 630	–	X 5 CrNiCuNb 16-4	Z6CNU17.04	–	–	–	CB7Cu	1.4542	UGIMA® 4542
17-4 PH	X 5 CrNiCuNb 17 4 4	–	SUS 630	S17400	X 5 CrNiCuNb 16-4	X5CrNiCuNb16.4	–	–	–	A693	1.4548	–
–	X 5 CrNiMoCuNb 14 5	–	–	–	X 5 CrNiMoCuNb 14-5	X 5 CrNiMoCuNb 14-5	X 5 CrNiMoCuNb 14-5	–	–	–	1.4594	–
–	X 50 CoCrNi 20 20	–	–	–	–	–	–	–	–	–	1.4978	–
EV8	X 53 CrMnNiN 2 9	349 S 54	SUH35/SUH36	S63008	349S54	Z52CMN21.09	X53CrMnNiN21-9	–	EV8	–	1.4871	–
–	X 55 CrMo 14	–	–	–	–	Z 50 CD 13	–	–	–	–	1.4110	–
–	X 60 CrMnMoVNbN 21 10	–	–	–	–	Z 60 CMDVNb 21-10 Az	–	–	–	–	1.4785	–
440 A	X 65 CrMo 14	–	SUS 440A	S44002	X 70 CrMo 15	Z 70 CD 14	–	–	–	–	1.4109	ATI 440A™
–	X 7 CrNiAl 17 7	301 S 81	SUS 631	S17700	X 7 CrNiAl 17-7	X7CrNiAl17-7;Z9CNA17-07	X 7 CrNiAl 17-7	2388	–	A693	1.4568	–
632	X 7 CrNiMoAl 15 7	–	–	S15700	–	–	–	–	–	–	1.4574	PH 15-7 Mo®
–	X 8 CrCoNiMo 10 6	Z 9 CKD 11	–	–	S152	Z10CKD10	–	–	–	–	1.4911	ATI FV535™
15-7 PH	X 8 CrNiMoAl 15 7 2	–	–	S15700	X 8 CrNiMoAl 15-7-2	Z8CNDA15.07	X 8 CrNiMoAl 15-7-2	–	–	A693	1.4532	ATI 15-7™
HNV 6	X 80 CrNiSi 20	443 S 65	SUH 4	S65006	X 80 CrNiSi 20	Z 80 CSN 20.02	X 80 CrSiNi 20	–	–	–	1.4747	–
–	X 85 CrMoV 18 2	–	–	–	X 85 CrMoV 18 2	Z 85 CDMV 18.02	X 85 CrMoV 19 3	–	–	–	1.4748	–
440 B	X 90 CrMoV 18	409 S 1 9	SUS 440 B	S44003	X 90 CrMoV 18	Z 3 CT 1 2	X 6 Cr Ti 1 2	–	–	–	1.4112	–
–	X45CrNiW18-9	331 S 40	SUH31	–	X 45 CrNiW 18 9	Z35CNWS14.14	X45CrNiW18-9	–	–	–	1.4873	–

NOTE: For legend, see page Y217.

M1 Workpiece Materials Listing • Stainless Steel • M1

M1 Austenitic Stainless Steel *Tensile Strength RM (MPa)*: <600* *Hardness (HB): 130–200*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
CF-8	X 6 CrNi 18 9	304 C 15	SCS 13	–	X 2 CrNiN 18 7	Z 6 CN 18.10 M	G X 5 CrNi 19-10	2333	–	CF8	1.4308	CF-8
–	X 2 NiCr 18 16	–	–	–	–	Z 3 CDT 18-02	–	–	–	–	1.4321	–
–	X 1 CrNi 25 21	–	–	–	X 1 CrNi 25 21	X1CrNi25-21	X 1 CrNi 25-21	–	–	–	1.4335	Uranus 65
610	X1CrNiSi 18-15-4	–	–	S30600	X 1 CrNiSi 18-15-4	Z1 CNS 17.5	X 1 CrNiSi 18-15-4	–	–	A240-97A	1.4361	ATI 610™
CF-8M	X 6 CrNiMo 18 10	316 C 16	SCS 14	J92900	GX 5 CrNiMo 19-11-2	GX5CrNiMo 19-11-2	G X 5 CrNiMo 19-11-2	2343	–	–	1.4408	–
–	GX 2 CrNiMo 19 11 2	–	–	–	GX 2 CrNiMo 19-11-2	GX 2 CrNiMo 19-11-2	GX 2 CrNiMo 19-11-2	–	–	–	1.4409	–
–	ER0 4412 AHMo	–	–	J92900	GX 5 CrNiMo19-11-3	GX 5 CrNiMo 19-11-3	–	–	–	A743CF8M	1.4412	–
–	ER0 4416 AHCRMo	–	–	–	GX 2 NiCrMoN 25-20-5	GX2NiCrMoN 25-20-5	–	–	–	–	1.4416	–
–	GX 6 CrNiMo 18 12	317 C 12	–	–	–	–	–	–	–	–	1.4437	–
–	X 2 CrNiMo 18 16 5	–	–	S31780	–	–	–	–	–	–	1.4440	–
–	GX 2 CrNiMoN 17 1 3 4	–	–	–	GX 2 CrNiMoN 17 1 3 4	–	–	–	–	–	1.4446	–
–	GX 6 CrNiMo 17 13	317 C 16	–	J93000	–	–	–	–	–	CG8M	1.4448	–
–	GX 2 NiCrMo 28 20 2	–	–	–	GX 2 NiCrMo 28-20-2	GX 2 NiCrMo 28-20-2	GX 2 NiCrMo 28-20-2	–	–	–	1.4458	–
–	GX 4 NiCrCuMo 30 20 4	–	–	–	GX 4 NiCrCuMo 30-20-4	GX 4 NiCrCuMo 30-20-4	–	–	–	–	1.4527	–
–	GX 5 CrNiNb 18 9	347 C 17	SCS 21	J92710	GX 5 CrNiNb 19-11	Z 4 CNNb 19.10 M	G-X 5 CrNiNb 19-11	–	–	–	1.4552	–
–	GX 2 CrNiMoCuN 20 18 6	–	–	–	GX 2 CrNiMoCuN 20-18-6	GX 2 CrNiMoCuN 20-18-6	–	–	–	–	1.4557	–
–	X 3 CrNiCuMo 17 11 3 2	–	–	–	X 3 CrNiCuMo17 11 3 2	X3CrNiCuMo 17-11-3-2	X 3 CrNiCuMo 17-11-3-2	–	–	–	1.4578	–
–	GX 5 CrNiMoNb 18 10	318 C 17	SCS 22	–	GX 5 CrNiMoNb 19-11-2	Z 4 CNDNb 18.12 M	GX 6 CRNOMONB 20 11	–	–	–	1.4581	–
–	GX 2 NiCrMoCu 25 2 0 5	–	–	–	GX 2 NiCrMoCu 25-20-5	GX 2 NiCrMoCu 25-20-5	–	–	–	–	1.4584	–
–	GX 7 CrNiMoCuNb 18 18	–	–	J94651	–	–	–	–	–	–	1.4585	–
–	GX 2 NiCrMoCuN 29 25 5	–	–	–	GX 2 NiCrMoCuN 29-25-5	GX 2 NiCrMoCuN 29-25-5	–	–	–	–	1.4587	–
–	GX 2 NiCrMoCuN 25 20 6	–	–	–	GX 2 NiCrMoCuN 25-20-6	GX 2 NiCrMoCuN 25-20-6	–	–	–	–	1.4588	–
–	GX 25 CrNiSi 18 9	302 C 35	–	J92602	–	–	G X 16 CrNi 20 10	–	–	CF20	1.4825	–
–	GX 40 CrNiSi 22 9	–	SCH 12	J92603	–	–	–	–	–	–	1.4826	–
–	GX 50 CrNiNb 25 22	–	–	–	–	–	–	–	–	–	1.4836	–
–	GX 40 CrNiSi 25 12	309 C 30	SCS 17	J93503	–	–	GX 35 CrNi 25 12	–	–	CE30	1.4837	–
334	X 8 CrNiAlTi 20 20	–	–	S33400	–	–	–	–	–	–	1.4847	ATI 334™
–	GX 40 NiCrSiNb 38 18	–	–	N08004	–	–	–	–	–	–	1.4849	–
–	GX 40 NiCrSiNb 35 25	–	–	–	–	–	–	–	–	–	1.4852	–
–	GX 40 NiCrSi 35 25	–	–	J95705	–	–	GX 50 NiCr 35 25	–	–	–	1.4857	–
105 MA	BGH 4892	–	–	–	–	–	–	–	–	–	1.4892	–
–	X 3 CrNi 18 11	–	–	–	–	–	X 2 CrNiN 18 11	–	–	–	1.4949	–
–	X 2 CrNiMo 19 12	316 S 93	–	S31683	x 2 CrNiMo 19 13 03 KE	Z 2 CND 19-12-03	–	–	–	–	1.4430	–
–	GX 7 NiCrMoCuNb 25 20	–	SCS 23	J95150	10.204.3.1B	Z 3 NCDU 25.20 M	GX 5 NiCrCuMo 29 21	–	–	–	1.4500	–
–	X 3 CrNiCu 19 9 2	–	–	–	S 124 M	PHYHQ 4560	304 RH1	–	–	–	1.4560	ACX276
–	–	–	–	S63198	–	–	–	–	19-9 DL	–	–	19-9 DL
–	X 2 CrNiMoN 17 13 3	–	–	–	–	Z 2 CND 17.13	X 2 CrNiMoN 17 13 3	–	–	–	–	–
332	–	–	–	N08800	–	–	–	–	–	–	–	ATI 332™
–	–	–	–	N08367	–	–	–	–	–	–	–	AL-6XN®
611	–	–	–	S30601	–	–	–	–	–	A240-97A	–	ATI 611™

M2 Workpiece Materials Listing • Stainless Steel • M2

M2 High-Strength Austenitic Stainless and Cast Stainless Steels *Tensile Strength RM (MPa)*: 600–800*
Hardness (HB): 150–230 (HRC): <25

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
304 H	X 5 CrNi 18 10	304 S 15	SUS 304	S30409	X 6 CrNi 18 10 KD	Z 6 CN 18.09	X 5 CrNi 18 10	2332	–	–	1.4301	–
–	X 5 CrNi 19 9	308 S 96	–	S30888	X 6CrNi 20 10 KE	–	–	–	–	–	1.4302	–
305	X 4 CrNi 18 12	305 S 19	SUS 305	S30500	X 4 CrNi18 12 KD	Z 5 CN 18.12	X 4 CrNi 19 10	–	–	–	1.4303	–
303	X 10 CrNiS 18 9	303 S 21	SUS 303	S30300	X 10 CrNiS 18 9	Z 10 CNF 18.09	X 10 CrNiS 18 09	2346	–	–	1.4305	ATI 303™
304 L	X 2 CrNi 19 11	304 C 12	SUS 304L	S30403	X 3 CrNi18 10 KD	Z 2 CN 18.09	GX 2 CrNi 19 10	2352	–	CF3	1.4306	ATI 304L™
304 L	X 2 CrNi 18 9	304 S 11	SUS 304L	–	X 2 CrNi 18 9	CLC18.9.L	X 2 CrNi 18-9	–	–	–	1.4307	–
–	GX 2 CrNi 19 11	304 C 12	–	J92500	GX2CrNi19-11	GX2CrNi19-11	GX2CrNi19-11	2352	–	CF3	1.4309	–
304 LN	X 2 CrNiN 18 10	304 S 62	SUS 304 LN	S30453	X 2 CrNiN 18 10	Z 8 CN 18.12	X 8 CrNi 19 10	2371	–	–	1.4311	–
305	GX 10 CrNi 18 8	302 C 25	SCS 12	–	–	Z 10 CN 18.9 M	–	–	–	–	1.4312	ATI 305™
308 L	X 2 CrNi 19 9	308 S 92	SUS Y 308L	S30883	X 2 CrNi 20 10 KE	Z 2 CN 20.10	–	–	–	–	1.4316	–
–	X 2 CrNiN 18 7	–	–	–	X 2 CrNiN 18-7	18-7L	18-7L	–	–	–	1.4318	–
302	X 10 CrNi 18 9	302 S 26	SUS 302	S20200	302S31	Z10CN18-09	X 10 CrNi 18 09	2330	–	–	1.4319	ATI 302™
301	X 10 CrNi 18 9	302 S 26	–	J92501	X 10 CrNi 18 9	–	–	–	–	–	1.4324	–
–	X 10 CrNi 30 9	312 S 94	–	–	X 12 CrNi 30 09 KE	Z 10 CN 31-10	–	–	–	–	1.4337	–
–	X 3 CrNi 13 4	–	–	S41086	X 3 CrNi 14 04 KE	–	–	–	–	–	1.4351	410NiMo
202	X 3CrMnNiN 18 8 7	–	–	–	284S16	Z8CMN18-08-05	–	–	–	–	1.4371	–
201	X 12 CrMnNiN 17 7 5	284 S 16	SUS 201	–	X 12 CrMnNiN 17-7-5	X 12 CrMnNiN17-7-5	X 12 CrMnNiN 17-7-5	–	–	–	1.4372	ACX060
316	X 5 CrNiMo 17 12 2	316 S 16	SUS 316	S31600	X6 CrNiMo 17 12 2 KD	Z 6 CND 17.11	X 5 CrNiMo 17 12	2347	–	–	1.4401	ATI 316™
316L	X 2 CrNiMo 17 13 2	316 S 12	SUS 316 L	S31603	GX 3 CrNiMo 17 12 2 KD	Z 3 CND 19.10 M	GX 2 CrNiMo 19 11	2348	–	–	1.4404	ATI 316L™
316 LN	X 2 CrNiMoN 17 12 2	316 S 61	SUS 316 LN	S31653	X 3 CrNiMoN 17 12 2	Z 2 CND 17.12 Az	X 2 CrNiMoN 17 12	2353	–	–	1.4406	ATI 316LN™
–	X 5 CrNiMo 13 4	–	–	J91550	–	Z 6 CND 16.05.01	–	–	–	–	1.4407	–
–	X12CrNiMoS18-11	–	–	–	–	Z3CNDF17-13	–	–	–	–	1.4427	Chronifer® Special KL
316L	X 2 CrNiMo 17 12 3	316 S 13	SUS 316L	–	X 2 CrNiMo 17 12 2	Z 3 CND 17-13-30	X 2 CrNiMo 17-12-3	2348/2353/2354	–	–	1.4432	–
–	X 2 CrNiMoN 18 12 4	–	–	–	317 LN	CLC18.12.4.LN	X2CrNiMoN1812-4	–	–	–	1.4434	–
316 L	X 2 CrNiMo 18 14 3	316 S 11	SCS 16	S31603	X 2 CrNiMo 18 16	Z 2 CND 17.13	X 2 CrNiMo 17 13	2353	–	–	1.4435	–
316	X 5 CrNiMo 17 1 3 3	316 S 16	SUS 316	S31600	X6 CrNiMo 18 13 3 KD	Z 6 CND 17.12	X 5 CrNiMo 17 13	2343	–	–	1.4436	–
317 L	X 2 CrNiMo 18 16 4	317 S 12	SUS 317 L	S31703	X 3 CrNiMo 18 16 4	Z 2 CND 19.15	X 2 CrNiMo 18 15	2367	–	–	1.4438	ATI 317L™
–	X 2 CrNiMoN 17 13 5	–	–	–	X 3 CrNiMo 17 13 5	Z 3 CND 18.14-05 AZ	–	–	–	–	1.4439	–
–	X 2 CrNiMo 18 15 4	–	–	S31675	–	X 3 CrNiMoN 19-14	–	–	–	–	1.4442	–
317	X 5 CrNiMo 17 13	317 S 16	SUS 317	S31700	–	–	X 5 CrNiMo 18 15	–	–	–	1.4449	AL 317L+E55
–	X 5 CrNiCuNb 16 4	–	–	–	–	Z7CNU16.04	–	–	–	–	1.4452	–
–	–	–	–	S21904	–	–	–	–	–	A666	1.4454	ATI 219
–	X 2 CrNiMnMoN 20 16	–	–	–	X 2 CrNiMnMoN 20 15 08 KE	–	–	–	–	–	1.4455	–
–	X 1 CrNiMoN 25 2 5 2	–	–	S31050	–	–	–	–	–	–	1.4465	2RE69

