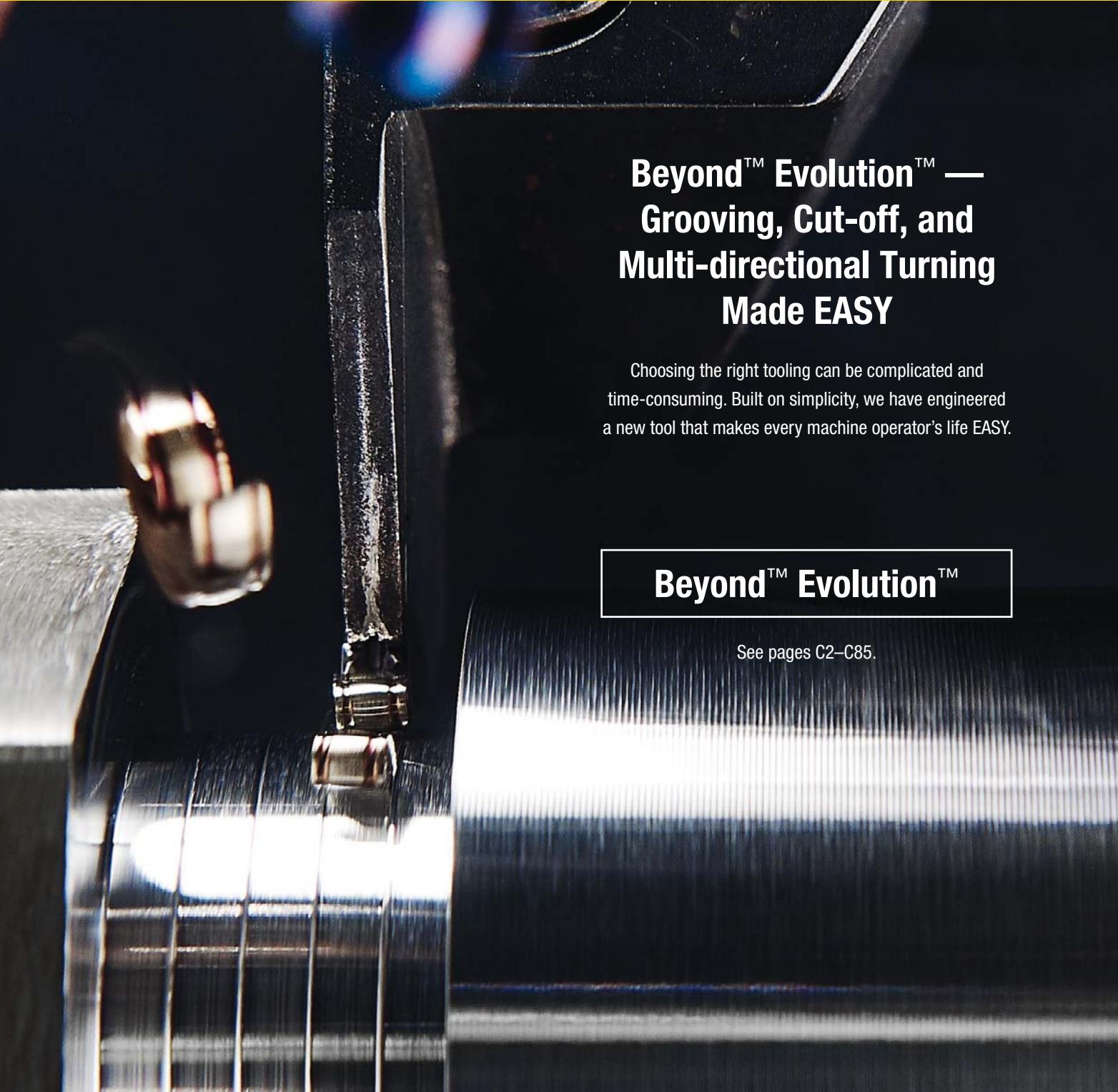


MASTER CATALOGUE 2018

VOLUME ONE | **TURNING TOOLS**



ISO TURNING | GROOVING & CUT-OFF | THREADING | APPLICATION SPECIFIC



Beyond™ Evolution™ — Grooving, Cut-off, and Multi-directional Turning Made EASY

Choosing the right tooling can be complicated and time-consuming. Built on simplicity, we have engineered a new tool that makes every machine operator's life EASY.

Beyond™ Evolution™

See pages C2–C85.

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 900+ pages bring you the latest in turning 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



Volume I • Turning Tools

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

Turning Tools

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Turning

PRODUCT HIGHLIGHTS

► BEYOND™ EVOLUTION™

See section C 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 for more details.



beyond **DRIVE™**

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.



► CAST IRON TURNING WITH KBK45™

See section B 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 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.

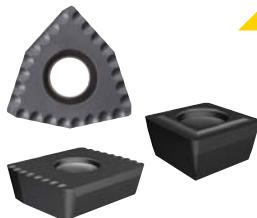
KBH20 grade is a new substrate for applications like case-hardened components, including gears, shafts, and other drive-train components.

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



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.

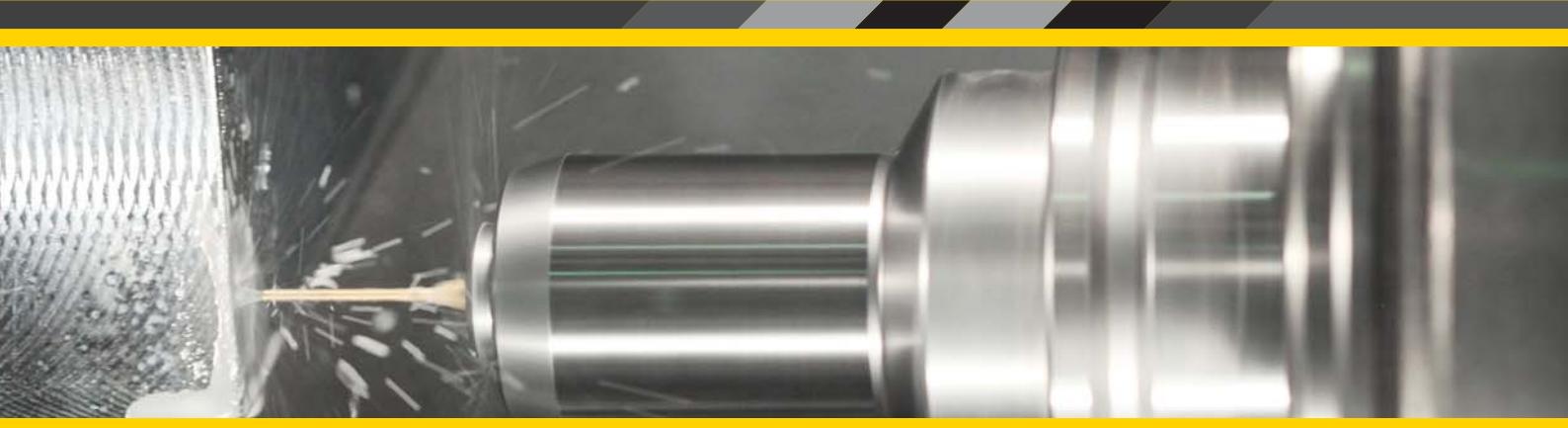
The all-new B21_SGL series solid carbide drills are designed specifically for stainless steel applications, offering high performance and long tool life in high-temperature alloys and regular steel, also.

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!





NEW!



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.

GTotap 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. GTotap taps versatility extends beyond the part, as it can be used in a wide range of machine tools and application conditions. The new GTotap TC multipurpose taps enable blind-hole tapping with tension/compression holders without sizing problems due to over-feeding. The versatility of GTotap taps mean lower inventory costs with no loss of productivity, consistent tool life, and high-quality thread finish.

Solid End Milling

PRODUCT HIGHLIGHTS



DUO-LOCK®

See section O (Volume II) 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-LOCK®
by HAIMER® and Kennametal



HARVI™ III FAMILY

See section P (Volume II) 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™ EADE SOLID CERAMIC END MILLS

See section P (Volume II) 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 (Volume II) 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 (Volume II) 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.

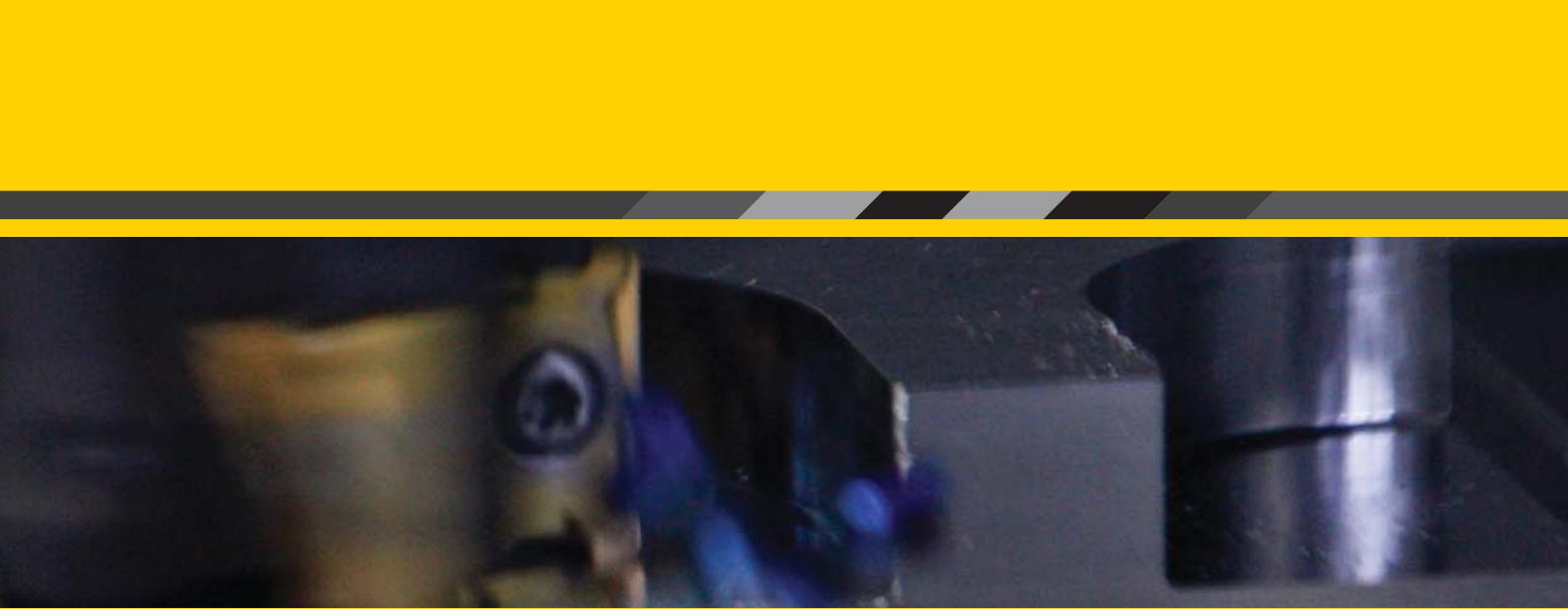


► MILL 16™

See section S (Volume II) 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.



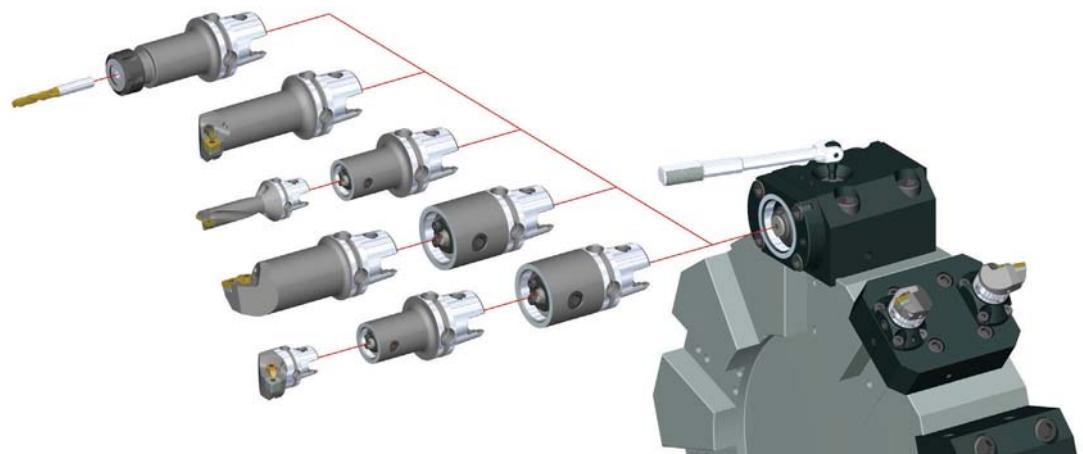
STELLRAM® 7792VX HIGH-FEED SERIES

See section V (Volume II) 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.

Tooling Systems

PRODUCT HIGHLIGHTS



KENNAMETAL MODULAR (KM™) QUICK CHANGE

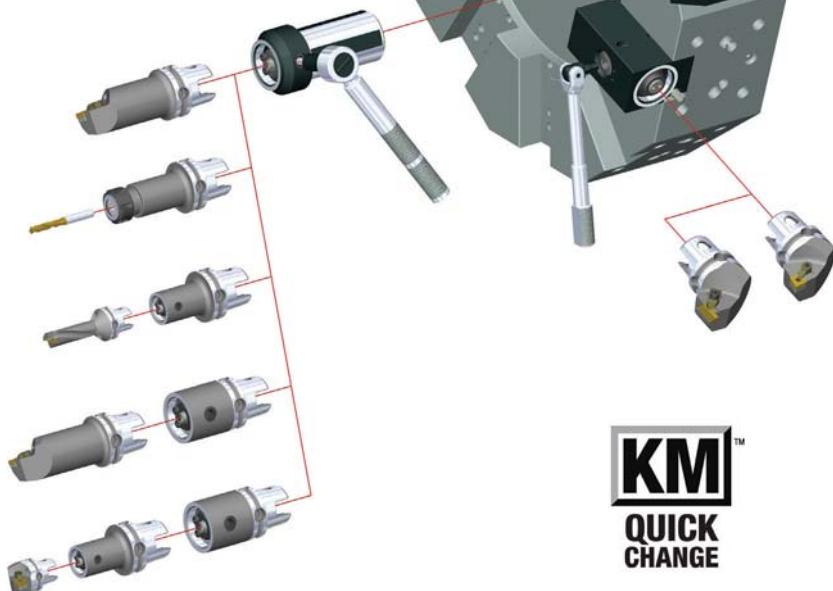
Visit kennametal.com or kennametal.com/novo for more details.

KM™ quick-change tooling helps achieve dramatic improvements in cutting tool performance and machine output. Frequent changing, setting up, and gaging of tools create costly machine downtime. KM quick-change tooling provides a more efficient process that can reduce downtime to increase productivity.

In addition, KM micro and KM mini systems can be used to considerably increase machine tool capacity on automatic and universal lathes and decrease indexing and setup times by up to 66%.

Whether you're looking to outfit a new machine or improve the output of current equipment, KM quick-change tooling can maximise production.

The KM portfolio includes options for all application requirements and limits the need for costly custom solutions due to system modularity.



KM™
**QUICK
CHANGE**



► 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.



► DRIVEN TOOLING AND STATIC TOOL BLOCKS

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

Turn your CNC lathe into a multi-task solution provider with turret-adapted driven clamping units for rotating applications and static tool blocks for maximum quick change flexibility. Whether it's for milling, drilling, tapping, boring, or non-rotating applications, you can maximise machine utilisation by employing Kennametal tooling and solutions. Available in multiple KM™ format sizes to allow for versatility and productivity.

- 0 and 90° options available as standard.
- Up to 12,000 RPM speeds for high metal removal rates.
- 1:1 and 1:2 gear ratios available for added speed or torque.
- Standard configurations for multiple manufacturers and customisable to fit most turrets.
- Quick change solutions for static and rotating applications to maximise machine effectiveness.

► TUNABLE BORING

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

Kennametal tunable boring bars can increase productivity and solve chatter and other issues in long-boring operations.

Several key improvements to our current tunable boring bar portfolio include:

- Enhanced tuning process at the manufacturing plant ensures accurate tuning at the maximum overhang.
- Nitriding of steel tunable boring bars eliminates the effects of chip wash.
- Elimination of flats on tunable boring bars enhances stability and proper toolholding.
- Addition of a small flat on the connection collar enables the use of a centre-height tool.
- Enhanced assembly process.



Kennametal on the Web

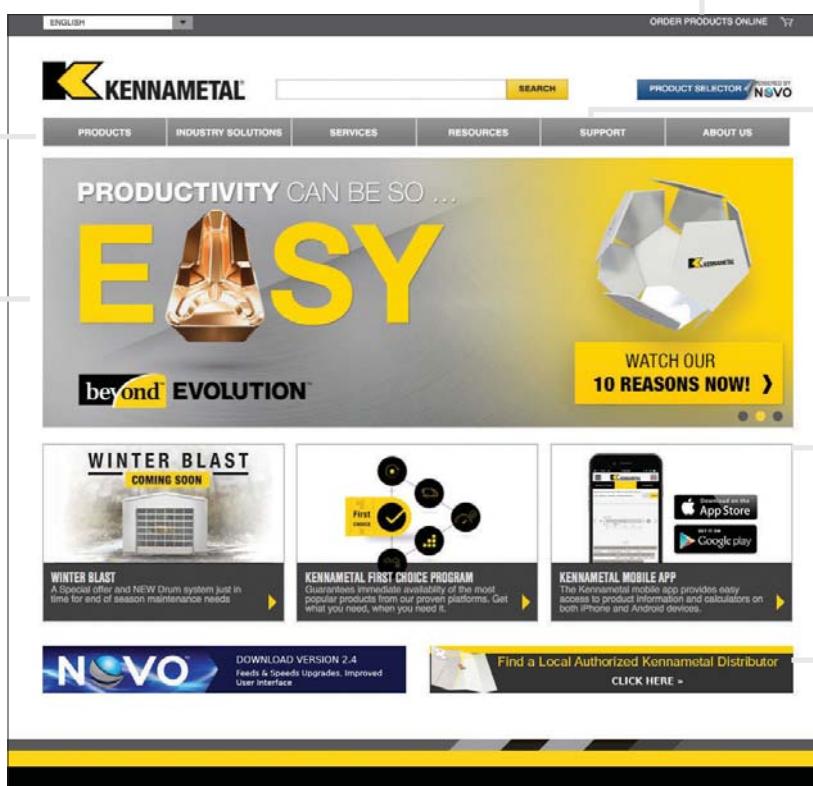
kennametal.com

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

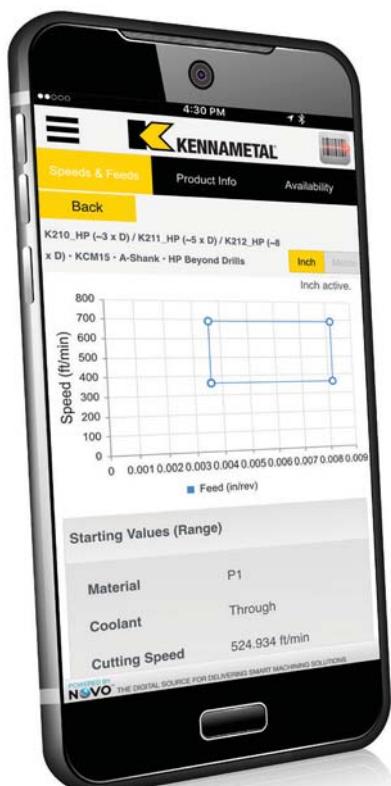
Our customers are important to us. We want to provide you the best customer service in the industry. If you have a comment or question, please send it to us. We strive to respond to all inquiries within 24 hours.

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.



MACHINING CALCULATORS

ORDERING

WHERE TO FIND IT

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.

View data for milling and drilling applications.

Inch and metric values calculated.

Login using your Konnect credentials to complete a purchase.

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

| Originating Country | Language | Phone | E-mail |
|---------------------|----------------|-----------------|-----------------------------------|
| Australia | English | 1800 666 667 | ap-kmt.techsupport@kennametal.com |
| Austria | German | 0800 202873 | eu.techsupport@kennametal.com |
| Belgium | English/French | 0800 80850 | eu.techsupport@kennametal.com |
| China | Chinese | 400 889 2238 | k-cn.techsupport@kennametal.com |
| Denmark | English | 808 89298 | na.techsupport@kennametal.com |
| Finland | English | 0800 919412 | na.techsupport@kennametal.com |
| France | French | 080 5540 367 | eu.techsupport@kennametal.com |
| Germany | German | 0800 0006651 | eu.techsupport@kennametal.com |
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| Italy | Italian | 800 916561 | eu.techsupport@kennametal.com |
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| Malaysia | English | 1800 812 990 | ap-kmt.techsupport@kennametal.com |
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| 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.

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:

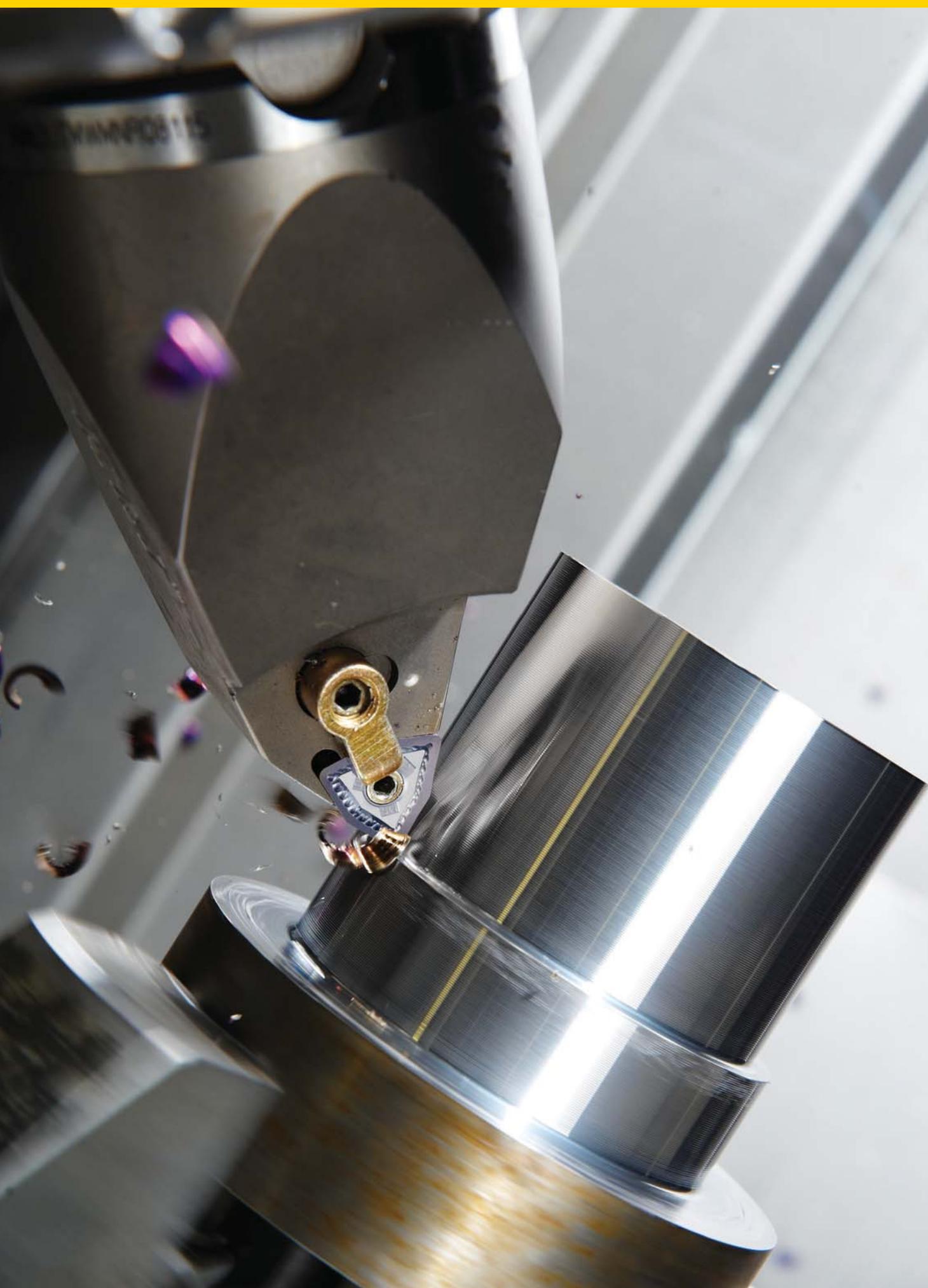
- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

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

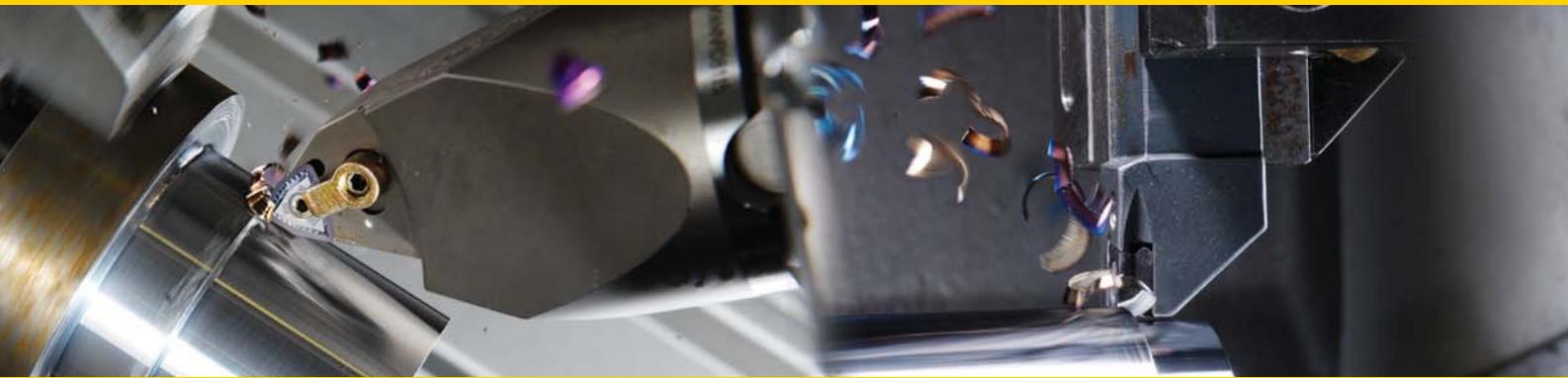
- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that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



Turning

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| Threading..... | D1–D110 |
| Application Specific..... | E1–E65 |



Turning 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.



ISO TURNING

See Section B for more details.

- Negative-style inserts.
- Toolholders, boring bars, cartridges, and bolt-on heads for negative-style inserts.
- Positive-style inserts.
- Toolholders, boring bars, cartridges, and bolt-on heads for positive-style inserts.
- Advanced material inserts for machining:
 - Cast iron
 - Hardened steels
 - High-temperature alloys
- PCD inserts.
- Toolholders, boring bars, cartridges, and bolt-on heads for use with advanced material inserts.
- Tunable bars.

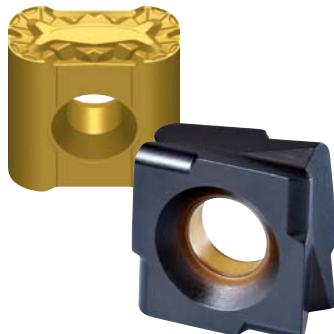




➤ THREADING, GROOVING, AND CUT-OFF

See Sections C and D for more details.

- Beyond™ Evolution™ Grooving, Cut-Off, and Side Turning
- A4™ Grooving and Side Turning
- Top Notch™ Grooving
- Top Notch Threading
- Laydown Threading



➤ APPLICATION SPECIFIC

See Section E for more details.

- Fix-Perfect™ Turning
- Top Notch Profiling
- Tools for Railroad and Wheel Machining
- K-Lock™





ISO Turning

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Mobile Apps

The Kennametal mobile app provides easy access to product information and calculators on both iPhone® and Android™ devices. We've highlighted a few of the key features...

There's an app for that.

SPEEDS & FEEDS

View speeds and feeds information for metalworking products.

PRODUCT AVAILABILITY

Check global availability of products. View available quantities by providing your Konnect login credentials.

CALCULATORS

Utilise our machining calculators for milling and drilling applications.



➤ By just scanning the bar code on the insert packet, you can find the most productive cutting conditions for tool life, process time, and chip control.

NOTE: The app is currently only available in the English-language version. We have plans to translate the app in different languages with future releases.



➤ ISO Turning Inserts, Toolholders, and Boring Bars

Modern CNC machines and flexible production facilities require tools with application versatility. Kennametal high-performance inserts, toolholders, and boring bars are designed to handle any turning application. Whether you're cutting steel or titanium, or doing light finishing or heavy roughing, we have the tooling solution to meet your needs.



Features and Benefits

Beyond™ Drive™ Inserts

- Designed for increased productivity.
- Post-coat treatment reduces stress, improves coating adhesion.
- Excellent toughness and wear resistance.
- Better insert wear detection.

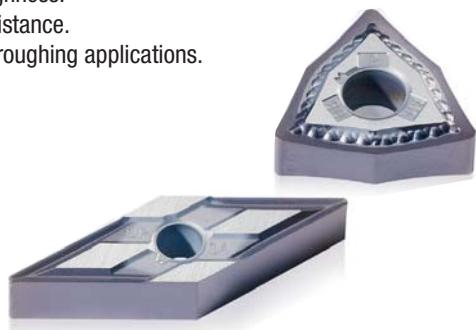
Beyond™ PVD Grades

KCU10™ Grade

- Superior wear resistance and faster cutting speeds at higher temperatures.
- Ideal for stainless steels and high-temp alloys.
- Improved depth-of-cut notch resistance.
- Use in finishing to medium applications.

KCU25™ Grade

- Superior edge toughness.
- Excellent wear resistance.
- Use in medium to roughing applications.



Kennametal Turning Solutions by Material

| | | |
|---|--------------------|--|
| P | Steel | Carbide or Cermet Inserts |
| M | Stainless Steel | Carbide Inserts |
| K | Cast Iron | Carbide, Ceramic, or PcbN Inserts |
| N | Non-Ferrous | Carbide or PCD Inserts |
| S | High-Temp Alloys | Carbide, Ceramic, PcbN, or PCD Inserts |
| H | Hardened Materials | Ceramic or PcbN Inserts |

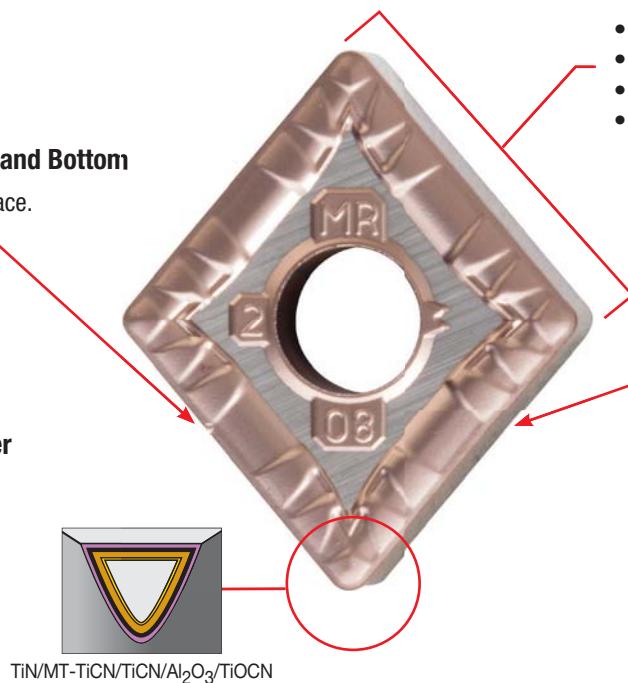
Beyond™ Drive™ Inserts • Technology Details

Post-Coat Grinding — Top and Bottom

- Provides secure seating surface.

Fine-Grained Alumina Layer

- Provides coating integrity at elevated speeds.
- Higher productivity and dependability at high-cutting temperatures.



Post-Coat Treatment

- Improves edge toughness.
- Long predictable tool life.
- Reduces depth-of-cut notching.
- Wide range of applications.

Micro-Polished Edges

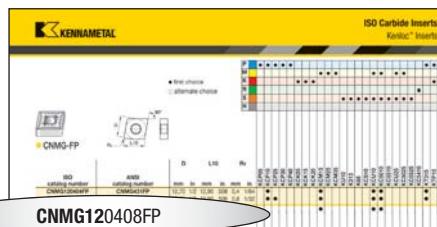
- Improves edge toughness.
- Provides smooth outer surface to reduce forces, friction, and workpiece sticking.

Toolholders, Boring Bars, and Cartridges



How Do Catalogue Numbers Work?

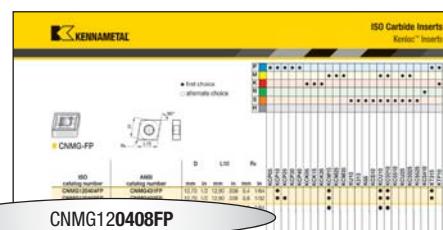
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



| C | N | M | G | 12 |
|--|--|---|------------------|---|
| Insert Shape | Insert Clearance Angle | Tolerance Class | Insert Features | Size |
| H Hexagon 120° | A 3° | Tolerances apply prior to edge prep and coating | N | Code for inch cutting edge length "L10" |
| O Octagon 135° | B 5° | | R | "D" mm C D R S T V W |
| P Pentagon 108° | C 7° | | F | 3,97 S4 04 03 03 06 - - |
| R Round | D 15° | | A | 4,76 04 05 04 04 08 08 S3 |
| S Square 90° | E 20° | | M | 5,56 05 06 05 05 09 09 03 |
| T Triangular 60° | F 25° | | G | 6,00 - - 06 - - - - |
| C Rhomboid 80° | G 30° | D = Theoretical diameter of the insert inscribed circle S = Thickness B = See figures below | W | 6,35 06 07 06 06 11 11 04 |
| D 55° | | | T | 7,94 08 09 07 07 13 13 05 |
| E 75° | | | Q | 8,00 - - 08 - - - - |
| M 86° | | | U | 9,52 09 11 09 09 16 16 06 |
| V 35° | | | B | 10,00 - - 10 - - - - |
| W Trigon 80° with enlarged corner angles | N 0° | | H | 11,11 11 13 11 11 19 19 07 |
| L Rectangular 90° | P 11° | | C | 12,00 - - 12 - - - - |
| A Parallelogram 85° | | | J | 12,70 12 15 12 12 22 22 08 |
| B 82° | O Indicated for other clearance angles requiring descriptions. | | X Special Design | 14,29 14 17 14 14 24 24 09 |
| N/K 55° | | | | 15,88 16 19 15 15 27 27 10 |
| | | | | 16,00 - - 16 - - - - |
| | | | | 17,46 17 21 17 17 30 30 11 |
| | | | | 19,05 19 23 19 19 33 33 13 |
| | | | | 20,00 - - 20 - - - - |
| | | | | 22,22 22 27 22 22 38 38 15 |
| | | | | 25,00 - - 25 - - - - |
| | | | | 25,40 25 31 25 25 44 44 17 |
| | | | | 31,75 32 38 31 31 54 54 21 |
| | | | | 32,00 - - 32 - - - - |

| tolerance class | tolerance on "D" | tolerance on "B" | tolerance on "S" |
|-----------------|-------------------------|------------------|------------------|
| C | ±0,025 | ±0,013 | ±0,025 |
| H | ±0,013 | ±0,013 | ±0,025 |
| E | ±0,025 | ±0,025 | ±0,025 |
| G | ±0,025 | ±0,025 | ±0,013 |
| M | See tables on next page | | ±0,013 |
| U | See tables on next page | | ±0,013 |

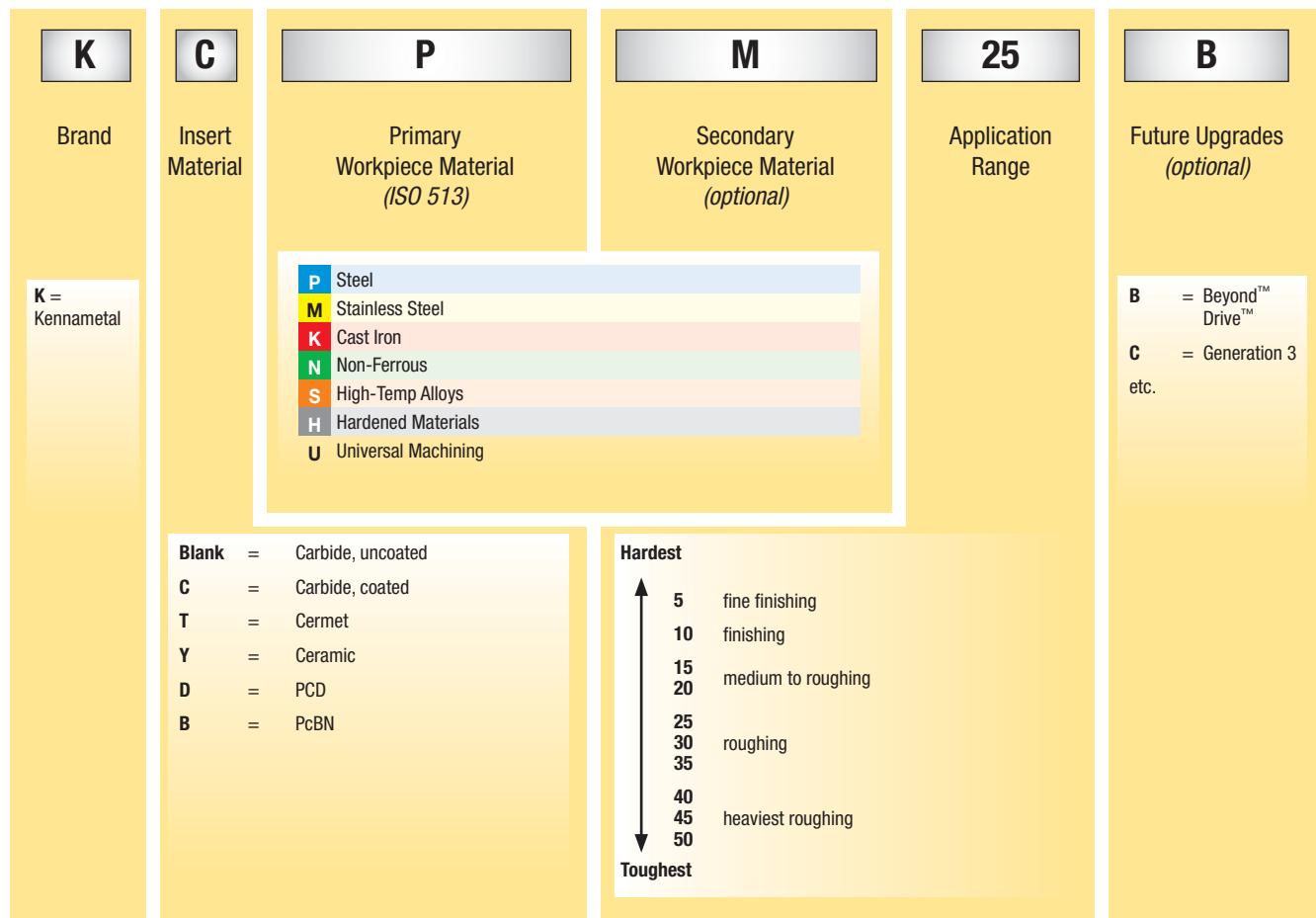
By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



| 04 | 08 | | | FP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------------------|------------------------------|----------------------------|---------------------------|------------------------------------|------|-----------|-------------------|----|-------------------|----|------------------------------------|------------------------------------|------------------|------------------|---------------------------|------|------|----|------|----|------|------|------|----|------|------|------|------|-------|------|-------|---|--------|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|------|------|-------|-------|------|------|------|------|-------|--------------|---|---|---|------|-------|-------|------|------|------|------|-------|-------|------|------|------|------|-------|-------|------|------|------|------|-------|-------|------|---|---|------|-------|-------|------|---|---|------|-------|-------|------|---|---|------|-------|--------------------|--|--|--|--|--|-----------|-------------------|--|-------------------|--|-------------------------|------------------------------------|------------------|------------------|---------------------------|------|------|---|---|---|------|------|------|---|---|------|------|------|------|------|---|------|------|------|------|------|---|------|------|------|------|------|---|------|------|------|------|------|------|------|------|-------|------|------|---|---|-------|-------|------|------|------|------|-------|-------|------|------|---|---|-------|-------|------|------|---|------|-------|-------|------|------|---|------|-------|-------|------|------|---|------|-------|-------|------|---|---|------|-------|-------|------|---|---|------|-------|-------|------|---|---|------|-------|
| Thickness S | Corner Radius "R _E " | Hand of Insert (optional) | Cutting Edge (optional) | Chipbreaker (optional) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>symbol</th><th>thickness</th></tr> <tr> <th>mm</th><th>mm</th></tr> </thead> <tbody> <tr><td>—</td><td>0,79</td></tr> <tr><td>T0</td><td>1,00</td></tr> <tr><td>01</td><td>1,59</td></tr> <tr><td>T1</td><td>1,98</td></tr> <tr><td>02</td><td>2,38</td></tr> <tr><td>03</td><td>3,18</td></tr> <tr><td>T3</td><td>3,97</td></tr> <tr><td>04</td><td>4,76</td></tr> <tr><td>05</td><td>5,56</td></tr> <tr><td>06</td><td>6,35</td></tr> <tr><td>07</td><td>7,94</td></tr> <tr><td>9</td><td>9,52</td></tr> <tr><td>11</td><td>11,11</td></tr> <tr><td>12</td><td>12,70</td></tr> </tbody> </table> | symbol | thickness | mm | mm | — | 0,79 | T0 | 1,00 | 01 | 1,59 | T1 | 1,98 | 02 | 2,38 | 03 | 3,18 | T3 | 3,97 | 04 | 4,76 | 05 | 5,56 | 06 | 6,35 | 07 | 7,94 | 9 | 9,52 | 11 | 11,11 | 12 | 12,70 | <table border="1"> <thead> <tr> <th>symbol</th><th>corner radius</th></tr> <tr> <th>mm</th><th>mm</th></tr> </thead> <tbody> <tr><td>X0</td><td>0,04</td></tr> <tr><td>01</td><td>0,1</td></tr> <tr><td>02</td><td>0,2</td></tr> <tr><td>04</td><td>0,4</td></tr> <tr><td>08</td><td>0,8</td></tr> <tr><td>12</td><td>1,2</td></tr> <tr><td>16</td><td>1,6</td></tr> <tr><td>20</td><td>2,0</td></tr> <tr><td>24</td><td>2,4</td></tr> <tr><td>28</td><td>2,8</td></tr> <tr><td>32</td><td>3,2</td></tr> <tr><td>00</td><td></td></tr> <tr><td>M0</td><td></td></tr> <tr><td>—</td><td>round insert</td></tr> </tbody> </table> | symbol | corner radius | mm | mm | X0 | 0,04 | 01 | 0,1 | 02 | 0,2 | 04 | 0,4 | 08 | 0,8 | 12 | 1,2 | 16 | 1,6 | 20 | 2,0 | 24 | 2,4 | 28 | 2,8 | 32 | 3,2 | 00 | | M0 | | — | round insert | <p>R = Right hand</p> <p>L = Left hand</p> <p>N = Neutral</p> | <p>F Sharp</p> <p>E Rounded</p> <p>T Chamfered</p> <p>S Chamfered and Rounded</p> <p>K Double-Chamfered</p> <p>P Double-Chamfered and Rounded</p> | <p>F = Sharp</p> <p>FF = Fine Finishing</p> <p>FN = Finishing Negative</p> <p>MN = Medium Negative</p> <p>MR = Medium Roughing</p> <p>RN = Roughing Negative</p> <p>UN = Universal Medium</p> <p>FP = Finishing Positive</p> <p>MP = Medium Positive</p> <p>RP = Roughing Positive</p> <p>RM = Roughing Medium</p> <p>RH = Roughing Heavy</p> <p>FW = Finishing Wiper</p> <p>MW = Medium Wiper</p> <p>FS = Finishing Sharp</p> <p>MS = Medium Sharp</p> <p>RW = Roughing Wiper</p> <p>HP = High Positive</p> <p>UP = Universal Positive</p> <p>K = Light-Feed Chip Control</p> <p>UF = Ultra-Fine Finishing</p> <p>LF = Light Finishing</p> <p>MF = Medium Finishing</p> <p>E = Hone Only</p> <p>T = Negative Land</p> <p>S = Negative Land Plus Hone</p> <p>MP-K = Medium Positive</p> <p>MG-P = Medium Positive</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| symbol | thickness | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| mm | mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | 0,79 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T0 | 1,00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01 | 1,59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T1 | 1,98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | 2,38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | 3,18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T3 | 3,97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | 4,76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | 5,56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | 6,35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07 | 7,94 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 9,52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 11,11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 12,70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| symbol | corner radius | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| mm | mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| X0 | 0,04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01 | 0,1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | 0,2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | 0,4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08 | 0,8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 1,2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 1,6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 2,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 2,4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 2,8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | 3,2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | round insert | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th colspan="6">± Tolerance on "D"</th> </tr> <tr> <th rowspan="2">"D" mm</th> <th colspan="2">Class M Tolerance</th> <th colspan="2">Class U Tolerance</th> <th rowspan="2">Shapes S, T, C, R, & W mm</th> </tr> <tr> <th>Shapes S, T, C, R, & W mm</th> <th>Shape D mm</th> <th>Shape V mm</th> <th>Shapes S, T, & C mm</th> </tr> </thead> <tbody> <tr><td>3,97</td><td>0,05</td><td>—</td><td>—</td><td>—</td><td>3,97</td></tr> <tr><td>4,76</td><td>0,05</td><td>—</td><td>—</td><td>0,08</td><td>4,76</td></tr> <tr><td>5,56</td><td>0,05</td><td>0,05</td><td>0,05</td><td>0,08</td><td>5,56</td></tr> <tr><td>6,35</td><td>0,05</td><td>0,05</td><td>0,05</td><td>0,08</td><td>6,35</td></tr> <tr><td>7,94</td><td>0,05</td><td>0,05</td><td>0,05</td><td>0,08</td><td>7,94</td></tr> <tr><td>9,52</td><td>0,05</td><td>0,05</td><td>0,05</td><td>0,08</td><td>9,52</td></tr> <tr><td>11,11</td><td>0,08</td><td>0,08</td><td>0,08</td><td>0,13</td><td>11,11</td></tr> <tr><td>12,70</td><td>0,08</td><td>0,08</td><td>0,08</td><td>0,13</td><td>12,70</td></tr> <tr><td>14,29</td><td>0,08</td><td>0,08</td><td>0,08</td><td>0,13</td><td>14,29</td></tr> <tr><td>15,88</td><td>0,10</td><td>0,10</td><td>0,10</td><td>0,18</td><td>15,88</td></tr> <tr><td>17,46</td><td>0,10</td><td>0,10</td><td>0,10</td><td>0,18</td><td>17,46</td></tr> <tr><td>19,05</td><td>0,10</td><td>0,10</td><td>0,10</td><td>0,18</td><td>19,05</td></tr> <tr><td>22,22</td><td>0,13</td><td>—</td><td>—</td><td>0,25</td><td>22,22</td></tr> <tr><td>25,40</td><td>0,13</td><td>—</td><td>—</td><td>0,25</td><td>25,40</td></tr> <tr><td>31,75</td><td>0,15</td><td>—</td><td>—</td><td>0,25</td><td>31,75</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="6">± Tolerance on "B"</th> </tr> <tr> <th rowspan="2">"D" mm</th> <th colspan="2">Class M Tolerance</th> <th colspan="2">Class U Tolerance</th> <th rowspan="2">Shapes S, T, C mm</th> </tr> <tr> <th>Shapes S, T, C, R, & W mm</th> <th>Shape D mm</th> <th>Shape V mm</th> <th>Shapes S, T, & C mm</th> </tr> </thead> <tbody> <tr><td>3,97</td><td>0,08</td><td>—</td><td>—</td><td>—</td><td>3,97</td></tr> <tr><td>4,76</td><td>0,08</td><td>—</td><td>—</td><td>0,13</td><td>4,76</td></tr> <tr><td>5,56</td><td>0,08</td><td>0,11</td><td>—</td><td>0,13</td><td>5,56</td></tr> <tr><td>6,35</td><td>0,08</td><td>0,11</td><td>—</td><td>0,13</td><td>6,35</td></tr> <tr><td>7,94</td><td>0,08</td><td>0,11</td><td>—</td><td>0,13</td><td>7,94</td></tr> <tr><td>9,52</td><td>0,08</td><td>0,11</td><td>0,18</td><td>0,13</td><td>9,52</td></tr> <tr><td>11,11</td><td>0,13</td><td>0,15</td><td>—</td><td>—</td><td>11,11</td></tr> <tr><td>12,70</td><td>0,13</td><td>0,15</td><td>0,25</td><td>0,20</td><td>12,70</td></tr> <tr><td>14,29</td><td>0,13</td><td>0,15</td><td>—</td><td>—</td><td>14,29</td></tr> <tr><td>15,88</td><td>0,15</td><td>0,18</td><td>—</td><td>0,27</td><td>15,88</td></tr> <tr><td>17,46</td><td>0,15</td><td>0,18</td><td>—</td><td>0,27</td><td>17,46</td></tr> <tr><td>19,05</td><td>0,15</td><td>0,18</td><td>—</td><td>0,27</td><td>19,05</td></tr> <tr><td>22,22</td><td>0,15</td><td>—</td><td>—</td><td>0,38</td><td>22,22</td></tr> <tr><td>25,40</td><td>0,18</td><td>—</td><td>—</td><td>0,38</td><td>25,40</td></tr> <tr><td>31,75</td><td>0,20</td><td>—</td><td>—</td><td>0,38</td><td>31,75</td></tr> </tbody> </table> | ± Tolerance on "D" | | | | | | "D" mm | Class M Tolerance | | Class U Tolerance | | Shapes S, T, C, R, & W mm | Shapes S, T, C, R, & W mm | Shape D mm | Shape V mm | Shapes S, T, & C mm | 3,97 | 0,05 | — | — | — | 3,97 | 4,76 | 0,05 | — | — | 0,08 | 4,76 | 5,56 | 0,05 | 0,05 | 0,05 | 0,08 | 5,56 | 6,35 | 0,05 | 0,05 | 0,05 | 0,08 | 6,35 | 7,94 | 0,05 | 0,05 | 0,05 | 0,08 | 7,94 | 9,52 | 0,05 | 0,05 | 0,05 | 0,08 | 9,52 | 11,11 | 0,08 | 0,08 | 0,08 | 0,13 | 11,11 | 12,70 | 0,08 | 0,08 | 0,08 | 0,13 | 12,70 | 14,29 | 0,08 | 0,08 | 0,08 | 0,13 | 14,29 | 15,88 | 0,10 | 0,10 | 0,10 | 0,18 | 15,88 | 17,46 | 0,10 | 0,10 | 0,10 | 0,18 | 17,46 | 19,05 | 0,10 | 0,10 | 0,10 | 0,18 | 19,05 | 22,22 | 0,13 | — | — | 0,25 | 22,22 | 25,40 | 0,13 | — | — | 0,25 | 25,40 | 31,75 | 0,15 | — | — | 0,25 | 31,75 | ± Tolerance on "B" | | | | | | "D" mm | Class M Tolerance | | Class U Tolerance | | Shapes S, T, C mm | Shapes S, T, C, R, & W mm | Shape D mm | Shape V mm | Shapes S, T, & C mm | 3,97 | 0,08 | — | — | — | 3,97 | 4,76 | 0,08 | — | — | 0,13 | 4,76 | 5,56 | 0,08 | 0,11 | — | 0,13 | 5,56 | 6,35 | 0,08 | 0,11 | — | 0,13 | 6,35 | 7,94 | 0,08 | 0,11 | — | 0,13 | 7,94 | 9,52 | 0,08 | 0,11 | 0,18 | 0,13 | 9,52 | 11,11 | 0,13 | 0,15 | — | — | 11,11 | 12,70 | 0,13 | 0,15 | 0,25 | 0,20 | 12,70 | 14,29 | 0,13 | 0,15 | — | — | 14,29 | 15,88 | 0,15 | 0,18 | — | 0,27 | 15,88 | 17,46 | 0,15 | 0,18 | — | 0,27 | 17,46 | 19,05 | 0,15 | 0,18 | — | 0,27 | 19,05 | 22,22 | 0,15 | — | — | 0,38 | 22,22 | 25,40 | 0,18 | — | — | 0,38 | 25,40 | 31,75 | 0,20 | — | — | 0,38 | 31,75 |
| ± Tolerance on "D" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "D" mm | Class M Tolerance | | Class U Tolerance | | Shapes S, T, C, R, & W mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Shapes S, T, C, R, & W mm | Shape D mm | Shape V mm | Shapes S, T, & C mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3,97 | 0,05 | — | — | — | 3,97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4,76 | 0,05 | — | — | 0,08 | 4,76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5,56 | 0,05 | 0,05 | 0,05 | 0,08 | 5,56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6,35 | 0,05 | 0,05 | 0,05 | 0,08 | 6,35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7,94 | 0,05 | 0,05 | 0,05 | 0,08 | 7,94 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9,52 | 0,05 | 0,05 | 0,05 | 0,08 | 9,52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11,11 | 0,08 | 0,08 | 0,08 | 0,13 | 11,11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12,70 | 0,08 | 0,08 | 0,08 | 0,13 | 12,70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14,29 | 0,08 | 0,08 | 0,08 | 0,13 | 14,29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15,88 | 0,10 | 0,10 | 0,10 | 0,18 | 15,88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17,46 | 0,10 | 0,10 | 0,10 | 0,18 | 17,46 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19,05 | 0,10 | 0,10 | 0,10 | 0,18 | 19,05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22,22 | 0,13 | — | — | 0,25 | 22,22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25,40 | 0,13 | — | — | 0,25 | 25,40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31,75 | 0,15 | — | — | 0,25 | 31,75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ± Tolerance on "B" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "D" mm | Class M Tolerance | | Class U Tolerance | | Shapes S, T, C mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Shapes S, T, C, R, & W mm | Shape D mm | Shape V mm | Shapes S, T, & C mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3,97 | 0,08 | — | — | — | 3,97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4,76 | 0,08 | — | — | 0,13 | 4,76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5,56 | 0,08 | 0,11 | — | 0,13 | 5,56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6,35 | 0,08 | 0,11 | — | 0,13 | 6,35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7,94 | 0,08 | 0,11 | — | 0,13 | 7,94 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9,52 | 0,08 | 0,11 | 0,18 | 0,13 | 9,52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11,11 | 0,13 | 0,15 | — | — | 11,11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12,70 | 0,13 | 0,15 | 0,25 | 0,20 | 12,70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14,29 | 0,13 | 0,15 | — | — | 14,29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15,88 | 0,15 | 0,18 | — | 0,27 | 15,88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17,46 | 0,15 | 0,18 | — | 0,27 | 17,46 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19,05 | 0,15 | 0,18 | — | 0,27 | 19,05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22,22 | 0,15 | — | — | 0,38 | 22,22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25,40 | 0,18 | — | — | 0,38 | 25,40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31,75 | 0,20 | — | — | 0,38 | 31,75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

A system of grades, geometries, and application guidelines to provide optimal solutions for your metalcutting needs. It's easy to determine which Kennametal chip-control cutting tool will work best in your specific workpiece materials and applications!

■ Grade • Beyond™ • Beyond™ Drive™



NOTE: Application range does not apply to PcbN grades.

Positive Inserts



Screw-On Inserts

- Screw-On inserts are your first choice for I.D. turning of all materials and O.D. turning on small to medium lathes.
- Available in flat-top and chip-control geometries with both moulded and ground peripheries. Suitable for all workpiece materials.

See pages:

Carbide: B175–B273

Advanced Materials: B284–B351

Negative Inserts



Kenloc™ Inserts

- Kenloc inserts are your first choice for general machining of all materials on medium to large lathes.
- Kenloc inserts offer the best economy for high metal removal rates.
- Available in flat-top and chip-control geometries with both moulded and ground peripheries. Suitable for all workpiece materials.

See pages:

Carbide: B46–B165

Advanced Materials: B284–B351



Kendex™ and V-Bottom Inserts

- Kendex positive and V-bottom inserts are your first choice for productive machining of high-temperature alloys on medium to large lathes.
- Available in flat-top geometries with ground periphery.

See pages:

Carbide: B166–B168

Advanced Materials: B284–B351



Kendex Inserts

- Ceramic Kendex inserts are a great choice for productive machining of high-temp alloys.
- Kendex negative rake inserts are also recommended for the machining of hardened materials and cast irons.
- Available in flat-top geometries with moulded and ground peripheries.
- Wide selection of standard toolholders are offered.

See pages B284–B351 for product listing.



Top Notch™ Profiling Inserts

- First choice for high-production profiling.
- Unique insert clamping design offers superior rigidity.
- Available in chip-control geometries with both moulded and ground peripheries. Suitable for all workpiece materials.

See pages E20–E43 for product listing.



Top Notch Turning Inserts

- Ceramic Top Notch turning inserts are your first choice for high-speed roughing and finishing of cast iron parts.
- Available in flat-top geometries with moulded and ground peripheries.

See pages B284–B351 for product listing.



K-Lock™ Inserts

- K-Lock inserts are ideal for deep grooving and profiling.
- A unique insert clamping system allows for unimpeded chip flow.
- Available in moulded and ground peripheries.

See page E62–E65 for product listing.



Fix-Perfect™ Inserts

- Tangential design and rigid clamping system.

See pages E2–E18 for product listing.



Railroad Inserts

- Designed for the machining of railway wheels and axles.

See pages E44–E61 for product listing.

Insert Selection System

How to Use

The Kennametal three-step insert selection system makes choosing and applying the most productive tool as easy as 1, 2, 3. Tool recommendations are based on six workpiece material groups, optimising selection accuracy.

Example:

Six workpiece material groups

■ Step 1 • Select the insert geometry

Given: depths of cut = 1mm
feed = 0,4mm
Unknown: **insert geometry**
Solution: -MN

■ Step 2 • Select the grade

Given: cutting conditions:
lightly interrupted cut
Geometry: -MN
Unknown: **grade**
Solution: KCP25B

■ Step 3 • Select the cutting speed

Given: grade KCP25B
cutting conditions
material CK15
Unknown: **cutting speed**
Solution: 280 m/min

Need help in selecting a product?
Additional information can be obtained by contacting
The Kennametal Customer Application Support Team.
Go to kennametal.com for your country's phone number.

■ Step 1 • Select the insert geometry

Negative Inserts



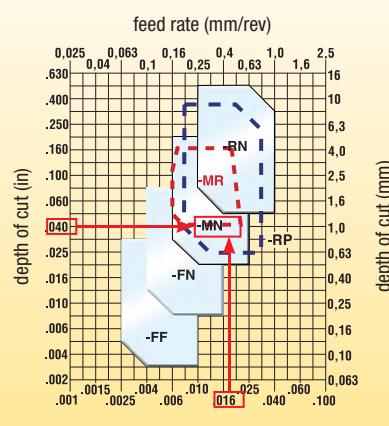
-RN
Roughing



-FN
Finishing



-FF
Fine Finishing



*-RP – Supplemental geometry for high-strength materials

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

beyond

beyond DRIVE™

■ Step 2 • Select the grade

| cutting condition | -FF | -FN | -MN | -RN | -RP | -11 | -UF | -LF | -FP | -MF | -MP |
|---|------------------------------|------------------|--------------------|---------------------------------------|---------------------------------------|-------|----------------------------|------------------|----------------------------|-------------------|-------------------|
| heavily interrupted cut | ◆ KCP10B/ KCP10 | KCP25B/ KCP25 | KCP30B/ KCP30 | KCP30B/ KCP30/ KCP40B/ KCP40 | KCP30B/ KCP30/ KCP40B/ KCP40 | — | KCU10/ KCP25B/ KCP25 | KCP25B/ KCP25 | KCU25/ KCP25B/ KCP25 | KCP40B/ KCP40B | KCP40B/ KCP40B |
| lightly interrupted cut | ● KCP10B/ KCP10 | KCP25B/ KCP25 | ■ KCP25B/ KCP25 | KCP30B/ KCP30/ KCP40B/ KCP40 | KCP30B/ KCP30/ KCP40B/ KCP40 | — | KCU10/ KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 |
| varying depth of cut, casting, or forging skin | ● KCP05B/ KCP05/ KT315 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP30B/ KCP30/ KCP40B/ KCP40 | KCP30B/ KCP30/ KCP40B/ KCP40 | KT315 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 |

■ Step 3 • Selecting the cutting speed

| Low-Carbon (<0,3% C) and Free-Machining Steel | | | | | | | | | | | | Starting Conditions ◇ | |
|---|---------------------------|---------------------|-----------|-----------|-----------|------------|------------|------------|------------|------------|-------|-----------------------|---|
| material group | grade | speed — m/min (SFM) | | | | | | | | | | Starting Conditions ◇ | |
| | | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM | ◇ |
| P1 | KCP05B/KCP05/KTP10 | | | | | | | | | | 435 | 1450 | ◇ |
| | KCP10B/KCP10 | | | | | | | | | | 395 | 1320 | ◇ |
| | ■ KCP25B/KCP25 | | | | | | | | | | 275 | 925 | ◇ |
| | KCP30B/KCP30/KCP40B/KCP40 | | | | | | | | | | 210 | 700 | ◇ |

New Beyond™ Material Group Selection Guide:

To optimise speed recommendations, Beyond material subgroups have been added to each of the six workpiece material groups.

| material | material group ISO code | number of material subgroups |
|-----------------------|-------------------------|------------------------------|
| steel | P | 1–6 |
| stainless steel | M | 1–3 |
| cast iron | K | 1–3 |
| non-ferrous materials | N | 1–8 |
| high-temp alloys | S | 1–4 |
| hardened materials | H | 1 |

Step 1 • Select the insert geometry

Negative Wiper Inserts



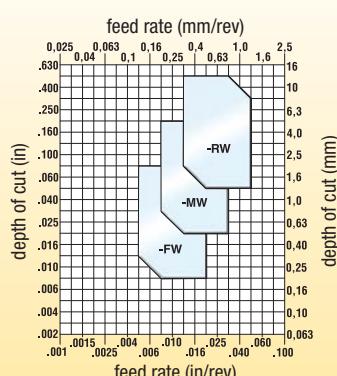
-RW
Rough Wiper



-MW
Medium Wiper



-FW
Finishing Wiper



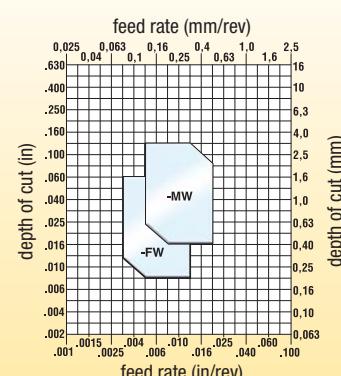
Positive Wiper Inserts



-MW
Medium Wiper



-FW
Finishing Wiper



Step 2 • Select the grade

| cutting condition | Negative Insert Geometry | | | Positive Insert Geometry | | |
|---|--------------------------|--------------|--------------|-------------------------------|--------------|--------------|
| | -FW | -MW | -RW | -FW | -MW | |
| heavily interrupted cut | | - | - | KCP25B/KCP25 | - | KCP25B/KCP25 |
| lightly interrupted cut | | KCP10B/KCP10 | KCP25B/KCP25 | KCP25B/KCP25 | KCP25B/KCP25 | KCP25B/KCP25 |
| varying depth of cut, casting, or forging skin | KCP05B/KCP05/ KT315 | KCP10B/KCP10 | KCP10B/KCP10 | KCP10B/KCP10/ KCK20B/KCK20 | KCP10B/KCP10 | KCP10B/KCP10 |
| smooth cut, pre-turned surface | KCP05B/KCP05/ KT315 | KCP05B/KCP05 | KCP10B/KCP10 | KCP10B/KCP10/ KT315 | KT315 | |

Step 1 • Select the insert geometry

Negative Inserts



-RN
-RP* (positive)



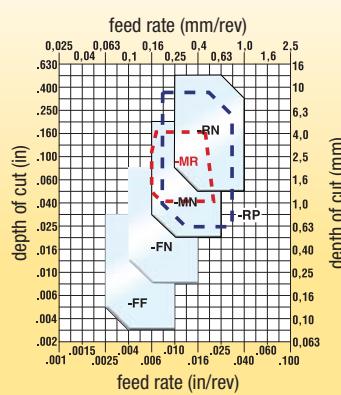
-MR
Medium
Roughing

-MN
Medium
Machining



-FN
Finishing

-FF
Fine Finishing



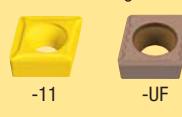
Positive Inserts



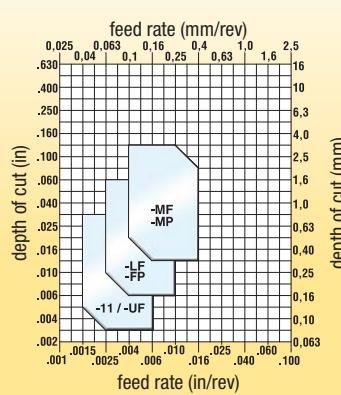
-MF
-MP
Positive
Medium Machining



-LF
-FP
Positive
Finishing



-11
-UF
Fine Finishing



*-RP – Supplemental geometry
for high-strength materials

Step 2 • Select the grade

| cutting condition | Negative Insert Geometry | | | | | | Positive Insert Geometry | | | | | |
|---|----------------------------|------------------|------------------|------------------|-------------------|-------------------|--------------------------|----------------------------|------------------|------------------|------------------|------------------|
| | -FF | -FN | -MN | -MR | -RN | -RP | -11 | -UF | -LF | -FP | -MF | -MP |
| heavily interrupted cut | KCP10B/ KCP10 | KCP25B/ KCP25 | KCP30B/ KCP30 | - | KCP30B/ KCP40B | KCP30B/ KCP40B | - | KCU10/ KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP40B/ KCP40 | KCM25B/ KCM25 |
| lightly interrupted cut | KCP10B/ KCP10 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | - | KCU10/ KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 |
| varying depth of cut, casting, or forging skin | KCP05B/ KCP05/ KT315 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KT315 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 |
| smooth cut, pre-turned surface | KCP05B/ KCP05/ KT315 | KCP05B/ KCP05 | KCP05B/ KCP05 | KCP10B/ KCP10 | KCP05B/ KCP10 | KCP05B/ KCP10 | KT315 | KCP05B/ KCP05 | KCP05B/ KCP05 | KCP05B/ KCP05 | KCP05B/ KCP05 | KCP05B/ KCP05 |

■ Step 3 • Selecting the cutting speed

Low-Carbon (<0.3% C) and Free-Machining Steel

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions ◇ | |
|----------------|---------------------------|---------------------|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------------------|------|
| | | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM |
| P0/P1 | KCP05B/KCP05/KCPK05 | | | | | | | ◇ | | | 435 | 1450 |
| | KCP10B/KCP10 | | | | | | | ◇ | | | 395 | 1320 |
| | KCP25B/KCP25 | | | | ◇ | | | | | | 275 | 925 |
| | KCP30B/KCP30/KCP40B/KCP40 | | ◇ | | | | | | | | 210 | 700 |
| | KT315/KTP10 | | | | | | | ◇ | | | 440 | 1450 |
| | KCU10 | | | ◇ | | | | | | | 280 | 925 |

Medium- and High-Carbon Steels (>0.3% C)

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions ◇ | |
|----------------|---------------------------|---------------------|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------------------|-----|
| | | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM |
| P2 | KCP05B/KCP05/KCPK05 | | | | ◇ | | | | | | 240 | 800 |
| | KCP10B/KCP10 | | | ◇ | | | | | | | 265 | 880 |
| | KCP25B/KCP25 | | ◇ | | | | | | | | 195 | 650 |
| | KCP30B/KCP30/KCP40B/KCP40 | ◇ | | | | | | | | | 150 | 500 |
| | KT315/KTP10 | | | ◇ | | | | | | | 270 | 880 |
| | KCU10 | ◇ | | | | | | | | | 200 | 650 |