(continued)

M2 Workpiece Materials Listing • Stainless Steel • M2 *(continued)*

M2 High-Strength Austenitic Stainless and Cast Stainless Steels *Tensile Strength RM (MPa)*: 600–800*
Hardness (HB): 150–230 (HRC): <25

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 1 CrNiMoN 25 22 2	–	–	–	725 LN	DMV 25.22.2	X 1 CrNiMoN 25-22-2	–	–	–	1.4466	–
–	X 1 NiCrMoCuN 25 20 6	–	–	–	–	–	–	–	–	–	1.4529	Uranus B26 6Mo
–	GX 2 NiCrMoCuN 25 20	–	–	J94650	GX 2 CrNiMoCuN 25-20-6	–	–	–	–	–	1.4536	–
–	X 1 CrNiMoCuN 25 25 5	–	–	–	X 1 CrNiMoCuN 25-25-5	X 1 CrNiMoCuN 25-25-5	X 1 CrNiMoCuN 25-25-5	–	–	–	1.4537	–
321	X 6 CrNiTi 18 10	321 S 12	SUS 321	S32100	X 6 CrNiTi 18 10	Z 6 CNT 18.10	X 6 CrNiTi 18 11	2337	–	–	1.4541	ATI 321™
321	A 700	304 S 31	–	J92630	–	Z 10 CNT 18 11	X 6 CrNiTi 18 11	–	–	–	1.4544	–
–	X 1 CrNiMoCuN 20 18 7	X 1 CrNiMoCuN 20 18 7	–	S31254	X 1 CrNiMoCuN 20-18-7	X 1 CrNiMoCuN 20-18-7	X 1 CrNiMoCuN 20-18-7	–	–	–	1.4547	Uranus B25 6Mo
–	X 2 NiCrAlTi 32 20	–	NCF 800 TB	–	–	–	–	–	–	–	1.4558	–
–	X 1 NiCrMoCuN 31 27 4	–	–	–	X 1 NiCrMoCu 31 27 4	X 1 NiCrMoCuN 31 -27-4	X 1 NiCrMoCuN 31 -27-4	2584	–	–	1.4563	–
–	X 3 CrNiCu 18 9 4	394 S 17	SUS XM7	–	X3CrNiCu18-9-4	304CU	304K	–	–	–	1.4567	–
316 Ti	X 6 CrNiMoTi 17 12 2	320 S 31	SUS 316Ti	–	X 6 CrNiMoTi 17 12 2	Z 6 CNDT 17.12	X 6 CrNiMoTi 17 12	2350	–	–	1.4571	ATI 316Ti™
–	GX 5 CrNiMoNb 23 9	–	–	–	–	–	–	–	–	–	1.4572	–
316 Ti	X 10 CrNiMoTi 18 12	320 S 33	SUS 316Ti	S31635	–	–	X 6 CrNiMoTi 17 13	–	–	–	1.4573	–
318	X 10 CrNiMoNb 18 12	–	–	–	–	–	X 6 CrNiMoNb 17 13	–	–	–	1.4583	–
–	X 2 CrNiCu 19 10	–	–	–	X 2 CrNiCu 19-10	TX 304L	–	–	–	–	1.4650	–
–	X1CrNiMoCuN24-22-8	–	–	S32654	–	–	–	–	–	–	1.4652	654 SMO®
–	153 MA	–	–	S30415	X 6 CrNiSiNCe 19 10	–	–	–	–	–	1.4818	153 MA™
–	X 20 CrNiSi 25 4	–	–	S44635	X 15 CrNiSi 25 4	Z 20 CNS 25.04	X 20 CrNiSi 25 4	–	–	–	1.4821	–
309	X 15 CrNiSi 20 12	309 S 24	SUH 309	S30900	X 15 CrNiSi 20 12	Z 15 CNS 20.12	X 16 CrNiSi 25,20	–	–	–	1.4828	ATI 309™
309 S	X 7 CrNi 23 14	309 S 24	SUS 309 S	J93400	X 12 CrNi 23 13	Z 15 CN 24.13	X 6 CrNi 23 14	–	–	–	1.4833	–
–	353 MA	–	–	S35315	X 6 NiCrSiNCe 35-25	–	–	–	–	–	1.4854	353 MA®
–	X 8 NiCrSi 38 18	NA 17	–	N08330	–	Z 12 NCS 37.18	–	–	–	–	1.4862	–
–	X 33 CrNiMnN 23 8	–	–	–	X 33 CrNiMnN 23-8	X 33 CrNiMnN 23-8	–	–	–	–	1.4866	–
EV 12	X 55 CrMnNiN 20 8	–	–	S63012	X 55 CrMnNiN 20-8	Z 55 CMN 20.08 Az	–	–	–	–	1.4875	–
321	X 12 CrNiTi 18 9	321 S 20	SUS 321	S32100	X 10 CrNiTi 18 10	Z 6 CNT 18.12	X 6 CrNiTi 18.11	2337	–	–	1.4878	ACX315
EV 11	X 70 CrMnNiN 21 6	–	–	S63011	–	–	X 70 CrMnNiN 21 6	–	–	–	1.4881	–
–	X 50 CrMnNiNbN 21 9	–	–	–	X 50 CrMnNiNbN 21-9	Z 50 CMNNb 21.09	–	–	–	–	1.4882	–
–	X 7 CrNiNb 18 10	–	SUS347H	S34709	X7CrNiNb18-10	X7CrNiNb18-10	–	–	–	–	1.4912	–
316 H	X 6 CrNiMo 17 13	316 S 51	–	S31609	X 6 CrNiMo 17 12 2	Z 6 CND 17-13 B	–	–	–	–	1.4919	–
321 H	X 8 CrNiTi 18 10	–	–	–	X 6 CrNiTiB 18-10	Z 6 CNT 18-10 B	X 6 CrNiTiB 11	–	–	–	1.4941	–
A660	X 4 NiCrTi 25 15	HR251	SUH 660	S66286	–	Z 6 NCTDV 25.15 B	–	–	–	–	1.4943	Discaloy
–	X 6 CrNiWNb 16 16	–	–	–	–	–	–	–	–	–	1.4945	–
–	X 6 CrNi 18 11	304 S 51	–	S30480	X 6 CrNi 18 10	Z 6 CN 18-09	X 5 CrNi 18 10 KW	2333	–	–	1.4948	–
–	X 6 CrNi 25 20	–	–	–	310 H	–	–	–	–	–	1.4951	–
–	X 8 CrNiNb 16 13	347 S 51	–	–	–	–	–	–	–	–	1.4961	–
–	Esshete12 50	–	–	S21500	X 10 CrNiMoMnNbVB 15-10-1	X 10 CrNiMoMnNbVB 15-10-1	–	–	–	A213	1.4982	Esshete 1250
–	X 8 CrNiMoBNb 16 16	–	–	–	X 7 CrNiMoBNb 16-16	–	–	–	–	–	1.4986	–
301	X 12 CrNi 17 7	301 S 21	SUS 301	S30100	X 12 CrNi 17 7	Z 12 CN 17.07	X 12 CrNi 17 07	2331	–	–	1.4310	ATI 301™
–	GX 40 CrNi 27 4	–	–	J92615	–	–	GX 35 CrNi 28 05	–	–	–	1.4340	–
304	X 5 CrNi 18 9	304 S 31	SUS 304	S30400	1	Z6CN18.09	X5CrNi1810	2332/2333	–	A276	1.4350	ATI 304™
–	X 15 CrNiMn 18 8	307 S 98	–	–	X 15 CrNiMn 18 08 KE	Z 8 CNM 19-09-07	–	–	–	–	1.4370	–
S32750	GX 10 CrNiMo 18 9	–	SCS 14 A	S32750	X 2 CrNiMoN 25-7-4	Z 5 CND 20.10 M	X 2 CrNiMoN 25-7-4	–	–	–	1.4410	–
–	X 5 CrNiMo 18 11	315 S 16	–	–	–	–	–	2340	–	–	1.4420	–
347	X 6 CrNiNb 18 10	347 S 17	SUS 347	S34700	X 6 CrNiNb 18 10	Z 6 CNNb 18.10	X 6 CrNiNb 18 11	2338	–	–	1.4550	ATI 347™
316 Cb	X 6 CrNiMoNb 17 12 2	318 S 17	–	–	X 6 CrNiMoNb 17 12 2	Z 6 CNDNb 17.12	X 6 CrNiMoNb 17 12	–	–	–	1.4580	–
–	X 3 CrNiMoN 17 13	–	–	–	X 3 CrNiMoN 17-13-3	–	X 2 CrNiMoN 17 12	–	–	–	1.4910	–
–	X 6 CrNi 23 13	–	–	–	309 H	–	–	–	–	–	1.4950	–
A286	X 6 NiCrTiMoVB 25-15-2	286 S 31	–	S66286	X 6 NiCrTiMoVB 21-15-2	–	–	–	–	–	1.4980	Incoloy A 286
XM-19	–	–	–	S20910	–	–	–	–	–	F1314	–	ATI XM-19™
303 plus X	–	–	–	S30310	–	–	–	–	–	XM-5	–	303 plus X
–	X 2 CrNi 18 13 3	–	–	–	–	–	–	–	–	–	–	Staybrite® 4435NCu
218	–	–	–	S21800	–	–	–	–	–	–	–	Nitronic 60
201LN	–	–	–	S20153	–	–	–	–	–	–	–	ATI 201LN™-MIL
–	X 2 CrNiMoN 17 13 3	–	–	–	–	Z 2 CND 17.13	X 2 CrNiMoN 17 13 3	–	–	–	–	AL 316LXN
–	–	–	–	S31675	–	–	–	–	–	F1586	–	ATI REX 734™
–	–	–	–	–	–	–	–	–	–	–	–	P558
–	X 1 NiCrMoCu 22 24 6	–	–	–	–	–	–	–	–	–	–	Uranus B66
–	–	–	–	–	–	–	–	–	–	–	–	ATI Datalloy 2®
–	–	–	–	–	–	–	–	–	–	–	–	ATI Staballoy® AG17®
–	–	–	–	–	–	–	–	–	–	–	–	P530
–	X 1 NiCrMoCu 31 27 4	–	–	N08028	–	–	–	–	–	–	–	Uranus B28
–	–	–	–	–	–	–	–	–	–	–	–	P750
–	–	–	–	–	–	–	–	–	–	–	–	P750-I
–	X 4 CrNiMoN 21 9 4	–	–	–	–	–	–	–	–	F1586	–	M30NW
–	–	–	–	–	–	–	–	–	–	–	–	P550
–	–	–	–	–	–	–	–	–	–	–	–	P580
–	–	–	–	–	–	–	–	–	–	–	–	P650
–	–	–	–	–	–	–	–	–	–	–	–	ATI Datalloy HP™

NOTE: For legend, see page Y217.