Alloy Steels and Tool Steels (<=330 HB) (<=35 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions ◇ | |
|----------------|---------------------------|---------------------|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------------------|-----|
| | | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM |
| P3 | KCP05B/KCP05/KCPK05 | | ◇ | | | | | | | | 205 | 680 |
| | KCP10B/KCP10 | | ◇ | | | | | | | | 190 | 630 |
| | KCP25B/KCP25 | ◇ | | | | | | | | | 155 | 510 |
| | KCP30B/KCP30/KCP40B/KCP40 | ◇ | | | | | | | | | 120 | 400 |
| | KT315/KTP10 | | ◇ | | | | | | | | 210 | 680 |
| | KCU10 | | ◇ | | | | | | | | 155 | 510 |

Alloy Steels and Tool Steels (340–450 HB) (36–48 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions ◇ | |
|----------------|---------------------------|---------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------------------|-----|
| | | 60 (200) | 90 (300) | 120 (400) | 150 (500) | 180 (600) | 210 (700) | 240 (800) | 270 (900) | 300 (1000) | m/min | SFM |
| P4 | KCP05B/KCP05/KCPK05 | | | | ◇ | | | | | | 160 | 530 |
| | KCP10B/KCP10 | | | ◇ | | | | | | | 145 | 480 |
| | KCP25B/KCP25 | | ◇ | | | | | | | | 105 | 360 |
| | KCP30B/KCP30/KCP40B/KCP40 | ◇ | | | | | | | | | 95 | 325 |
| | KT315/KTP10 | | | ◇ | | | | | | | 210 | 530 |
| | KCU10 | | ◇ | | | | | | | | 110 | 360 |

Ferritic, Martensitic, and PH Stainless Steels (<=330 HB) (<=35 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions ◇ | |
|----------------|---------------------------|---------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|-----------------------|-----|
| | | 120 (400) | 150 (500) | 180 (600) | 210 (700) | 240 (800) | 270 (900) | 300 (1000) | 330 (1100) | 360 (1200) | m/min | SFM |
| P5 | KCP05B/KCP05/KCPK05 | | | | ◇ | | | | | | 240 | 800 |
| | KCP10B/KCP10 | | | | ◇ | | | | | | 215 | 720 |
| | KCP25B/KCP25 | | | ◇ | | | | | | | 195 | 650 |
| | KCP30B/KCP30/KCP40B/KCP40 | ◇ | | | | | | | | | 135 | 450 |
| | KT315/KTP10 | | | ◇ | | | | | | | 250 | 800 |
| | KCU10 | | | ◇ | | | | | | | 200 | 660 |

Ferritic, Martensitic, and PH Stainless Steels (340–450 HB) (36–48 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions ◇ | |
|----------------|---------------------------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|-----------------------|-----|
| | | 105 (350) | 135 (450) | 165 (550) | 195 (650) | 225 (750) | 255 (850) | 285 (950) | 315 (1050) | 345 (1150) | m/min | SFM |
| P6 | KCP05B/KCP05/KCPK05 | | | | ◇ | | | | | | 200 | 660 |
| | KCP10B/KCP10 | | | | ◇ | | | | | | 180 | 600 |
| | KCP25B/KCP25 | | ◇ | | | | | | | | 150 | 500 |
| | KCP30B/KCP30/KCP40B/KCP40 | ◇ | | | | | | | | | 105 | 350 |
| | KT315/KTP10 | | | ◇ | | | | | | | 200 | 660 |
| | KCU10 | | ◇ | | | | | | | | 150 | 500 |

■ Step 1 • Select the insert geometry

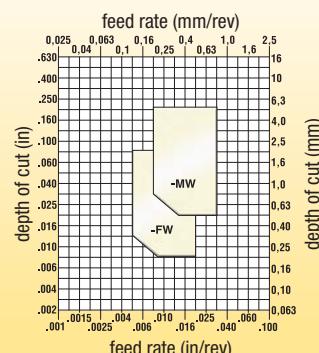
Negative Wiper Inserts



-MW
Medium Wiper



-FW
Finishing Wiper



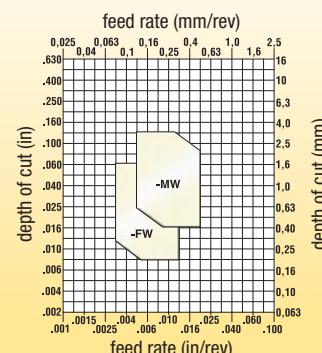
Positive Wiper Inserts



-MW
Medium Wiper



-FW
Finishing Wiper



■ Step 2 • Select the grade

| cutting condition | Negative Insert Geometry | | Positive Insert Geometry | |
|---|--------------------------|------------------------|--------------------------|--------------|
| | -FW | -MW | -FW | -MW |
| heavily interrupted cut | | - | - | - |
| lightly interrupted cut | | KCM15B/KCM15 | KCM25B/KCM25 | KCM15B/KCM15 |
| varying depth of cut, casting, or forging skin | | KCM15B/KCM15/ KCU10 | KCM15B/KCM15 | KCU10 |
| smooth cut, pre-turned surface | | KCM15B/KCM15/ KT315 | KCM15B/KCM15 | KT315 |

■ Step 1 • Select the insert geometry

Negative Inserts



-RP
Roughing



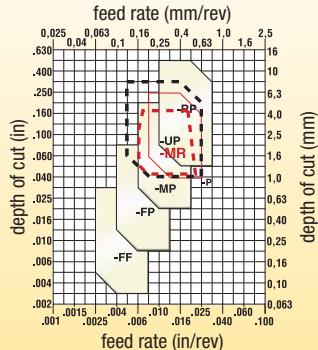
-MR
Medium Roughing



-MP
Medium Machining



-FP
Finishing



Positive Inserts



-MP
Medium Machining



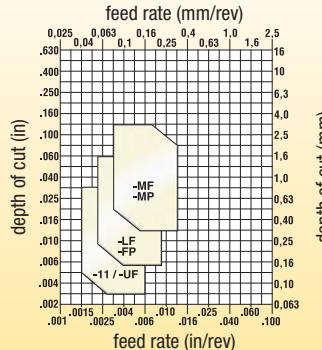
-LF
Finishing



..GT-LF



-UF
Fine Finishing



■ Step 2 • Select the grade

| cutting condition | Negative Insert Geometry | | | | |
|---|--------------------------|-------|------------------------|------------------------|--------------------------------|
| | -FF | -FP | -MP/-UP | -P-/RP | -MR |
| heavily interrupted cut | | KCU10 | KCM15B/KCM15 | KCM35B/KCM35 | KCM35B/KCM35 |
| lightly interrupted cut | | KCU10 | KCM15B/KCM15 | KCM25B/KCM25 | KCM25B/KCM25 |
| varying depth of cut, casting, or forging skin | | KT315 | KCM15B/KCM15/ KCU10 | KCM15B/KCM15 | KCM15B/KCM15 / KCM25B/KCM25 |
| smooth cut, pre-turned surface | | KT315 | KCM15B/KCM15/ KT315 | KCM15B/KCM15/ KCU10 | KCM15B/KCM15 |

(continued)

■ Step 2 • Select the grade (continued)

| cutting condition | Positive Insert Geometry | | | | | |
|---|--------------------------|-------|-------|------------------------|--------------|------------------------|
| | -11 | -UF | -LF | -MP/-MF | -FP | .GT-LF |
| heavily interrupted cut | | - | KCU25 | KCM35B/KCM35 | KCM25B/KCM25 | KCU25/KCM25B/ KCM25 |
| lightly interrupted cut | | - | KCU10 | KCM25B/KCM25 | KCM25B/KCM25 | KCM15B/KCM15 |
| varying depth of cut, casting, or forging skin | | KT315 | - | KCM15B/KCU10 | KCM15B/KCM15 | KCU10 |
| smooth cut, pre-turned surface | | KT315 | - | KCM15B/KCM15/ KT315 | KCM15B/KCM15 | KTP10 |
| | | | | | | KCU10 |

■ Step 3 • Selecting the cutting speed
Austenitic Stainless Steel

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions | |
|----------------|--------------|---------------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------------|-----|
| | | 90 (300) | 135 (450) | 180 (600) | 225 (800) | 270 (900) | 315 (1050) | 360 (1200) | 405 (1350) | 450 (1500) | m/min | SFM |
| M1 | KCM15B/KCM15 | | | | | | | | | | 180 | 600 |
| | KCM25B/KCM25 | | | | | | | | | | 150 | 500 |
| | KCM35B/KCM35 | | | | | | | | | | 120 | 400 |
| | KT315 | | | | | | | | | | 230 | 750 |
| | KCU10 | | | | | | | | | | 215 | 700 |
| | KCU25 | | | | | | | | | | 180 | 550 |

Austenitic Stainless Steel

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions | |
|----------------|--------------|---------------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------------|-----|
| | | 90 (300) | 135 (450) | 180 (600) | 225 (800) | 270 (900) | 315 (1050) | 360 (1200) | 405 (1350) | 450 (1500) | m/min | SFM |
| M2 | KCM15B/KCM15 | | | | | | | | | | 165 | 550 |
| | KCM25B/KCM25 | | | | | | | | | | 140 | 450 |
| | KCM35B/KCM35 | | | | | | | | | | 105 | 350 |
| | KT315 | | | | | | | | | | 215 | 700 |
| | KCU10 | | | | | | | | | | 200 | 650 |
| | KCU25 | | | | | | | | | | 165 | 500 |

Austenitic Stainless Steel: Duplex (Ferritic and Austenitic Mixture)

| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions | |
|----------------|--------------|---------------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------------|-----|
| | | 90 (300) | 135 (450) | 180 (600) | 225 (800) | 270 (900) | 315 (1050) | 360 (1200) | 405 (1350) | 450 (1500) | m/min | SFM |
| M3 | KCM15B/KCM15 | | | | | | | | | | 150 | 500 |
| | KCM25B/KCM25 | | | | | | | | | | 120 | 400 |
| | KCM35B/KCM35 | | | | | | | | | | 90 | 300 |
| | KT315 | | | | | | | | | | 200 | 650 |
| | KCU10 | | | | | | | | | | 185 | 600 |
| | KCU25 | | | | | | | | | | 150 | 450 |

■ Step 1 • Select the insert geometry

Negative Wiper Inserts



-MW
Medium Wiper



-FW
-FW

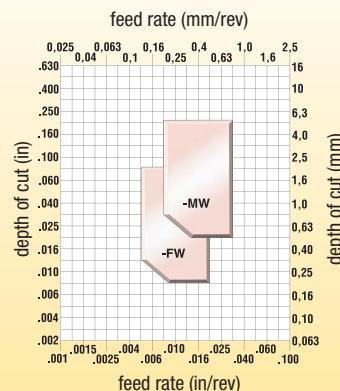


-T-20FW



-FW
-T-20FW

Finishing Wiper



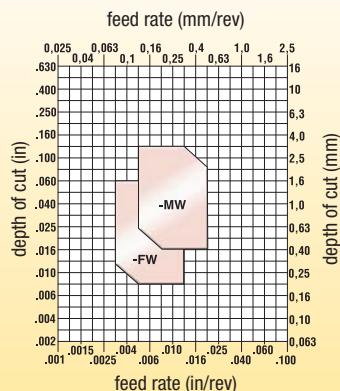
Positive Wiper Inserts



-MW
Medium Wiper



-FW
Finishing Wiper



■ Step 2 • Select the grade

Grey Iron

| cutting condition | Negative Insert Geometry | | | Positive Insert Geometry | |
|--|--------------------------|------------------------|------------|--------------------------|-------------------------------------|
| | -FW | -T-20FW | -S...MW... | -FW | -MW |
| heavily interrupted cut | | — | KY3500 | KB1345 | — |
| lightly interrupted cut | | KCK15B/KCK15 | KY3500 | KB1345 | KCK20B/KCK20 |
| varying depth of cut, casting, or forging skin | | KCK05B/KCK05/ KT315 | KYK10 | KB1345 | KCK20B/KCK20 |
| smooth cut, pre-turned surface | | KCK05B/KCK05/ KT315 | KYK25 | KB1345 | KCK20B/ KT315 |
| | | | | | KCK15B/KCK15/ KCK20B/KCK20/KT315 |

Ductile Iron

| cutting condition | Negative Insert Geometry | | Positive Insert Geometry | |
|--|--------------------------|------------------------|--------------------------|------------------------|
| | -FW | -T-20FW | -FW | -MW |
| heavily interrupted cut | | — | — | — |
| lightly interrupted cut | | KCK15B/ KCK15 | KY3500 | KCK20B/ KCK20 |
| varying depth of cut, casting, or forging skin | | KCK05B/KCK05/ KT315 | KYK10 | KCK20B/ KCK20 |
| smooth cut, pre-turned surface | | KCK05B/KCK05/ KT315 | KYK25 | KCK20B/KCK20/ KT315 |

■ Step 3 • Selecting the cutting speed

Grey Cast Iron

| material group | grade | speed — m/min (SFM) | | | | | | | | Starting Conditions | | |
|----------------|---------------------|---------------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------------|-------|------|
| | | 60 (200) | 150 (500) | 240 (800) | 330 (1100) | 420 (1400) | 510 (1700) | 600 (2000) | 690 (2300) | 780 (2600) | m/min | SFM |
| K1 | KCK05B/KCK05 | | | | | ◇ | | | | | 450 | 1500 |
| | KCK15B/KCK15 | | | | ◇ | | | | | | 360 | 1200 |
| | KCK20B/KCK20/KCPK05 | | | ◇ | | | | | | | 300 | 1000 |
| | KT315 | | ◇ | | | | | | | | 275 | 900 |

Ductile, Compacted Graphite, and Malleable Cast Irons (<80 KSI tensile strength)

| material group | grade | speed — m/min (SFM) | | | | | | | | Starting Conditions | | |
|----------------|---------------------|---------------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------------|-------|------|
| | | 60 (200) | 150 (500) | 240 (800) | 330 (1100) | 420 (1400) | 510 (1700) | 600 (2000) | 690 (2300) | 780 (2600) | m/min | SFM |
| K2 | KCK05B/KCK05 | | | | ◇ | | | | | | 360 | 1200 |
| | KCK15B/KCK15 | | | ◇ | | | | | | | 270 | 900 |
| | KCK20B/KCK20/KCPK05 | | ◇ | | | | | | | | 240 | 800 |
| | KT315 | | ◇ | | | | | | | | 275 | 900 |

Ductile, Compacted Graphite, and Malleable Cast Irons (>80 KSI tensile strength)

| material group | grade | speed — m/min (SFM) | | | | | | | | Starting Conditions | | |
|----------------|---------------------|---------------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------------|-------|-----|
| | | 60 (200) | 150 (500) | 240 (800) | 330 (1100) | 420 (1400) | 510 (1700) | 600 (2000) | 690 (2300) | 780 (2600) | m/min | SFM |
| K3 | KCK05B/KCK05 | | | ◇ | | | | | | | 240 | 800 |
| | KCK15B/KCK15 | | | ◇ | | | | | | | 215 | 725 |
| | KCK20B/KCK20/KCPK05 | | ◇ | | | | | | | | 210 | 700 |
| | KT315 | | ◇ | | | | | | | | 230 | 750 |

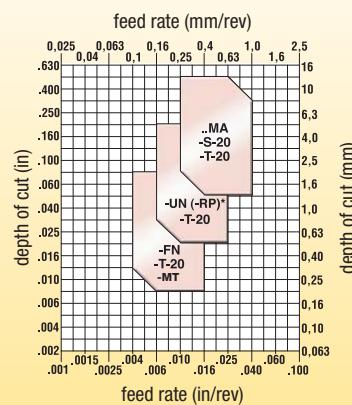
Step 1 • Select the insert geometry


beyond
beyond **DRIVE™**

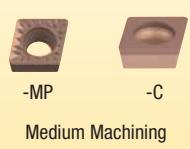
Negative Inserts



Finishing



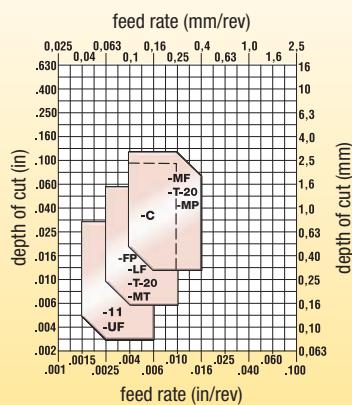
Positive Inserts



Finishing



Fine Finishing



*Geometry can be used in medium machining operations to reduce tool pressure in high-strength metals.

Step 2 • Select the grade

Grey Iron

| cutting condition | Negative Insert Geometry | | | | Positive Insert Geometry | | | |
|---|--------------------------|----------------------------|-----------------------------------|------------------|--------------------------|------------------|------------------|------------------|
| | -FN | -MR | -UN(-RP) | -MA | -LF | -FP | -MF | -MP |
| heavily interrupted cut | | KCK15B/ KCK15 | KCP25B/ KCP25/ KCP10B/KCP10 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 |
| lightly interrupted cut | | KCK15B/ KCK15 | KCP10B/ KCP10/ KCP25B/KCP25 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 |
| varying depth of cut, casting, or forging skin | | KCK05B/ KCK05/ KT315 | KCK15B/ KCK15 | KCK15B/ KCK15 | KCK15B/ KCK15 | KCK20B/ KCK20 | KCK15B/ KCK15 | KCK20B/ KCK20 |
| smooth cut, pre-turned surface | | KCK05B/ KCK05/ KT315 | KCK15B/ KCK15 | KCK05B/ KCK05 | KCK05B/ KCK05 | KCK20B/ KCK20 | KCK15B/ KCK15 | KCK20B/ KCK20 |

Ductile Iron

| cutting condition | Negative Insert Geometry | | | | Positive Insert Geometry | | | |
|---|--------------------------|----------------------------|------------------|------------------|--------------------------|------------------|------------------|------------------|
| | -FN | -UN(-RP) | -MA | -11/-UF | -LF | -MF | -FP | -MP |
| heavily interrupted cut | | KCK15B/ KCK15 | KCK20B/ KCK20 | KCK20B/ KCK20 | - | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 |
| lightly interrupted cut | | KCK15B/ KCK15 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCU10 | KCK20B/ KCK20 | KCK20B/ KCK20 | KCK20B/ KCK20 |
| varying depth of cut, casting, or forging skin | | KCK05B/ KCK05/ KT315 | KCK15B/ KCK15 | KCK15B/ KCK15 | KCU10 | KCK15B/ KCK15 | KCK20B/ KCK20 | KCK20B/ KCK20 |
| smooth cut, pre-turned surface | | KCK05B/ KCK05/ KT315 | KCK05B/ KCK05 | KCK05B/ KCK05 | KT315 | KCU10 | KCK15B/ KCK15 | KCK20B/ KCK20 |

(continued)

■ Step 3 • Selecting the cutting speed (continued) (Optimal speed depends on casting quality and disposition.)

Grey Cast Iron

| material group | grade | speed — m/min (SFM) | | | | | | | | | | Starting Conditions | |
|----------------|---------------------|---------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|---------------------|------|
| | | 60 (200) | 180 (600) | 305 (1000) | 430 (1400) | 550 (1800) | 675 (2200) | 800 (2600) | 920 (3000) | 1040 (3400) | 1160 (3800) | m/min | SFM |
| K1 | KT315 | | | | | | | | | | | 275 | 900 |
| | KB1340/KB1345 | | | | | | | | | | | 760 | 2500 |
| | KCK05B/KCK05 | | | | | | | | | | | 450 | 1500 |
| | KCK15B/KCK15 | | | | | | | | | | | 360 | 1200 |
| | KCK20B/KCK20/KCPK05 | | | | | | | | | | | 300 | 1000 |

Ductile, Compacted Graphite, and Malleable Cast Irons

| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | |
|----------------|---------------------|---------------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------------|------|
| | | 90 (300) | 135 (450) | 180 (600) | 225 (750) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 460 (1500) | 500 (1650) | 550 (1800) | 600 (1950) | m/min | SFM |
| K2 | KT315 | | | | | | | | | | | | | 275 | 900 |
| | KCU10 | | | | | | | | | | | | | 200 | 650 |
| | KCK05B/KCK05 | | | | | | | | | | | | | 360 | 1200 |
| | KCK15B/KCK15 | | | | | | | | | | | | | 270 | 900 |
| | KCK20B/KCK20/KCPK05 | | | | | | | | | | | | | 240 | 800 |

Ductile, Compacted Graphite, and Malleable Cast Irons

| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | |
|----------------|---------------------|---------------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------------|-----|
| | | 90 (300) | 135 (450) | 180 (600) | 225 (750) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 460 (1500) | 500 (1650) | 550 (1800) | 600 (1950) | m/min | SFM |
| K3 | KT315 | | | | | | | | | | | | | 230 | 750 |
| | KCU10 | | | | | | | | | | | | | 150 | 500 |
| | KCK05B/KCK05 | | | | | | | | | | | | | 240 | 800 |
| | KCK15B/KCK15 | | | | | | | | | | | | | 215 | 725 |
| | KCK20B/KCK20/KCPK05 | | | | | | | | | | | | | 210 | 700 |

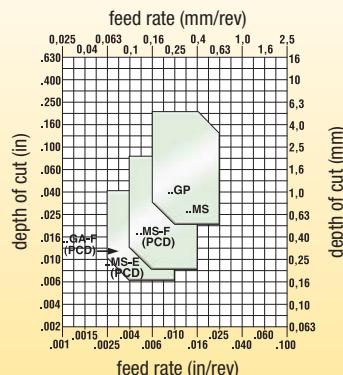
■ Step 1 • Select the insert geometry

beyond DRIVE™

Negative Inserts



Medium Finishing



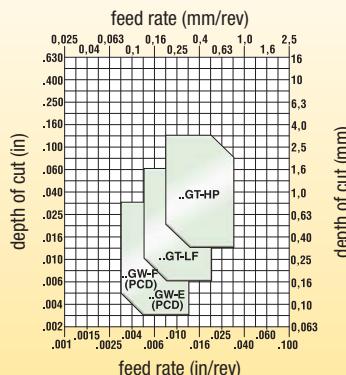
Positive Inserts



Medium Finishing

Finishing

(PCD) (PCD)



■ Step 2 • Select the grade

Negative Insert Geometry

Positive Insert Geometry

| cutting condition | ..GP | ..MS | ..GT-LF | ..GT-HP | |
|---|------|-------------|---------|---------|--------|
| heavily interrupted cut | | KC5410/K313 | KC5410 | — | KC5410 |
| lightly interrupted cut | | KC5410/K313 | KC5410 | KC5410 | KC5410 |
| varying depth of cut, casting, or forging skin | | KC5410/K313 | KC5410 | KC5410 | KC5410 |
| smooth cut, pre-turned surface | | KC5410/K313 | KC5410 | KC5410 | KC5410 |

■ Step 3 • Selecting the cutting speed

Low-Silicon Aluminium Alloys
(hypoeutectic <12.2% Si) and Magnesium Alloys

| material group | grade | speed — m/min (SFM) | | | | | | | | | | Starting Conditions | |
|----------------|--------|---------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|-----|
| | | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | 1250 (4000) | 1500 (4800) | 1750 (5600) | 2000 (6400) | 2250 (7200) | 2500 (8000) | m/min | SFM |
| N1 | KC5410 | | | | | | | | | | | 550 | |

■ Additional cutting speed recommendations for miscellaneous workpiece materials

Copper-, Brass-, Zinc-Based on a Machinability Index Range of 70–100

speed — m/min (SFM)

Starting Conditions



| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | m/min | SFM |
|----------------|--------|--------------|---------------|---------------|----------------|-------|-----|
| N4 | KC5410 | ◇◇ | | | | 275 | 900 |
| | K313 | ◇◇ | | | | 260 | 850 |

Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass, and Glass

speed — m/min (SFM)

Starting Conditions



| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | m/min | SFM |
|----------------|--------|--------------|---------------|---------------|----------------|-------|-----|
| N5 | KC5410 | ◇◇ | | | | 170 | 550 |

Carbon and Graphite Composites:

Brush Alloys, Kevlar, and Graphite (280–400 HB) (30–43 HRC)

speed — m/min (SFM)

Starting Conditions



| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | m/min | SFM |
|----------------|--------|--------------|---------------|---------------|----------------|-------|-----|
| N6 | KC5410 | ◇◇ | | | | 200 | 650 |

Tin Alloys, Cast: ASTM 823, Alloys 1, 2, 3, 11

speed — m/min (SFM)

Starting Conditions

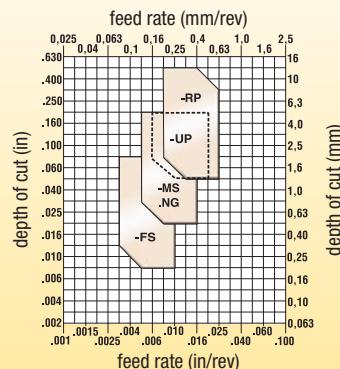


| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | m/min | SFM |
|----------------|--------|--------------|---------------|---------------|----------------|-------|-----|
| N8 | KC5410 | ◇◇ | | | | 215 | 700 |
| | K313 | ◇◇ | | | | 180 | 600 |

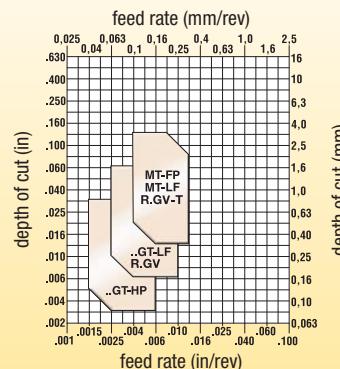
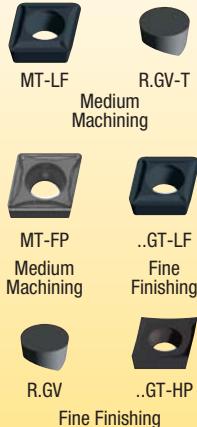
Step 1 • Select the insert geometry



Negative Inserts



Positive Inserts



Step 2 • Select the grade

Negative Insert Geometry

| cutting condition | -FS | -MS | -UP | -RP |
|--|-----|------------|------------|--------|
| heavily interrupted cut | | KCU25 | KCU25 | KCM35B |
| lightly interrupted cut | | KCU10 | KCU25 | KCM15B |
| varying depth of cut, casting, or forging skin | | KCU10 | KCU10 | KCM15B |
| smooth cut, pre-turned surface | | KCU10/K313 | KCU10/K313 | KCU10 |

Positive Insert Geometry

| cutting condition | MT-FP | ..GT-HP | MT-LF | ..GT-LF |
|--|-------|------------|------------|------------|
| heavily interrupted cut | | KCU25 | — | KCU25 |
| lightly interrupted cut | | KCU25 | KCU25 | KCU25 |
| varying depth of cut, casting, or forging skin | | KCU10/KU10 | KCU10 | KCU10 |
| smooth cut, pre-turned surface | | KCU10/KU10 | KCU10/K313 | KCU10/K313 |

■ Step 3 • Select the cutting speed

Iron-Based, Heat-Resistant Alloys (135–320 HB) (≤ 34 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | ◇◇ | |
|----------------|---------------------------|---------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------------|-------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 105 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | 290 (950) | 310 (1050) | 350 (1150) | 380 (1250) | m/min | SFM |
| S1 | K313/KU10 | ◇◇ | | | | | | | | | | | | | 30 | 100 |
| | KCU10 | | ◇◇ | | | | | | | | | | | | 55 | 180 |
| | KCU25 | ◇◇ | | | | | | | | | | | | | 40 | 125 |
| | KCM15B/KCM15 | | ◇◇ | | | | | | | | | | | | 55 | 180 |
| | KCM25B/KCM25/KCM35B/KCM35 | ◇◇ | | | | | | | | | | | | | 40 | 125 |

Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤ 45 HRC)

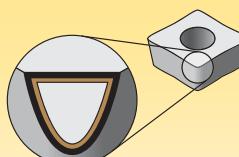
| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | ◇◇ | |
|----------------|---------------------------|---------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------------|-------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 105 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | 290 (950) | 310 (1050) | 350 (1150) | 380 (1250) | m/min | SFM |
| S2 | K313/KU10 | ◇◇ | | | | | | | | | | | | | 35 | 110 |
| | KCU10 | | ◇◇ | | | | | | | | | | | | 60 | 195 |
| | KCU25 | ◇◇ | | | | | | | | | | | | | 30 | 100 |
| | KCM15B/KCM15 | | ◇◇ | | | | | | | | | | | | 60 | 195 |
| | KCM25B/KCM25/KCM35B/KCM35 | ◇◇ | | | | | | | | | | | | | 30 | 100 |

Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤ 48 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | ◇◇ | |
|----------------|---------------------------|---------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------------|-------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 105 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | 290 (950) | 310 (1050) | 350 (1150) | 380 (1250) | m/min | SFM |
| S3 | K313/KU10 | ◇◇ | | | | | | | | | | | | | 40 | 125 |
| | KCU10 | | ◇◇ | | | | | | | | | | | | 70 | 225 |
| | KCU25 | ◇◇ | | | | | | | | | | | | | 40 | 125 |
| | KCM15B/KCM15 | | ◇◇ | | | | | | | | | | | | 70 | 225 |
| | KCM25B/KCM25/KCM35B/KCM35 | ◇◇ | | | | | | | | | | | | | 40 | 125 |

Titanium and Titanium Alloys (110–450 HB) (≤ 48 HRC)

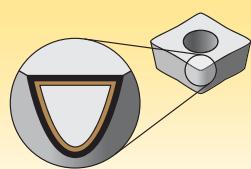
| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | ◇◇ | |
|----------------|---------------------------|---------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------------|-------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 105 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | 290 (950) | 310 (1050) | 350 (1150) | 380 (1250) | m/min | SFM |
| S4 | K313/KU10 | ◇◇ | | | | | | | | | | | | | 45 | 150 |
| | KCU10 | | ◇◇ | | | | | | | | | | | | 70 | 225 |
| | KCU25 | ◇◇ | | | | | | | | | | | | | 55 | 175 |
| | KCM15B/KCM15 | | ◇◇ | | | | | | | | | | | | 70 | 225 |
| | KCM25B/KCM25/KCM35B/KCM35 | ◇◇ | | | | | | | | | | | | | 55 | 175 |



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 | | | | | | | | | |
| | Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| Uncoated Carbide Grades | K313 | Composition: A hard, low binder content, unalloyed WC/Co fine-grain grade. Application: Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temp alloys. Superior thermal deformation and depth-of-cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service. | | | | | | | | | |
| | K68 | Composition: A hard, low binder content, alloyed grade WC/Co fine-grain grade. Application: The K68 grade has excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and as an alternative to the K313 grade on high-temperature alloys. Use as a general-purpose grade for non-ferrous materials. | M | | | | | | | | |
| PVD-Coated Carbide Grades | KCS10 | Composition: An advanced PVD-AlTiN coated, fine-grained tungsten carbide grade. Application: The KCS10 grade specifically engineered for the productive machining of high-temperature alloys. The fine-grained tungsten carbide substrate has excellent toughness and deformation resistance while the advanced PVD coating allows metalcutting speeds double those of conventional PVD-coated cutting tools. | P | | | | | | | | |
| | KCU10 | Composition: An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. Application: The KCU10™ grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and high-temp alloys with improved edge toughness, notch resistance, and higher cutting speed/feed capability. | M | | | | | | | | |

beyond

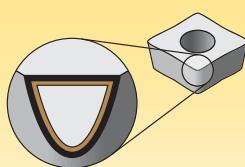


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

wear resistance ← → toughness

| Coating | | Grade Description | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------|---|--|--|----|----|----|----|----|----|----|----|----|
| KCU25 | | <p>Composition: An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities.</p> <p>Application: The KCU25™ grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cut and high feed rates.</p> | | P | | | | | | | | |
| | — | | | M | | | | | | | | |
| | — | | | K | | | | | | | | |
| | — | | | N | | | | | | | | |
| | — | | | S | | | | | | | | |
| | — | | | H | | | | | | | | |
| beyond™ | | | | | | | | | | | | |
| KC5010 | | <p>Composition: An advanced PVD AlTiN coating over a very deformation-resistant unalloyed carbide substrate.</p> <p>Application: The KC5010™ grade is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and high-temp alloys under stable conditions. It also performs well machining hardened and short chipping materials.</p> | | P | | | | | | | | |
| | — | | | M | | | | | | | | |
| | — | | | K | | | | | | | | |
| | — | | | N | | | | | | | | |
| | — | | | S | | | | | | | | |
| | — | | | H | | | | | | | | |
| KC5025 | | <p>Composition: An advanced PVD-AlTiN-coated grade with a tough, ultra-fine-grain unalloyed substrate.</p> <p>Application: For general-purpose machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.</p> | | P | | | | | | | | |
| | — | | | M | | | | | | | | |
| | — | | | K | | | | | | | | |
| | — | | | N | | | | | | | | |
| | — | | | S | | | | | | | | |
| | — | | | H | | | | | | | | |
| KC5410 | | <p>Composition: A PVD TiB₂ coating over a very deformation-resistant unalloyed substrate.</p> <p>Application: Designed for roughing, semi-finishing, and finishing of free machining (hypoeutectic <12.2% Si) aluminium, aluminium alloys, and magnesium alloys. The TiB₂ coating is harder than TiN and TiAlN coatings and has an extremely smooth surface, resulting in reduced surface friction, speedy chip flow, and outstanding wear resistance. Built-up edge is prevented because this coating has a very low affinity for aluminium. The substrate is unalloyed and fine grained and offers sharp edges, smooth surfaces, and excellent thermal deformation resistance and edge integrity. Inserts with a ground periphery are polished before coating and have a sharp edge. Moulded inserts have a light hone.</p> | | P | | | | | | | | |
| | — | | | M | | | | | | | | |
| | — | | | K | | | | | | | | |
| | — | | | N | | | | | | | | |
| | — | | | S | | | | | | | | |
| | — | | | H | | | | | | | | |