M3 ■ Workpiece Materials Listing • Stainless Steel • M3

M3 Duplex Stainless Steel *Tensile Strength RM (MPa)*: <800* *Hardness (HB): 135–275 (HRC): <30*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GX 120 CrMo 29 2	–	–	–	–	–	–	–	–	F30M	1.4138	PK324
–	X 2 CrMnNiN 21 5 1	–	–	S32101	–	–	–	–	–	–	1.4162	LDX2101
–	GX 6 CrNiN 26 7	–	–	–	GX 6 CrNiN 26-7	–	–	–	–	–	1.4347	–
S32304	X 2 CrNiN 23 4	–	–	S32304	SAF 2304	35 N	X 2 CrNiN 23-4	2327	–	A240	1.4362	ATI 2304™
S31500	X 2 CrNiMoSi 19 5	–	–	S39215	GX 2 CrNiMoN 25-7-3	GX 2 CrNiMoN 25-7-3	–	2376	–	–	1.4417	–
S31803	X 2 CrNiMoN 22 5 3	318 S 13	SUS 329J 3L	S31803, S32205	X 2 CrNiMoN 22 5 3	Z 3 CND 22.05 AZ	X 2 CrNiMoN 22-5-3	2377	F51	2205	1.4462	ATI 2205™
–	GX 6 CrNiMo 24 8 2	–	–	–	–	–	–	–	–	–	1.4463	–
–	GX 2 CrNiMoN 25 6 3	–	–	–	GX 2 CrNiMoN 25-6-3	GX 2 CrNiMoN 25-6-3	–	–	–	–	1.4468	–
–	GX 2 CrNiMoN 26 7 4	–	–	J93404	GX 2 CrNiMoN 26-7-4	GX 2 CrNiMoN 26-7-4	GX 2 CrNiMoN 26-7-4	–	–	–	1.4469	–
–	X 2 CrNiMoCuWN 25 7 4	–	–	S32760	X 2 CrNiMoCuWN 25 7 4	X 2 CrNiMoCuWN 25-7-4	X 2 CrNiMoCuWN 25-7-4	–	–	F 55	1.4501	F55
2507	X 2 CrNiMoCuN 25 6 3	–	–	–	X 2 CrNiMoCuN 25-6-3	DMV25.7Cu	329SK	–	–	–	1.4507	Uranus 52N+
–	GX 2 CrNiMoCuWN 25 8 4	–	–	–	X 6 CrNiCu 18 10 4 KD	Z 4 CNUD 17-11-03 FF	–	–	–	–	1.4508	–
–	GX 2 CrNiMoCuN 25 6 3 3	–	–	–	GX 2 CrNiMoCuN 25-6-3-3	GX 2 CrNiMoCuN 25-6-3-3	GX 2 CrNiMoCuN 25-6-3-3	–	–	–	1.4517	–
–	X 4 CrNiMoNb 25 7	–	SCS 22	–	–	–	–	–	–	–	1.4582	PK343
–	BGH 4593	–	–	–	GX 3 CrNiMoCuN 24 6 2 3	–	–	–	–	–	1.4593	Noridur®
329	X 4 CrNiMo 27 5 2	–	SUS 329 J1	S32900	X 3 CrNiMo 27 5 2	X 2 CrNiMo 25-7-3	X 3 CrNiMo 27-5-2	2324	–	A240	1.4460	10RE51
–	GX 2 CrNiMoN 22 5 3	–	–	–	GX 2 CrNiMoN 22-5-3	GX 2 CrNiMoN 22-5-3	GX 2 CrNiMoN 22-5-3	–	–	–	1.4470	–
S32550	–	–	–	S32550	–	–	–	–	–	–	–	Ferralium® alloy 255
–	–	–	–	S32003	–	–	–	–	–	–	–	ATI 2003®
–	–	–	–	S80211	–	–	–	–	–	–	–	ATI 2102™
–	–	–	–	S32550	–	–	–	–	–	–	–	ATI 255™
–	–	–	–	S34565	–	–	–	–	–	–	–	ATI 4565™
–	X 2 CrNiMoN 25 6 3	–	–	–	–	–	–	–	–	–	–	Uranus 47N+
–	–	–	–	–	–	–	F60	–	–	32760	–	Zeron® 100

Cast Iron

K1 ■ Workpiece Materials Listing • Cast Iron • K1

K1 Grey Cast Iron *Tensile Strength RM (MPa)*: 125–500* *Hardness (HB): 120–290 (HRC): <32*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GG-150HB	–	–	–	GJL-HB 170	–	–	–	–	–	0.6012	–
A48-25 B	GG-15	Grade 150	FC 150	–	GJL-150	FGL 150	G 15	0115-00	–	A 48 Class 25	0.6015	–
–	GG-170HB	–	–	N06985	GJL-HB 205	–	–	–	–	–	0.6017	–
–	GG-190HB	–	–	N06022	GJL-HB 230	–	–	–	–	–	0.6022	–
A48-35 B	GG-25	Grade 260	FC 250	–	GJL-250	FGL 250	G 25	0125-00	–	A 48 Class 35	0.6025	–
–	GG-26	–	FC260	–	–	–	G 26	0126-00	–	–	0.6026	–
–	GG-220HB	–	–	W06027	GJL-HB 250	FGL 250	–	–	–	–	0.6027	–
–	GG-240HB	–	–	–	GJL-HB 275	–	–	–	–	–	0.6032	–
A48-50 B	GG-35	Grade 350	FC 350	–	GJL-350	FGL 350	G 35	0135-00	–	A 48 Class 50	0.6035	–
–	GG-260HB	–	–	–	GJL-HB 275	–	–	–	–	–	0.6037	–
A48-20 B	GG-10	Grade 100	FC 100	–	GJL-100	FGL 100	G 10	0110-00	–	A 48 Class 20	0.6010	–
A48-30 B	GG-20	Grade 220	FC 200	W06020	GJL-200	FGL 200	G 20	0120-00	–	A 48 Class 30	0.6020	–
A48-45 B	GG-30	Grade 300	FC 300	–	GJL-300	FGL 300	G 30	0130-00	–	A 48 Class 45	0.6030	–
A48-55 B	GG-40	Grade 400	–	–	GJL-400	FGL 400	–	0140-00	–	A 48 Class 55	0.6040	–
A48-40	–	–	–	–	–	–	–	–	–	A 48 Class 40	–	–
A48-60	–	–	–	–	–	–	–	–	–	A 48 Class 60	–	–
–	–	–	–	–	–	–	–	–	G1800	A 159 G1800	–	–
–	–	–	–	–	–	–	–	–	G3000	A 159 G3000	–	–
–	–	–	–	–	–	–	–	–	G10H18	A 159 G3000	–	–
–	–	–	–	–	–	–	–	–	G11H18	A 159 G3000	–	–
–	–	–	–	–	–	–	–	–	G3500	A 159 G3500	–	–
–	–	–	–	–	–	–	–	–	G11H20	A 159 G3500	–	–
–	–	–	–	–	–	–	–	–	G4000	A 159 G4000	–	–
–	–	–	–	–	–	–	–	–	G13H19	A 159 G4000	–	–
–	–	–	–	–	–	–	–	–	G12H21	A 159 G4000	–	–
–	–	–	–	–	–	–	–	–	G9H12	A 159 G1800	–	–
–	GG-26-Cr	–	–	–	–	–	–	–	–	–	–	–
–	GG-25-Cr	–	–	–	–	–	–	–	–	–	–	–

K2 Workpiece Materials Listing • Cast Iron • K2

K2 Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI) *Tensile Strength RM (MPa)*: <600*
Hardness (HB): 130–260 (HRC): <28

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GGL-NiMn137	L-NiMn 13 7	FCA NiMn 13 7	F43000	GJLA-XNiMn 13-7	L-NM 13 7	–	–	–	–	0.6652	–
A 436 Type 1	GGL- NiCuCr1562	L-NiCuCr 15 6 2	FCA-NiCuCr 15 6 2	F41000	GJLA-XNiCuCr 15-6-2	L-NUC 15 6 2	–	–	–	–	0.6655	–
A 436 Type 1b	GGL-NiCuCr1563	L-NiCuCr 15 6 3	FCA-NiCuCr 15 6 3	F41001	GJLA-XNiCuCr 15-6-3	L-NUC 15 6 3	–	–	–	–	0.6656	–
A 436 Type 2b	GGL-NiCr203	L-NiCr 20 3	FCA-NiCr 20 3	F41003	GJLA-XNiCr 20-3	L-NC 20 3	–	–	–	–	0.6661	–
–	GGL-NiSiCr2053	L-NiSiCr 20 5 3	FCA-NiSiCr 20 5 3	–	GJLA-XNiSiCr 20-5-3	L-NSC 20 5 3	–	–	–	–	0.6667	–
A 436 Type 3	GGL- NiCr303	L-NiCr 30 3	FCA-NiCr 30 3	F41004	GJLA-XNiCr 30-3	L-NC 30 3	–	–	–	–	0.6676	–
–	GGG-35.3	–	–	–	GJS-350-22	–	–	0717-15	–	–	0.7033	–
–	GGG-40.3	SNG 370/17	FCD 370	–	GJS-400-18	FGS 370-17	GSO 42/15	0717-15	–	–	0.7043	–
–	GGG-45	–	FCD 450	–	–	–	–	–	–	–	0.7045	–
–	–	–	–	–	–	FGS450.10	–	–	–	–	0.7049	–
–	GGG-65	–	–	–	–	–	–	–	–	–	0.7065	–
–	GGG-NiMn137	S-NiMn 13 7	FCDA-NiMn 13 7	–	GJSA-XNiMn 13-7	S-Mn 13 7	–	0772-00	–	–	0.7652	–
–	GGG-NiCrNb202	S2W	FCDA-NiCrNb 20 2	–	GJSA-XNiCrNb 20-2	–	–	–	–	–	0.7659	–
A 439 Type D-2B	GGG-NiCr203	S-NiCr 20 3	FCDA-NiCr 20 3	F43001	GJSA-XNiCr 20-3	–	–	–	–	–	0.7661	–
–	GGG-NiSiCr2052	S-NiSiCr 20 5 2	FCDA-NiSiCr 20 5 2	–	GJSA-XNiSiCr 20-5-2	S-NSC 20 5 2	–	–	–	–	0.7665	–
A 571 Type D-2M	GGG-NiMn234	S-NiMn 23 4	FCDA-NiMn 23 4	–	GJSA-XNiMn 23-4	S-NM 23 4	–	–	–	–	0.7673	–
A 439 Type D-3	GGG-NiCr303	S-NiCr 30 3	FCDA-NiCr 30 3	F43003	GJSA-XNiCr 30-3	S-NC 30 3	–	–	–	–	0.7676	–
A 439 Type D-3A	GGG-NiCr301	S-NiCr 30 1	FCDA-NiCr 30 1	F43004	GJSA-XNiCr 30-1	S-NC 30 1	–	–	–	–	0.7677	–
–	GGG-NiSiCr3055	–	FCDA-NiSiCr 30 5 5	–	GJSA-XNiSiCr 30-5-5	–	–	–	–	–	0.7679	–
A 439 Type D-5	GGG-Ni35	S-Ni 35	FCDA-Ni 35	F43006	GJSA-XNi 35	S-N 35	–	–	–	–	0.7683	–
A 439 Type D-5A	GGG-NiCr353	S-NiCr 35 3	FCDA-NiCr 35 3	F43007	GJSA-XNiCr 35-3	S-NC 35 3	–	–	–	–	0.7685	–
–	GGG-NiSiCr3552	–	FCDA-NiSiCr 35 5 2	–	GJSA-XNiSiCr 35-5-2	FGS Ni35 Si 5 Cr2	–	–	–	–	0.7688	–
–	GTW-35-04	W 35-04	FCMW 330 class 1	–	GJMW-35-0-4	MB 35-7	W 35-04	–	–	–	0.8035	–
–	GTW-S-38-1 2	W 38-12	–	–	GJMW-360-12	MB 300-12	–	–	–	–	0.8038	–
–	GTW-45-07	W 45-07	FCMWP 440 class 3	–	GJMW-450-7	MB 450-7	GMB 45	–	–	–	0.8045	–
–	GTW-55	–	–	–	–	–	GMB 55	–	–	–	0.8055	–
–	GTW-65	–	–	–	–	–	GMB 65	–	–	–	0.8065	–
32510	GTS-35-10	B 340/12	FCMP 330	–	GJMB-350-10	MN 350-10	–	815	–	–	0.8135	–
40010	GTS-45-06	P 440/7	FCMP 440	–	GJMB-450-6	MN 450 - 6	P 45-06	852	–	–	0.8145	–
50005	GTS-55-04	P 510/4	FCMP 490	–	GJMB-550-4	MN 550-4	P 55-04	854	–	–	0.8155	–
70003	GTS-65-02	P 570/3	FCMP 540	–	GJMB-650-2	MN 650-3	P 65-02	0858-00, 0856-00	–	–	0.8165	–
90001	GTS-70-02	P 690/2	FCMP 690	–	GJMB-700-2	MN 700-2	P 70-02	0862-03; 0864-03	–	–	0.8170	–
–	GGV-30	–	–	–	GJV-300	–	–	–	–	–	0.9991	–
A 436 Type 2	GGL-NiCr202	L-NiCr 20 2	FCA-NiCr 20 2	F41002	GJLA-XNiCr 20-2	L-NC 20 2	–	0523-00	–	–	0.6660	–
A 436 Type 4	GGL- NiSiCr3055	L-NiSiCr 30 5 5	FCA-NiSiCr 30 5 5	F41005	GJLA-XNiSiCr 30-5-5	L-NSC 30 5 5	–	–	–	–	0.6680	–
60-40-18	GGG-40	SNG 420/12	FCD 400 class 1	F32800	GJS-400-15	FGS400-12	GS400-12	0717-02	60-40-18	60-40-18	0.7040	–
65-45-12	GGG-50	SNG 500/7	FCD 500	F33100	GJS-500-7	FGS 500-7	GS 500/7	0727-02	65-45-12	65-45-12	0.7050	–
–	GGG-60	SNG 600/3	FCD 600-3	–	GJS-600-3	–	GS 600/3	–	80-55-06	80-55-06	0.7060	–
100-70-03	GGG-70	SNG 700/2	FCD 700	F34800	GJS-700-2	FGS 700-2	GS 700-2	0737-01	100-70-03	100-70-03	0.7070	–
120-90-02	GGG-80	SNG 800/2	FCD 800	F36200	GJS-800-2	FGS 800-2	GS 800-2	–	120-90-02	120-90-02	0.7080	–
A 439 Type D-2	GGG-NiCr202	L-NiCuCr 20 2	FCDA-NiCr 20 2	–	GJSA-XNiCr 20-2	L-NC 20 2	–	0523-00	–	–	0.7660	–
A 439 Type D-2C	GGG-Ni22	S-Ni 22	FCDA-Ni 22	F43002	GJSA-XNi 22	S-N 22	–	–	–	–	0.7670	–
A 439 Type D-4	GGG-NiSiCr3053	S-NiSiCr 30 5 5	FCDA-NiSiCr 30 5 4	F43005	GJSA-XNiSiCr 30-5-3	S-NSC 30 5 5	–	–	–	–	0.7680	–
–	GTW-40-05	W 40-05	FCMW 370	–	GJMW-400-5	MB 400-5	GMB 40	–	–	–	0.8040	–
–	GGV-40	–	–	–	GJV-400	–	–	–	–	–	0.9990	–
80-55-06	–	–	–	F33800	–	FGS 350-22	–	0732-03	D5506	–	–	–
–	–	–	–	–	–	–	–	–	D4018	–	–	–
–	–	–	–	–	–	–	–	–	D400	–	–	–
–	–	–	–	–	–	–	–	–	D4512	–	–	–
–	–	–	–	–	–	–	–	–	D450	–	–	–
–	–	–	–	–	–	–	–	–	M3210	–	–	–
–	–	–	–	–	–	–	–	–	M4504	–	–	–
–	–	–	–	–	–	–	–	–	M5003	–	–	–
–	–	–	–	–	–	–	–	–	M5503	–	–	–
–	–	–	–	–	–	–	–	–	M7002	–	–	–
–	–	–	–	–	–	–	–	–	D7003	–	–	–
–	–	–	–	–	–	–	–	–	M8501	A 602 M8501	–	–
–	GGV-45	–	–	–	GJV-450	–	–	–	–	–	–	–
–	GGG-SiMo3.08	–	–	–	–	–	–	–	–	–	–	–
–	GGG-SiMo4.10	–	–	–	–	–	–	–	–	–	–	–
–	GGG-SiMo5.10	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	HPI C13 06
–	GGV-35	–	–	–	GJV-350	–	–	–	–	–	–	–
–	GGV-50	–	–	–	GJV-500	–	–	–	–	–	–	–

K3 Workpiece Materials Listing • Cast Iron • K3

K3 High-Strength Ductile Irons and Austempered Ductile Iron (ADI) *Tensile Strength RM (MPa)*: >600* *Hardness (HB): 180–350 (HRC): <43*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	–	–	–	–	–	–	–	–	–	A 897 125-80-10	–	–
–	–	–	–	–	–	–	–	–	–	A 897 150-100-7	–	–
–	–	–	–	–	–	–	–	–	–	A 897 175-125-4	–	–
–	–	–	–	–	–	–	–	–	–	A 897 200-150-1	–	–
–	–	–	–	–	–	–	–	–	–	A 897 230-185	–	–

NOTE: For legend, see page Y217.

N1 Workpiece Materials Listing • Non-Ferrous Metals • N1

N1 Wrought Aluminium

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
1080	Al99.8	–	1A	–	–	–	–	–	–	–	3.0128	–
1050	Al99.5	L 31	1B	–	–	A 59050 C	–	–	–	–	3.0255	–
–	SG-Al 99,5	–	–	–	–	–	–	–	–	–	3.0259	–
1070	Al99.7	–	–	–	–	–	4508	–	–	–	3.0275	–
3103	AlMn	–	N3	–	–	–	–	–	–	–	3.0515	–
3003	AlMnCu	–	–	–	–	–	–	–	–	–	3.0517	–
3005	AlMn1Mg0.5	–	–	–	–	–	–	–	–	–	3.0525	–
3004	AlMn1Mg1	–	–	–	–	–	–	–	–	–	3.0526	–
–	AlMgSiPb	–	–	–	–	–	–	–	–	–	3.0615	–
–	SG-Al 99,5Ti	–	–	–	–	–	–	–	–	–	3.0805	–
–	SG-Al 99,5 Ti	–	–	–	–	–	–	–	–	–	3.0805	–
2014	AlCuSiMn	–	H15	–	–	A-U4SG	3581	–	–	–	3.1255	–
2017	AlCuMg 1	–	–	–	AW-2017 A	A-U4G	3579	–	–	–	3.1325	–
2024	AlCuMg 2	–	L97	–	AW-2024	A-U4G1	–	–	–	–	3.1355	–
–	AlCuMgPb	–	–	–	–	–	–	–	–	–	3.1645	–
2011	AlCuBiPb	–	FC1	–	–	A-U5PbBi	6362	–	–	–	3.1655	–
6082	AlMgSi 1	–	H30	–	AW-6005 A	A-SGM0.7	3571	–	–	–	3.2315	–
6060	AlMgSi0.5	–	–	–	–	–	–	–	–	–	3.3206	–
6063	AlMgSi0.7	–	H9	–	–	A-GS	3569	–	–	–	3.3206	–
6463	EAlMgSi0.5	–	91E	–	–	–	–	–	–	–	3.3207	–
5005	AlMg 1	–	N41	–	AW-6082	A-G0.6	5764-66	–	–	–	3.3315	–
5050	–	–	–	–	–	–	–	–	–	–	3.3316	–
5052	AlMg2.5	–	2L56	–	–	A-G2.5C	4574	–	–	–	3.3523	–
5754	AlMg 3	–	N5	–	–	A-G3M	3575	–	–	–	3.3535	–
5454	AlMg2.5Mn	–	N51	–	–	A-G2.5MC	7789	–	–	–	3.3537	–
5086	AlMg4Mn	–	–	–	–	–	–	–	–	–	3.3545	–
–	SG-Al Mg 4,5 Mn Zr	–	–	–	–	–	–	–	–	–	3.3546	–
5083	AlMg4,5Mn	–	N8	–	–	A-G4.5MC	7790	–	–	–	3.3547	–
5056	AlMg5	–	N6	–	–	A-G5	3576	–	–	–	3.3549	–
–	AlMg 5	–	–	–	–	–	–	–	–	–	3.3555	–
7050	AlZnMgCu0,5	L 86	–	–	–	AZ 4 GU/9051	811-04	–	–	–	3.4144	–
7020	AlZn4.5Mg1	–	H17	–	–	A-Z5G	–	–	–	–	3.4335	–
7022	AlZnMgCu0.5	–	–	–	–	–	–	–	–	–	3.4345	–
–	AlZn5,5MgCu	–	–	–	–	–	–	–	–	–	3.4365	–
7075	AlZnMgCu 1.5	–	DTD5074	A97075	AL-P7075	A-Z5GU	3735	–	7075	–	3.4365	–
1000	Al99.5H	L31	–	–	–	A59050C	–	–	–	–	3.0250	–
–	Al99.8	–	–	–	–	–	–	–	–	–	3.0280	–
–	AlMg3Mn	–	–	–	–	–	–	–	–	–	–	–
2025	–	–	A 2025 FD	A92025	–	–	–	–	2025	B 247 2025	–	–
1100	–	–	–	–	–	–	–	–	–	–	–	–
3105	–	–	–	–	–	–	–	–	–	–	–	–
5657	AlMg0.8Si	–	–	–	–	–	–	–	–	–	–	–
6070	–	–	–	–	–	–	–	–	–	–	–	–
6262	–	–	–	–	–	–	–	–	–	–	–	–
7003	–	–	–	–	–	–	–	–	–	–	–	–
2050	–	–	–	–	–	–	–	–	–	–	–	–
7475	–	–	–	–	–	–	–	–	–	–	–	–
7175	–	–	–	–	–	–	–	–	–	–	–	–
7178	–	–	–	–	–	–	–	–	–	–	–	–
5251	AlMg2Mo3	–	N4	–	–	A-G2M	3574	–	–	–	–	–
6151	–	–	–	–	–	–	–	–	–	–	–	–
7001	–	–	–	–	–	–	–	–	–	–	–	–
7040	–	–	–	–	–	–	–	–	–	–	–	–

N2 Workpiece Materials Listing • Non-Ferrous Metals • N2

N2 Low-Silicon Aluminium Alloys and Magnesium Alloys *Content: Si <12,2%*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	SG-Al99,8	–	–	–	–	–	–	–	–	–	3.0286	–
–	G-AlCu 4 TiMg	–	–	–	–	–	–	–	–	–	3.1371	–
–	G-AlCu 4 TiMg	–	–	–	–	–	–	–	–	–	3.1371	–
–	G-AlCu 5 Ni 1,5	–	–	–	–	–	–	–	–	–	3.1754	–
–	G-AlCu 4 Ti	–	–	–	–	–	–	–	–	–	3.1841	–
–	G-AlSi 5 Cu 1	–	–	–	–	–	–	–	–	–	3.2131	–
–	G-AlSi 6 Cu 4	–	–	–	–	–	–	–	–	–	3.2151	–
–	G-AlSi 8 Cu 3	–	–	–	–	–	–	–	–	–	3.2161	–
–	G-AlSi 9 Cu 3	–	–	–	–	–	–	–	–	–	3.2163	–
–	G-AlSi 1 1	–	–	–	–	–	–	–	–	–	3.2211	–
–	SG-AlSi 5	–	–	–	–	–	–	–	–	–	3.2245	–
–	SG-AlSi 5	–	–	–	–	–	–	–	–	–	3.2245	–
–	G-AlSi 5 Mg	–	–	–	–	–	–	–	–	–	3.2341	–
4218 B	G-AlSi 7 Mg	–	–	–	–	–	–	–	–	–	3.2371	–
–	G-AlSi 9 Mg	–	–	–	–	–	–	–	–	–	3.2373	–
–	G-AlSi 10 Mg	–	–	–	–	–	–	–	–	–	3.2381	–
–	G-D AlSi 10 Mg	–	–	–	–	–	–	–	–	–	3.2382	–
A 360.2	G-AlSi 10 Mg(Cu)	LM 9	–	–	–	–	–	4253	–	–	3.2383	–
A 413.0	G-D AlSi 12	–	–	–	–	–	–	4247	–	–	3.2582	–
–	SG-AlSi 12	–	–	–	–	–	–	–	–	–	3.2585	–
–	G-D AlSi 12(Cu)	–	–	–	–	–	–	–	–	–	3.2982	–
6061	AlMgSiCu	–	H20	–	–	A-GSUC	6170	–	–	–	3.3211	–
–	G-AlMg 3 Si	–	–	–	–	–	–	–	–	–	3.3241	–
–	G-AlMg 5 Si	–	–	–	–	–	–	–	–	–	3.3261	–
–	G-D AlMg 9	–	–	–	–	–	–	–	–	–	3.3292	–
–	G-AlMg5Si(Cu,Mn)	–	–	–	–	–	–	–	–	–	3.3458	–
–	SG-AlMg 3	–	–	–	–	–	–	–	–	–	3.3536	–

(continued)

N2 Workpiece Materials Listing • Non-Ferrous Metals • N2 *(continued)*

N2 Low-Silicon Aluminium Alloys and Magnesium Alloys *Content: Si <12,2%*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	G-AlMg 3	–	–	–	–	–	–	–	–	–	3.3541	–
–	SG-AlMg 4,5 Mn	–	–	–	–	–	–	–	–	–	3.3548	–
–	SG-AlMg 5	–	–	–	–	–	–	–	–	–	3.3556	–
–	G-AlMg 5	–	–	–	–	–	–	–	–	–	3.3561	–
ZE 41	G-MgZn 4 SE 1 Zr 1	MAG 5	–	–	MCMgZn 4 RE 1 Zr	G-Z 4 TR	–	–	–	–	3.5101	–
–	G-MgZn 5 Th 2 Zr 1	–	–	–	–	–	–	–	–	–	3.5102	–
EZ 33	MgSE 3 Zn 2 Zr 1	MAG 6	–	–	MCMgRE 3 Zn 2 Zr	G-TR 3 Z 2	–	–	–	–	3.5103	–
–	MgAl 9 Zn 1	–	–	–	–	–	–	–	–	–	3.5104	–
–	G-MgTh 3 Zn 2 Zr 1	–	–	–	–	–	–	–	–	–	3.5105	–
QE 22	G-MgAg 3 SE 2 Zr 1	MAG 12	–	–	MCMgRE 2 Ag 2 Zr	G-Ag 22,5	–	–	–	–	3.5106	–
–	G-D MgAl 6 Zn 1	–	–	–	–	–	–	–	–	–	3.5612	–
–	G-D MgAl 6	–	–	–	–	–	–	–	–	–	3.5662	–
AZ 81	G-MgAl 8 Zn 1	MAG 1	–	–	MCMgAl 8 Zn 1	G-A 9	–	–	–	–	3.5812	–
AZ 91	G-MgAl 9 Zn 1	MAG 7	–	–	MCMgAl 9 Zn 1	G-A 9 Z 1	–	–	–	–	3.5912	–
–	G-MgAl 8 Zn 1	–	–	–	–	–	–	–	–	–	3.5200	–
AS 41	G-D MgAl 4 Si 1	–	–	–	MCMgAl4Si	G-A4S 1	–	–	–	–	3.5470	–
–	G-AlZn10Si8Mg	–	–	–	–	–	–	–	–	–	–	–
AS 7 G	AlSi7Mg	–	–	–	–	–	–	–	–	–	–	–
2117	–	–	–	–	–	–	–	–	–	–	–	–
2218	AlCuMgNi2	–	–	–	–	–	–	–	–	–	–	–
2091	–	–	–	–	–	–	–	–	–	–	–	–
8090	–	–	–	–	–	–	–	–	–	–	–	–
2090	–	–	–	–	–	–	–	–	–	–	–	–
2224	–	–	–	–	–	–	–	–	–	–	–	–
2094	–	–	–	–	–	–	–	–	–	–	–	–
2095	–	–	–	–	–	–	–	–	–	–	–	–
2097	–	–	–	–	–	–	–	–	–	–	–	–
2098	–	–	–	–	–	–	–	–	–	–	–	–
2099	–	–	–	–	–	–	–	–	–	–	–	–
2195	–	–	–	–	–	–	–	–	–	–	–	–
2196	–	–	–	–	–	–	–	–	–	–	–	–
2197	–	–	–	–	–	–	–	–	–	–	–	–
2198	–	–	–	–	–	–	–	–	–	–	–	–
2297	–	–	–	–	–	–	–	–	–	–	–	–
2397	–	–	–	–	–	–	–	–	–	–	–	–
8017	–	–	–	–	–	–	–	–	–	–	–	–
8024	–	–	–	–	–	–	–	–	–	–	–	–
8091	–	–	–	–	–	–	–	–	–	–	–	–
8093	–	–	–	–	–	–	–	–	–	–	–	–
2199	–	–	–	–	–	–	–	–	–	–	–	–