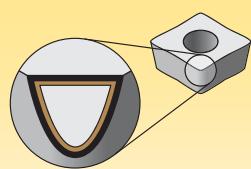


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

← wear resistance → toughness

| CVD-Coated Carbide Grades | Coating | Grade Description | Wear Resistance vs. Toughness | | | | | | | | |
|---------------------------|---------|---|-------------------------------|----|----|----|----|----|----|----|----|
| | | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| | KCP05B | Composition: An innovative, highly deformation-resistant, cobalt-enriched substrate with a specially designed, adherent MTCVD TiCN-Al ₂ O ₃ -TiOCN coating. Application: For finishing to semi-finishing of most steels, ferritic, martensitic, and PH stainless steels and cast irons. Provides excellent combination of deformation resistance and insert edge strength. The new coating combined with a state-of-the-art post-coat treatment provides high-productivity with long predictable tool life and superior workpiece surface finish. | P | | | | | | | | |
| | — | | | | | | | | | | |
| | | beyond DRIVE™ | | | | | | | | | |
| | KCP05 | Composition: An innovative, highly deformation-resistant, cobalt-enriched substrate with a specially designed, adherent MTCVD TiCN-Al ₂ O ₃ coating. Application: For finishing to semi-finishing of most steels, ferritic, martensitic, and PH stainless steels and cast irons. Provides excellent combination of deformation resistance and insert edge strength. The new coating combined with a state-of-the-art post-coat treatment provides high-productivity with long predictable tool life and superior workpiece surface finish. | P | | | | | | | | |
| | — | | | | | | | | | | |
| | | beyond | | | | | | | | | |
| | KCPK05 | Composition: A deformation-resistant, cobalt-enriched substrate combined with thick MTCVD TiCN-Al ₂ O ₃ coating. Application: For high productivity turning of steels and PH stainless steels in continuous to lightly interrupted cuts. This grade provides excellent combination of toughness and high speed wear resistance allowing the fastest steel part production. Its unique combination of substrate and coating also make it an ideal roughing grade for cast iron where chipping resistance is required. | P | | | | | | | | |
| | — | | | | | | | | | | |
| | | beyond | | | | | | | | | |
| | KCP10B | Composition: A specially engineered cobalt-enriched carbide grade with thick MTCVD TiCN-Al ₂ O ₃ -TiOCN coating for maximum wear resistance. Application: An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes. | P | | | | | | | | |
| | — | | | | | | | | | | |
| | | beyond DRIVE™ | | | | | | | | | |
| | KCP10 | Composition: A specially engineered cobalt-enriched carbide grade with thick MTCVD TiCN-Al ₂ O ₃ coating for maximum wear resistance. Application: An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes. | P | | | | | | | | |
| | — | | | | | | | | | | |
| | | beyond | | | | | | | | | |



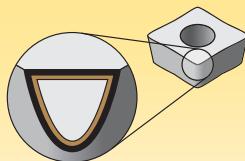
Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

wear resistance ← → toughness

| Coating | | Grade Description | P | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------|---|---|---|----|----|----|----|----|----|----|----|----|
| KCP25B | | <p>Composition: A tough cobalt-enriched carbide grade with a multilayer MTCVD TiCN-Al₂O₃-TiOCN coating with superior interlayer adhesion.</p> <p>Application: Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimises microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes.</p> | P | | | | | | | | | |
| | — | | K | | | | | | | | | |
| KCP25 | | <p>Composition: A tough cobalt-enriched carbide grade with a multilayer MTCVD TiCN-Al₂O₃ coating with superior interlayer adhesion.</p> <p>Application: Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimises microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes.</p> | P | | | | | | | | | |
| | — | | K | | | | | | | | | |
| KCP30B | | <p>Composition: A tough cobalt-enriched carbide grade with an advanced multilayer MTCVD TiCN-Al₂O₃-TiOCN coating.</p> <p>Application: For medium to rough machining of all carbon, alloy, and stainless steels. The substrate design provides superior insert strength that is required for this application, and the multilayer coating adds wear resistance to the insert resulting in long tool life.</p> | P | | | | | | | | | |
| | — | | M | | | | | | | | | |
| KCP30 | | <p>Composition: A tough cobalt-enriched carbide grade with an advanced multilayer MTCVD TiCN-Al₂O₃ coating.</p> <p>Application: For medium to rough machining of all carbon, alloy, and stainless steels. The substrate design provides superior insert strength that is required for this application, and the multilayer coating adds wear resistance to the insert resulting in long tool life.</p> | P | | | | | | | | | |
| | — | | M | | | | | | | | | |

CVD-Coated Carbide Grades

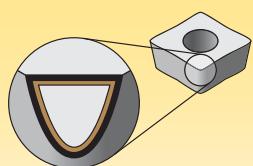


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

← wear resistance → toughness

| CVD-Coated Carbide Grades | Coating | Grade Description | Wear Resistance vs. Toughness Grid | | | | | | | | |
|---------------------------|---------|---|------------------------------------|----|----|----|----|----|----|----|----|
| | | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| KCP40B | KCP40B | Composition: A tough carbide grade with a thin MTCVD TiCN-Al ₂ O ₃ -TiOCN coating. Application: For heavy roughing of carbon, alloy, and stainless steels. The substrate-coating combination provides unbelievable toughness and operational security allowing high metal removal rates even in most demanding interrupted cuts. | P | | | | | | | | |
| | — | | M | | | | | | | | |
| KCP40 | KCP40 | Composition: A tough carbide grade with a thin MTVCD TiCN-Al ₂ O ₃ coating. Application: For heavy roughing of carbon, alloy, and stainless steels. The substrate-coating combination provides unbelievable toughness and operational security allowing high metal removal rates even in most demanding interrupted cuts. | P | | | | | | | | |
| | — | | M | | | | | | | | |
| KCK05B | KCK05B | Composition: A multilayered coating with moderately thick MTCVD TiCN-Al ₂ O ₃ -TiOCN layers over a highly deformation-resistant carbide substrate. Application: Designed for high-speed machining of grey and ductile irons. The substrate and coating architecture together with post-coat treatment ensure a tremendous tool life advantage, especially when cutting higher tensile strength ductile and grey irons where workpiece size consistency and reliability of tool life are critical. Excellent both in continuous cuts and varied depths of cut. | P | | | | | | | | |
| | — | | K | | | | | | | | |
| KCK05 | KCK05 | Composition: A multilayered coating with moderately thick MTCVD TiCN-Al ₂ O ₃ layers over a highly deformation-resistant carbide substrate. Application: Designed for high-speed machining of grey and ductile irons. The substrate and coating architecture together with post-coat treatment ensure a tremendous tool life advantage, especially when cutting higher tensile strength ductile and grey irons where workpiece size consistency and reliability of tool life are critical. Excellent both in continuous cuts and varied depths of cut. | P | | | | | | | | |
| | — | | K | | | | | | | | |
| KCK15B | KCK15B | Composition: A multilayered coating with thick MTCVD TiCN-Al ₂ O ₃ -TiOCN layers applied over a carbide substrate specifically engineered for cast irons. Application: Delivers consistent performance in high-speed machining of grey and ductile irons. The substrate design permits the insert to stay in the cut for a long time at high speeds with minimum deformation. The thick CVD coating and post-coat treatment provide superior wear resistance ensuring long and consistent tool life. Can be applied both in continuous and lightly interrupted cuts. | P | | | | | | | | |
| | — | | K | | | | | | | | |

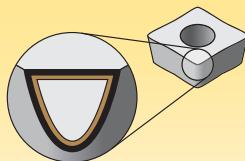


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

← wear resistance → toughness

| Coating | | Grade Description | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------------------------|--------|--|----------------------|----|----|----|----|----|----|----|----|----|
| CVD-Coated Carbide Grades | KCK15 | Composition: A multilayered coating with thick MTCVD TiCN-Al ₂ O ₃ layers applied over a carbide substrate specifically engineered for cast irons. Application: Delivers consistent performance in high-speed machining of grey and ductile irons. The substrate design permits the insert to stay in the cut for a long time at high speeds with minimum deformation. The thick CVD coating and post-coat treatment provide superior wear resistance ensuring long and consistent tool life. Can be applied both in continuous and lightly interrupted cuts. | beyond | P | | | | | | | | |
| | KCK20B | Composition: A specially toughened MTCVD TiCN-Al ₂ O ₃ -TiOCN coating over a wear-resistant substrate. Application: Specifically engineered to maximise coating adhesion and edge strength making this grade ideal in wet interrupted cutting of grey and ductile irons. It can be used in a wide range of applications from finishing to roughing to maximise productivity wherever strength and reliability are needed. | beyond DRIVE™ | P | | | | | | | | |
| | KCK20 | Composition: A specially toughened MTCVD TiCN-Al ₂ O ₃ coating over a wear-resistant substrate. Application: Specifically engineered to maximise coating adhesion and edge strength making this grade ideal in wet interrupted cutting of grey and ductile irons. It can be used in a wide range of applications from finishing to roughing to maximise productivity wherever strength and reliability are needed. | beyond | P | | | | | | | | |
| | KCM15B | Composition: A multilayer MTCVD TiCN-Al ₂ O ₃ coated carbide grade. Application: An excellent finishing to medium machining grade for austenitic stainless steels at higher speeds and covers a broad range of steel applications in the P20–P25 range. KCM15B grade in combination with unique geometries have been designed to resist depth-of-cut notching and minimise bur formation. The post-coat treatment reduces coating stresses, improves coating adhesion, minimises microchipping and edge build-up, and improves workpiece finish. | beyond DRIVE™ | P | | | | | | | | |

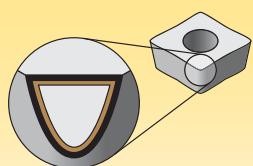


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

← wear resistance → toughness

| CVD-Coated Carbide Grades | Coating | Grade Description | Performance Matrix | | | | | | | | | |
|---------------------------|---------|--|--------------------|----|----|----|----|----|----|----|----|--|
| | | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | |
| | KCM15 | Composition: A multilayer MTCVD TiCN-Al ₂ O ₃ coated carbide grade. Application: An excellent finishing to medium machining grade for austenitic stainless steels at higher speeds and covers a broad range of steel applications in the P20-P25 range. KCM15 grade in combination with unique geometries have been designed to resist depth-of-cut notching and minimise bur formation. The post-coat treatment reduces coating stresses, improves coating adhesion, minimises microchipping and edge build-up, and improves workpiece finish. | P | | | | | | | | | |
| | | | M | | | | | | | | | |
| | KCM25B | Composition: A multilayer MTCVD TiCN-Al ₂ O ₃ -TiOCN coated carbide grade. Application: This CVD-coated grade is designed for general-purpose machining of austenitic stainless steels at moderate speeds and feeds. This grade offers an extraordinary combination of toughness, built-up edge resistance, and wear resistance in stainless steel applications. | P | | | | | | | | | |
| | | | M | | | | | | | | | |
| | KCM25 | Composition: A multilayer CVD coating comprised of MTCVD TiCN-Al ₂ O ₃ layers over a tough, cobalt-enriched carbide substrate. Application: This CVD-coated grade is designed for general-purpose machining of austenitic stainless steels at moderate speeds and feeds. This grade offers an extraordinary combination of toughness, built-up edge resistance, and wear resistance in stainless steel applications. | P | | | | | | | | | |
| | | | M | | | | | | | | | |
| | KCM35B | Composition: A multilayer MTCVD TiCN-Al ₂ O ₃ -TiOCN coating over a super-tough substrate. Application: Engineered to take on the most brutal cast stainless steel machining applications. The substrate withstands heavy interruptions, while the coating provides the wear resistance needed for long tool life. The polished surface resists edge build-up, even at slow cutting speeds. Available in insert sizes and geometries appropriate for heavy feeds and large depths of cut. | P | | | | | | | | | |
| | | | M | | | | | | | | | |
| | KCM35 | Composition: A multilayer MTCVD TiCN-Al ₂ O ₃ coating over a super-tough substrate. Application: Engineered to take on the most brutal cast stainless steel machining applications. The substrate withstands heavy interruptions, while the coating provides the wear resistance needed for long tool life. The polished surface resists edge build-up, even at slow cutting speeds. Available in insert sizes and geometries appropriate for heavy feeds and large depths of cut. | P | | | | | | | | | |
| | | | M | | | | | | | | | |



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

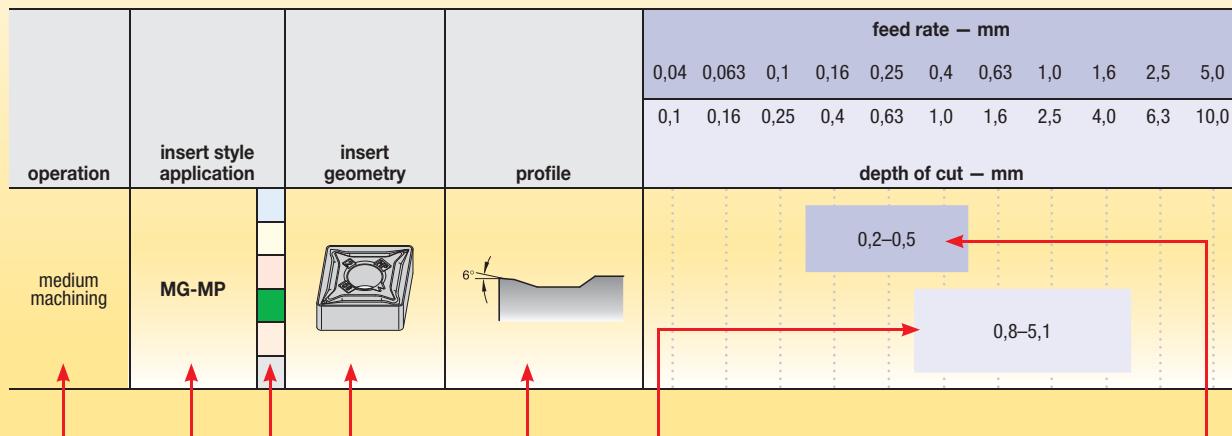
| | |
|---|--------------------|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous |
| S | High-Temp Alloys |
| H | Hardened Materials |

← wear resistance → toughness

| Coating | | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|--------------------------|-------|---|----|----|----|----|----|----|----|----|----|
| PVD-Coated Cermet Grades | KT315 | Composition: A multilayer PVD TiN/TiCN/TiN-coated cermet turning grade. Application: Ideal for high-speed finishing to medium machining of most carbon and alloy steels and stainless steels. Performs very well in cast and ductile iron applications, too. Provides long and consistent tool life and will produce excellent workpiece finishes. | P | ■ | ■ | | | | | | |
| | — | | M | ■ | ■ | | | | | | |
| KTP10 | KTP10 | Composition: A multilayer PVD TiN/TiCN/TiN-coated cermet turning grade. Application: Ideal for high-speed finishing to medium machining of most carbon and alloy steels and stainless steels. Performs very well in cast and ductile iron applications, too. Provides long and consistent tool life and will produce excellent workpiece finishes. | K | ■ | ■ | | | | | | |
| | — | | ■ | ■ | ■ | | | | | | |

■ Select the geometry –
based on feed rate and depth of cut

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



Feed Rate Range —
for best results, use the
centre 60% of the range

Depth-of-Cut Range —
for all inserts in the programme, select smaller
inserts for lighter cuts and larger inserts for
heavy cuts

Chipbreaker Geometry —
section is through nose radius of insert

**Primary Workpiece
Material Group**

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

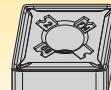
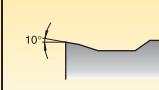
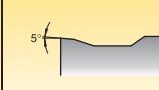
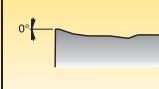
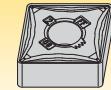
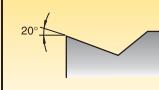
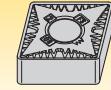
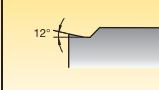
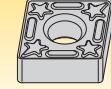
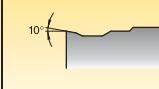
Chip Control Geometry Designation —
example: MG-MP = CNMG-432MP

Machining Operation —
for what the insert geometry is designed

NOTE: For detailed grade and geometry recommendations, reference the Kennametal Beyond™ Selection System on pages B8–B21.

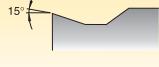
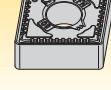
■ Select the geometry –
based on feed rate and depth of cut

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

| operation | insert style application | insert geometry | profile | feed rate – mm | | | | | | | | | | |
|------------------------|--------------------------|---|---|----------------|-------|------|------|------|----------|------|-----|-----|-----|------|
| | | | | 0,04 | 0,063 | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 |
| depth of cut – mm | | | | | | | | | | | | | | |
| | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 |
| wiper finishing | MG-FW |  |  | | | | | | 0,2–0,4 | | | | | |
| wiper medium machining | MG-MW |  |  | | | | | | 0,25–2,0 | | | | | |
| wiper roughing | MM-RW |  |  | | | | | | 0,3–0,6 | | | | | |
| fine finishing | MG-FF |  |  | | | | | | 0,8–5,1 | | | | | |
| finishing sharp | GG-FS precision ground |  |  | | | | | | 0,3–1,3 | | | | | |
| finishing | GG-LF precision ground |  |  | | | | | | 1,3–12,7 | | | | | |

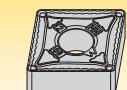
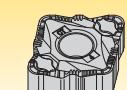
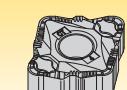
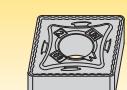
■ Select the geometry –
based on feed rate and depth of cut

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

| operation | insert style application | insert geometry | profile | feed rate – mm | | | | | | | | | | |
|-------------------|--------------------------|---|---|----------------|-------|------|------|-----------|-----|------|-----|-----|-----|------|
| | | | | 0,04 | 0,063 | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 |
| | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 |
| depth of cut – mm | | | | | | | | | | | | | | |
| finishing | MG-FP |  |  | 15° | | | | 0,1–0,3 | | | | | | |
| | MG-FN |  |  | 10° | | | | 0,1–0,3 | | | | | | |
| | MP-K |  |  | 10° | | | | 0,1–0,3 | | | | | | |
| medium sharp | MG-MS |  |  | 13° | | | | 0,12–0,35 | | | | | | |
| medium machining | MG-UP |  |  | 15° | | | | 0,2–0,6 | | | | | | |

**Select the geometry –
based on feed rate and depth of cut**

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

| operation | insert style application | insert geometry | profile | feed rate – mm | | | | | | | | | | |
|-------------------|--------------------------|---|---|----------------|-------|------|------|-----------|-----|------|----------|----------|-----|------|
| | | | | 0,04 | 0,063 | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 |
| | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 |
| depth of cut – mm | | | | | | | | | | | | | | |
| medium machining | -GP* |  |  | 10° | | | | 0,3–0,5 | | | | | | |
| | MG-MP |  |  | 6° | | | | 0,15–0,5 | | | | 0,8–5,1 | | |
| | MG-P |  |  | 10° | | | | 0,15–0,5 | | | | 0,75–5,0 | | |
| | MG-MN |  |  | 0° | | | | 0,15–0,5 | | | 0,5–5,1 | | | |
| | MG-MR |  |  | | | | | 0,15–0,55 | | | | 1,5–6,3 | | |
| | MG-CT O.D. turning |  |  | 15° | | | | 0,13–0,5 | | | 1,0–3,0 | | | |
| | MG-CT outward facing |  |  | 15° | | | | 0,25–0,5 | | | 0,25–1,0 | | | |
| | -MS single sided |  |  | 20° | | | | 0,15–0,4 | | | 0,6–2,3 | | | |
| | MG-UN |  |  | 0° | | | | 0,2–0,5 | | | 0,8–3,8 | | | |

*35° and 55° geometries are single sided.

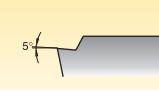
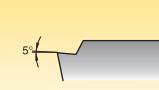
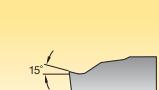
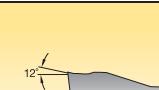
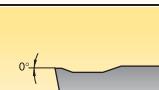
■ Select the geometry –
based on feed rate and depth of cut

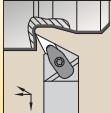
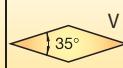
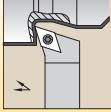
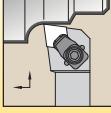
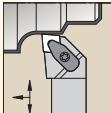
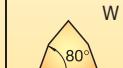
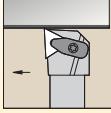
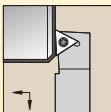
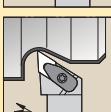
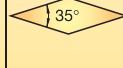
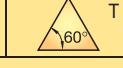
| | |
|---|--------------------|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous |
| S | High-Temp Alloys |
| H | Hardened Materials |

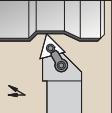
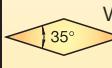
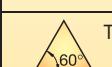
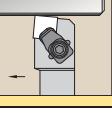
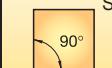
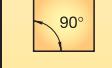
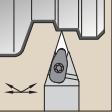
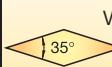
| operation | insert style application | insert geometry | profile | feed rate – mm | | | | | | | | | | |
|-------------------------------|--------------------------|---|---|----------------|-------|------|------|------|-----|-----------|-----|-----|-----|------|
| | | | | 0,04 | 0,063 | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 |
| | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 |
| depth of cut – mm | | | | | | | | | | | | | | |
| roughing | MG-RP |  |  | | | | | | | 0,2–0,6 | | | | |
| | MG-RN |  |  | | | | | | | 0,3–0,63 | | | | |
| | MG |  |  | | | | | | | 0,3–0,8 | | | | |
| | MM-RM single sided |  |  | | | | | | | 0,3–1,0 | | | | |
| | MM-RP single sided |  |  | | | | | | | 0,2–1,0 | | | | |
| | MM-RH single sided |  |  | | | | | | | 0,4–1,3 | | | | |
| wiper finishing | MT-FW |  |  | | | | | | | 0,08–0,35 | | | | |
| wiper, medium finishing | MT-MW |  |  | | | | | | | 0,12–0,5 | | | | |

■ Select the geometry –
based on feed rate and depth of cut

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

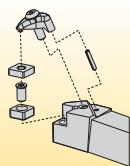
| operation | insert style application | insert geometry | profile | feed rate – mm | | | | | | | | | | | | |
|-------------------|--------------------------|---|---|----------------|-------|------|------|------|-----|------|-----|-----|-----|------|--|--|
| | | | | 0,04 | 0,063 | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 | | |
| | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 | | |
| depth of cut – mm | | | | | | | | | | | | | | | | |
| fine finishing | GM precision ground |  |  | 0,05–0,2 | | | | | | | | | | | | |
| | MT-11 |  |  | 0,08–0,25 | | | | | | | | | | | | |
| | .MT-UF |  |  | 0,05–0,25 | | | | | | | | | | | | |
| finishing | GT-HP precision ground |  |  | 0,2–0,4 | | | | | | | | | | | | |
| | GT-LF precision ground |  |  | 0,2–0,4 | | | | | | | | | | | | |
| | MT-FP |  |  | 0,063–0,25 | | | | | | | | | | | | |
| | MT-LF |  |  | 0,16–1,6 | | | | | | | | | | | | |
| medium machining | MT-MP |  |  | 0,15–0,4 | | | | | | | | | | | | |
| | MT-MF |  |  | 0,2–0,4 | | | | | | | | | | | | |

| tool path | insert shape | clamping style | Turning | Profiling | Facing | Plunging | Chamfering | page(s) |
|---|---|----------------|---------|-----------|--------|----------|------------|------------|
| ■ 117,5° Lead Angle | | | | | | | | |
|  |  | Kenloc™ | ● | ● | ● | | | B151 |
| | | Kenclamp™ | ● | | ● | | | B150 |
| ■ 107,5° Lead Angle | | | | | | | | |
|  |  | Screw-On | ● | ● | | | | B213 |
| | | TNT | ● | ● | | ● | | B151 |
| |  | Screw-On | ● | ● | | | | B265 |
| ■ 97,5° Lead Angle | | | | | | | | |
|  |  | MTS | ● | | ● | | | — |
| ■ 95° Lead Angle | | | | | | | | |
|  |  | Kenloc | ● | ● | ● | | | B62 |
| | | Kenclamp | ● | ● | ● | | | B59 |
| | | Kenlever™ | ● | ● | ● | | | B65 |
| | | Screw-On | ● | ● | ● | | | B180, B193 |
| | | MTS | ● | ● | ● | | | B358 |
| |  | Kenloc | ● | ● | ● | | | B162 |
| | | Kenclamp | ● | ● | ● | | | B161 |
| | | Kenlever | ● | ● | ● | | | B163 |
| | | Screw-On | ● | ● | ● | | | B271 |
| | | MTS | ● | ● | ● | | | B369 |
| | | WedgeLock™ | ● | ● | ● | | | B162 |
| ■ 93° Lead Angle | | | | | | | | |
|  |  | Kenloc | ● | ● | | | | B86 |
|  | | Kenclamp | ● | ● | | | | B85 |
|  | | Kenlever | ● | ● | | | | B87 |
| | | Screw-On | ● | ● | | | | B210 |
| | | MTS | ● | ● | | | | B360 |
| |  | Kenloc | ● | ● | | | | B151 |
| | | Kenclamp | ● | ● | | | | B149 |
| | | Screw-On | ● | ● | | | | B267 |
| |  | WedgeLock | ● | ● | | | | B133 |

| tool path | insert shape | clamping style | Turning | Profiling | Facing | Plunging | Chamfering | page(s) |
|---|--|----------------|---------|-----------|--------|----------|------------|---------|
| ■ 90° Lead Angle | | | | | | | | |
|  |  | Screw-on | ● | ● | ● | | | B179 |
| |  | Screw-on | ● | ● | ● | | | B209 |
| |  | Screw-on | ● | ● | ● | | | B266 |
| |  | Kenloc | ● | ● | ● | ● | | B133 |
| | | Kenclamp | ● | ● | ● | | | B132 |
| | | Kenlever | ● | ● | ● | | | B135 |
| | | Screw-on | ● | ● | ● | | | B247 |
| | | TNT | ● | ● | ● | | | — |
| | | WedgeLock | ● | ● | ● | | | B133 |
| ■ 85° Lead Angle | | | | | | | | |
|  |  | MTS | ● | | ● | | | B366 |
| ■ 75° Lead Angle | | | | | | | | |
|  |  | Kenloc | ● | ● | ● | | | B61 |
| | | Kenclamp | ● | ● | ● | | | B58 |
| | | Kenlever | ● | | ● | | | B64 |
| | | TNT | ● | ● | | | | — |
| | | Screw-on | ● | | ● | | | B180 |
| | | MTS | ● | | | | | B356 |
| |  | Kenloc | ● | | ● | | | B108 |
| | | Kenclamp | ● | | ● | | | B105 |
| | | Kenlever | ● | ● | ● | | | B111 |
| | | Screw-on | ● | ● | ● | | | B233 |
| | | MTS | ● | ● | ● | | | B364 |
| ■ 72,5° Lead Angle | | | | | | | | |
|  |  | Kenloc | ● | ● | | | | B152 |
| | | Kenclamp | | ● | | | | B150 |
| | | Screw-on | ● | ● | | | | B268 |

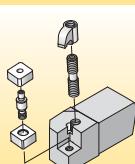
| tool path | insert shape | clamping style | Turning | Profiling | Facing | Plunging | Chamfering | page(s) |
|-------------------------|--------------|----------------|---------|-----------|--------|----------|------------|---------|
| 70° Lead Angle | E | Kenloc™ | ● | ● | | | | — |
| 63° Lead Angle | D | Kenloc | ● | ● | | | | B85 |
| 62,5° Lead Angle | D | Kenloc | ● | ● | ● | | | B86 |
| | | Kenlever | ● | ● | ● | | | B88 |
| | | Screw-On | ● | ● | | | | B211 |
| 60° Lead Angle | T | Kenloc | ● | ● | ● | | | B133 |
| | | | | | | | | |
| 50° Lead Angle | V | Kenloc | ● | ● | ● | | | B63 |
| 45° Lead Angle | C | Kenloc | ● | ● | ● | | | B60 |
| | | Kendex™ | ● | ● | ● | | | B66 |
| | | Screw-On | ● | ● | ● | | | B192 |
| | S | Kenloc | ● | ● | ● | | | B109 |
| | | Kenclamp | ● | ● | ● | | | B105 |
| | | Kenlever™ | ● | ● | ● | | | B111 |
| | | Kendex | ● | ● | ● | | | — |
| | | Screw-On | ● | ● | ● | | | B233 |
| | | MTS | ● | ● | ● | | | B213 |
| | T | Kenlever | ● | ● | ● | | | B86 |
| | R | Kenloc | ● | ● | ● | | | B95 |
| | | Kenclamp | ● | ● | ● | | | — |
| | | Fix-Perfect™ | ● | ● | ● | | | — |
| | | Screw-On | ● | ● | ● | | | B227 |
| | | MTS | ● | ● | ● | | | B365 |

Clamping Styles



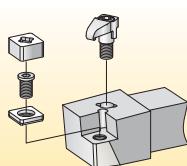
Kenclamp Style

- Uses Kenloc negative style inserts.
- Unique clamp design provides rigid clamping.
- Ensures insert repeatability and seating.
- Reduced chatter and improved tool life.



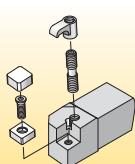
Kenloc Style

- Uses Kenloc negative style inserts.
- Lock pin and top clamp provide rigid clamping.
- Wide variety of insert styles may be used.
- Tools may be used with or without clamp.



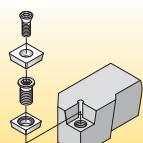
MTS Style Modular Tooling System

- Proven superior system in holding ceramic inserts rigidly in turning and profiling operations.
- Uses standard insert sizes — 80°, 75°, 55°, square, and trigon.
- This system offers the added versatility of using optional hardware to hold standard Kendex and Kenloc inserts.



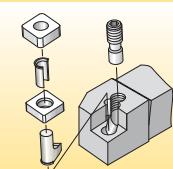
Kendex Style

- Uses Kendex inserts.
- Chipbreaker option available for ceramic inserts.
- Wide variety of insert styles may be used.



Screw-On Style

- Top clamping by screw for Screw-On inserts.

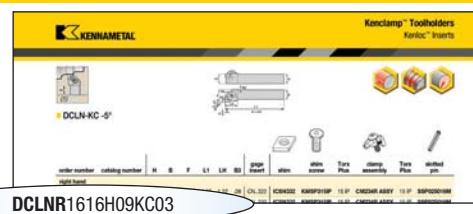


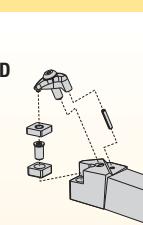
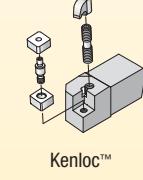
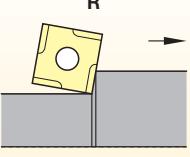
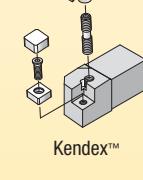
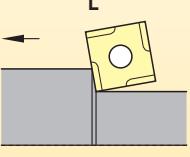
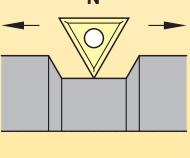
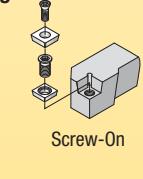
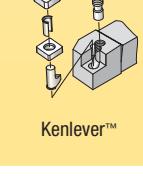
Kenlever Style

- Proven superior system for holding ceramic inserts rigidly in turning and profiling operations.
- Can be used on Kendex or Kenloc inserts using optional hardware.

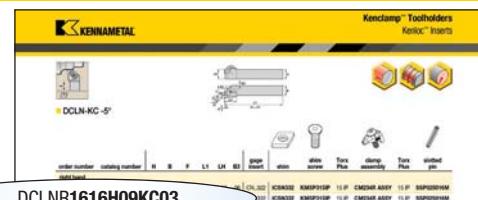
How Do Catalogue Numbers Work?

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.

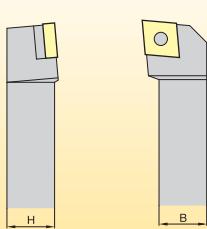


| D | C | L | N | R | |
|---|---|--|---|---|--|
| Insert Holding Method | Insert Shape | Tool Style or Lead Angle | Insert Clearance Angle | Hand of Tool | Additional Information |
|  Kenclamp™ | A 85° B 82° C 80° D 55° E 75° H 120° K 55° L 90° M 86° O 135° P 108° R  S 90° T  V 35° W  | A 90° B 15° C 90° D 45° E 60° F 90° G 90° H 107,5° J 93° K 75° L 95° M 50° P 107,5° Q 107,5° R 75° S 45° U 93° V 72,5° Y 85° | N 0° B 5° C 11° P 11° D 15° E 20° F 25° | R = Right hand L = Left hand N = Neutral | C = Deep pocket for ceramic insert S = Single pocket locating wall F = Straight shank, no offset |
|  Kenloc™ | | | |  | |
|  Kendex™ | | | |  | |
|  Top Notch™ Profiling | | | |  | |
|  Screw-On | | | | | |
|  Kenlever™ | | | | | |

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.


16

Shank Dimensions



The seventh and eighth position shall be a significant two-digit number that indicates the holder cross section.

- If the dimension for the width "B" or the height "H" is represented by a one-digit number, a 0 (zero) will be used in front of it.

Example: 8,0mm = 08

16
H

Tool Length

| L1 | ISO |
|----------------|-----|
| 32 | A |
| 40 | B |
| 50 | C |
| 60 | D |
| 70 | E |
| 80 | F |
| 90 | G |
| 100 | H |
| 110 | J |
| 125 | K |
| 140 | L |
| 150 | M |
| 160 | N |
| 170 | P |
| 180 | Q |
| 200 | R |
| 250 | S |
| 300 | T |
| 350 | U |
| 400 | V |
| 450 | W |
| 500 | Y |
| Special Design | X |

09

Insert Size

Cutting Edge Length L10

| | | | |
|----------|----------------|--|---|
| H | Hexagon 120° | | C Rhomboid 80° |
| O | Octagon 135° | | D 55° |
| P | Pentagon 108° | | E 75° |
| S | Square 90° | | M 86° |
| T | Triangular 60° | | V 35° |
| R | Round | | W Trigon 80° with enlarged corner angles |
| | | | L Rectangular 90° |
| | | | A Parallelogram 85° |
| | | | B 82° |
| | | | K 55° |

KC

Additional Information

KC =

Kenclamp™

H4 =

WedgeLock™
clamping system

M =

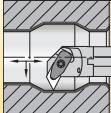
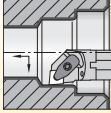
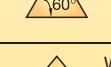
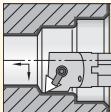
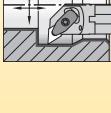
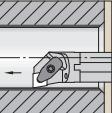
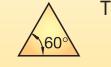
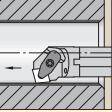
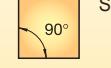
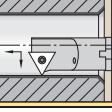
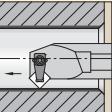
MTS clamping system for
ceramic and
PcBN inserts

03

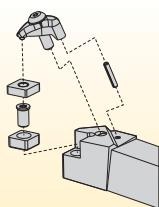
Insert Thickness
(optional)

04 = 4,76mm

06 = 6,35mm

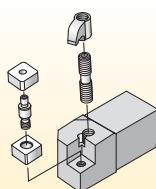
| tool path | insert shape | clamping style | Boring | Back Boring | Profiling | page(s) |
|---|--|----------------|--------|-------------|-----------|------------|
| ■ 117,5° Lead Angle | | | | | | |
|  |  | Kenclamp™ | ● | ● | ● | B89 |
| ■ 107,5° Lead Angle | | | | | | |
|  |  | Kenclamp | ● | ● | ● | B89 |
| |  | Screw-On | ● | ● | ● | B212, B217 |
| ■ 95° Lead Angle | | | | | | |
|  |  | Kenloc™ | ● | ● | ● | B67 |
| | | Kenclamp | ● | ● | ● | B66 |
| | | Screw-on | ● | ● | ● | B182, B196 |
| | | Kenlever™ | ● | ● | ● | B68 |
| | | MTS | ● | ● | ● | B372 |
|  |  | MTS | ● | ● | ● | — |
| |  | Screw-On | ● | ● | ● | B250 |
|  |  | Kenloc | ● | ● | ● | B164 |
| | | Kenclamp | ● | ● | ● | B163 |
| | | Kenlever | ● | ● | ● | B165 |
| | | Screw-on | ● | ● | ● | B271 |
| | | MTS | ● | ● | ● | B374 |
| ■ 93° Lead Angle | | | | | | |
|  |  | Kenloc | ● | ● | ● | B90 |
| | | Kenclamp | ● | ● | ● | B90 |
| | | Screw-on | ● | ● | ● | B212, B217 |
| | | MTS | ● | ● | ● | — |
|  |  | Kenloc | ● | ● | ● | B153 |
| | | Kenclamp | ● | ● | ● | B152 |
| | | Screw-on | ● | ● | ● | B269 |
| |  | Kendex™ | ● | ● | ● | B371 |
| |  | Screw-On | ● | ● | ● | B272 |
| ■ 90° Lead Angle | | | | | | |
|  |  | Screw-On | ● | ● | ● | B182, B194 |
| |  | Kenloc | ● | ● | ● | B137 |
| | | Kenclamp | ● | ● | ● | B137 |
| | | Kenlever | ● | ● | ● | B138 |
| | | Kendex | ● | ● | ● | — |
| | | Screw-On | ● | ● | ● | B248, B257 |
| ■ 75° Lead Angle | | | | | | |
|  |  | Screw-On | ● | ● | ● | B195 |
| |  | Kenloc | ● | ● | ● | B114 |
| | | Kenclamp | ● | ● | ● | B113 |
| | | Kenlever | ● | ● | ● | B114 |
| | | Kendex | ● | ● | ● | — |
| |  | MTS | ● | ● | ● | B233 |
| | | Kendex | ● | ● | ● | — |
| ■ 60° Lead Angle | | | | | | |
|  |  | Screw-On | ● | ● | ● | — |
| ■ 45° Lead Angle | | | | | | |
|  |  | MTS | ● | ● | ● | B373 |

Clamping Styles



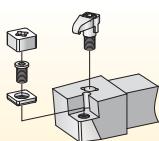
Kenclamp™ Style

- Uses Kenloc™ negative style inserts.
- Unique clamp design provides rigid clamping.
- Ensures insert repeatability and seating.
- Reduced chatter and improved tool life.



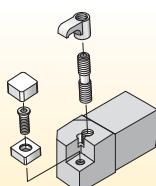
Kenloc™ Style

- Uses Kenloc™ negative style inserts.
- Lock pin and top clamp provide rigid clamping.
- Wide variety of insert styles may be used.
- Tools may be used with or without clamp.



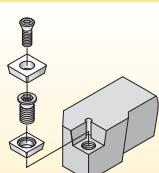
MTS Style

- Proven superior system in holding ceramic inserts rigidly in turning and profiling operations.
- Uses standard insert sizes — 80°, 75°, 55°, square, and trigon.
- This system offers the added versatility of using optional hardware to hold standard Kendex and Kenloc inserts.



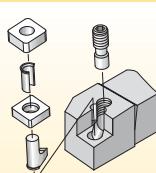
Kendex™ Style

- Uses Kendex inserts.
- Chipbreaker option available for ceramic inserts.
- Wide variety of insert styles may be used.



Screw-On Style

- Top clamping by screw for Screw-On inserts.

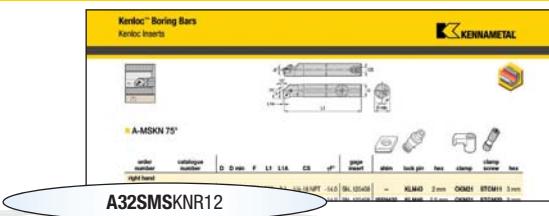


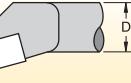
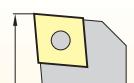
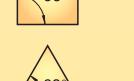
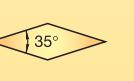
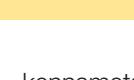
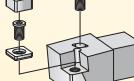
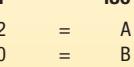
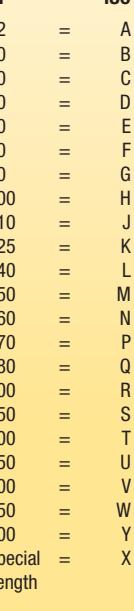
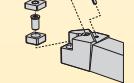
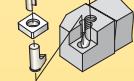
Kenlever™ Style

- Proven superior system for holding ceramic inserts rigidly in turning and profiling operations.
- Can be used on Kendex or Kenloc inserts using optional hardware.

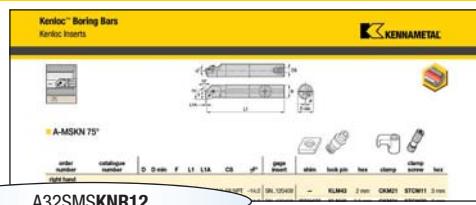
How Do Catalogue Numbers Work?

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.



| A | 32 | S | M | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|---|---|---|----|---|----|---|----|---|----|---|----|---|----|---|----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|----------------|--|
| Bar Type | Bar Diameter | Bar Length** | Insert Holding Method | Insert Shape | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  A Steel bar with coolant |  32 Bar Diameter |  S Bar Length** <p>Metric: A two-digit number indicates the bar diameter in mm. If the diameter is represented by a one digit number, a 0 (zero) will be used in front of it. Example: 8mm = 08</p> |  M Insert Holding Method C  Kendex™ |  A  B  C  D  E  H  K  L  M  O  P  R  S  T  V  W | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  S Steel bar without coolant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  C Carbide bar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  D DeVibrator bar with coolant | | |  N  Top Notch™ Profiling | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  D Tunable bar with coolant | |  L1  <table border="1"> <thead> <tr> <th>ISO</th> <th>L1</th> </tr> </thead> <tbody> <tr><td>A</td><td>32</td></tr> <tr><td>B</td><td>40</td></tr> <tr><td>C</td><td>50</td></tr> <tr><td>D</td><td>60</td></tr> <tr><td>E</td><td>70</td></tr> <tr><td>F</td><td>80</td></tr> <tr><td>G</td><td>90</td></tr> <tr><td>H</td><td>100</td></tr> <tr><td>J</td><td>110</td></tr> <tr><td>K</td><td>125</td></tr> <tr><td>L</td><td>140</td></tr> <tr><td>M</td><td>150</td></tr> <tr><td>N</td><td>160</td></tr> <tr><td>P</td><td>170</td></tr> <tr><td>Q</td><td>180</td></tr> <tr><td>R</td><td>200</td></tr> <tr><td>S</td><td>250</td></tr> <tr><td>T</td><td>300</td></tr> <tr><td>U</td><td>350</td></tr> <tr><td>V</td><td>400</td></tr> <tr><td>W</td><td>450</td></tr> <tr><td>Y</td><td>500</td></tr> <tr><td>X</td><td>Special Length</td></tr> </tbody> </table> | ISO | L1 | A | 32 | B | 40 | C | 50 | D | 60 | E | 70 | F | 80 | G | 90 | H | 100 | J | 110 | K | 125 | L | 140 | M | 150 | N | 160 | P | 170 | Q | 180 | R | 200 | S | 250 | T | 300 | U | 350 | V | 400 | W | 450 | Y | 500 | X | Special Length | |
| ISO | L1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F | 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| J | 110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| K | 125 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | 140 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N | 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P | 170 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q | 180 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R | 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | 300 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U | 350 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| V | 400 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W | 450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y | 500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| X | Special Length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  E Carbide bar with coolant | | |  D  Kenclamp™ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  B DeVibrator | | |  M  Kenloc™ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  H Interchangeable head | | |  S  Screw-On | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  L Heavy metal bar with coolant | | |  P  Kenlever™ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

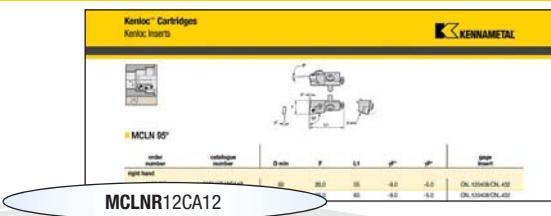
By referencing this easy-to-use guide, you can identify the correct product to meet your needs.

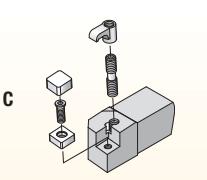
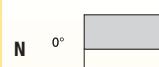
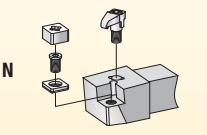
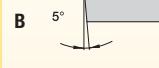
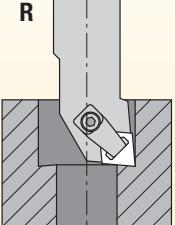
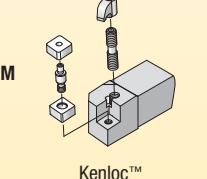
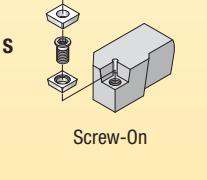
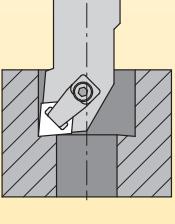
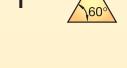


| K | N | R | 12 | |
|---------------------------|------------------------|---------------------------|-------------------------------------|--|
| Bar Style or Lead Angle | Insert Clearance Angle | Hand of Tool | Insert Size Cutting Edge Length L10 | Additional Information |
| E 30° | N 0° | R = Right-hand boring bar | H L10 | M... = TNT/MTS clamping systems for ceramic and PcbN inserts |
| F 0° | B 5° | L = Left-hand boring bar | O L10 | D = Dual pocket |
| K 15° | C 7° | | P L10 | AP5 = Axial positive |
| L 5° 5° (E-style inserts) | P 11° | | S L10 | KC = Kenclamp™ |
| L 7.5° 7.5° | D 15° | | T L10 | + = Insert Thickness |
| P 27.5° | E 20° | | CDE L10 | |
| Q 17.5° | F 25° | | M L10 | |
| S 45° | | | V L10 | |
| U 3° | | | W L10 | |
| X 5° | | | L L10 | |
| | | | A B K L10 | |
| | | | R D | |

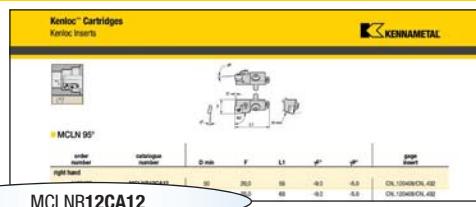
How Do Catalogue Numbers Work?

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.



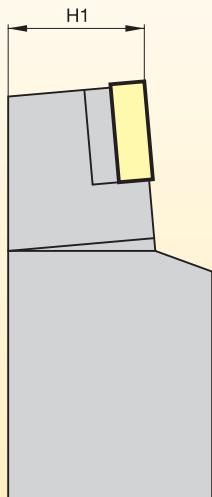
| M | C | L | N | R |
|---|---|---|--|---|
| Insert Clamping System | Insert Shape | Tool Style or Lead Angle | Insert Clearance Angle | Hand of Tool |
|  C Kendex™ |  C 80° |  A 0° |  N 0° | R = Right-hand boring bar |
|  N Top Notch™ Profiling |  D 55° |  B 15° |  B 5° |  R |
|  M Kenloc™ |  R |  C 0° |  C 7° | L = Left-hand boring bar |
|  S Screw-On |  S 90° |  D 45° |  D 15° |  L |
| |  T 60° |  E 30° |  E 20° | |
| |  W 80° |  F 0° |  F 25° | |
| | |  G 0° | | |
| | |  H 50° | | |
| | |  I 3° | | |
| | |  J 3° | | |
| | |  K 15° | | |
| | |  L 5° | | |
| | |  M 40° | | |
| | |  P 27.5° | | |
| | |  Q 27.5° | | |
| | | R 15° | | |
| | | S 45° | | |
| | | U 3° | | |
| | | V 17.5° | | |
| | | Y 5° | | |

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.


12

Cartridge Size

H1 = Cutting edge height of cartridge, in millimetres


C

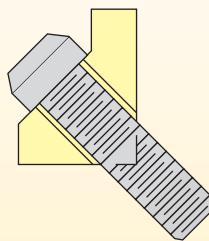
Identifying Code of Cartridge

C = Cartridge

A

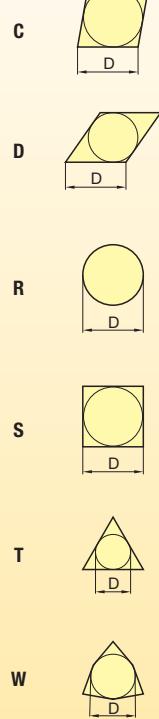
Mounting Design of Cartridge

A = Angular acc. ISO 5611

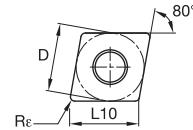

12

Insert Size

Cutting edge length D

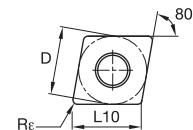


● first choice
○ alternate choice



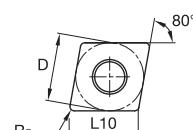
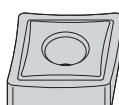
■ CNGG-FS

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|--------|-------|--------|-------|--------|-------|
| CNGG120401FS | 12,70 | 12,90 | 0,1 | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 |
| CNGG120402FS | 12,70 | 12,90 | 0,2 | - | - | KCP10 | KCP10 | KCP30B | KCP30 |
| CNGG120404FS | 12,70 | 12,90 | 0,4 | - | - | - | - | KCP40B | KCP40 |
| CNGG120408FS | 12,70 | 12,90 | 0,8 | - | - | - | - | - | - |



■ CNGG-LF

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|--------|-------|--------|-------|--------|-------|
| CNGG120401LF | 12,70 | 12,90 | 0,1 | KCP05B | KCP05 | KCP10B | KCP10 | KCK05B | KCK05 |
| CNGG120402LF | 12,70 | 12,90 | 0,2 | - | - | KCP10 | KCP10 | KCK15B | KCK15 |
| CNGG120404LF | 12,70 | 12,90 | 0,4 | - | - | - | - | KCK20B | KCK20 |
| CNGG120408LF | 12,70 | 12,90 | 0,8 | - | - | - | - | KCM15B | KCM15 |
| CNGG120412LF | 12,70 | 12,90 | 1,2 | - | - | - | - | KCM25B | KCM25 |

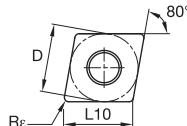
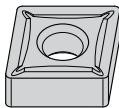


■ CNGP

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|--------|-------|--------|-------|--------|-------|
| CNGP120401 | 12,70 | 12,90 | 0,1 | KCP05B | KCP05 | KCP10B | KCP10 | KCK05B | KCK05 |
| CNGP120402 | 12,70 | 12,90 | 0,2 | - | - | KCP10 | KCP10 | KCK15B | KCK15 |
| CNGP120404 | 12,70 | 12,90 | 0,4 | - | - | - | - | KCK20B | KCK20 |
| CNGP120408 | 12,70 | 12,90 | 0,8 | - | - | - | - | KCM15B | KCM15 |
| CNGP120412 | 12,70 | 12,90 | 1,2 | - | - | - | - | KCM25B | KCM25 |
| CNGP120416 | 12,70 | 12,90 | 1,6 | - | - | - | - | KCM35B | KCM35 |

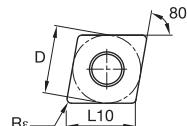
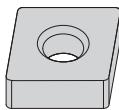
NOTE: Indexable Inserts for P-clamping.

- first choice
- alternate choice

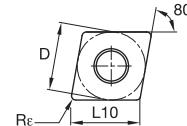
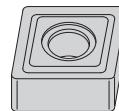


■ CNGP-K

| ISO catalogue number | D | L10 | R _E | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|
| CNGP120408K | 12,70 | 12,90 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CNGP160612K | 15,88 | 16,12 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | | |

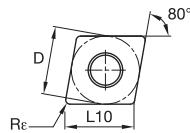
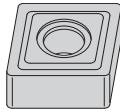


■ CNMA



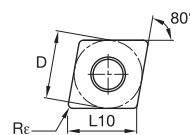
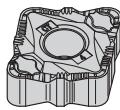
CNMG

● first choice
○ alternate choice



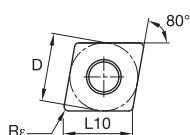
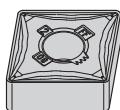
■ CNMG-33

| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| CNMG12040833 | 12,70 | 12,90 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | | | | | |



■ CNMG-CT

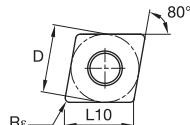
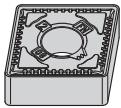
| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| CNMG120408CT | 12,70 | 12,90 | 0,8 | - | ● | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CNMG120412CT | 12,70 | 12,90 | 1,2 | - | ● | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CNMG120416CT | 12,70 | 12,90 | 1,6 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



■ CNMG-FF

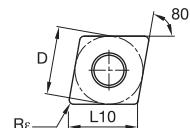
| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| CNMG090304FF | 9,53 | 9,67 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CNMG090308FF | 9,53 | 9,67 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CNMG120404FF | 12,70 | 12,90 | 0,4 | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | ● | - | - | - | | | | |
| CNMG120408FF | 12,70 | 12,90 | 0,8 | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | ● | - | - | - | | | | |

- first choice
- alternate choice

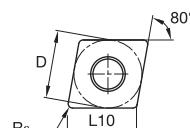
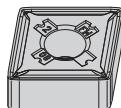


■ CNMG-FN

NOTE: Indexable Inserts for P-clamping.

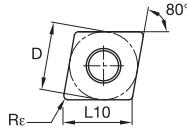


CNMG-FP



■ CNMG-FW

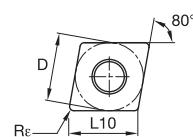
| ISO catalogue number | D | L10 | R _E | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| CNMG120404FW | 12,70 | 12,90 | 0,4 | - | ● | ● | ● | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | ● | | | |
| CNMG120408FW | 12,70 | 12,90 | 0,8 | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | ● | | |
| CNMG120412FW | 12,70 | 12,90 | 1,2 | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | ● | | |



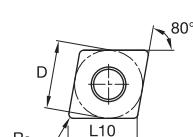
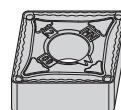
- first choice
- alternate choice

■ CNMG-FM

| ISO catalogue number | D | L10 | R _E |
|----------------------|-------|-------|----------------|
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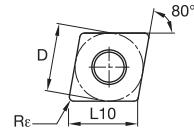


■ CNMG-LF

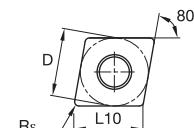
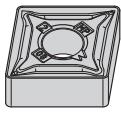


■ CNMG-MN

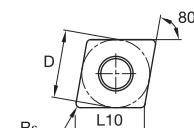
- first choice
- alternate choice



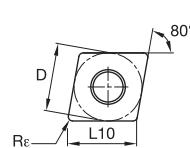
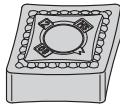
■ CNMU-MN



■ CNMG-MP

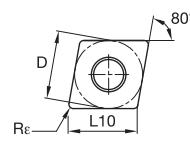


■ CNMG-MR

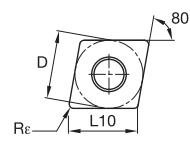
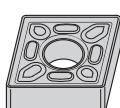


- first choice
- alternate choice

■ CNMG-MS



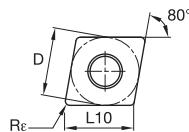
■ CNMG-MW



■ CNMG-P

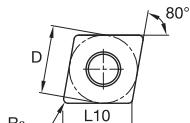
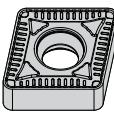
| ISO catalogue number | D | L10 | R _E | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | H68 | KCU10 | KCU10 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| CNMG120404P | 12,70 | 12,90 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG120408P | 12,70 | 12,90 | 0,8 | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG120412P | 12,70 | 12,90 | 1,2 | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG190612P | 19,05 | 19,34 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | | | | | |

● first choice
○ alternate choice



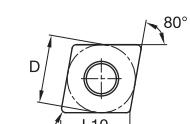
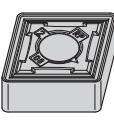
■ CNMG-RN

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM25B | KCM25 | KCM35B | KCM35 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|--------------|---|---|---|---|---|---|--------|-------|--------|-------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|--------|--------|-------|--------|-------|-------|-------|--------|--------|--------|-------|
| CNMG120408RN | 12,70 | 12,90 | 0,8 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG120412RN | 12,70 | 12,90 | 1,2 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG120416RN | 12,70 | 12,90 | 1,6 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG160608RN | 15,88 | 16,12 | 0,8 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG160612RN | 15,88 | 16,12 | 1,2 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG160616RN | 15,88 | 16,12 | 1,6 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG190608RN | 19,05 | 19,34 | 0,8 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG190612RN | 19,05 | 19,34 | 1,2 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG190616RN | 19,05 | 19,34 | 1,6 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| CNMG190624RN | 19,05 | 19,34 | 2,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |



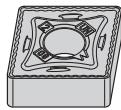
■ CNMU-RN

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM25B | KCM25 | KCM35B | KCM35 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|--------------|---|---|---|---|---|---|--------|-------|--------|-------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|--------|--------|-------|--------|-------|-------|-------|--------|--------|--------|-------|
| CNMU120412RN | 12,70 | 12,90 | 1,2 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |

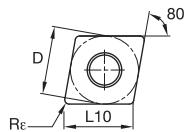


■ CNMG-RP

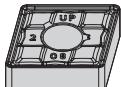
| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM25B | KCM25 | KCM35B | KCM35 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|--------------|---|---|---|---|---|---|--------|-------|--------|-------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|--------|--------|-------|--------|-------|-------|-------|--------|--------|--------|-------|
| CNMG120404RP | 12,70 | 12,90 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG120408RP | 12,70 | 12,90 | 0,8 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG120412RP | 12,70 | 12,90 | 1,2 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG120416RP | 12,70 | 12,90 | 1,6 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG160608RP | 15,88 | 16,12 | 0,8 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG160612RP | 15,88 | 16,12 | 1,2 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG160616RP | 15,88 | 16,12 | 1,6 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG190612RP | 19,05 | 19,34 | 1,2 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| CNMG190616RP | 19,05 | 19,34 | 1,6 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |



- first choice
- alternate choice

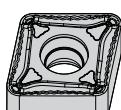


■ CNMG-UN



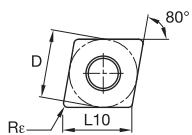
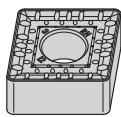
A technical drawing showing a stepped hole. The top part has a diameter labeled D . The bottom part has a diameter labeled $L10$. A dashed line indicates a 90-degree corner. An angle of 80° is shown between the horizontal axis and the bottom edge of the hole.

■ CNMG-LP



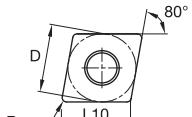
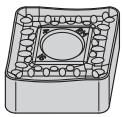
A technical drawing showing a stepped hole. The top part has a diameter labeled D . The bottom part has a radius labeled $R8$. The depth of the step is labeled $L10$.

■ CNMM-MR



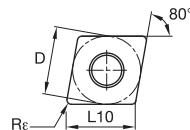
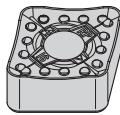
- first choice
- alternate choice

■ CNMM-RH



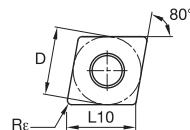
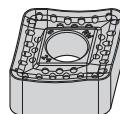
■ CNMM-RM

● first choice
○ alternate choice



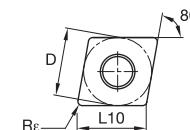
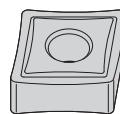
■ CNMM-RP

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|-------|-----|---|---|---|
| CNMM120408RP | 12,70 | 12,90 | 0,8 | - | ● - | ● - | - | - | - |
| CNMM120412RP | 12,70 | 12,90 | 1,2 | - | - ● - | ● - | - | - | - |
| CNMM120416RP | 12,70 | 12,90 | 1,6 | - | - - | ● - | - | - | - |
| CNMM160608RP | 15,88 | 16,12 | 0,8 | - | - - | ● - | - | - | - |
| CNMM160612RP | 15,88 | 16,12 | 1,2 | - | - - | ● - | - | - | - |
| CNMM160616RP | 15,88 | 16,12 | 1,6 | - | - - | ● - | - | - | - |
| CNMM160624RP | 15,88 | 16,12 | 2,4 | - | - - | ● - | - | - | - |
| CNMM190612RP | 19,05 | 19,34 | 1,2 | - | - - | ● - | - | - | - |
| CNMM190616RP | 19,05 | 19,34 | 1,6 | - | - - | ● - | - | - | - |
| CNMM190624RP | 19,05 | 19,34 | 2,4 | - | - - | ● - | - | - | - |
| CNMM250924RP | 25,40 | 25,79 | 2,4 | - | - - | ● - | - | - | - |



■ CNMM-RW

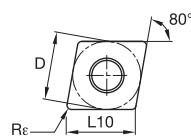
| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|-----|-----|---|---|---|
| CNMM190624RW | 19,05 | 19,34 | 2,4 | - | - - | ● - | - | - | - |
| CNMM250924RW | 25,40 | 25,79 | 2,4 | - | - - | ● - | - | - | - |



■ CNMP

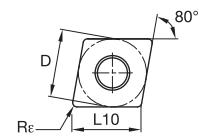
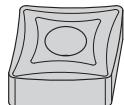
| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|--------|--------|--------|-------|-------|
| CNMP120404 | 12,70 | 12,90 | 0,4 | - | KCP05B | KCP05 | KCP10B | KCP10 | KCP10 |
| CNMP120408 | 12,70 | 12,90 | 0,8 | - | - | KCP10B | - | - | - |
| CNMP120412 | 12,70 | 12,90 | 1,2 | - | - | ● - | - | - | - |
| CNMP160608 | 15,88 | 16,12 | 0,8 | - | - | - | - | - | - |
| CNMP190612 | 19,05 | 19,34 | 1,2 | - | - | - | - | - | - |

● first choice
○ alternate choice



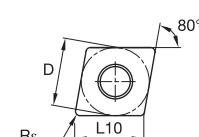
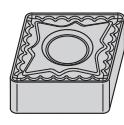
■ CNMP-K

| ISO catalogue number | D | L10 | R _ε | P | M | K | N | S | H |
|----------------------|-------|-------|----------------|-----|--------|-------|--------|-------|-------|
| CNMP120404K | 12,70 | 12,90 | 0,4 | - - | KCP05B | KCP05 | KCP10B | KCP10 | KCP10 |
| CNMP120408K | 12,70 | 12,90 | 0,8 | - - | ● - | KCP10 | KCP25B | KCP25 | KCP25 |



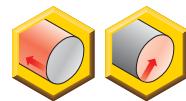
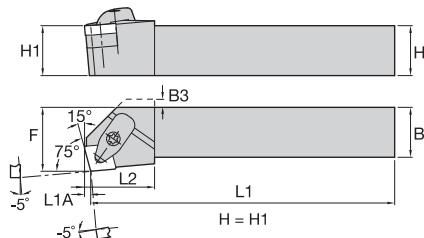
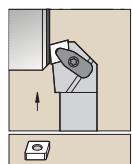
■ CNMS

| ISO catalogue number | D | L10 | R _ε | P | M | K | N | S | H |
|----------------------|-------|-------|----------------|-----|--------|-------|--------|-------|-------|
| CNMS120408 | 12,70 | 12,90 | 0,8 | - - | KCP05B | KCP05 | KCP10B | KCP10 | KCP10 |
| CNMS160608 | 15,88 | 16,12 | 0,8 | - - | ● - | KCP10 | KCP25B | KCP25 | KCP25 |
| CNMS190608 | 19,05 | 19,34 | 0,8 | - - | ● - | KCP25 | KCP30B | KCP30 | KCP30 |
| CNMS190612 | 19,05 | 19,34 | 1,2 | - - | ● - | KCP30 | KCP30 | KCP30 | KCP30 |



■ CNMG-MG

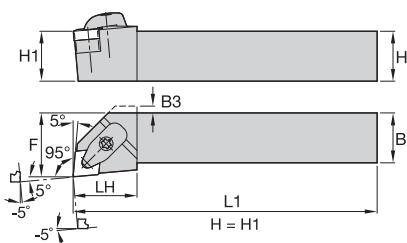
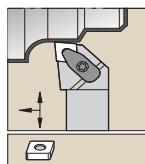
| ISO catalogue number | D | L10 | R _ε | P | M | K | N | S | H |
|----------------------|-------|-------|----------------|-----|--------|-------|--------|-------|-------|
| CNMG120408MG | 12,70 | 12,90 | 0,8 | - - | KCP05B | KCP05 | KCP10B | KCP10 | KCP10 |
| CNMG120412MG | 12,70 | 12,90 | 1,2 | - - | ● - | KCP10 | KCP25B | KCP25 | KCP25 |
| CNMG120416MG | 12,70 | 12,90 | 1,6 | - - | ● - | KCP25 | KCP30B | KCP30 | KCP30 |
| CNMG160612MG | 15,88 | 16,12 | 1,2 | - - | ● - | KCP30 | KCP30 | KCP30 | KCP30 |
| CNMG160616MG | 15,88 | 16,12 | 1,6 | - - | ● - | KCP30 | KCP30 | KCP30 | KCP30 |
| CNMG190612MG | 19,05 | 19,34 | 1,2 | - - | ● - | KCP30 | KCP30 | KCP30 | KCP30 |



■ DCKN-KC 75°



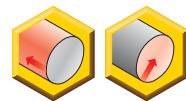
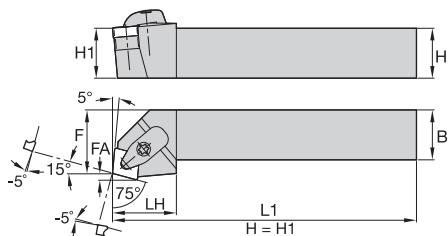
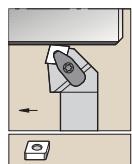
| order number | catalogue number | H | B | F | L1 | LH | L1A | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-------------------|------------------|----|----|---------|------|-----|-----|------------|-------------------------|-------------------|------------|------------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | | |
| 2273083 | DCKNR2020K12KC04 | 20 | 20 | 25,0125 | 32,0 | 3,1 | 6,0 | CN..120408 | ICSN433 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM4615IP | | | | |
| 1875200 | DCKNR2525M12KC04 | 25 | 25 | 32,0150 | 32,0 | 3,1 | — | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM4615IP | | | | |
| 2273084 | DCKNR3225P12KC04 | 32 | 25 | 32,0170 | 32,0 | 3,1 | — | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM46L15IP | | | | |
| 2273085 | DCKNR3232P16KC06 | 32 | 32 | 40,0170 | 32,0 | 3,8 | — | CN..160612 | ICSN543 KMSP515IP 15 IP | CM209R ASSY 15 IP | SSP025016M | KLM58L15IP | | | | |
| left hand | | | | | | | | | | | | | | | | |
| 2273087 | DCKNL2020K12KC04 | 20 | 20 | 25,0125 | 32,0 | 3,1 | 6,0 | CN..120408 | ICSN433 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM4615IP | | | | |
| 1875204 | DCKNL2525M12KC04 | 25 | 25 | 32,0150 | 32,0 | 3,1 | — | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM4615IP | | | | |
| 2273088 | DCKNL3225P12KC04 | 32 | 25 | 32,0170 | 32,0 | 3,1 | — | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM46L15IP | | | | |