N3 Workpiece Materials Listing • Non-Ferrous Metals • N3

N3 High-Silicon Aluminium Alloys and Magnesium Alloys *Content: Si >12,2%*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 413.1	G-AlSi 12(Cu)	LM 20	–	–	–	–	–	4260	–	–	3.2583	–
A 413.2	G-AlSi 12	LM 6	–	–	–	–	–	4261	–	–	3.2581	–
–	G-AlSi17Cu4Mg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi18CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi21CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi12CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi25CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	G-AlSi 21 CuNiMg	–	–	–	–	–	–	–	–	–	–	–
4032	–	–	–	–	–	–	–	–	–	–	–	–

N4 Workpiece Materials Listing • Non-Ferrous Metals • N4

N4 Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
C 11000	E-Cu 58	C 101	–	–	–	Cn-a2	–	–	–	–	2.0065	–
C 81100	G-CuL 45	HCC 1	–	–	–	–	–	–	–	–	2.0082	–
C 81100	G-Cu L 50	HCC 1	–	–	–	–	–	–	–	–	2.0085	–
–	CuZn 40 MnPb	–	–	–	–	–	–	–	–	–	2.0241	–
C 26000	CuZn 30	CZ 102	C 2600	–	–	CuZn 30	–	–	–	–	2.0265	–
C 27200	CuZn 37	CZ 108	–	–	–	CuZn 37	C 2720	–	–	–	2.0321	–
–	CuZn 36 Pb 1.5	–	–	–	–	–	–	–	–	–	2.0331	–
–	S-CuZn40	–	–	–	–	–	–	–	–	–	2.0366	–
–	CuZn 39 Pb 3 + D567	–	–	–	–	–	–	–	–	–	2.0401	–
–	CuZn 40 Pb 2	–	–	–	–	–	–	–	–	–	2.0402	–
B-198	G-CuZn 15Si 4	–	–	–	–	–	–	–	–	–	2.0492	–
–	CuZn 40Al 1	–	–	–	–	–	–	–	–	–	2.0561	–
–	G-KCuZn 38 Al	–	–	–	–	–	–	–	–	–	2.0591	–
C 86500	G-CuZn 35 Al 1	HTB 1	–	–	–	U-Z 36 N 3	–	–	–	–	2.0592	–
–	G-KCuZn 37 Al 1	–	–	–	–	–	–	–	–	–	2.0595	–
C 86200	G-CuZn 34 Al 2	HTB 1	–	–	–	U-Z 36 N 3	–	–	–	–	2.0596	–
–	G-CuZn 25 Al 5	–	–	–	–	–	–	–	–	–	2.0598	–
–	S - CuNi 30 Fe	–	–	–	–	–	–	–	–	–	2.0837	–
–	CuNi 10 Fe 1 Mn	–	–	–	–	–	–	–	–	–	2.0872	–

NOTE: For legend, see page Y217.

(continued)

N4 Workpiece Materials Listing • Non-Ferrous Metals • N4 *(continued)*

N4 Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S - CuNi 10 Fe	–	–	–	–	–	–	–	–	–	2.0873	–
–	CuNi 30 Mn 1 Fe	–	–	–	–	–	–	–	–	–	2.0882	–
–	SG-Cu Al 8	–	–	–	–	–	–	–	–	–	2.0921	–
–	SG-CuAl 8 Ni 2	–	–	–	–	–	–	–	–	–	2.0922	–
–	SG-CuAl 9 Ni5 Fe	–	–	–	–	–	–	–	–	–	2.0927	–
–	CuAl 10 Fe 3 Mn 2	CA 103	–	–	–	U-A 10 Fe	–	–	–	–	2.0936	–
–	SG-Cu Al 10 Fe	–	–	–	–	–	–	–	–	–	2.0937	–
C 63000	CuAl 10 Ni 5 Fe 4	Ca 104	–	–	–	U-A 10 N	–	–	–	–	2.0966	–
B-148-52	G-CuAl 10 Ni	–	–	–	–	–	–	–	–	–	2.0975	–
–	SG-Cu Sn	–	–	–	–	–	–	–	–	–	2.1006	–
–	SG-Cu Sn 6	–	–	–	–	–	–	–	–	–	2.1022	–
C 90800	G-CuSn 12	Pb 2	–	–	–	UE 12 P	–	–	–	–	2.1052	–
–	G-CuSn 12 Pb	–	–	–	–	–	–	–	–	–	2.1061	–
–	G-CuSn 10 Zn	–	–	–	–	–	–	–	–	–	2.1086	–
C 93200	G-CuSn 7 ZnPb	–	–	–	–	U-E 7 Z 5 Pb 4	–	–	–	–	2.1091	–
–	G-CuSn 6 ZnNi	LG 4	–	–	–	–	–	–	–	–	2.1093	–
C 83600	G-CuSn 5 ZnPb	LG 2	–	–	–	U-E 5 Pb 5 Z 5	–	–	–	–	2.1096	–
–	G-CuSn 2 ZnPb	–	–	–	–	–	–	–	–	–	2.1098	–
C 93700	G-CuPb 10 Sn	LB 2	–	–	–	U-E 10 Pb 10	–	–	–	–	2.1176	–
C 93800	G-CuPb 15 Sn	LB 1	–	–	–	U-Pb 15 E 8	–	–	–	–	2.1182	–
C 94100	G-CuPb 20 Sn	LB 5	–	–	–	U-Pb 20	–	–	–	–	2.1188	–
C 81500	G-CuCrF 35	CC1-FF	–	–	–	–	–	–	–	–	2.1292	–
C 18200	CuCrZr	CC 102	–	–	–	U-Cr 0,8 Zr	–	–	–	–	2.1293	–
–	SG-Cu Mn 13 Al 7	–	–	–	–	–	–	–	–	–	2.1367	–
–	SG-Cu Si 3	–	–	–	–	–	–	–	–	–	2.1461	–
CuSi 3 Mn	–	–	–	–	–	–	–	–	–	–	2.1525	–
–	OF-Cu	–	–	–	–	–	–	–	–	–	2.0040	–
B-120	E-Cu 57	–	–	–	–	–	–	–	–	–	2.0060	–
C 10300	SE-Cu	C 101	–	–	–	Cu-c1	–	–	–	–	2.0070	–
–	CuZn 5	–	–	–	–	–	–	–	–	–	2.0220	–
C 23000	CuZn 15	CZ 102	C 2300	–	–	CuZn 15	–	–	–	–	2.0240	–
–	G-CuZn 33 Pb	–	–	–	–	–	–	–	–	–	2.0290	–
–	CuZn 36 Pb 2	–	–	–	–	–	–	–	–	–	2.0330	–
–	G-CuZn 37 Pb	–	–	–	–	–	–	–	–	–	2.0340	–
–	CuZn 40	–	–	–	–	–	–	–	–	–	2.0360	–
–	CuZn 39 Pb 2	–	–	–	–	–	–	–	–	–	2.0380	–
–	CuZn 20 Al 2	–	–	–	–	–	–	–	–	–	2.0460	–
–	CuZn 37Al 1	–	–	–	–	–	–	–	–	–	2.0510	–
–	CuZn 40 Al 2	–	–	–	–	–	–	–	–	–	2.0550	–
–	G-CuZn 40 Fe	–	–	–	–	–	–	–	–	–	2.0590	–
–	G-CuAl 10 Fe	–	–	–	–	–	–	–	–	–	2.0940	–
C 90700	G-CuSn 10	CT 1	–	–	–	–	–	–	–	–	2.1050	–
C 91700	G-CuSn 12 Ni	–	–	–	–	–	–	–	–	–	2.1060	–
–	C35100	–	–	–	–	–	–	–	–	–	–	–
–	17665	–	–	C95500	–	–	–	–	–	–	–	–
–	MS60	–	–	–	–	–	–	–	–	–	–	–

N5 Workpiece Materials Listing • Non-Ferrous Metals • N5

N5 Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	LEXAN	–	–	–	–	–	–	–	–	–	–	–
–	HOSTALEN	–	–	–	–	–	–	–	–	–	–	–
–	Polystyrol	–	–	–	–	–	–	–	–	–	–	–
–	Makralon	–	–	–	–	–	–	–	–	–	–	–

N6 Workpiece Materials Listing • Non-Ferrous Metals • N6

N6 Carbon, Graphite Composites, CFRP

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GFK	–	–	–	–	–	–	–	–	–	–	–
–	CFK	–	–	–	–	–	–	–	–	–	–	–
Graphite	–	–	–	–	–	–	–	–	–	–	–	–
CFRP	–	–	–	–	–	–	–	–	–	–	–	–

S1 Workpiece Materials Listing • High-Temp Alloys • S1

S1 Iron-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 500–1200* *Hardness (HB): 160–260 (HRC): 25–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 10 Cr 25	–	–	–	–	–	–	–	–	–	1.3811	–
–	D 1 a	–	–	–	–	–	–	–	–	–	1.3915	–
–	D 3	BD 3	–	–	X 210 Cr 1 2	Z 200 C 12	X 205 Cr 12 KU	–	–	–	1.3916	–
–	RNi 12	–	–	–	–	–	–	–	–	–	1.3926	–
–	RNi 8	–	–	–	–	–	–	–	–	–	1.3927	–
–	GX 2 NiCoMoTi1 7 10	–	–	–	–	–	–	–	–	–	1.6351	Maraging
6501, 6512, 6520	X 2 NiCoMo 18 8 5	–	–	UNS K92890	S162	Z2NKD18.8	–	–	–	ASTM A646	1.6359	ATI VascoMax® C-250
–	X 2 NiCoMo 18-8-5	–	–	K92890	–	–	–	–	–	–	1.6359	Maraging
–	X 1 CrNiCoMo 13 8 5	–	–	–	–	–	–	–	–	–	–	Maraging
–	Ni 36	–	–	–	–	–	–	–	–	–	1.3910	Magnifer 36
–	Ni 46	–	–	–	–	–	–	–	–	–	1.3920	–
–	X 2 CrNiCoMo 12 8 5	–	–	–	–	–	–	–	–	–	1.6980	Maraging
ASTM B463	–	–	–	UNS N08020	–	–	–	–	–	ASTM B463	2.4660	20CB-3
ASTM A666	–	–	–	–	–	–	–	–	–	ASTM A666	–	6/21/09
ASTM B753	–	–	–	–	–	–	–	–	–	ASTM B753	–	AL 4750
S66286	–	–	NAS 660	UNS S66286	–	–	A-286	–	–	–	–	ATI A286™
–	–	–	–	UNS K92810	–	–	–	–	–	–	–	ATI VascoMax® C-200
6514	–	–	–	UNS K93120	–	–	–	–	–	–	–	ATI VascoMax® C-300
–	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® C-350
–	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® T-200
6518, 6519, 6591	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® T-250
–	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® T-300
5725	–	–	–	–	–	Z3NCT25	–	–	SAE 16-25-6	–	–	Discaloy 16-25-6
ASTM A638	–	–	–	–	–	Z3NCT25	–	–	Discaloy	ASTM A638	–	Discaloy 24
–	–	–	–	R30556	–	–	–	–	–	–	–	Haynes® 556
5768	X 12 CrCoNi 21 20	–	–	–	–	Z12CKNDWNb21.20.20	–	–	–	–	–	Haynes 556
ASTM F30	–	–	–	–	–	–	–	–	Invar	ASTM F30	–	Invar 42
5768	–	–	–	UNS R30155	–	Z12CNKDW20	–	–	–	–	–	Multimet N-155
–	–	–	–	–	–	–	–	–	–	–	–	Multimet N-156
5533	X 40 CoCrNi 20 20	–	–	–	–	Z42CKNDW	–	–	–	–	–	S 590
–	X 2 NiCrAlTi 32 20	–	–	–	–	–	–	–	–	–	–	Sanicro 30
AISI:665	–	–	–	–	–	Z8NCTDA2613	–	–	–	–	–	W-545