■ DCLN-KC 95°

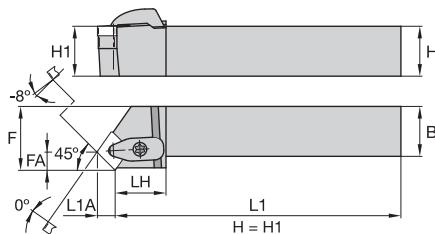
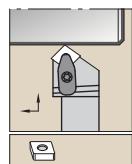


| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|-------------------|------------|-------------|----------------|------------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | |
| 2417296 | DCLNR1616H09KC03 | 16 | 16 | 20,0 | 100 | 30,0 | 6,0 | CN..090308 | ICSN332 KMSP315IP | 9 IP | CM234R ASSY | 15 IP | SSP025016M | KLM34L9IP | |
| 1875199 | DCLNR2020K12KC04 | 20 | 20 | 25,0 | 125 | 32,0 | 4,0 | CN..120408 | ICSN433 KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM4615IP | |
| 1875193 | DCLNR2525M12KC04 | 25 | 25 | 32,0 | 150 | 32,0 | — | CN..120408 | ICSN443 KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM46L15IP | |
| 1875212 | DCLNR2525M16KC06 | 25 | 25 | 32,0 | 150 | 33,0 | — | CN..160612 | ICSN543 KMSP515IP | 15 IP | CM209R ASSY | 15 IP | SSP025016M | KLM58L15IP | |
| 1875223 | DCLNR3225P12KC04 | 32 | 25 | 32,0 | 170 | 32,0 | — | CN..120408 | ICSN443 KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM46L15IP | |
| 1875232 | DCLNR3225P16KC06 | 32 | 25 | 32,0 | 170 | 33,0 | — | CN..160612 | ICSN543 KMSP515IP | 15 IP | CM209R ASSY | 15 IP | SSP025016M | KLM58L15IP | |
| 1875224 | DCLNR3232P16KC06 | 32 | 32 | 40,0 | 170 | 33,0 | — | CN..160612 | ICSN543 KMSP515IP | 15 IP | CM209R ASSY | 15 IP | SSP025016M | KLM58L15IP | |
| 2273091 | DCLNR3232P19KC06 | 32 | 32 | 40,0 | 170 | 40,0 | — | CN..190612 | ICSN643 KMSP625IP | 25 IP | CM210R ASSY | 25 IP | SSP025016M | KLM68L25IP | |
| 2273092 | DCLNR4040S19KC06 | 40 | 40 | 50,0 | 250 | 40,0 | — | CN..190612 | ICSN643 KMSP625IP | 25 IP | CM210R ASSY | 25 IP | SSP025016M | KLM68L25IP | |
| left hand | | | | | | | | | | | | | | | |
| 1875194 | DCLNL2020K12KC04 | 20 | 20 | 25,0 | 125 | 32,0 | 4,0 | CN..120408 | ICSN433 KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM4615IP | |
| 1875196 | DCLNL2525M12KC04 | 25 | 25 | 32,0 | 150 | 32,0 | — | CN..120408 | ICSN443 KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM46L15IP | |
| 1875205 | DCLNL2525M16KC06 | 25 | 25 | 32,0 | 150 | 33,0 | — | CN..160612 | ICSN543 KMSP515IP | 15 IP | CM209R ASSY | 15 IP | SSP025016M | KLM58L15IP | |
| 1875231 | DCLNL3225P12KC04 | 32 | 25 | 32,0 | 170 | 32,0 | — | CN..120408 | ICSN443 KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM46L15IP | |
| 1875230 | DCLNL3225P16KC06 | 32 | 25 | 32,0 | 170 | 33,0 | — | CN..160612 | ICSN543 KMSP515IP | 15 IP | CM209R ASSY | 15 IP | SSP025016M | KLM58L15IP | |
| 1875225 | DCLNL3232P16KC06 | 32 | 32 | 40,0 | 170 | 33,0 | — | CN..160612 | ICSN543 KMSP515IP | 15 IP | CM209R ASSY | 15 IP | SSP025016M | KLM58L15IP | |
| 2273093 | DCLNL3232P19KC06 | 32 | 32 | 40,0 | 170 | 40,0 | — | CN..190612 | ICSN643 KMSP625IP | 25 IP | CM210R ASSY | 25 IP | SSP025016M | KLM68L25IP | |
| 2273094 | DCLNL4040S19KC06 | 40 | 40 | 50,0 | 250 | 40,0 | — | CN..190612 | ICSN643 KMSP625IP | 25 IP | CM210R ASSY | 25 IP | SSP025016M | KLM68L25IP | |



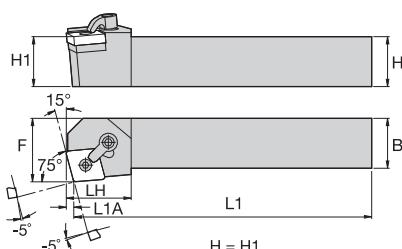
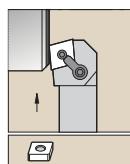
■ DCRN-KC 75°

| order number | catalogue number | | | | | | | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin | |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|-------------------------|-------------------|------------|----------------|-----------|-------------|-------------------|--|
| | | H | B | F | L1 | LH | FA | | | | | | | | | |
| right hand | | | | | | | | | | | | | | | | |
| 1875226 | DCRNR2020K12KC04 | 20 | 20 | 25,0 | 125 | 32,0 | 3,3 | CN..120408 | ICSN433 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM4615IP | | | | |
| 1875201 | DCRNR2525M12KC04 | 25 | 25 | 32,0 | 150 | 32,0 | 3,3 | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM46L15IP | | | | |
| 2273095 | DCRNR3225P12KC04 | 32 | 25 | 32,0 | 170 | 32,0 | 3,3 | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM46L15IP | | | | |
| 2273097 | DCRNR3232P19KC06 | 32 | 32 | 40,0 | 170 | 38,0 | 4,9 | CN..190612 | ICSN643 KMSP625IP 25 IP | CM210R ASSY 25 IP | SSP025016M | KLM68L25IP | | | | |
| left hand | | | | | | | | | | | | | | | | |
| 1875206 | DCRNL2525M12KC04 | 25 | 25 | 32,0 | 150 | 32,0 | 3,3 | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM46L15IP | | | | |
| 2273099 | DCRNL3232P16KC06 | 32 | 32 | 40,0 | 170 | 38,0 | 4,1 | CN..160612 | ICSN543 KMSP515IP 15 IP | CM209R ASSY 15 IP | SSP025016M | KLM58L15IP | | | | |

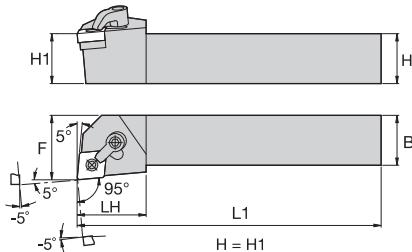
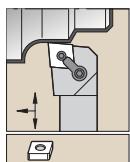


■ DCSN-KC 45°

| order number | catalogue number | | | | | | | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin | |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|------------|-------------------------|-------------------|----------------|------------|-------------|-------------------|--|
| | | H | B | F | L1 | LH | FA | | | | | | | | | |
| right hand | | | | | | | | | | | | | | | | |
| 2273101 | DCSNR2020K12KC04 | 20 | 20 | 25,0 | 125 | 35,0 | 8,2 | 8,5 | CN..120408 | ICSN433 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM4615IP | | | |
| 2273102 | DCSNR2525M12KC04 | 25 | 25 | 32,0 | 150 | 35,0 | 8,2 | 8,5 | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM46L15IP | | | |
| left hand | | | | | | | | | | | | | | | | |
| 2273104 | DCSNL2525M12KC04 | 25 | 25 | 32,0 | 150 | 35,0 | 8,2 | 8,5 | CN..120408 | ICSN443 KMSP415IP 15 IP | CM234R ASSY 15 IP | SSP025016M | KLM46L15IP | | | |


■ MCKN 75°

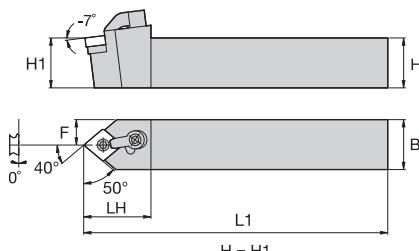
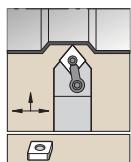

| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | |
| 1102236 | MCKNR2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 3,1 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102237 | MCKNR3225P12 | 32 | 25 | 32,0 | 170 | 32,0 | 3,1 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102240 | MCKNR3225P16 | 32 | 25 | 32,0 | 170 | 33,0 | 3,6 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | | |
| 1102729 | MCKNL2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 3,1 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1099253 | MCKNL3225P16 | 32 | 25 | 32,0 | 170 | 33,0 | 3,6 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102728 | MCKNL3232P19 | 32 | 32 | 40,0 | 170 | 38,0 | 4,4 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |



■ MCLN 95°



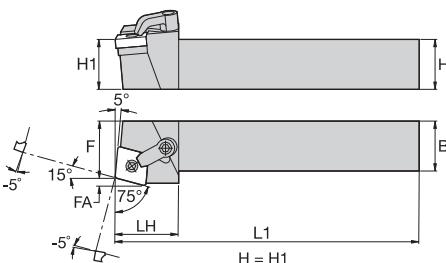
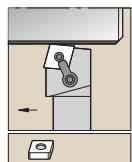
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | |
| 1100939 | MCLNR1616H09 | 16 | 16 | 20,0 | 100 | 25,0 | CN..090308 | — | KLM33 | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1101710 | MCLNR1616H12 | 16 | 16 | 20,0 | 100 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1099132 | MCLNR2020K09 | 20 | 20 | 25,0 | 125 | 25,0 | CN..090308 | ICSN332 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1099133 | MCLNR2020K12 | 20 | 20 | 25,0 | 125 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1100943 | MCLNR2525M09 | 25 | 25 | 32,0 | 150 | 25,0 | CN..090308 | ICSN332 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1101711 | MCLNR2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101641 | MCLNR2525M16 | 25 | 25 | 32,0 | 150 | 33,0 | CNMA160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1101704 | MCLNR2525M19 | 25 | 25 | 32,0 | 150 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1101712 | MCLNR3225P12 | 32 | 25 | 32,0 | 170 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101642 | MCLNR3225P16 | 32 | 25 | 32,0 | 170 | 33,0 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1101705 | MCLNR3225P19 | 32 | 25 | 32,0 | 170 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 3595785 | MCLNR3232P12 | 32 | 32 | 40,5 | 171 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 3595787 | MCLNR3232P16 | 32 | 32 | 40,5 | 171 | 33,0 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1101706 | MCLNR3232P19 | 32 | 32 | 40,0 | 170 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1101707 | MCLNR4040R19 | 40 | 40 | 50,0 | 200 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1100938 | MCLNL1616H09 | 16 | 16 | 20,0 | 100 | 25,0 | CN..090308 | — | KLM33 | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1102539 | MCLNL1616H12 | 16 | 16 | 20,0 | 100 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102540 | MCLNL2020K12 | 20 | 20 | 25,0 | 125 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102541 | MCLNL2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102440 | MCLNL2525M16 | 25 | 25 | 32,0 | 150 | 33,0 | CNMA160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102534 | MCLNL2525M19 | 25 | 25 | 32,0 | 150 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1102542 | MCLNL3225P12 | 32 | 25 | 32,0 | 170 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102442 | MCLNL3225P16 | 32 | 25 | 32,0 | 170 | 33,0 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102535 | MCLNL3225P19 | 32 | 25 | 32,0 | 170 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 3595786 | MCLNL3232P12 | 32 | 32 | 40,5 | 171 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 3595788 | MCLNL3232P16 | 32 | 32 | 40,5 | 171 | 33,0 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102536 | MCLNL3232P19 | 32 | 32 | 40,0 | 170 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1102537 | MCLNL4040R19 | 40 | 40 | 50,0 | 200 | 38,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |



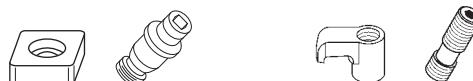
■ MCMN 50°



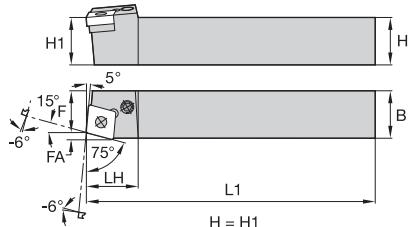
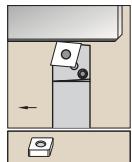
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|--------------|------------------|-----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|------|
| 1101708 | MCMNN2020K12 | 61 | 20 | 10,0 | 125 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101709 | MCMNN2525M12 | 86 | 25 | 12,9 | 150 | 32,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102538 | MCMNN3225P16 | 94 | 32 | 12,9 | 170 | 38,0 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102239 | MCMNN4040R19 | 117 | 40 | 20,0 | 200 | 42,0 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |



■ MCRN 75°

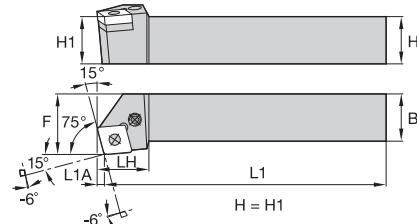
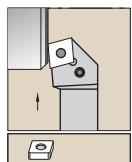


| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | |
| 1101638 | MCRNR2020K12 | 20 | 20 | 25,0 | 125 | 32,0 | 3,3 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101639 | MCRNR2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 3,3 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101640 | MCRNR3225P12 | 32 | 25 | 32,0 | 170 | 32,0 | 3,3 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102732 | MCRNR3232P16 | 32 | 32 | 32,0 | 170 | 33,0 | 4,2 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1101643 | MCRNR3232P19 | 32 | 32 | 40,0 | 170 | 38,0 | 4,6 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| 1102437 | MCRNL2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 3,3 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102439 | MCRNL3225P12 | 32 | 25 | 32,0 | 170 | 32,0 | 3,3 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102241 | MCRNL3232P16 | 32 | 32 | 32,0 | 170 | 33,0 | 4,2 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102443 | MCRNL3232P19 | 32 | 32 | 40,0 | 170 | 38,0 | 4,6 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |



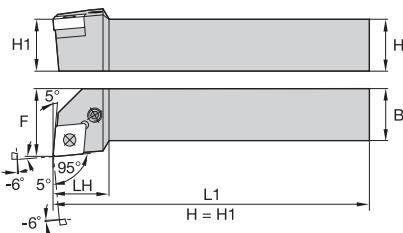
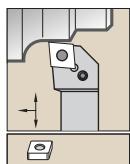
■ PCB 75°

| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 1244679 | PCBNR2525M12 | 25 | 25 | 22,0 | 150 | 26,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244635 | PCBNR2525M16 | 25 | 25 | 22,0 | 150 | 28,0 | 4,2 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244636 | PCBNR3225P12 | 32 | 25 | 22,0 | 170 | 28,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244637 | PCBNR3225P16 | 32 | 25 | 22,0 | 170 | 28,0 | 4,2 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244638 | PCBNR3232P16 | 32 | 32 | 27,0 | 170 | 38,0 | 4,2 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244795 | PCBNR3232P19 | 32 | 32 | 27,0 | 170 | 38,0 | 4,6 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1192373 | PCBNR4040S19 | 40 | 40 | 35,0 | 250 | 38,0 | 4,6 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| left hand | | | | | | | | | | | | | | |
| 1244630 | PCBNL2020K12 | 20 | 20 | 17,0 | 125 | 26,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244859 | PCBNL2525M12 | 25 | 25 | 22,0 | 150 | 26,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244631 | PCBNL2525M16 | 25 | 25 | 22,0 | 150 | 28,0 | 4,2 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244794 | PCBNL3232P16 | 32 | 32 | 27,0 | 170 | 38,0 | 4,2 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244633 | PCBNL3232P19 | 32 | 32 | 27,0 | 170 | 38,0 | 4,6 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1192372 | PCBNL4040S19 | 40 | 40 | 35,0 | 250 | 38,0 | 4,6 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |



■ PCKN 75°

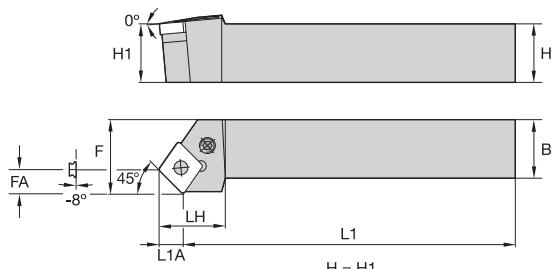
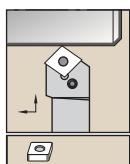
| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 1244649 | PCKNR2020K12 | 20 | 20 | 25,0 | 125 | 23,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244797 | PCKNR2525M12 | 25 | 25 | 32,0 | 150 | 23,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244775 | PCKNR2525M16 | 25 | 25 | 32,0 | 150 | 30,0 | 3,8 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244650 | PCKNR3225P12 | 32 | 25 | 32,0 | 170 | 26,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244776 | PCKNR3225P16 | 32 | 25 | 32,0 | 170 | 30,0 | 3,8 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244798 | PCKNR3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 4,6 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| left hand | | | | | | | | | | | | | | |
| 1244646 | PCKNL2020K12 | 20 | 20 | 25,0 | 125 | 23,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244780 | PCKNL2525M12 | 25 | 25 | 32,0 | 150 | 23,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244647 | PCKNL3225P12 | 32 | 25 | 32,0 | 170 | 26,0 | 3,1 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244777 | PCKNL3225P16 | 32 | 25 | 32,0 | 170 | 30,0 | 3,8 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244648 | PCKNL3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 4,6 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |



■ PCLN 95°



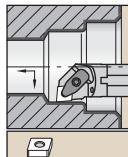
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | |
| 1244809 | PCLNR1616H12 | 16 | 16 | 20,0 | 100 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244810 | PCLNR2020K12 | 20 | 20 | 25,0 | 125 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1108097 | PCLNR2525M12 | 25 | 25 | 32,0 | 150 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1192378 | PCLNR2525M16 | 25 | 25 | 32,0 | 150 | 28,0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244652 | PCLNR2525M19 | 25 | 25 | 32,0 | 150 | 36,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244811 | PCLNR3225P12 | 32 | 25 | 32,0 | 170 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244812 | PCLNR3225P16 | 32 | 25 | 32,0 | 170 | 38,0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244653 | PCLNR3225P19 | 32 | 25 | 32,0 | 170 | 38,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1236864 | PCLNR3232P16 | 32 | 32 | 40,0 | 170 | 36,0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244813 | PCLNR3232P19 | 32 | 32 | 40,0 | 170 | 36,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1192379 | PCLNR4040S19 | 40 | 40 | 50,0 | 250 | 36,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| left hand | | | | | | | | | | | | | |
| 1244799 | PCLNL1616H12 | 16 | 16 | 20,0 | 100 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1156962 | PCLNL2020K12 | 20 | 20 | 25,0 | 125 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1192375 | PCLNL2525M12 | 25 | 25 | 32,0 | 150 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1192376 | PCLNL2525M16 | 25 | 25 | 32,0 | 150 | 28,0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244800 | PCLNL2525M19 | 25 | 25 | 32,0 | 150 | 36,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244858 | PCLNL3225P12 | 32 | 25 | 32,0 | 170 | 26,0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244802 | PCLNL3225P16 | 32 | 25 | 32,0 | 170 | 38,0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244803 | PCLNL3225P19 | 32 | 25 | 32,0 | 170 | 38,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244804 | PCLNL3232P16 | 32 | 32 | 40,0 | 170 | 36,0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244805 | PCLNL3232P19 | 32 | 32 | 40,0 | 170 | 36,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1192377 | PCLNL4040S19 | 40 | 40 | 50,0 | 250 | 36,0 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |



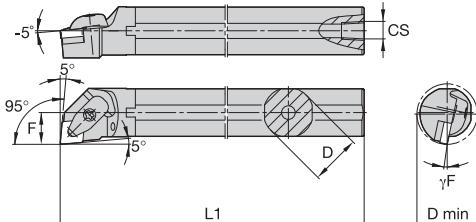
■ PCSN 45°

| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|------|------|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 1244656 | PCSNR2020K12 | 20 | 20 | 25,0 | 125 | 26,0 | 8,3 | 8,5 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244618 | PCSNR2525M12 | 25 | 25 | 32,0 | 150 | 28,0 | 8,3 | 8,5 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244657 | PCSNR3225P12 | 32 | 25 | 32,0 | 170 | 29,0 | 8,3 | 8,5 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244819 | PCSNR3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 12,5 | 12,7 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| left hand | | | | | | | | | | | | | | | |
| 1244654 | PCSNL2020K12 | 20 | 20 | 25,0 | 125 | 26,0 | 8,3 | 8,5 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244655 | PCSNL2525M12 | 25 | 25 | 32,0 | 150 | 28,0 | 8,3 | 8,5 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1284109 | PCSNL3225P12 | 32 | 25 | 32,0 | 170 | 29,0 | 8,3 | 8,5 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244817 | PCSNL3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 12,5 | 12,7 | CN..190612 | 512.123 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |

Kenclamp™ Boring Bars



Steel shank with through coolant.

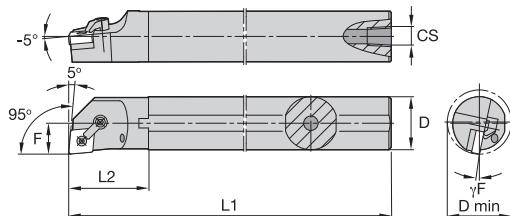


■ A-DCLN-KC 95°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | shim | shim screw | Torx Plus | clamp assembly | slotted pin | Torx Plus |
|-------------------|------------------|----|-------|------|-----|------------|-------|-------------|-------------------|------------|------------------------|------------------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 2441867 | A25RDCLNR12KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -12,0 | CN.120408 | — | — | 15 IP | CM234R ASSY SSP025016M | 15 IP | |
| 2441931 | A32SDCLNR12KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12,0 | CN.120408 | ICSN433 KMSP415IP | 15 IP | CM234R ASSY SSP025016M | 15 IP | | |
| 2441933 | A40TDCLNR12KC04 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -9,0 | CN..120408 | ICSN433 KMSP415IP | 15 IP | CM234R ASSY SSP025016M | 15 IP | | |
| left hand | | | | | | | | | | | | | | |
| 2441930 | A25RDCLNL12KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -12,0 | CN.120408 | — | — | 15 IP | CM234R ASSY SSP025016M | 15 IP | |
| 2441932 | A32SDCLNL12KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12,0 | CN.120408 | ICSN433 KMSP415IP | 15 IP | CM234R ASSY SSP025016M | 15 IP | | |
| 2441934 | A40TDCLNL12KC04 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -9,0 | CN.120408 | ICSN433 KMSP415IP | 15 IP | CM234R ASSY SSP025016M | 15 IP | | |
| 2441938 | A40TDCLNL16KC06 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -12,0 | CN..160612 | ICSN533 KMSP515IP | 15 IP | CM209R ASSY SSP025018M | 15 IP | | |



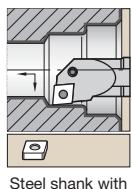
Steel shank with through coolant.



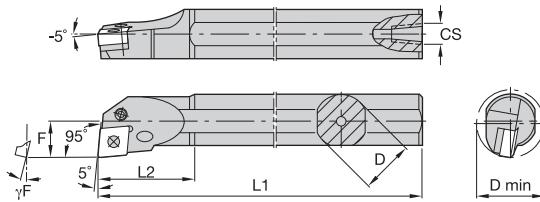
■ A-MCLN 95°



| order number | catalogue number | D | D min | F | L1 | L2 | CS | γF° | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------|------------|------------------|-------------|---------|----------|--------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | | | |
| 1098767 | A25RMCLNR09 | 25 | 32,0 | 17,0 | 200 | 40,0 | 1/4-18 NPT | -12,0 | CN..090308 | — | KLM33 | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1098088 | A25RMCLNR12 | 25 | 32,0 | 17,0 | 200 | 33,0 | 1/4-18 NPT | -12,0 | CN..120408 | — | KLM43 | 2 mm | CKM21 | STCM11 | 3 mm |
| 1098090 | A32SMCLNR12 | 32 | 40,0 | 22,0 | 250 | — | 1/4-18 NPT | -12,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098092 | A40TMCLNR12 | 40 | 50,0 | 27,0 | 300 | — | 1/4-18 NPT | -12,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098096 | A40TMCLNR16 | 40 | 50,0 | 27,0 | 300 | — | 1/4-18 NPT | -11,0 | CN..160612 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1098094 | A50UMCLNR12 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -12,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098098 | A50UMCLNR16 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -12,0 | CN..160608 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1098100 | A50UMCLNR19 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -12,0 | CN..190608 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | | | |
| 1098089 | A25RMCLNL12 | 25 | 32,0 | 17,0 | 200 | 33,0 | 1/4-18 NPT | -12,0 | CN..120408 | — | KLM43 | 2 mm | CKM21 | STCM11 | 3 mm |
| 1098091 | A32SMCLNL12 | 32 | 40,0 | 22,0 | 250 | — | 1/4-18 NPT | -12,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098093 | A40TMCLNL12 | 40 | 50,0 | 27,0 | 300 | — | 1/4-18 NPT | -12,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098097 | A40TMCLNL16 | 40 | 50,0 | 27,0 | 300 | — | 1/4-18 NPT | -11,0 | CN..160608 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1098095 | A50UMCLNL12 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -7,0 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098099 | A50UMCLNL16 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -12,0 | CN..160608 | ICSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1098101 | A50UMCLNL19 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -12,0 | CN..190608 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |



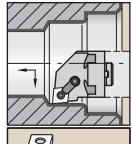
Steel shank with through coolant.



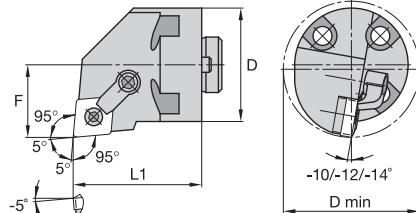
■ A-PCLN 95°

| order number | catalogue number | D | D min | F | L1 | L2 | CS | γF° | gage insert | shim | shim pin | pin | toggle lever | lever screw | Torx Plus |
|-------------------|------------------|----|-------|------|-----|----|------------|------------------|-------------|---------|----------|---------|--------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 2447150 | A25TPCLNR12 | 25 | 32,0 | 17,0 | 300 | 40 | 1/4-18 NPT | -12.0 | CN..120408 | — | — | — | 511.022 | 514.122 | 10 IP |
| 2447152 | A32UPCLNR12 | 32 | 40,0 | 22,0 | 350 | 50 | 1/4-18 NPT | -10.0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 2447476 | A32UPCLNR16 | 32 | 50,0 | 22,0 | 350 | 50 | 1/4-18 NPT | -10.0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 2447533 | A40VPCLNR12 | 40 | 50,0 | 27,0 | 400 | 55 | 1/4-18 NPT | -10.0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 2447478 | A40VPCLNR16 | 40 | 50,0 | 27,0 | 400 | 55 | 1/4-18 NPT | -11.0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| left hand | | | | | | | | | | | | | | | |
| 2447151 | A25TPCLNL12 | 25 | 32,0 | 17,0 | 300 | 40 | 1/4-18 NPT | -12.0 | CN..120408 | — | — | — | 511.022 | 514.122 | 10 IP |
| 2447473 | A32UPCLNL12 | 32 | 40,0 | 22,0 | 350 | 50 | 1/4-18 NPT | -10.0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 2447534 | A40VPCLNL12 | 40 | 50,0 | 27,0 | 400 | 55 | 1/4-18 NPT | -10.0 | CN..120408 | 512.112 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 2447479 | A40VPCLNL16 | 40 | 50,0 | 27,0 | 400 | 55 | 1/4-18 NPT | -11.0 | CN..160612 | 512.117 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |

Kenloc™ Boring Heads

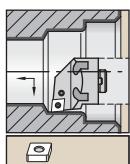


With through coolant.

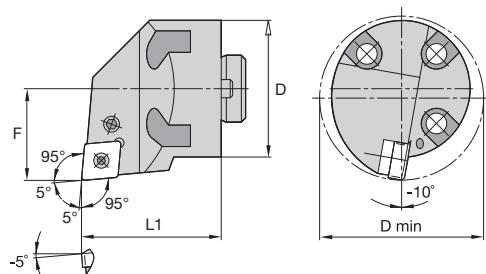


■ H-MCLN 95°

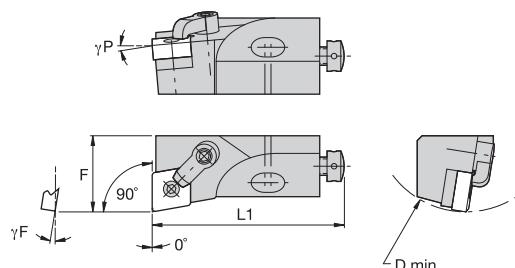
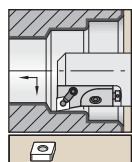
| order number | catalogue number | D | D min | F | L1 | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|----|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | |
| 3612156 | H32MCLNR12 | 32 | 40,0 | 22,0 | 41 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 3612178 | H50MCLNR12 | 50 | 63,0 | 35,0 | 41 | CN..120408 | ICSN432 | KLM46 | 2.5 mm | CKM20 | STCM20 | 3 mm |
| 1099102 | H50MCLNR19 | 50 | 63,0 | 35,0 | 41 | CN..190612 | ICSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |



With through coolant.


■ H-PCLN 95°


| order number | catalogue number | D | D min | F | L1 | gage insert | shim | shim pin | lever | punch pin | lever lock screw | hex |
|-------------------|------------------|----|-------|------|----|-------------|---------|----------|---------|-----------|------------------|-------|
| right hand | | | | | | | | | | | | |
| 1861493 | H32PCLNR12 | 32 | 40,0 | 22,0 | 41 | CN..120408 | 512.112 | 513.023 | 514.123 | 515.018 | 514.123 | 15 IP |
| 1861500 | H40PCLNR12 | 40 | 50,0 | 27,0 | 41 | CN..120408 | 512.112 | 513.023 | 514.123 | 515.018 | 514.123 | 15 IP |
| 1861517 | H50PCLNR12 | 50 | 63,0 | 35,0 | 41 | CN..120408 | 512.112 | 513.023 | 514.123 | 515.018 | 514.123 | 15 IP |
| left hand | | | | | | | | | | | | |
| 1861501 | H40PCLNL12 | 40 | 50,0 | 27,0 | 41 | CN..120408 | 512.112 | 513.023 | 514.123 | 515.018 | 514.123 | 15 IP |
| 1861518 | H50PCLNL12 | 50 | 63,0 | 35,0 | 41 | CN..120408 | 512.112 | 513.023 | 514.123 | 515.018 | 514.123 | 15 IP |



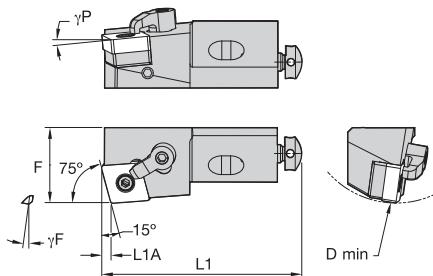
■ MCFN 90°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand | | | | | | | |
| 3331146 | MCFNR10CA09 | 40 | 14,0 | 50 | -9.0 | -9.0 | CN..090308/CN..322 |
| 3346236 | MCFNR12CA12 | 50 | 20,0 | 55 | -9.0 | -5.0 | CN..120408/CN..432 |
| 2074433 | MCFNR16CA12 | 60 | 25,0 | 63 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3330195 | MCFNR20CA12 | 70 | 25,0 | 70 | -9.0 | -5.0 | CN..120408/CN..432 |
| left hand | | | | | | | |
| 3331145 | MCFNL10CA09 | 40 | 14,0 | 50 | -9.0 | -9.0 | CN..090308/CN..322 |
| 1906272 | MCFNL12CA12 | 50 | 20,0 | 55 | -9.0 | -5.0 | CN..120408/CN..432 |

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|---------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|----------------|------|--------------|
| 40 | — | KLM33 | 2 mm | CKM36 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | — | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |
| 60 | ICSN432 | KLM46S | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | 5 mm | CSWM 080 050 |
| 70 | ICSN432 | KLM46 | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | 5 mm | CSWM 080 050 |



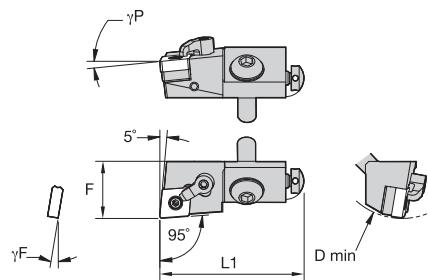
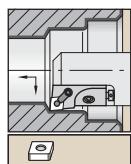
■ MCKN 75°

| order number | catalogue number | D min | F | L1 | L1A | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|-----|------------------|------------------|--------------------|
| right hand | | | | | | | | |
| 3346238 | MCKNR12CA12 | 50 | 20,0 | 55 | 3 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3330222 | MCKNR16CA12 | 60 | 25,0 | 63 | 3 | -9.0 | -5.0 | CN..120408/CN..432 |
| left hand | | | | | | | | |
| 3346237 | MCKNL12CA12 | 50 | 20,0 | 55 | 3 | -9.0 | -5.0 | CN..120408/CN..432 |

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|---------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | — | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |
| 60 | ICSN432 | KLM46S | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |



■ MCLN 95°

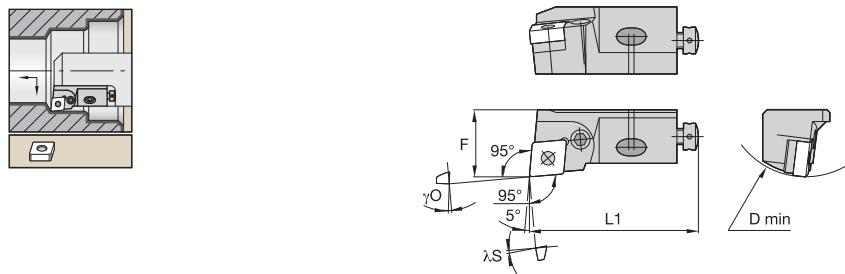
| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|-----|------------------|------------------|--------------------|
| right hand | | | | | | | |
| 1100493 | MCLNR12CA12 | 50 | 20,0 | 55 | -9.0 | -5.0 | CN..120408/CN..432 |
| 1282100 | MCLNR16CA12 | 60 | 25,0 | 63 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3330197 | MCLNR20CA12 | 70 | 25,0 | 70 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3332803 | MCLNR25CA12 | 100 | 32,0 | 100 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3332804 | MCLNR25CA16 | 100 | 32,0 | 100 | -9.0 | -5.0 | CN..160612/CN..543 |
| 3332805 | MCLNR25CA19 | 100 | 32,0 | 100 | -9.0 | -5.0 | CN..190612/CN..643 |
| left hand | | | | | | | |
| 2077947 | MCLNL12CA12 | 50 | 20,0 | 55 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3330273 | MCLNL16CA12 | 60 | 25,0 | 63 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3330196 | MCLNL20CA12 | 70 | 25,0 | 70 | -9.0 | -5.0 | CN..120408/CN..432 |
| 3332362 | MCLNL25CA19 | 100 | 32,0 | 100 | -9.0 | -5.0 | CN..190612/CN..643 |

NOTE: Select spare parts based off of D min and the insert size selected.

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|---------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|----------------|------|--------------|
| 50 | — | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | 191.406 | — | 4 mm | CSWM 060 050 |
| 60 | ICSN432 | KLM46S | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | — | 5 mm | CSWM 080 050 |
| 70 | ICSN432 | KLM46 | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | — | 5 mm | CSWM 080 050 |
| 100 | ICSN633 | KLM68 | 4 mm | CKM35 | STCM8 | 4 mm | KUAM27 | 4 mm | KUAM32 | — | MS364 | 8 mm | CSWM 100 080 |
| 100 | ICSN432 | KLM46 | 2.5 mm | CKM37 | STCM40 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | MS364 | 8 mm | CSWM 100 080 |
| 100 | ICSN533 | KLM58 | 3 mm | CKM41 | STCM20 | 3 mm | KUAM26 | 3 mm | KUAM32 | — | MS364 | 8 mm | CSWM 100 080 |
| 100 | ICSN633 | KLM68 | 4 mm | CKM35 | STCM8 | 4 mm | KUAM27 | 4 mm | KUAM32 | — | MS364 | 8 mm | CSWM 100 080 |



■ PCLN 95°

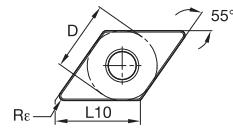
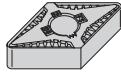
| order number | catalogue number | D min | F | L1 | λs° | γo° | gage insert |
|-------------------|------------------|-------|------|----|-------------------|------------------|--------------------|
| right hand | | | | | | | |
| 1244444 | PCLNR12CA-12 | 50 | 20,0 | 55 | -6.0 | -9.0 | CN..120408/CN..432 |
| 1244496 | PCLNR16CA-12 | 60 | 25,0 | 63 | -6.0 | -7.0 | CN..120408/CN..432 |
| left hand | | | | | | | |
| 1244443 | PCLNL16CA-12 | 60 | 25,0 | 63 | -6.0 | -7.0 | CN..120408/CN..432 |

■ Spare Parts



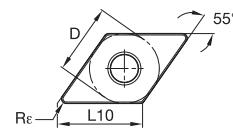
| D min | shim | shim pin | toggle lever | lever screw | wrench size lever screw | radial adjusting screw | axial adjusting screw | mounting screw | hex | washer |
|-------|---------|----------|--------------|-------------|-------------------------|------------------------|-----------------------|----------------|---------|-------------------|
| 50 | — | — | 511.022 | 514.122 | 10 IP | KUAM28 | 2 mm | KUAM31 | 191.406 | 4 mm CSWM 060 050 |
| 60 | 512.112 | 513.023 | 511.023 | 514.123 | 15 IP | KUAM23 | 2.5 mm | KUAM32 | 191.407 | 5 mm CSWM 080 050 |

● first choice
○ alternate choice



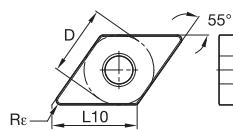
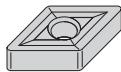
■ DNGG-FS

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|--------|---|---|---|---|
| DNGG110402FS | 9,53 | 11,63 | 0,2 | - | KCP05B | ● | ● | ● | ● |
| DNGG110404FS | 9,53 | 11,63 | 0,4 | - | KCP05 | ● | ● | ● | ● |
| DNGG110408FS | 9,53 | 11,63 | 0,8 | - | KCP10B | ● | ● | ● | ● |
| DNGG150401FS | 12,70 | 15,50 | 0,1 | - | KCP10 | ● | ● | ● | ● |
| DNGG150402FS | 12,70 | 15,50 | 0,2 | - | KCP25B | ● | ● | ● | ● |
| DNGG150404FS | 12,70 | 15,50 | 0,4 | - | KCP25 | ● | ● | ● | ● |
| DNGG150604FS | 12,70 | 15,50 | 0,4 | - | KCP30B | ● | ● | ● | ● |
| DNGG150408FS | 12,70 | 15,50 | 0,8 | - | KCP30 | ● | ● | ● | ● |
| DNGG150608FS | 12,70 | 15,50 | 0,8 | - | KCP40B | ● | ● | ● | ● |
| DNGG150412FS | 12,70 | 15,50 | 1,2 | - | KCP40 | ● | ● | ● | ● |



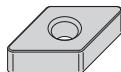
■ DNGG-LF

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|--------|---|---|---|---|
| DNGG150402LF | 12,70 | 15,50 | 0,2 | - | KCP05B | ● | ● | ● | ● |
| DNGG150404LF | 12,70 | 15,50 | 0,4 | - | KCP05 | ● | ● | ● | ● |
| DNGG150408LF | 12,70 | 15,50 | 0,8 | - | KCP10B | ● | ● | ● | ● |

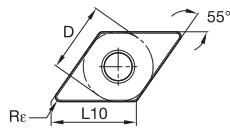


■ DNGP

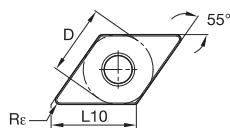
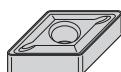
| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|--------|---|---|---|---|
| DNGP150401 | 12,70 | 15,50 | 0,1 | - | KCP05B | ● | ● | ● | ● |
| DNGP150402 | 12,70 | 15,50 | 0,2 | - | KCP05 | ● | ● | ● | ● |
| DNGP150404 | 12,70 | 15,50 | 0,4 | - | KCP10B | ● | ● | ● | ● |
| DNGP150604 | 12,70 | 15,50 | 0,4 | - | KCP10 | ● | ● | ● | ● |
| DNGP150408 | 12,70 | 15,50 | 0,8 | - | KCP25B | ● | ● | ● | ● |
| DNGP150608 | 12,70 | 15,50 | 0,8 | - | KCP25 | ● | ● | ● | ● |



- first choice
- alternate choice

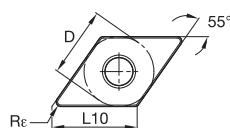
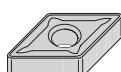


■ DNMA



DNMG

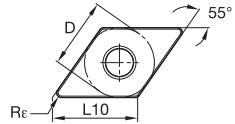
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|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|--------|--------|--------|--------|-------|
| DNMG150408B | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | | | | | |



■ DNMG-33

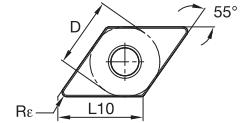


- first choice
- alternate choice

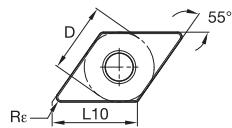


DNMG-CT

| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KCS010 | KCS025 | KCS410 | KT315 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| DNMG110412CT | 9,53 | 11,62 | 1,2 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| DNMG110408CT | 9,53 | 11,63 | 0,8 | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| DNMG150604CT | 12,70 | 15,50 | 0,3 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| DNMG150404CT | 12,70 | 15,50 | 0,4 | - | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | | | | |
| DNMG150408CT | 12,70 | 15,50 | 0,8 | - | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | | | | |
| DNMG150608CT | 12,70 | 15,50 | 0,8 | - | - | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DNMG150412CT | 12,70 | 15,50 | 1,2 | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | | |
| DNMG150612CT | 12,70 | 15,50 | 1,2 | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | | |

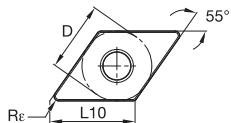
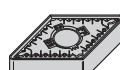


■ DNMG-FF



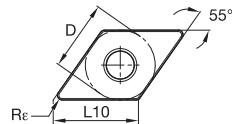
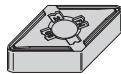
- first choice
- alternate choice

■ DNMG-FN



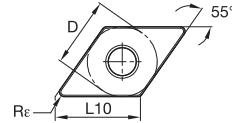
■ DNMG-FP

● first choice
○ alternate choice



■ DNMG-FW

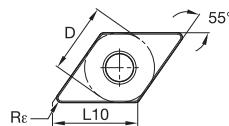
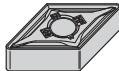
| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|-----------|--------|--------|--------|--------|--------|
| DNMG110404FW | 9,53 | 11,63 | 0,4 | - - - - - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B |
| DNMG110408FW | 9,53 | 11,63 | 0,8 | - - ● ● - | KCP05 | KCP10B | KCP10 | KCP25B | KCP30B |
| DNMG150404FW | 12,70 | 15,50 | 0,4 | - - - - - | KCP10 | KCP25B | KCP30 | KCP40B | KCP40 |
| DNMG150408FW | 12,70 | 15,50 | 0,4 | - - ● ● - | KCP10 | KCP25B | KCP30 | KCP40B | KCP40 |
| DNMG150604FW | 12,70 | 15,50 | 0,4 | - - ● ● - | KCP25B | KCP30B | KCP30 | KCK05B | KCK05 |
| DNMG150608FW | 12,70 | 15,50 | 0,4 | - - ● ● - | KCP25B | KCP30B | KCP30 | KCK15B | KCK15 |



■ DNMG-MN

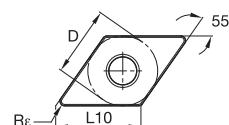
| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|-----------|--------|--------|--------|--------|--------|
| DNMG110404MN | 9,53 | 11,63 | 0,4 | - - ● ● - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B |
| DNMG110408MN | 9,53 | 11,63 | 0,8 | - - ● ● - | KCP05 | KCP10B | KCP10 | KCP25B | KCM25 |
| DNMG110412MN | 9,53 | 11,63 | 1,2 | - - - - - | KCP10 | KCP25B | KCP30 | KCM35B | KCM35 |
| DNMG150404MN | 12,70 | 15,50 | 0,4 | - - - - - | KCP25B | KCP30B | KCP30 | KCM15B | KCM15 |
| DNMG150604MN | 12,70 | 15,50 | 0,4 | - - - - - | KCP30B | KCP30B | KCP40B | KCPK05 | KCPK05 |
| DNMG150608MN | 12,70 | 15,50 | 0,8 | - - - - - | KCP30B | KCK05 | KCK15B | K313 | K313 |
| DNMG150608MN | 12,70 | 15,50 | 0,8 | - - - - - | KCK05 | KCK15B | KCK15 | K68 | K68 |
| DNMG150612MN | 12,70 | 15,50 | 1,2 | - - - - - | KCK15B | KCK20B | KCK20 | KCU10 | KCU10 |
| DNMG150616MN | 12,70 | 15,50 | 1,6 | - - - - - | KCK20B | KCM25B | KCM25 | KCU25 | KCU25 |
| DNMG190612MN | 15,88 | 19,38 | 1,2 | - - - - - | KCM25B | KCM35B | KCM35 | KC5010 | KC5010 |

● first choice
○ alternate choice



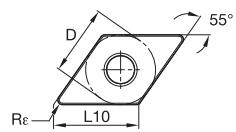
■ DNMG-MP

| ISO catalogue number | D | L10 | Rε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KCS010 | KCS025 | KC5410 | KT315 |
|----------------------|-------|-------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| DNMG110408MP | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG110412MP | 9,53 | 11,63 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150404MP | 12,70 | 15,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150604MP | 12,70 | 15,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150408MP | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150608MP | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150412MP | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150612MP | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |



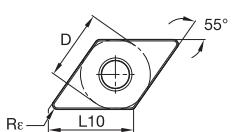
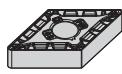
■ DNMG-MS

| ISO catalogue number | D | L10 | Rε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KCS010 | KCS025 | KC5410 | KT315 |
|----------------------|-------|-------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| DNMG110408MS | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150401MS | 12,70 | 15,50 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150402MS | 12,70 | 15,50 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150404MS | 12,70 | 15,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150604MS | 12,70 | 15,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150408MS | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150608MS | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150412MS | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| DNMG150612MS | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |

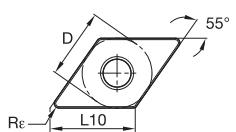


- first choice
- alternate choice

DNMG-MW

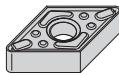


■ DNMG-MR

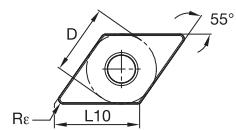


■ DNMG-MG

| ISO catalogue number | D | L10 | R _E | |
|----------------------|-------|-------|----------------|--|
| DNMG150612MG | 12,70 | 15,50 | 1,2 | KCP05B KCP05 KCP10B KCP10 KCP25B KCP25 KCP30B KCP30 KCP40B KCP40 KCK05B KCK05 KCK15B KCK15 KCK20B KCK20 KCM15B KCM15 KCM25B KCM25 KCM35B KCM35 KCPK05 K313 K68 KCJ10 KCJ25 KCJ5010 KCJ5025 KCJ5410 KT315 |
| DNMG150616MG | 12,70 | 15,50 | 1,6 | ● |



- first choice
- alternate choice



■ DNMG-P



A technical drawing of a stepped hexagonal part. The top surface has a radius $R\epsilon$ and a length $L10$. The bottom surface is inclined at an angle of 55° . The side view shows a stepped hexagonal profile with a top width D .

■ DNMG-RN



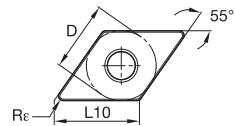
A technical drawing of a stepped shoulder bolt. The bolt has a diameter D at the top, a shoulder with a radius R_8 , and a threaded section with length L_{10} . The angle between the top surface and the shoulder is 55° .

DNMG-RP

| ISO catalogue number | D | L10 | R _E | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|--------|--------|--------|-------|
| DNMG110408RP | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DNMG110412RP | 9,53 | 11,63 | 1,2 | - | - | - | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DNMG150408RP | 12,70 | 15,50 | 0,8 | - | - | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DNMG150608RP | 12,70 | 15,50 | 0,8 | - | ● | ● | ● | ● | ● | ● | - | ● | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | | | |
| DNMG150412RP | 12,70 | 15,50 | 1,2 | - | - | ● | - | ● | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DNMG150612RP | 12,70 | 15,50 | 1,2 | - | - | ● | ● | ● | ● | ● | - | - | - | - | - | ● | - | ● | ● | - | - | ● | ● | - | - | - | - | - | | | |
| DNMG150416RP | 12,70 | 15,50 | 1,6 | - | - | - | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | ● | - | | | |
| DNMG150616RP | 12,70 | 15,50 | 1,6 | - | - | - | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | | | |

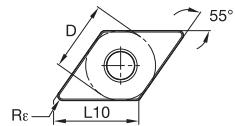
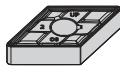


● first choice
○ alternate choice



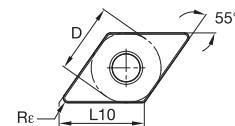
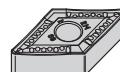
■ DNMG-UN

| ISO catalogue number | D | L10 | R ϵ | KGP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|
| DNMG110408UN | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG110412UN | 9,53 | 11,63 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150408UN | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150608UN | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150412UN | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150612UN | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150416UN | 12,70 | 15,50 | 1,6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150616UN | 12,70 | 15,50 | 1,6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |



■ DNMG-UP

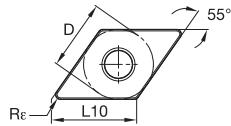
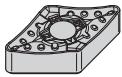
| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|
| DNMG110408UP | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150404UP | 12,70 | 15,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150604UP | 12,70 | 15,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150408UP | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMG150608UP | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |



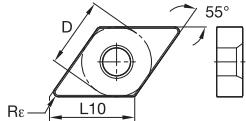
■ DNMM-RM

| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|
| DNMM150408RM | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMM150608RM | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMM150412RM | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMM150612RM | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DNMM150616RM | 12,70 | 15,50 | 1,6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

- first choice
- alternate choice

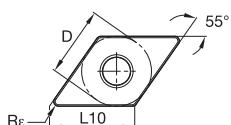


■ DNMM-RP

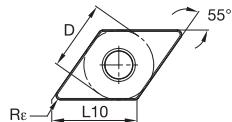
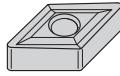


DNMP

| ISO catalogue number | D | L10 | R _E | KCP05B | KCP06 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K88 | KCU10 | KCU25 | KCS010 | KCS025 | KCS410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| DNMP150404 | 12,70 | 15,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | |
| DNMP150408 | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | | |
| DNMP150412 | 12,70 | 15,50 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | | |



DNMP-K



- first choice
- alternate choice

DNMS

Mobile Apps

The Kennametal mobile app provides easy access to product information and calculators on both iPhone® and Android™ devices. We've highlighted a few of the key features...

There's an app for that.

SPEEDS & FEEDS

View speeds and feeds
information for
metalworking products.

PRODUCT AVAILABILITY

Check global availability of products. View available quantities by providing your Konnect login credentials.

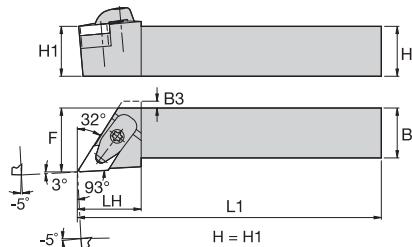
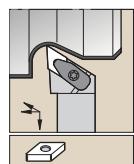
CALCULATORS

Utilise our machining calculators for milling and drilling applications.

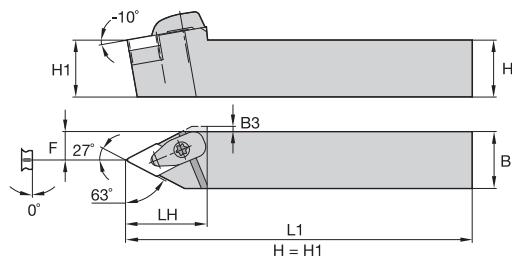
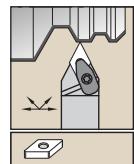


NOTE: The app is currently only available in the English-language version. We have plans to translate the app in different languages with future releases.

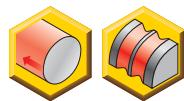
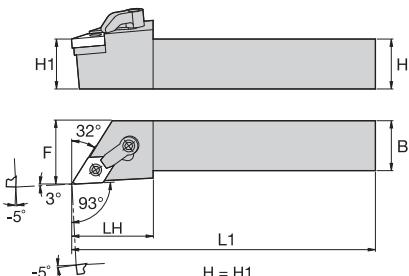
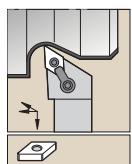



■ DDJN-KC 93°

| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---|------------|-----------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | |
| 2273105 | DDJNR2020K11KC04 | 20 | 20 | 25,0 | 125 | 30,0 | 2,0 | DN..110408 | IDSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M KLM34L9IP | | | | | | |
| 1875197 | DDJNR2020K15KC06 | 20 | 20 | 25,0 | 125 | 32,0 | 4,0 | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| 2273106 | DDJNR2525M11KC04 | 25 | 25 | 32,0 | 150 | 30,0 | — | DN..110408 | IDSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M KLM34L9IP | | | | | | |
| 1875191 | DDJNR2525M15KC06 | 25 | 25 | 32,0 | 150 | 32,0 | — | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| 1875208 | DDJNR3225P15KC06 | 32 | 25 | 32,0 | 170 | 32,0 | — | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| 1875227 | DDJNR3232P15KC06 | 32 | 32 | 40,0 | 170 | 32,0 | — | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| left hand | | | | | | | | | | | | | | | |
| 2273107 | DDJNL2020K11KC04 | 20 | 20 | 25,0 | 125 | 30,0 | 2,0 | DN..110408 | IDSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M KLM34L9IP | | | | | | |
| 1875198 | DDJNL2020K15KC06 | 20 | 20 | 25,0 | 125 | 32,0 | 4,0 | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| 2273108 | DDJNL2525M11KC04 | 25 | 25 | 32,0 | 150 | 30,0 | — | DN..110408 | IDSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M KLM34L9IP | | | | | | |
| 1875192 | DDJNL2525M15KC06 | 25 | 25 | 32,0 | 150 | 32,0 | — | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| 1875207 | DDJNL3225P15KC06 | 32 | 25 | 32,0 | 170 | 32,0 | — | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| 1875209 | DDJNL3232P15KC06 | 32 | 32 | 40,0 | 171 | 32,0 | — | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |

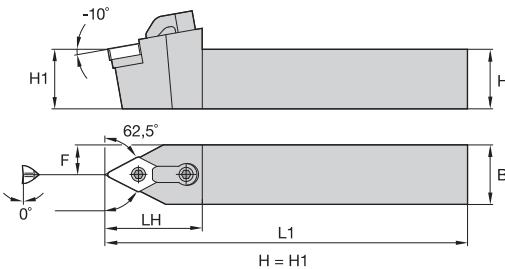
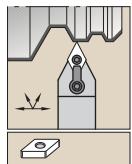

■ DDNN-KC 63°

| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---|------------|-----------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | |
| 2273111 | DDNNR2020K15KC06 | 20 | 20 | 10,0 | 125 | 40,0 | 2,5 | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |
| 2273112 | DDNNR2525M15KC06 | 25 | 25 | 13,0 | 150 | 40,0 | — | DN..150608 | IDSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP | | | | | | |



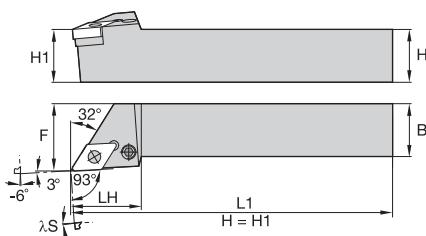
■ MDJN 93°

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | |
| 1100936 | MDJNR1616H11 | 16 | 16 | 20,0 | 100 | 32,0 | DN..110408 | IDSN322 | KLM34L | 2 mm | CKM7 | STCM5 | 2.5 mm |
| 1101286 | MDJNR2020K11 | 20 | 20 | 25,0 | 125 | 32,0 | DN..110408 | IDSN322 | KLM34L | 2 mm | CKM7 | STCM5 | 2.5 mm |
| 1101356 | MDJNR2020K15 | 20 | 20 | 25,0 | 125 | 36,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| 1101288 | MDJNR2525M11 | 25 | 25 | 32,0 | 150 | 32,0 | DN..110408 | IDSN322 | KLM34L | 2 mm | CKM7 | STCM5 | 2.5 mm |
| 1101357 | MDJNR2525M15 | 25 | 25 | 32,0 | 150 | 36,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| 1101358 | MDJNR3225P15 | 32 | 25 | 32,0 | 170 | 36,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| 3638550 | MDJNR3232P15 | 32 | 32 | 40,5 | 173 | 32,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | |
| 1101285 | MDJNL2020K11 | 20 | 20 | 25,0 | 125 | 32,0 | DN..110408 | IDSN322 | KLM34L | 2 mm | CKM7 | STCM5 | 2.5 mm |
| 1101287 | MDJNL2525M11 | 25 | 25 | 32,0 | 150 | 32,0 | DN..110408 | IDSN322 | KLM34L | 2 mm | CKM7 | STCM5 | 2.5 mm |
| 1102316 | MDJNL2525M15 | 25 | 25 | 32,0 | 150 | 36,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| 1102317 | MDJNL3225P15 | 32 | 25 | 32,0 | 170 | 32,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| 3638551 | MDJNL3232P15 | 32 | 32 | 40,5 | 173 | 32,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |

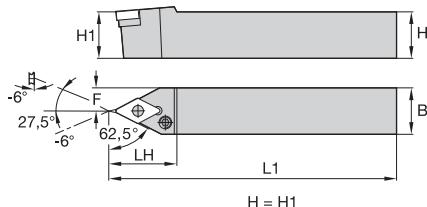
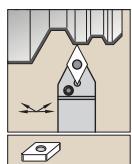


■ MDNN 62,5°

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 1101636 | MDNNR2525M15 | 68 | 25 | 12,5 | 150 | 41,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| 1101637 | MDNNR3225P15 | 88 | 32 | 12,5 | 170 | 41,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | |
| 1102434 | MDNNL2525M15 | 68 | 25 | 12,5 | 150 | 41,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| 1102435 | MDNNL3225P15 | 88 | 32 | 12,5 | 170 | 41,0 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |


■ PDJN 93°

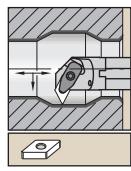

| order number | catalogue number | H | B | F | L1 | LH | λS° | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-------------------|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 1244752 | PDJNR1616H11 | 16 | 16 | 20,0 | 100 | 24,0 | -6,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1192382 | PDJNR2020K11 | 20 | 20 | 25,0 | 125 | 30,0 | -7,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1192383 | PDJNR2020K15 | 20 | 20 | 25,0 | 125 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1192384 | PDJNR2525M11 | 25 | 25 | 32,0 | 150 | 30,0 | -7,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1192385 | PDJNR2525M15 | 25 | 25 | 32,0 | 150 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1156969 | PDJNR3225P15 | 32 | 25 | 32,0 | 170 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1236865 | PDJNR3232P15 | 32 | 32 | 40,0 | 170 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1244784 | PDJNR4025R15 | 40 | 25 | 32,0 | 200 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| left hand | | | | | | | | | | | | | | |
| 1244751 | PDJNL1616H11 | 16 | 16 | 20,0 | 100 | 24,0 | -6,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1244658 | PDJNL2020K11 | 20 | 20 | 25,0 | 125 | 30,0 | -7,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1244820 | PDJNL2020K15 | 20 | 20 | 25,0 | 125 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1192380 | PDJNL2525M11 | 25 | 25 | 32,0 | 150 | 30,0 | -7,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1156968 | PDJNL2525M15 | 25 | 25 | 32,0 | 150 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1244781 | PDJNL3225P15 | 32 | 25 | 32,0 | 170 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1244821 | PDJNL3232P15 | 32 | 32 | 40,0 | 170 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1192381 | PDJNL4025R15 | 40 | 25 | 32,0 | 200 | 36,0 | -7,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |



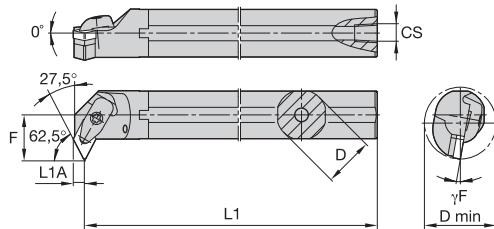
■ PDNN 62,5°



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | |
| 1244756 | PDNNR2020K11 | 20 | 20 | 10,0 | 125 | 24,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1244824 | PDNNR2020K15 | 20 | 20 | 10,0 | 125 | 36,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1244773 | PDNNR2525M15 | 25 | 25 | 12,5 | 150 | 36,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1244825 | PDNNR4025M15 | 40 | 25 | 12,5 | 150 | 36,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| left hand | | | | | | | | | | | | | |
| 1244754 | PDNNL2020K11 | 20 | 20 | 10,0 | 125 | 24,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1244822 | PDNNL2020K15 | 20 | 20 | 10,0 | 125 | 36,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1244659 | PDNNL2525M11 | 25 | 25 | 12,5 | 150 | 30,0 | DN..110408 | 512.060 | 513.060 | 515.018 | 511.060 | 514.118 | 10 IP |
| 1244785 | PDNNL2525M15 | 25 | 25 | 12,5 | 150 | 36,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1244823 | PDNNL4025M15 | 40 | 25 | 12,5 | 150 | 36,0 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |

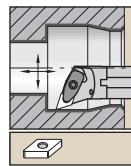


Steel shank with through coolant.

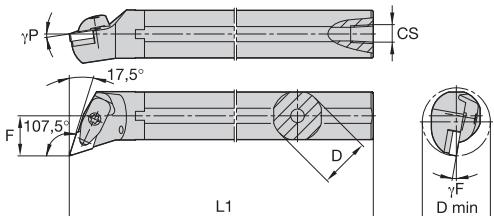


■ A-DDPN-KC 117,5°

| order number | catalogue number | D | D min | F | L1 | L1A | CS | γF° | gage insert | shim | shim screw | Torx Plus | clamp assembly | slotted pin | Torx Plus |
|-------------------|------------------|----|-------|------|-----|-----|------------|------------------|-------------|-------------------------|------------------------------|-----------|----------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 2441957 | A25RDDPNR11KC04 | 25 | 37,0 | 22,0 | 200 | 4,8 | 1/4-18 NPT | -10,0 | DN..110408 | IDSN322 KMSP315IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |
| 2441959 | A32SDDPNR15KC06 | 32 | 45,0 | 27,0 | 250 | 6,5 | 1/4-18 NPT | -12,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |
| 2441961 | A40TDDPNR15KC06 | 40 | 52,0 | 30,0 | 300 | 6,6 | 1/4-18 NPT | -10,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |
| left hand | | | | | | | | | | | | | | | |
| 2441960 | A32SDDPNL15KC06 | 32 | 45,0 | 27,0 | 250 | — | 1/4-18 NPT | -12,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |
| 2441962 | A40TDDPNL15KC06 | 40 | 52,0 | 30,0 | 300 | 6,6 | 1/4-18 NPT | -10,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |

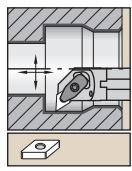


Steel shank with through coolant.

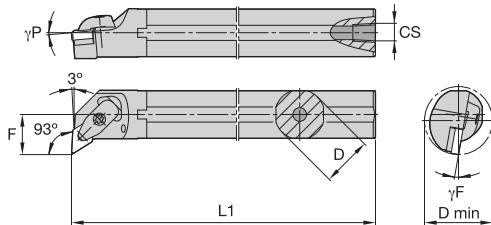


■ A-DDQN-KC 107,5°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | Torx Plus | clamp assembly | slotted pin | Torx Plus |
|-------------------|------------------|----|-------|------|-----|------------|------------------|------------------|-------------|-------------------------|------------------------------|-----------|------------------------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 2441951 | A25RDDQNR11KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -11,0 | -7,0 | DN..110408 | — | — | — | CM234R ASSY SSP025016M 15 IP | | |
| 2441953 | A32SDDQNR15KC06 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12,0 | -10,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |
| 2441955 | A40TDDQNR15KC06 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -10,0 | -10,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |
| left hand | | | | | | | | | | | | | | | |
| 2441952 | A25RDDQNL11KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -11,0 | -7,0 | DN..110408 | — | — | — | CM234R ASSY SSP025016M 15 IP | | |
| 2441954 | A32SDDQNL15KC06 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12,0 | -10,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |
| 2441956 | A40TDDQNL15KC06 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -10,0 | -10,0 | DN..150608 | IDSN433 KMSP415IP 15 IP | CM234R ASSY SSP025016M 15 IP | | | | |

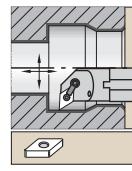


Steel shank with through coolant.

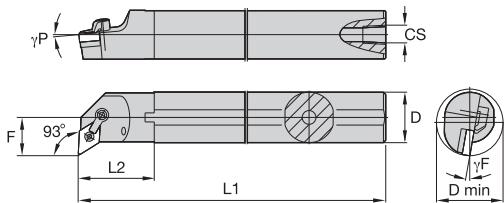


■ A-DDUN-KC 93°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | Torx Plus | clamp assembly | slotted pin | Torx Plus |
|-------------------|------------------|----|-------|------|-----|------------|------------------|------------------|-------------|-------------------|------------|-------------|----------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 2441939 | A25RDDUNR11KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -12.0 | -5.0 | DN..110408 | — | — | — | CM234R ASSY | SSP025016M | 15 IP |
| 2441941 | A32SDDUNR11KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12.0 | -5.0 | DN..110408 | IDSN322 KMSP315IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| 2441945 | A32SDDUNR15KC06 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12.0 | -6.0 | DN..150608 | IDSN433 KMSP415IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| 2441947 | A40TDDUNR15KC06 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -9.0 | -5.0 | DN..150608 | IDSN433 KMSP415IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| 2441949 | A50UDDUNR15KC06 | 50 | 63,0 | 35,0 | 350 | 1/4-18 NPT | -7.0 | -5.0 | DN..150608 | IDSN433 KMSP415IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| left hand | | | | | | | | | | | | | | | |
| 2441940 | A25RDDUNL11KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -12.0 | -5.0 | DN..110408 | — | — | — | CM234R ASSY | SSP025016M | 15 IP |
| 2441942 | A32SDDUNL11KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12.0 | -5.0 | DN..110408 | IDSN322 KMSP315IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| 2441946 | A32SDDUNL15KC06 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12.0 | -6.0 | DN..150608 | IDSN433 KMSP415IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| 2441948 | A40TDDUNL15KC06 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -9.0 | -5.0 | DN..150608 | IDSN433 KMSP415IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| 2441950 | A50UDDUNL15KC06 | 50 | 63,0 | 35,0 | 350 | 1/4-18 NPT | -7.0 | -5.0 | DN..150608 | IDSN433 KMSP415IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |



Steel shank with through coolant.

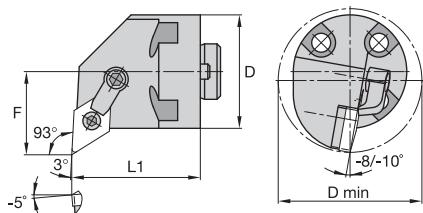


■ A-MDUN 93°

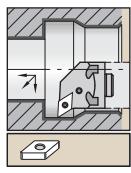
| order number | catalogue number | D | D min | F | L1 | L2 | CS | γF° | γP° | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------|------------|------------------|------------------|-------------|----------------|----------|-------|--------|-------------|--------|
| right hand | | | | | | | | | | | | | | | | |
| 1098769 | A25RMDUNR11 | 25 | 32,0 | 17,0 | 200 | 40,0 | 1/4-18 NPT | -14.0 | -5.0 | DN..110408 | — | KLM33L | 2 mm | CKM7 | STCM5 | 2.5 mm |
| 1098102 | A25RMDUNR15 | 25 | 32,0 | 17,0 | 200 | — | 1/4-18 NPT | -14.0 | -5.0 | DN..150408 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM11 | 3 mm | |
| 1098770 | A32SMDUNR11 | 32 | 40,0 | 22,0 | 250 | 50,0 | 1/4-18 NPT | -12.0 | -5.0 | DN..110408 | IDSN322 KLM34L | 2 mm | CKM7 | STCM5 | 2.5 mm | |
| 1098104 | A32SMDUNR15 | 32 | 40,0 | 22,0 | 250 | — | 1/4-18 NPT | -12.0 | -6.0 | DN..150608 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm | |
| 1098106 | A40TMDUNR15 | 40 | 50,0 | 27,0 | 300 | — | 1/4-18 NPT | -9.0 | -5.0 | DN..150608 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm | |
| 1098108 | A50UMDUNR15 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -7.0 | -5.0 | DN..150608 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm | |
| left hand | | | | | | | | | | | | | | | | |
| 1098779 | A25RMDUNL11 | 25 | 32,0 | 17,0 | 200 | 40,0 | 1/4-18 NPT | -14.0 | -5.0 | DN..110408 | — | KLM33L | 2 mm | CKM7 | STCM5 | 2.5 mm |
| 1098103 | A25RMDUNL15 | 25 | 32,0 | 17,0 | 200 | — | 1/4-18 NPT | -14.0 | -5.0 | DN..150408 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM11 | 3 mm | |
| 1098780 | A32SMDUNL11 | 32 | 40,0 | 22,0 | 250 | 50,0 | 1/4-18 NPT | -12.0 | -5.0 | DN..110408 | IDSN322 KLM34L | 2 mm | CKM7 | STCM5 | 2.5 mm | |
| 1098105 | A32SMDUNL15 | 32 | 40,0 | 22,0 | 250 | — | 1/4-18 NPT | -12.0 | -6.0 | DN..150608 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm | |
| 1098107 | A40TMDUNL15 | 40 | 50,0 | 27,0 | 300 | — | 1/4-18 NPT | -9.0 | -5.0 | DN..150608 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm | |
| 1098109 | A50UMDUNL15 | 50 | 63,0 | 35,0 | 350 | — | 1/4-18 NPT | -7.0 | -5.0 | DN..150608 | IDSN432 KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm | |



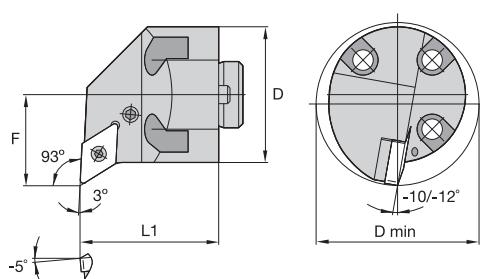
With through coolant.