S2 Workpiece Materials Listing • High-Temp Alloys • S2

S2 Cobalt-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 1000–1450* *Hardness (HB): 250–450 (HRC): 25–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	CoCr 26 Ni 9 Mo	–	–	–	–	–	–	–	–	–	2.4681	–
–	CoCr 25 NiW	–	–	–	–	KC25WN	–	–	–	ASTM A567	2.4682	Stellite® 31 (X40)
–	CoCr 22 NiW	–	–	–	–	–	–	–	–	–	2.4683	–
–	CoCr 28 Mo	–	–	–	–	KC27D5NFe	–	–	–	ASTM F-75	2.4691	HS 21
–	CoCr 20 Ni 15 Mo	–	–	–	–	–	–	–	–	–	2.4711	–
–	CoCr 29 Mo	–	–	–	–	–	–	–	–	–	2.4723	–
–	CoCr 33 W	–	–	–	–	–	–	–	–	–	2.4775	–
–	CoCr 28	–	–	–	–	–	–	–	–	–	2.4778	–
–	CoCr 28 Nb	–	–	–	–	–	–	–	–	–	2.4779	–
–	–	–	–	–	–	–	–	–	–	ASTM F90	2.4964	F 90
–	–	–	–	R30605	–	KC20WN	–	–	–	–	2.4964	Haynes 25
–	CoCr 20 W 15 Ni	HR 240	–	R30605	–	KC20WN	–	–	–	5759	2.4964	L 605
–	CoCr 20 W 15 Ni	–	–	CAST Version of L605	–	KC20WN	–	–	–	5759	2.4964	Stellite 25
AMS 5399	NiCr 19 Co 11 MoTi	–	–	–	–	NC 19 KDT	–	–	–	–	2.4973	–
–	CoCr 20 Ni 20 W	–	–	–	–	–	–	–	–	5534	2.4979	S 816
–	CoCr20NiW	–	–	–	–	–	–	–	–	–	2.4989	–
–	–	–	–	R31537 & R31538	–	CoCr28Mo	–	–	–	ASTM F1537	–	F 1537
–	–	–	–	–	–	–	–	–	–	ASTM F562	–	F 562
–	–	–	–	–	–	–	–	–	–	ASTM F563	–	F 563
–	–	–	–	R30188	–	KC22N22W14Fe	–	–	–	–	–	Haynes 188
AISI 670	CoCr 20 W 15 Ni	–	–	–	–	KC20WN	–	–	–	–	–	HS 25
–	CoCr 26 Ni 14 Mo	–	–	–	–	–	–	–	–	5380	–	HS 30
–	CoCr 19 W 14 NiB	–	–	–	–	–	–	–	–	–	–	HS 36
–	–	–	–	–	–	–	–	–	–	–	–	L 251
–	CoCrW 10 TaZrB	–	–	–	–	KC21W10Ta9	–	–	–	–	–	MAR-M 302
–	CoCr 22 W 9 TaZrNb	–	–	–	–	KC21W9Ta	–	–	–	–	–	MAR-M 322
–	CoCr 24 Ni 10 WTaZrB	–	–	–	–	KC23N10W7Ta	–	–	–	–	–	MAR-M 509
–	–	–	–	–	–	KC20N20Ta7	–	–	–	–	–	MAR-M 905
–	CoCr 20 Ni 20 Ta	–	–	–	–	KC20N20Ta7	–	–	–	–	–	MAR-M 918
–	–	–	–	R30159	–	–	–	–	–	–	–	MP159
–	–	–	–	R30035	–	–	–	–	–	–	–	MP35N
–	–	–	–	–	–	KC33W13	–	–	–	–	–	Stellite 1
–	–	–	–	–	–	KC28W8	–	–	–	–	–	Stellite 12
–	–	–	–	–	–	KC22N22W14Fe	–	–	–	–	–	Stellite 188
–	–	–	–	–	–	KC26NW	–	–	–	–	–	Stellite 6
–	–	–	–	–	–	–	–	–	–	–	–	Stellite 8 (F75)
–	CoCr 25 Ni 20 MoWNb	–	–	–	–	KC25N20DFeWNb	–	–	–	–	–	V-36
–	CoCr 21 Mo 11 W	–	–	–	–	KC21W11ANbT	–	–	–	–	–	WI-52
–	–	–	–	–	–	KC25N10W7Fe	–	–	–	–	–	X 45
–	–	–	–	–	–	–	–	–	J-1570	–	–	–
–	K13C20N126Fe15D7	–	–	R3003 & R3008	–	K13C20N126Fe15D7	–	–	–	ASTM F1058	–	–

NOTE: For legend, see page Y217.

S3 Workpiece Materials Listing • High-Temp Alloys • S3

S3 Nickel-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 600–1700* *Hardness (HB): 160–450 (HRC): <48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 7 NiCrCoMo 54 20	–	–	–	–	–	–	–	–	–	1.2789	–
–	Ni 99,7 Mg 0,07	–	–	J24053	–	–	–	–	–	A 915 J24053	2.4053	–
–	LC-Ni 99,6	–	–	N02201	–	–	–	–	–	–	2.4061	–
–	–	–	–	N02200	–	–	–	–	–	–	2.4066	200
Nickel 200	Ni 99,2	NA 11	–	N02200	–	–	–	–	–	–	2.4066	–
–	–	–	–	N02201	–	–	–	–	–	–	2.4068	201
Nickel 201	LC-Ni 99	NA 12	–	–	–	–	–	–	–	–	2.4068	–
–	NiMn 1	–	–	–	–	–	–	–	–	–	2.4106	–
–	NiMn 1 C	–	–	–	–	–	–	–	–	–	2.4108	–
–	NiMn 1,5	–	–	–	–	–	–	–	–	–	2.4109	–
–	NiMn 3 Al	–	–	–	–	–	–	–	–	–	2.4122	–
–	NiMn 3 SiMg	–	–	–	–	–	–	–	–	–	2.4126	–
–	NiCr 2 Mn	–	–	–	–	–	–	–	–	–	2.4145	–
–	NiCr 2 MnSi	–	–	–	–	–	–	–	–	–	2.4146	–
–	NiCr 5 MnSi	–	–	–	–	–	–	–	–	–	2.4151	–
–	SG-NiTi 4	NA32	–	–	NA 32	–	–	–	–	–	2.4155	–
CZ-100	G-Ni 93 C	–	–	–	–	–	–	–	–	–	2.4175	–
–	NiCr 4 Mn	–	–	–	–	–	–	–	–	–	2.4199	–
M 35-1/2	G-NiCu 30 Nb	–	–	N24030	–	–	–	–	–	–	2.4365	–
–	EL-NiCu 30 Mn	–	–	N04402	–	–	–	–	–	–	2.4366	–
M 30-H	G-NiCu 30 Si 3	–	–	–	–	–	–	–	–	–	2.4367	–
M-255	G-NiCu 30 Si 4	–	–	–	–	–	–	–	–	–	2.4368	–
–	NiCu 30 Al	–	–	–	–	–	–	–	–	–	2.4374	–
–	NiCu 30 Al	NA 18	–	N05500	3072.76	NU 30 AT	–	–	–	–	2.4375	Monel® K500
–	SG-NiCu 30 MnTi	NA 33	–	–	–	–	–	–	–	–	2.4377	–
–	NiFe 16 CuCr	–	–	–	–	–	–	–	–	–	2.4501	–
–	G-NiMo 16 CrW	–	–	–	–	–	–	–	–	–	2.4537	–
–	NiCr 21 Mo 14 W	–	–	N26022	–	–	–	–	–	–	2.4602	INCONEL® alloy 622
–	NiCr 30 FeMo	–	–	–	–	–	–	–	–	–	2.4603	Hastelloy® G-30
–	–	–	–	N06059	–	–	–	–	–	ASTM B575	2.4605	Allcorr
–	NiCr 23 Mo 16 Al	–	–	–	–	–	–	–	–	–	2.4605	–
–	SG/UP-NiCr 23 Mo 16	–	–	–	–	–	–	–	–	–	2.4607	–
–	NiCr 26 MoW	–	–	–	–	–	–	–	–	–	2.4608	–
–	SG-NiMo 27	–	–	–	–	–	–	–	–	–	2.4615	–
–	NiMo 28	–	–	N10665	–	NiMo 28	–	–	–	–	2.4617	–
–	NiCr 22 Mo 6 Cu	–	–	–	–	–	–	–	–	–	2.4618	–
–	–	–	–	N06985	–	–	–	–	–	–	2.4619	Hastelloy G-3
–	NiCr 22 Mo 7 Cu	–	–	N06985	–	–	–	–	–	–	2.4619	–
–	SG-NiCr 23 Al	NA 49	–	–	–	–	–	–	–	–	2.4626	–
–	SG-NiCr 22 Co 12 Mo	NA 50	–	–	–	–	–	–	–	–	2.4627	–
–	NiCr 20 Ti	HR5	–	N06075	HR5, 203.4	NC 20 T	–	–	–	–	2.4630	Nimonic® 75
–	NiCr 20 TiAl	NA 20	NCF 80A	N07080	HR401, 601	NC 20 TA	–	–	–	–	2.4631	Nimonic 80A
–	NiCr 20 Co 18 Ti	NA 36	–	N07090	HR2, 202	NC20KTA	–	–	–	–	2.4632	Nimonic 90
–	NiCo 20 Cr 15 MoAlTi	–	–	N13021	HR3	NCKD20ATV	–	–	–	–	2.4634	Nimonic 105
–	NiCo 15 Cr 15 MoAlTi	HR4	–	–	HR401, 601	NCVK15ATD	–	–	–	–	2.4636	Nimonic 115
AISI 687	NiCo 15 Cr 15 MoAlTi	–	–	–	–	NCKD20AT	–	–	–	–	2.4636	Udimet® 700
–	NiCr 22 Mo 8 AlCuTi	–	–	–	–	–	–	–	–	–	2.4637	–
–	SG-NiCr 20	NA 34	–	–	–	–	–	–	–	–	2.4639	–
–	NiCr 21 Mo 6 Cu	–	NCF 600 TP	–	–	–	–	–	–	–	2.4641	–
–	NiCr 29 Fe	–	NCF 690	N06690	–	NC 30 Fe	–	–	–	–	2.4642	INCONEL® alloy 690
–	NiCr 25 FeAlYC	–	–	–	–	–	–	–	–	–	2.4647	–
–	NiCr 20 CoMoTi	NA 38	NCF 690	N07263	HR10	NCK 20 D	–	–	–	–	2.4650	Nimonic C263
–	EL-NiCr 26 Mo	–	–	–	–	–	–	–	–	–	2.4652	–
–	NiCr 19 Co 14 Mo 4 Ti	–	–	N07001	–	NC20K14Y	–	–	–	–	2.4654	Waspaloy
–	SG-NiCr 29 Mo	–	–	–	–	–	–	–	–	–	2.4656	–
–	NiCr 70 30	–	–	N06008	–	–	–	–	–	–	2.4658	–
–	SG-NiCr 30 Mo 5 W	–	–	–	–	–	–	–	–	–	2.4659	–
–	EL-NiCr 29 Mo 5 W	–	–	–	–	–	–	–	–	–	2.4661	–
–	NiFe 35 Cr 14 MoTi	–	–	N09901	–	Z8NCDT42	–	–	–	–	2.4662	INCOLOY® 901
–	NiCr 13 Mo 6 Ti 3	–	–	N09901	–	Z8NCDT42	–	–	–	–	2.4662	Nimonic 901
–	NiCr 23 Co 12 Mo	–	–	N06617	–	NC22K12D9A	–	–	–	–	2.4663	INCONEL® alloy 617
–	NiCr 22 FeMo	–	–	N06002	HR6, 204	NC22FeD	–	–	–	–	2.4665	Hastelloy X
–	NiCr 22 Fe 18 Mo	NA 40	–	N06002	–	NC22FeD	–	–	–	–	2.4665	INCONEL alloy HX
–	NiCr 18 CoMo	–	–	–	–	NKCD20ATU	–	–	–	–	2.4666	Nimonic PK25
–	SG-NiCr 19 NbMoTi	NA 51	–	–	–	–	–	–	–	–	2.4667	–
–	NiCr 19 FeNbMo	–	–	N07718	HR8	NC 19 Fe Nb	–	–	–	–	2.4668	INCONEL alloy 718
–	NiCr 15 Fe 7 TiAl	–	–	N07750	–	NC 15 Fe 7 TA	–	–	–	–	2.4669	INCONEL alloy X750
–	G-NiCr 12 Al 6 MoNb	–	–	–	–	–	–	–	–	–	2.4671	–
–	G-NiCr 20 Co 20 MoTi	–	–	–	–	–	–	–	–	–	2.4672	–
–	NiCo 15 Cr 10 MoAlTi	–	–	N13100	–	NK15CAT	–	–	–	–	2.4674	IN 100
–	NiCo 15 Cr 10 MoAlTi	–	–	–	–	NK15C10A5T	–	–	–	–	2.4674	René 100
–	G-NiCo 15 Cr 10 AlTiMo	–	–	–	–	–	–	–	–	–	2.4674	–
–	G-NiCo 10 W 10 CrAlNb	–	–	–	–	–	–	–	–	–	2.4676	–
–	G-NiCr 50	–	–	–	–	–	–	–	–	–	2.4678	–
–	G-NiCr 35	–	–	–	–	–	–	–	–	–	2.4679	–
–	–	–	–	N10665	–	–	–	–	–	N7M	2.4685	Hastelloy B-2
CW-12 MW	G-NiMo 17 CrW	–	–	–	–	–	–	–	–	–	2.4686	–
–	NiCr 25 Mo 7 Ti	–	–	–	–	–	–	–	–	–	2.4693	–
–	NiCr 16 Fe 7 TiAl	–	–	N 07751	–	–	–	–	–	–	2.4694	INCONEL alloy 751
–	G-NiCr 20 Mo 15	–	–	–	–	–	–	–	–	–	2.4697	–
–	NiCr 22 W 14 Mo	–	–	–	–	–	–	–	–	–	2.4733	–
–	NiCr 20 AlY	–	–	–	–	–	–	–	–	–	2.4764	–
–	NiCr 17 AlWY	–	–	–	–	–	–	–	–	–	2.4765	–
–	SG-NiCr 20 Nb	NA 35	–	–	–	–	–	–	–	–	2.4806	–
–	G-NiCr 50 Nb	–	–	–	–	–	–	–	–	–	2.4813	–
–	NiCr 15 Fe	NA 14	NCF 600	N06600	3072.76	NC 15 Fe	–	–	–	–	2.4816	INCONEL alloy 600
–	G-NiMo 30	–	–	N10276	–	NC 15 D 14 KFe	–	–	–	–	2.4819	Hastelloy C-276
ASME SB575	NiMo 16 Cr 15 W	–	–	N10276	–	NC 17 D	–	–	–	–	2.4819	Nimonic C276

(continued)

S3 Workpiece Materials Listing • High-Temp Alloys • S3 *(continued)*

S3 Nickel-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 600–1700* *Hardness (HB): 160–450 (HRC): <48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	SG-NiCr 21 Mo 9 Nb	–	–	–	–	–	–	–	–	–	2.4831	–
–	NiCr 20 Mo 15	–	–	–	–	–	–	–	–	–	2.4836	–
–	SG-NiCr 20 Mo 15	–	–	–	–	–	–	–	–	–	2.4839	–
–	–	–	–	N06601	–	–	–	–	–	–	2.4851	Haynes® 601
–	NiCr 23 Fe	–	NCF 601	N06601	–	NC 23 Fe 14 A	–	–	–	–	2.4851	INCONEL alloy 601
–	NiFe 33 Cr 25 Co	–	–	–	–	–	–	–	–	–	2.4854	–
–	NiCr 19 Mo 9 Si	–	–	–	–	–	–	–	–	–	2.4855	–
ASME SB443	NiCr 22 Mo 9 Nb	–	–	N06625	–	NC 22 Fe DNb	–	–	–	–	2.4856	Haynes 625
ASME SB443.4	NiCr 22 Mo 9 Nb	NA 21	NCF 625	N06625	–	NC 22 Fe DNb	–	–	–	–	2.4856	INCONEL alloy 625
ASME SB163	NiCr 21 Mo	–	–	N08825	3072.76	NC21FeDU	–	–	–	–	2.4858	INCOLOY® 825
–	NiCr 60 15	–	–	–	–	–	–	–	–	–	2.4867	–
–	NiCr 80 20	–	–	–	–	–	–	–	–	–	2.4869	–
–	NiCr 20 AlSi	–	–	–	–	–	–	–	–	–	2.4872	–
–	G-NiCr 28 W	–	–	–	–	–	–	–	–	–	2.4879	Centralloy® 4879
–	NiCr 17 Mo 17 FeW	–	–	N10002	–	NC17DWY	–	–	–	CW12MW	2.4883	Hastelloy C
–	G-NiMo 16 Cr	–	–	–	–	–	–	–	–	–	2.4883	–
–	SG-NiMo 16 cr 16 W	NA 48	–	–	–	–	–	–	–	–	2.4886	–
–	G-NiCr 13 MoAl	–	–	–	–	–	–	–	–	–	2.4888	–
–	NiCr 20 Ti	HR 5	–	N06621	–	NC 20 T	–	–	–	–	2.4951	–
–	NiCr 20 TiAl	NA 20	NCF 80 A	N07080	–	NC 20 TA	–	–	–	–	2.4952	–
–	NiFe 25 Cr 20 NbTi	–	–	–	NiFe 25 Cr 20 NbTi	–	–	–	–	–	2.4955	–
–	NiCr 20 Co 18 Ti	NA 19	–	N07090	–	–	–	–	–	–	2.4969	–
–	NiCr 22 W 12 Fe	–	–	–	–	–	–	–	–	–	2.4972	–
–	NiCr 19 Co 11 MoTi	–	–	N07041	–	NC19KDT	–	–	–	–	2.4973	René 41
–	NiFeCr 12 Mo	–	–	–	–	–	–	–	–	–	2.4975	–
–	NiCr 20 Mo	–	–	–	–	–	–	–	–	–	2.4976	–
–	NiCr 20 CoMo	–	–	–	–	–	–	–	–	–	2.4982	–
–	NiCr 18 Co	–	–	N07500	–	–	–	–	–	–	2.4983	Co500
AISI 684	NiCr 18 CoMoAlTi	–	–	N07500	–	NCK19DAT	–	–	–	–	2.4983	Udimet® 500
–	Ni 99,6	NA 46	–	–	–	–	–	–	–	–	2.4060	–
–	NiMn 2	–	–	–	–	–	–	–	–	–	2.4110	–
SZ-100	G-Ni 95	–	–	–	–	–	–	–	–	–	2.4170	–
–	G-Ni 93 Si	–	–	–	–	–	–	–	–	–	2.4180	–
–	NiCu 30 Fe	–	–	N04400	3072.76	NU30	–	–	–	–	2.4360	Monel® 400
–	NiCu 30 Ti	–	–	–	–	–	–	–	–	–	2.4370	Monel 60
–	NiFe 44	–	–	–	–	–	–	–	–	–	2.4420	Magnifer 53
–	NiFe 16 CuMo	–	–	–	–	–	–	–	–	–	2.4530	Perm 77
–	NiFeK 6040	–	–	–	–	–	–	–	–	–	2.4560	–
–	NiMo 16 Cr 16 Ti	NA 45	–	N26455	–	–	–	–	–	–	2.4610	Hastelloy C-4
–	–	–	–	–	–	20CB-3	–	–	–	ASTM B463	2.4660	INCOLOY 020
–	NiCr 20 CuMo	–	–	N08020	–	–	–	–	–	–	2.4660	–
–	G-NiCr 13 Al 16 MoNb	–	–	–	HC203	NC13AD	–	–	–	–	2.4670	Nimocast 713
–	G-NiCr 50 Nb	–	–	–	–	–	–	–	–	–	2.4680	–
–	NiMo 23 Cr 8 Fe	–	–	–	–	–	–	–	–	–	2.4710	–
–	NiMo 30	–	–	–	–	ND27FeV	–	–	–	N-12 MV	2.4810	Hastelloy B
–	NiCr 45 23	–	–	–	–	–	–	–	–	–	2.4890	–
–	–	–	–	N13017	–	NK17C15D5AT	–	–	–	–	–	Astroloy
–	–	–	–	–	–	–	–	–	–	–	–	Centralloy® 60HTD
AISI 686	–	–	–	–	–	NC15Fe10D5AT	–	–	–	–	–	GMR 235
–	NiCr 16 MoAl	–	–	–	–	NC15D5FeAT	–	–	–	–	–	GMR 235-D
–	–	–	–	–	–	–	–	–	–	CW6M	–	Hastelloy C-22
–	–	–	–	N06007	–	NC22Fe19D6KTa	–	–	–	–	–	Hastelloy G
–	–	–	–	N10003	–	–	–	–	–	–	–	Hastelloy N
–	–	–	–	N06635	–	NC15D14KFe	–	–	–	–	–	Hastelloy S
–	–	–	–	N10004	–	–	–	–	–	–	–	Hastelloy W
–	–	–	–	N07263	–	NC20K20D6T	–	–	–	–	–	Haynes® 263
–	–	–	–	–	–	–	–	–	–	–	–	Haynes 282
–	NiCr 15 Fe	–	–	N06600	–	–	–	–	–	–	–	Haynes 600
–	–	–	–	–	–	–	–	–	–	–	–	Haynes 75
–	NiCo 32 Cr 26 Mo	–	–	–	–	–	–	–	–	–	–	HS27
–	–	–	–	N06102	–	–	–	–	–	–	–	IN 102
ASME SB409	X 10 NiCrAlTi 32-20	–	–	N08800	3082.76	Z10NC3221	–	–	–	–	–	INCOLOY 800
–	–	–	–	–	–	Z4NC3221	–	–	–	–	–	INCOLOY 802
–	–	–	–	–	–	NC29Fe25	–	–	–	–	–	INCOLOY 804
–	NiFe 42 K 15 Nb	–	–	N19903	–	Z3NK28	–	–	–	–	–	INCOLOY 903
–	–	–	–	N19907	–	–	–	–	–	–	–	INCOLOY 907
–	–	–	–	N09925	–	–	–	–	–	–	–	INCOLOY 925
–	–	–	–	N09945	–	–	–	–	–	–	–	INCOLOY 945
ASME SB575	–	–	–	–	–	NiMo16Cr15	–	–	–	–	–	INCONEL alloy 22
–	–	–	–	–	–	–	–	–	–	–	–	INCONEL alloy 230
–	–	–	–	–	–	–	–	–	–	–	–	INCONEL alloy 600SP
–	–	–	–	–	–	–	–	–	–	–	–	INCONEL alloy 62
–	–	–	–	N06626	–	–	–	–	–	–	–	INCONEL alloy 625LCF
–	–	–	–	–	–	NC15A	–	–	–	–	–	INCONEL alloy 702
–	–	–	–	N09706	–	NFe10C16NbT	–	–	–	–	–	INCONEL alloy 706
–	–	–	–	N07718	–	–	–	–	–	–	–	INCONEL alloy 718 OP
–	–	–	–	–	–	NC16Fe8TM	–	–	–	–	–	INCONEL alloy 721
–	NiCr 16 FeTi	–	–	N07722	–	NC16FeTi	–	–	–	–	–	INCONEL alloy 722
–	–	–	–	R30783	–	–	–	–	–	–	–	INCONEL alloy 783
–	–	–	–	N09925	–	–	–	–	–	B983 N09925	–	INCONEL alloy 925
–	–	–	–	N10276	–	–	–	–	–	–	–	INCONEL alloy C-276
–	–	–	–	N07754	–	–	–	–	–	–	–	INCONEL alloy MA754
–	–	–	–	N07751	–	–	–	–	–	–	–	INCONEL alloy X751
–	–	–	–	K93600 K93603	–	–	–	–	–	ASTM F1684	–	INVAR® 36
–	NiCr 20 Co 18 Ti	–	–	–	–	–	–	–	–	–	–	Jessop G81
–	G-NiCr 19 Co	–	–	N07252	–	–	–	–	–	–	–	M 252
–	–	–	–	N04405	–	–	–	–	–	–	–	Monel® R405

NOTE: For legend, see page Y217.

(continued)

S3 Workpiece Materials Listing • High-Temp Alloys • S3 *(continued)*

S3 Nickel-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 600–1700* *Hardness (HB): 160–450 (HRC): <48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	NiFe 33 Cr 17 Mo	–	–	–	–	–	–	–	–	–	–	Nimocast PD16
–	–	–	–	–	HC202	NC20N13	–	–	–	–	–	Nimocast PE10
–	–	–	–	–	–	NC19K18Fe5TA	–	–	–	–	–	Nimonic® 95
ASME SB575	–	–	–	N06022	–	–	–	–	–	–	–	Nimonic C22
–	NiCr 22 Fe 18 Mo	–	–	–	HR6, 204	NC22FeD	–	–	–	–	–	Nimonic PE13
–	NiFe 33 Cr 17 Mo	–	–	–	HR207	NW11AC	–	–	–	–	–	Nimonic PE16
–	NiCr 20 Co 16 MoTi	–	–	–	–	NC19KDUN	–	–	–	–	–	Nimonic PK33
–	–	–	NCF 3015	–	–	–	–	–	–	–	–	NiReVa 3015
AISI 686	–	–	–	–	–	–	–	–	–	–	–	R-235
AISI 690	–	–	–	–	–	Z6NKCDT38	–	–	–	–	–	Refractaloy 26
–	–	–	–	–	–	NK10C8W7ATaTD	–	–	–	–	–	René 125
–	–	–	–	–	–	NK15C14D6AWT	–	–	–	–	–	René 65
–	–	–	–	–	–	NC15K15ADT	–	–	–	–	–	René 77
–	–	–	–	–	–	NC14K9T5DWA	–	–	–	–	–	René 80
–	–	–	–	–	–	NC14K8	–	–	–	–	–	René 95
–	NiTa 9 Co 8 W 6 CrAl	–	–	–	–	NTa9K7C6W5A5DT	–	–	–	–	–	TRW VIA
–	NiCr 19 NbMo	–	–	–	–	NC18Fe18Nb6DWT	–	–	–	–	–	Udimet® 630
–	–	–	–	–	–	NCK18TDA	–	–	–	–	–	Udimet 710
–	–	–	–	–	–	NC18K15TDA	–	–	–	–	–	Udimet 720

S4 Workpiece Materials Listing • High-Temp Alloys • S4

S4 Titanium and Titanium Alloys *Tensile Strength RM (MPa)*: 900–1600* *Hardness (HB): 300–400 (HRC): 33–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
R 50250	Ti-99.8	2 TA 1	–	UNS R50250	TA6, TA7, TA8, TA9	AIR:9182T35	–	–	–	ASTM B381F1	3.7025	ATI 30 CP Grade 1
R 50400	Ti-99.7	2 TA 2-5	–	UNS R50400	TA2.5	AIR:9182T40	–	–	–	ASTM B381F2	3.7035	ATI 40 CP Grade 2
–	SG-Ti 2	–	–	–	–	–	–	–	–	–	3.7036	–
R 50550	Ti-99.6	TA 3	–	UNS R50550	TA2, TA3, TA4, TA5	AIR:9182T50	–	–	–	ASTM B381F3	3.7055	ATI 55 CP Grade 3
R 50700	Ti-99.5	2 TA 6-9	–	UNS R50700	–	AIR:9182T60	–	–	–	ASTM B381F4	3.7065	ATI 70 CP Grade 4
–	TiNi 0,8 Mo 0,3	–	–	UNS R53400	–	–	–	–	Ti-3Al-1.5Mn	ASTM Grade 12	3.7105	–
Ti 5Al-2.5Sn	TiAl 5 Sn 2,5	–	–	UNS R54520	TA 14,17	T-A5E	–	–	Ti-5Al-2.5Sn	–	3.7115	ATI Grade 6
–	TiCu 2	2 TA 21-24	–	–	–	–	–	–	Ti-2Cu	–	3.7124	–
R 54620	TiAl 6 Sn 2 Zr 4 Mo 2 Si	–	–	UNS R54620	–	–	–	–	Ti-6Al-2Sn-2Zr-4Mo-2Si	–	3.7145	–
–	TiAl 6 ZrMo 0,5	TA 43	–	–	–	–	–	–	Ti-6-5-0.5	–	3.7155	–
R 56400	TiAl 6 V 4	TA 10-13	TC4	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V	–	–	Ti-6Al-4V	–	3.7164	ATI 6-4™
–	TiAl 6 V4	–	TC4	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V; AIR:9183	–	–	Ti-6Al-4V (Beta)	–	3.7164	–
R 56620	TiAl 6 V 6 Sn2	–	–	UNS R56620	–	–	–	–	Ti-6Al-6V-2Sn	–	3.7175	ATI 6-6-2™
–	TiAl 4 Mo 4 Sn 2	TA 45-51	–	–	–	–	–	–	Ti-4Al-4Mo-2Sn	–	3.7185	–
–	TiAl 3 V2.5	–	–	UNS R56320	–	–	–	–	Ti-3Al-2.5V	ASTM Grade 9	3.7195	ATI 3-2.5-MIL™
R 52250	Ti 1 Pd	TP 1	–	UNS R 52250	–	–	–	–	–	ASTM Grade 11	3.7225	–
R 52400	Ti 2 Pd	–	–	UNS R 52400	–	–	–	–	–	ASTM Grade 7	3.7235	–
–	Ti 3 Pd	–	–	–	–	–	–	–	–	–	3.7255	–
–	TiAl 5 Fe 2,5	–	–	–	–	–	–	–	Ti-5Al-2.5Fe	–	3.7110	–
–	TiV13Cr11Al3	–	–	–	–	–	–	–	Ti-13V-11Cr-3Al	–	–	11/13/03
–	Ti-10V-2Fe-3Al	–	–	–	–	–	–	–	Ti-10.2.3	–	–	ATI 10-2-3™
–	–	–	–	UNS R58153	–	–	–	–	Ti-15-333	–	–	ATI 15-333™
–	–	–	–	–	–	–	–	–	Ti-15Mo (Alpha + Beta)	–	–	ATI 15Mo™ (Alpha + Beta)
–	–	–	–	–	–	–	–	–	Ti-15Mo (Beta)	–	–	ATI 15Mo™ (Beta)
–	Ti5Al2Sn2Zr4Cr4Mo	–	–	UNS R58650	–	–	–	–	–	–	–	ATI 17™
–	TIAl 3 V 8 Cr 6 Mo 4 Z 4	–	–	–	–	–	–	–	Ti-3Al-8V-6Cr-4Mo-4Zr	ASTN Grade 19	–	ATI 38-644™
–	–	–	–	UNS R54250	–	–	–	–	Ti-425	ASTM B265	–	ATI 425®
–	–	–	–	–	–	–	–	–	Ti-425 MIL	–	–	ATI 425®-MIL
–	TiAl 4 Mo 4 Sn 2 Si 0.5	–	–	–	5103	T-A4DE	–	–	Ti-4Al-4Mo-2Sn-0.5Si	–	–	ATI 4-4-2™
–	–	–	–	–	–	–	–	–	Ti-45Nb	–	–	ATI 45Nb™
–	–	–	–	–	–	–	–	–	Ti-5Al-5V-5Mo-3Cr	–	–	ATI 5-5-5-3 PM™
–	–	–	–	–	–	–	–	–	Ti-6Al-2Sn-2Zr-2Mn-2Cr-0.2Si	–	–	ATI 6-2222™
–	–	–	–	UNS R54620	–	–	–	–	Ti-6Al-4Zr-2Mo-2Sn	–	–	ATI 6-2-4-2 PM™
–	TiAl6Zr4Mo2Sn2	–	–	UNS R54620 modified	–	–	–	–	Ti-6Al-4Zr-2Mo-2Sn-0.2Si	–	–	ATI 6-2-4-2-Si PM™
–	–	–	–	UNS R56260	–	–	–	–	Ti-6-2-4-6	–	–	ATI 6-2-4-6™
–	–	–	–	UNS R56401	–	–	–	–	Ti-6Al-4V ELI	–	–	ATI 6-4 ELI™
–	TiAl 6 V4	–	–	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V; AIR:9183	–	–	Ti-6Al-4V MIL	–	–	ATI 6-4-MIL™
–	TiAl 6 V4	–	–	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V; AIR:9183	–	–	Ti-6Al-4V MIL (HT)	–	–	ATI 6-4-MIL™
–	–	–	–	UNS R56700	–	–	–	–	Ti-6-7	ASTM F 1295	–	ATI 6-7™
–	TiAl8Mo1V1	–	–	UNS R54810	–	–	–	–	Ti-8Al-1Mo-1V	–	–	ATI 8-1-1™
–	–	–	–	–	–	–	–	–	Ti-15Mo-3Nb-3Al-0.2Si	ASTM Grade 21	–	Beta 21-S
–	–	–	–	–	–	–	–	–	Ti-12Mo-6Zr-2Fe	–	–	TMZF
–	TiAl7Nb	–	–	–	–	–	–	–	Ti-6Al-7Nb	–	–	–
–	TiAl7Mo4	–	–	–	–	–	–	–	–	ASTM B381	–	–
–	TiAl 4 Mo 4 Sn 4 Si 0.5	–	–	–	5203	–	–	–	Ti-4Al-4Mo-4Sn-0.5Si	–	–	–
–	TiA6Zr5Mo0.5Si0.25	–	–	–	–	T.AGZ.50	–	–	Ti-6Al-5Zr-0.5Mo-0.25Si	–	–	–
–	TiAl6Zr5Mo4CuSi0.2	–	–	–	M201	–	–	–	Ti-6Al-5Zr-4Mo-Cu-0.2Si	–	–	–
–	–	–	TC18	–	–	–	–	–	Ti-5Al-5Mo-5V-1Cr-1Fe	–	–	–
–	–	–	–	UNS %58210	–	–	–	–	Ti Beta 21 S	ASTM Grade 21	–	–
Ti 98.8	Ti 98.8	–	–	–	–	–	–	–	–	–	–	–
Ti 99.9	Ti 99.9	–	–	–	–	–	–	–	–	–	–	–
–	TiAL 6 Sn 2 Zr 4 Mo 2	–	–	–	–	–	–	–	–	–	–	–

NOTE: For legend, see page Y217.

H1 ■ Workpiece Materials Listing • Hardened Steels and Irons • H1

H1 Hardened Materials *Hardness (HRC): 44–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
H 11	X 38 CrMoV 5 H1	BH 11	SKD 6	T20811	X 38 CrMoV 5 H1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	–	–	–	1.2343	–
H11	X 38 CrMoV 5 H1	BH 11	SKD 6	T20811	X 38 CrMoV 5 H1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	–	–	–	1.2343	–
H 13	X 40 CrMoV 5 1	BH 13	SKD 61	T20813	X 40 CrMoV 5 1	Z 40 CDV 5	X 40 CrMoV 5 1 1 KU	2242	–	–	1.2344	–
H 10	X 32 CrMoV 3 3	BH 10	SKD 7	T 20810	X 32 CrMoV 12H-28	32 DCV 28	30 CrMoV 12 27 KU	–	–	–	1.2365	–
H19	X 45 CrCoVW 5 5 5	–	–	–	–	–	–	–	–	–	1.2678	–
A 532 I B NiCr-LC	GX 260 NiCr 42	Grade 2 A	0512-00	F45001	GJH-X260NiCr 4-2	–	–	0512-00	–	–	0.9620	–
L6	–	–	–	–	–	55 NCDV 07 (HT)	–	–	–	–	–	–

H2 ■ Workpiece Materials Listing • Hardened Steels and Irons • H2

H2 Hardened Materials *Hardness (HRC): 48–55*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 532 I A NiCr-HC	G-X 330 NiCr 42	Grade 2 B	0513-00	F45000	GJH-X330NiCr 4-2	FB Ni 4 Cr2 HC	–	0513-00	–	–	0.9625	–
H 21	X 30 WCrV 93	BH 21	SKD 5	T 20821	X 30 WCrV 9 3	Z 30 WCV 9	X 30 WCrV 9 3 KU	–	–	–	1.2581	–
H 12	X 37 CrMoW 5 1	BH 12	SKD 62	T20812	–	Z 35 CWDV 5	X 35 CrMoW 05 KU	–	–	–	1.2606	–
–	G-X 300 NiMo 3 Mg	–	–	–	GJH-X300NiMo 3 Mg	–	–	–	–	–	0.9610	–
A 532 I B NiCr-LC	GX 260 NiCr 42	Grade 2 A	0512-00	F45001	GJH-X260NiCr 4-2	–	–	0512-00	–	–	0.9620	–
A 532 III A 25% Cr	GX 260 Cr 27	Grade 3 D	0466-00	–	GJH-X260Cr 27	–	–	–	–	–	0.9650	–
–	X 2 NiCoMoTi 180905	–	–	–	–	Z 2 NKD 180905	–	–	–	–	–	Durimphy
K12	–	–	–	–	–	–	–	–	–	–	–	ATI K12 MIL

H3 ■ Workpiece Materials Listing • Hardened Steels and Irons • H3

H3 Hardened Materials *Hardness (HRC): 56–60*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 532 IIC15% CrMo-HC	G-X 300CrMo 15 3	Grade 3 A	–	–	GJH-X300CrMo 15-3	–	–	–	–	–	0.9635	–
–	G-X 300 CrMoNi 15 2 1	Grade 3 B	–	F45005	GJH-X300CrMoNi15-2-1	–	–	–	–	–	0.9640	–
A 532 IID20% CrMo-LC	GX 260 CrMoNi 20 2 1	Grade 3 C	–	F45007	GJH-X260CrMoNi20-2-1	–	–	–	–	–	0.9645	–
A 532 III A 25% Cr	G-X 300 CrMo 27 1	Grade 3 E	–	–	GJH-X300CrMo 27-1	–	–	–	–	–	0.9655	–
A 2	X 100 CrMoV 5 1	SKD 12	–	–	BA 2	Z 100 CDV 5 (HT)	X 100 CrMoV 51 KU	2260	–	–	1.2363	–
D7 (HT)	–	–	–	T30407	–	Z 230 CVA 12 04	–	–	–	–	1.2378	–
O 2	90 MnCrV 8	BO 2	–	T31502	90 MnV 8	90 MnV 8	90 MnVCr 8 KU	–	–	–	1.2842	–
A 532 I D Ni-HiCr	G-X 300 CrNiSi 95 2	Grade 2 C	0457-00	F45003	GJH-X300CrNiSi 9-5-2	–	–	–	–	–	0.9630	Nihard type 4
S 1	60 WCrV 7	BS 1	–	–	6020 WCrV 8	55 WC 20	55 WCrV 8 KU	–	–	–	1.2550	–
S 1	60 WCrV 7	BS 1	–	–	60 WCrV 8	55 WC 20	55 WCrV 8 UK	–	–	–	1.2550	–
S 7	50 CrMoV 13 14	–	–	–	–	–	–	–	–	–	–	Cryodur 2357
K 12 (HT)	–	–	–	–	–	–	–	–	–	–	–	ATI K12-MIL

H4 ■ Workpiece Materials Listing • Hardened Steels and Irons • H4

H4 Hardened Materials *Hardness (HRC): >60*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
W 108	C 80 W 1	–	–	T72301	C 80 U	Y1 90	C 80 KU	1880	–	–	1.1525	–
D 2	X 155 CrVMo 12 1	BD 2	SKD §§	T 30402	X 153 CrMoV 12	Z 160 CDV 12	X 155 CrVMo 12 1 KU	2310	–	–	1.2379	–
–	100 WV4	–	SKS 21	–	–	–	–	–	–	–	1.2515	–
D 3	X 210 Cr 12	BD 3	SKD 1	T30403	X 210 Cr 1 2	Z 200 C 12	X 205 Cr 12 KU	–	–	–	1.2080	–
O 7	110 WCrV 5	–	–	–	–	–	–	–	–	–	–	–
–	Mh97 + Pb	–	–	–	–	–	–	–	–	–	–	LAW 100 Pb

■ Workpiece Materials Listing Legend

* 1 Mpa = 145 psi.
** Includes ASTM and SAE material specifications.
AISI — American Iron and Steel Institute
AFNOR — French National Organisation for Standardisation
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardisation
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organisation for Standardisation
UNS — Unified Numbering System

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METALCUTTING SAFETY

IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalogue!

Projectile and Fragmentation Hazards:

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards:

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by Kennametal and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalogue and recommendations on machining practices may not apply to your particular operation. For more information, consult the Kennametal Metalcutting Safety booklet, available free from Kennametal at 724 539 5747 or fax 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at 724 539 5066 or fax 724 539 5372.

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