■ H-MDUN 93°

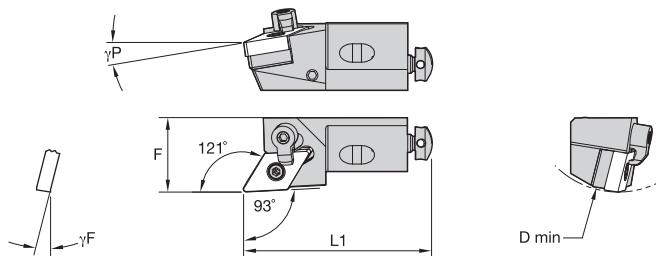
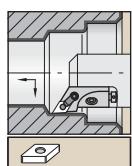

| order number | catalogue number | D | D min | F | L1 | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-----------------------|------------------|----|-------|------|----|-------------|---------|----------|--------|-------|-------------|------|
| right hand 1099094 | H40MDUNR15 | 40 | 50,0 | 27,0 | 41 | DN..150608 | IDSN432 | KLM46L | 2.5 mm | CKM22 | STCM20 | 3 mm |
| left hand 3612192 | H50MDUNL19 | 50 | 63,0 | 35,0 | 41 | DN..190612 | IDSN533 | KLM58 | 3 mm | CKM12 | STCM4 | 4 mm |

Kenlever™ Boring Heads


With through coolant.


■ H-PDUN 93°


| order number | catalogue number | D | D min | F | L1 | gage insert | shim | shim pin | pin | toggle lever | lever screw | Tors Plus |
|-----------------------|------------------|----|-------|------|----|-------------|---------|----------|---------|--------------|-------------|-----------|
| right hand 1861496 | H32PDUNR15 | 32 | 43,0 | 25,0 | 41 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| 1861519 | H50PDUNR15 | 50 | 63,0 | 35,0 | 41 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |
| left hand 1861520 | H50PDUNL15 | 50 | 63,0 | 35,0 | 41 | DN..150608 | 512.153 | 513.023 | 515.018 | 511.024 | 514.128 | 15 IP |



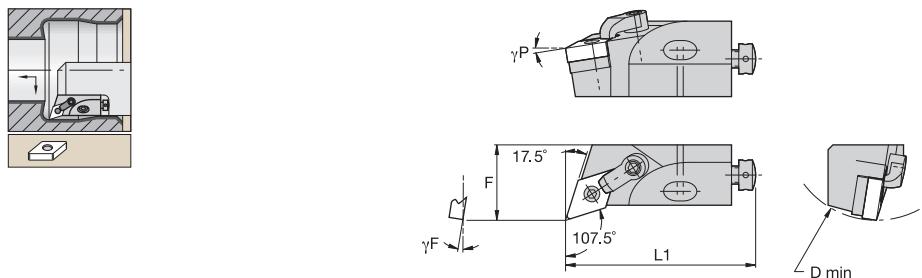
■ MDJN 93°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|----------------------|
| right hand | | | | | | | |
| 3346241 | MDJNR12CA11 | 50 | 20,0 | 55 | -9.0 | -9.0 | DN..110408/DN..322 |
| 3330275 | MDJNR16CA15 | 60 | 25,0 | 63 | -9.0 | -9.0 | DN..150408/DN..432 |
| 3330199 | MDJNR20CA15 | 70 | 25,0 | 70 | -8.5 | -8.5 | DN..150408/DN..3.532 |
| left hand | | | | | | | |
| 3346240 | MDJNL12CA11 | 50 | 20,0 | 55 | -9.0 | -9.0 | DN..110408/DN..322 |
| 3330274 | MDJNL16CA15 | 60 | 25,0 | 63 | -9.0 | -9.0 | DN..150408/DN..432 |

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|---------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | — | KLM33L | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |
| 60 | IDSN432 | KLM46S | 2.5 mm | CKM36 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |
| 70 | IDSN432 | KLM46 | 2.5 mm | CKM41 | STCM40 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |



■ MDQN 107,5°

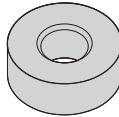
| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand | | | | | | | |
| 3330277 | MDQNR16CA15 | 60 | 25,0 | 63 | -9.0 | -6.0 | DN..150408/DN..432 |
| 3330201 | MDQNR20CA15 | 70 | 25,0 | 70 | -9.0 | -8.0 | DN..150408/DN..432 |
| left hand | | | | | | | |
| 3330276 | MDQNL16CA15 | 60 | 25,0 | 63 | -9.0 | -6.0 | DN..150408/DN..432 |
| 3330200 | MDQNL20CA15 | 70 | 25,0 | 70 | -9.0 | -8.0 | DN..150408/DN..432 |

■ Spare Parts



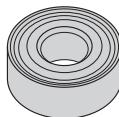
| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|---------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|------|--------------|
| 60 | IDSN432 | KLM46S | 2.5 mm | CKM36 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |
| 70 | IDSN432 | KLM46 | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |

● first choice
○ alternate choice



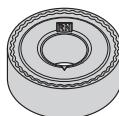
■ RNMA

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-----|--------------|--------|-------|--------|-------|--------|-------|
| RNMA120400 | 12,70 | — | — | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 |
| RNMA150600 | 15,88 | — | — | KCP10 | KCP10 | KCP10 | KCP10 | KCP30B | KCP30 |



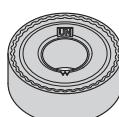
■ RNMG

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-----|--------------|--------|-------|--------|-------|--------|-------|
| RNMG190600 | 19,05 | — | — | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 |



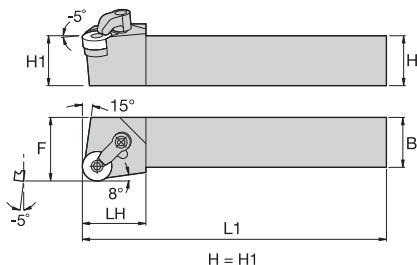
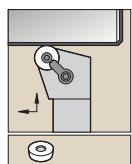
■ RNMG-RN

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-----|--------------|--------|-------|--------|-------|--------|--------|
| RNMG090300RN | 9,53 | — | — | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 |
| RNMG120400RN | 12,70 | — | — | KCP10 | KCP10 | KCP10 | KCP10 | KCP30B | KCP30 |
| RNMG150600RN | 15,88 | — | — | KCP10 | KCP10 | KCP10 | KCP10 | KCP30 | KCP30 |
| RNMG190600RN | 19,05 | — | — | KCP10 | KCP10 | KCP10 | KCP10 | KCP40B | KCP40B |
| RNMG250900RN | 25,40 | — | — | KCP10 | KCP10 | KCP10 | KCP10 | KCP40 | KCP40 |

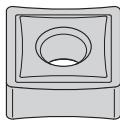


■ RNMG-UN

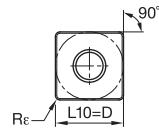
| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-----|--------------|--------|-------|--------|-------|--------|-------|
| RNMG120400UN | 12,70 | — | — | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 |


■ MRGN


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|--------|----------|--------|-------|-------------|------|
| right hand 1102086 | MRGNR2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | RN..120400 | IRSN43 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| left hand 1102699 | MRGNL2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | RN..120400 | IRSN43 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |

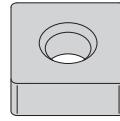


- first choice
- alternate choice

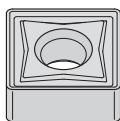


SNGP

| ISO catalogue number | D | L10 | R ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | KCU10 | KCU25 | KC5010 | KC5410 | KT315 |
|----------------------|-------|-------|-----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|--------|--------|-------|
| SNGP120404 | 12,70 | 12,70 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| SNGP120408 | 12,70 | 12,70 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | | | |

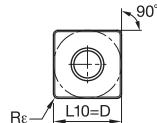
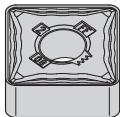


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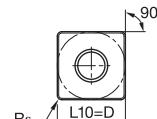
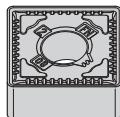


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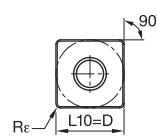
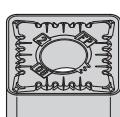
- first choice
- alternate choice



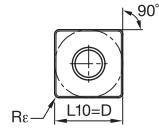
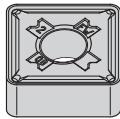
■ SNMG-FF



■ SNMG-FN

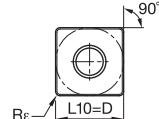
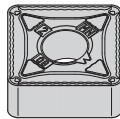


■ SNMG-FP

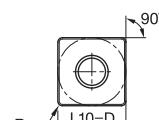
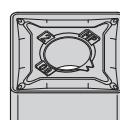


- first choice
- alternate choice

■ SNMG-FW



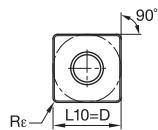
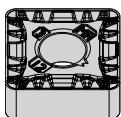
■ SNMG-MN



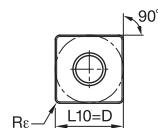
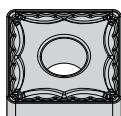
■ SNMG-MP

| ISO catalogue number | D | L10 | Re | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| SNMG120408MP | 12,70 | 12,70 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | - | - | - | ● | - | - | - | - | - | | |
| SNMG120412MP | 12,70 | 12,70 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | ● | - | ● | ● | - | - | - | - | - | |
| SNMG120416MP | 12,70 | 12,70 | 1,6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | ● | - | - | - | - | - | - | - | - | - | |
| SNMG150608MP | 15,88 | 15,88 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | |
| SNMG150612MP | 15,88 | 15,88 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | - | - | - | ● | - | ● | - | - | - | | |
| SNMG150616MP | 15,88 | 15,88 | 1,6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | ● | - | - | - | - | - | |
| SNMG190612MP | 19,05 | 19,05 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | |
| SNMG190616MP | 19,05 | 19,05 | 1,6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | |

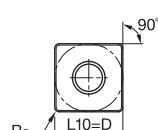
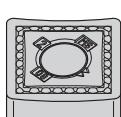
- first choice
- alternate choice



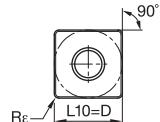
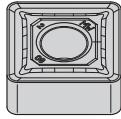
■ SNMG-MR



SNMG-MG

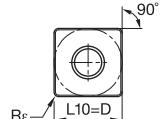


■ SNMG-MS

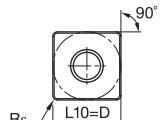
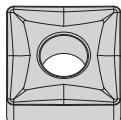


- first choice
- alternate choice

■ SNMG-MW

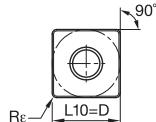
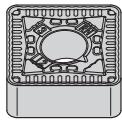


■ SNMG-P

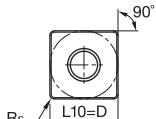
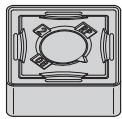


■ SNMG-RM

- first choice
- alternate choice



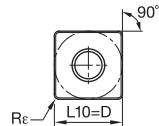
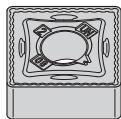
■ SNMG-RN



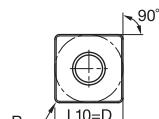
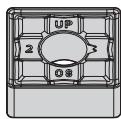
■ SNMG-RP

| ISO catalogue number | D | L10 | R _E | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| SNMG120408RP | 12,70 | 12,70 | 0,8 | - | ● | - | ● | ● | ● | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | - | ● | ● | ● | - | - | | | | |
| SNMG120412RP | 12,70 | 12,70 | 1,2 | - | ● | ● | ● | ● | ● | - | ● | - | ● | - | ● | ● | ● | - | ● | ● | - | - | - | - | - | ● | ● | ● | - | - | | | | |
| SNMG120416RP | 12,70 | 12,70 | 1,6 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | | | | |
| SNMG150612RP | 15,88 | 15,88 | 1,2 | - | - | ● | - | ● | ● | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | - | | | | |
| SNMG150616RP | 15,88 | 15,88 | 1,6 | - | - | ● | - | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | ● | ● | ● | - | - | | | | |
| SNMG190612RP | 19,05 | 19,05 | 1,2 | - | - | - | ● | - | - | - | - | - | ● | - | - | - | - | ● | - | ● | ● | - | ● | - | ● | ● | ● | ● | - | - | | | | |
| SNMG190616RP | 19,05 | 19,05 | 1,6 | - | - | - | ● | - | - | - | - | - | ● | - | - | - | - | ● | - | ● | ● | - | ● | - | ● | ● | ● | ● | - | - | | | | |

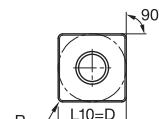
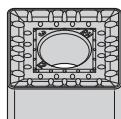
- first choice
- alternate choice



■ SNMG-UN

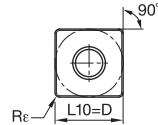
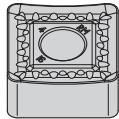


■ SNMG-UP

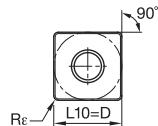
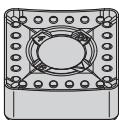


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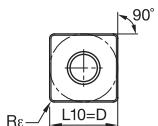
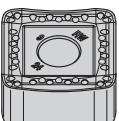
- first choice
- alternate choice



■ SNMM-RM

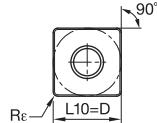
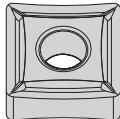


■ SNMM-RP



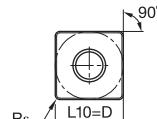
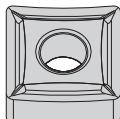
■ SNMM-RW

- first choice
- alternate choice



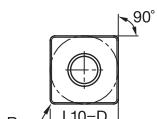
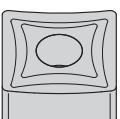
■ SNMP

| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-------|-------|--------|--------|--------|-------|
| SNMP190612 | 19,05 | 19,05 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



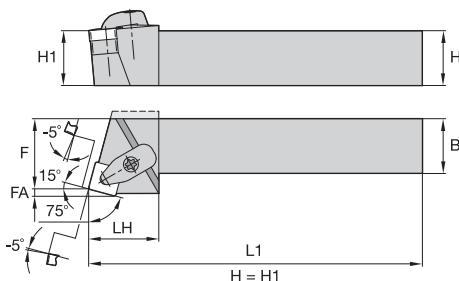
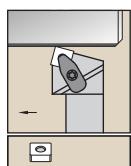
■ SNMP-K

| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-------|-------|--------|--------|--------|-------|
| SNMP120408K | 12,70 | 12,70 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |

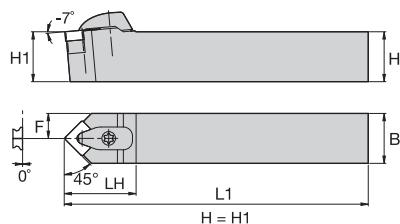
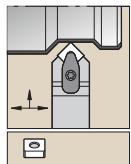


■ SNMS

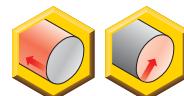
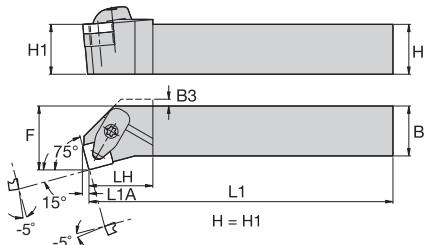
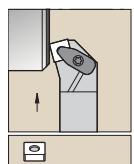
| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-----|-------|-------|--------|--------|--------|-------|
| SNMS120408 | 12,70 | 12,70 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| SNMS190612 | 19,05 | 19,05 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |


■ DSBN-KC 75°


| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|-----------|----------------|-----------|-------------|-------------------|
| left hand 1875215 | DSBNL2525M12KC04 | 25 | 25 | 22,0 | 150 | 32,0 | 3,0 | SN..120408 | ISSN443 | KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM46L15IP |


■ DSDN-KC 45°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|--------------|------------------|----|----|------|-----|------|-------------|---------|------------|-----------|----------------|-----------|-------------|-------------------|
| 1875210 | DSDNN2020K12KC04 | 20 | 20 | 10,0 | 125 | 36,0 | SN..120408 | ISSN433 | KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM4615IP |
| 1875211 | DSDNN2525M12KC04 | 25 | 25 | 12,0 | 150 | 36,0 | SN..120408 | ISSN443 | KMSP415IP | 15 IP | CM234R ASSY | 15 IP | SSP025016M | KLM46L15IP |
| 1875216 | DSDNN2525M15KC06 | 25 | 25 | 12,0 | 150 | 42,0 | SN..150612 | ISSN543 | KMSP515IP | 15 IP | CM209R ASSY | 15 IP | SSP025016M | KLM58L15IP |
| 2273139 | DSDNN3232P19KC06 | 32 | 32 | 15,5 | 170 | 44,0 | SN..190612 | ISSN643 | KMSP625IP | 25 IP | CM210R ASSY | 25 IP | SSP025016M | KLM68L25IP |
| 2456320 | DSDNN4040S25KC09 | 40 | 40 | 19,5 | 250 | 59,0 | SN..250924 | ISSN846 | KMSP825IP | 25 IP | CM236R ASSY | 25 IP | SSP025018M | KLM81025IP |



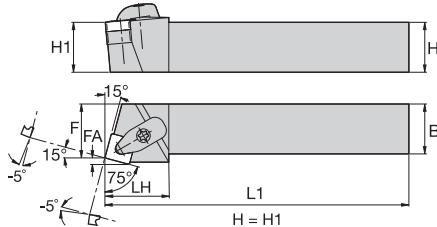
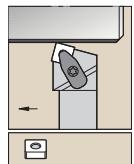
■ DSKN-KC 75°



| order number | catalogue number | H | B | F | L1 | LH | L1A | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|--------------|------------------|----|----|------|-----|------|-----|-----|-------------|---------|--|------------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | | |
| 1875219 | DSKNR2525M12KC04 | 25 | 25 | 32,0 | 150 | 32,0 | 3,1 | 4,0 | SN..120408 | ISSN443 | KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | |

left hand

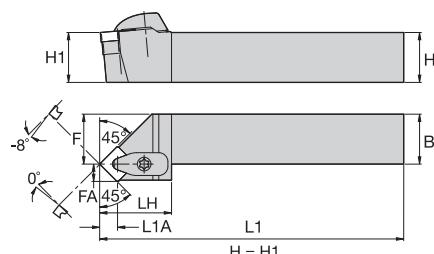
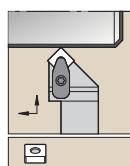
1875220 DSKNL2525M12KC04 | 25 25 32,0 150 32,0 3,1 4,0 | SN..120408 | ISSN443 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M KLM46L15IP



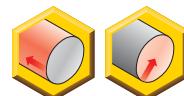
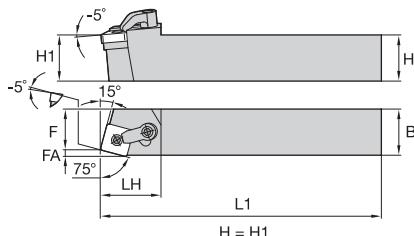
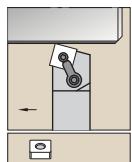
■ DSRN-KC 75°



| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|--------------|------------------|----|----|------|-----|------|-----|-------------|---------|--|------------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | |
| 1875228 | DSRNR2525M12KC04 | 25 | 25 | 27,0 | 150 | 32,0 | 3,3 | SN..120408 | ISSN443 | KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | |
| 2456321 | DSRNR4040S25KC09 | 40 | 40 | 43,0 | 250 | 52,0 | 6,1 | SN..250924 | ISSN846 | KMSP825IP 25 IP CM236R ASSY 25 IP SSP025018M | KLM81025IP | | | | |
| left hand | | | | | | | | | | | | | | | |
| 2456322 | DSRNL4040S25KC09 | 40 | 40 | 43,0 | 250 | 52,0 | 6,1 | SN..250924 | ISSN846 | KMSP825IP 25 IP CM236R ASSY 25 IP SSP025018M | KLM81025IP | | | | |


■ DSSN-KC 45°

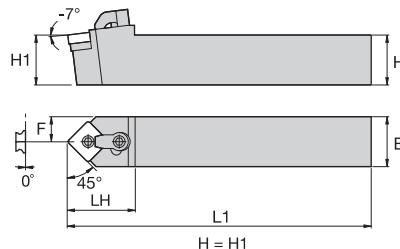
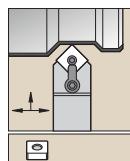

| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-------------------|------------------|----|----|------|-----|------|-----|-----|-------------|---------|--|------------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | | |
| 1875202 | DSSNR2020K12KC04 | 20 | 20 | 25,0 | 125 | 36,0 | 8,4 | 8,7 | SN..120408 | ISSN433 | KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM4615IP | | | | |
| 1875195 | DSSNR2525M12KC04 | 25 | 25 | 32,0 | 150 | 36,0 | 8,4 | 9,6 | SN..120408 | ISSN443 | KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | |
| 2273156 | DSSNR3225P12KC04 | 32 | 25 | 32,0 | 170 | 35,4 | 8,4 | 8,7 | SN..120408 | ISSN443 | KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | |
| left hand | | | | | | | | | | | | | | | | |
| 1875203 | DSSNL2525M12KC04 | 25 | 25 | 32,0 | 150 | 36,0 | 8,4 | 8,7 | SN..120408 | ISSN443 | KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | |



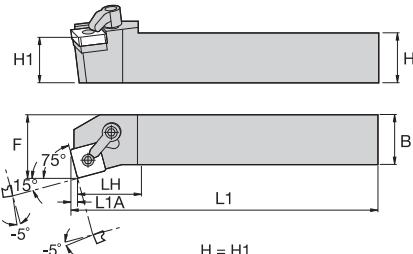
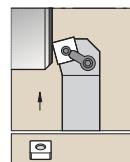
■ MSBN 75°



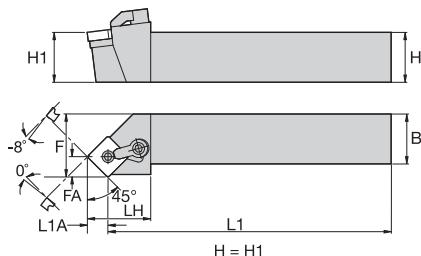
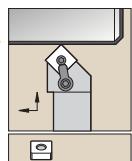
| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|-----|----|------|-----|------|-----|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | |
| 1101893 | MSBNR3232P19 | 32 | 32 | 27,0 | 170 | 40,0 | 4,6 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1101954 | MSBNR4040R19 | 40 | 40 | 35,0 | 200 | 40,0 | 4,6 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1100937 | MSBNR2020K12 | 61 | 20 | 17,0 | 125 | 32,0 | 3,1 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101359 | MSBNR2525M15 | 80 | 25 | 22,0 | 150 | 35,0 | 3,8 | SN..150612 | ISSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1100941 | MSBNR2525M12 | 86 | 25 | 22,0 | 150 | 32,0 | 3,1 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101361 | MSBNR3232P15 | 100 | 32 | 27,0 | 170 | 35,0 | 3,8 | SN..150612 | ISSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1101289 | MSBNR3225P12 | 106 | 32 | 22,0 | 170 | 32,0 | 3,1 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | | |
| 1102640 | MSBNL3232P19 | 32 | 32 | 27,0 | 170 | 40,0 | 4,6 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1099148 | MSBNL4040R19 | 40 | 40 | 35,0 | 200 | 40,0 | 4,6 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1102242 | MSBNL2020K12 | 61 | 20 | 17,0 | 125 | 32,0 | 3,1 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102318 | MSBNL2525M15 | 80 | 25 | 22,0 | 150 | 35,0 | 3,8 | SN..150612 | ISSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102243 | MSBNL2525M12 | 86 | 25 | 22,0 | 150 | 32,0 | 3,1 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102319 | MSBNL3232P15 | 100 | 32 | 27,0 | 170 | 35,0 | 3,8 | SN..150612 | ISSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102314 | MSBNL3225P12 | 106 | 32 | 22,0 | 170 | 32,0 | 3,1 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |


■ MSDN 45°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|--------------|------------------|-----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|--------|
| 1101891 | MSDNN2525M12 | 25 | 25 | 12,0 | 150 | 32,0 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101889 | MSDNN1616H09 | 44 | 16 | 8,0 | 100 | 28,0 | SN..090308 | ISSN332 | KLM34L | 2 mm | CKM19 | STCM9 | 2.5 mm |
| 1101890 | MSDNN2020K12 | 61 | 20 | 10,0 | 125 | 32,0 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101892 | MSDNN2525M15 | 80 | 25 | 12,5 | 150 | 35,0 | SN..150612 | ISSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1101888 | MSDNN3232P19 | 86 | 32 | 16,0 | 170 | 42,0 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1101713 | MSDNN3225P12 | 106 | 32 | 12,5 | 170 | 32,0 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |

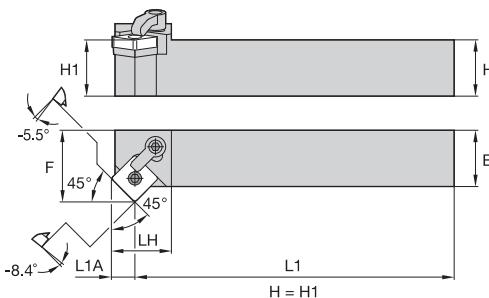
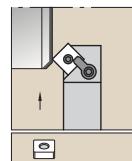

■ MSKN 75°


| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | |
| 1101886 | MSKNR2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 3,1 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1101957 | MSKNR3232P19 | 32 | 32 | 40,0 | 170 | 40,0 | 4,6 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| 1102637 | MSKNL2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 3,1 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102638 | MSKNL3225P12 | 32 | 25 | 32,0 | 170 | 32,0 | 3,1 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1099158 | MSKNL3232P15 | 32 | 32 | 40,0 | 170 | 35,0 | 3,7 | SN..150612 | ISSN533 | KLM58 | 3 mm | CKM21 | STCM20 | 3 mm |
| 1102641 | MSKNL3232P19 | 32 | 32 | 40,0 | 170 | 40,0 | 4,6 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |



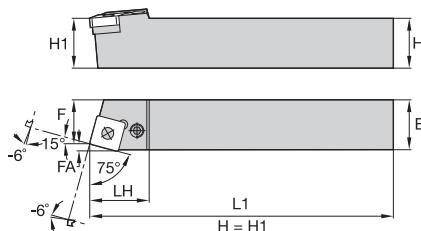
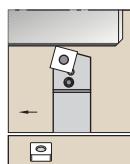
■ MSSN 45°

| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|------|------|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | | |
| 1102166 | MSSNR3232P19 | 32 | 32 | 40,0 | 170 | 40,0 | 12,5 | 12,5 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1102164 | MSSNR2020K12 | 71 | 20 | 25,0 | 125 | 32,0 | 8,4 | 9,6 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102165 | MSSNR2525M12 | 96 | 25 | 32,0 | 150 | 32,0 | 8,4 | 9,6 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | | | |
| 1102717 | MSSNL2020K12 | 20 | 20 | 25,0 | 125 | 32,0 | 8,4 | 8,3 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1102719 | MSSNL3232P19 | 32 | 32 | 40,0 | 170 | 40,0 | 12,5 | 12,5 | SN..190612 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| 1102718 | MSSNL2525M12 | 96 | 25 | 32,0 | 150 | 32,0 | 8,4 | 9,6 | SN..120408 | ISSN433 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |



■ MSZN 45°

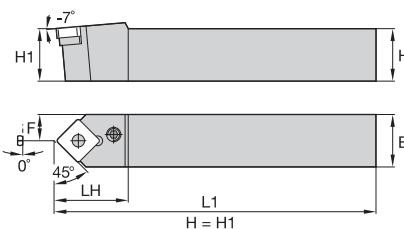
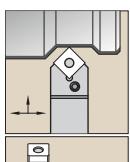
| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | |
| 1101884 | MSZNR2525M12 | 25 | 25 | 32,0 | 150 | 25,0 | 8,5 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | | |
| 1102634 | MSZNL2525M12 | 25 | 25 | 32,0 | 150 | 25,0 | 8,5 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |



■ PSBN 75°



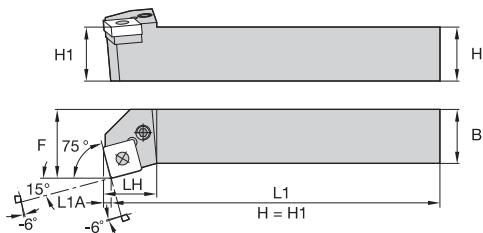
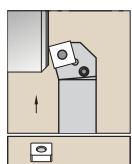
| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 1244833 | PSBNR2020K12 | 20 | 20 | 17,0 | 125 | 26,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244677 | PSBNR2525M12 | 25 | 25 | 22,0 | 150 | 26,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244834 | PSBNR2525M15 | 25 | 25 | 22,0 | 150 | 36,0 | 3,8 | SN..150608 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244678 | PSBNR3225P12 | 32 | 25 | 22,0 | 170 | 26,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244680 | PSBNR3232P15 | 32 | 32 | 27,0 | 170 | 33,0 | 3,8 | SN..150608 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244681 | PSBNR3232P19 | 32 | 32 | 27,0 | 170 | 40,0 | 4,6 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244682 | PSBNR4040S19 | 40 | 40 | 35,0 | 250 | 38,0 | 4,6 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244683 | PSBNR4040S25 | 40 | 40 | 35,0 | 250 | 47,0 | 5,9 | SN..250724 | 512.092 | 513.038 | 515.028 | 511.038 | 514.138 | 30 IP |
| left hand | | | | | | | | | | | | | | |
| 1244774 | PSBNL2020K12 | 20 | 20 | 17,0 | 125 | 26,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244668 | PSBNL2525M12 | 25 | 25 | 22,0 | 150 | 26,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244669 | PSBNL2525M15 | 25 | 25 | 22,0 | 150 | 36,0 | 3,8 | SN..150608 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244672 | PSBNL3232P15 | 32 | 32 | 27,0 | 170 | 33,0 | 3,8 | SN..150608 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244673 | PSBNL3232P19 | 32 | 32 | 27,0 | 170 | 40,0 | 4,6 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244674 | PSBNL4040S19 | 40 | 40 | 35,0 | 250 | 38,0 | 4,6 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244675 | PSBNL4040S25 | 40 | 40 | 35,0 | 250 | 47,0 | 5,9 | SN..250724 | 512.092 | 513.038 | 515.028 | 511.038 | 514.138 | 30 IP |



■ PSDN 45°



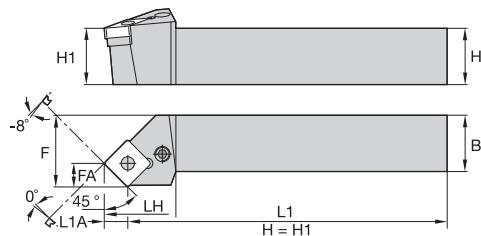
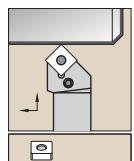
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|--------------|------------------|----|----|------|-----|------|-------------|---------|----------|-----------|---------|-------------|-----------|
| 1244686 | PSDNN1616H09 | 16 | 16 | 8,0 | 100 | 22,0 | SN..090308 | 512.053 | 513.019 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244863 | PSDNN2020K12 | 20 | 20 | 10,0 | 125 | 26,0 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1156970 | PSDNN2525M12 | 25 | 25 | 12,5 | 150 | 26,0 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244687 | PSDNN3225P12 | 32 | 25 | 12,5 | 170 | 28,0 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244688 | PSDNN3225P19 | 32 | 25 | 12,5 | 170 | 40,0 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244835 | PSDNN3232P19 | 32 | 32 | 16,0 | 170 | 40,0 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1147356 | PSDNN4040S25 | 40 | 40 | 20,0 | 250 | 50,0 | SN..250724 | 512.092 | 513.038 | 515.028 | 511.038 | 514.138 | 30 IP |



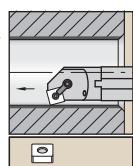
■ PSKN 75°



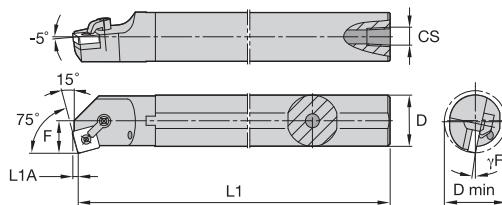
| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 1244699 | PSKNR2020K12 | 20 | 20 | 25,0 | 125 | 23,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244836 | PSKNR2525M12 | 25 | 25 | 32,0 | 150 | 23,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244701 | PSKNR3232P15 | 32 | 32 | 40,0 | 170 | 32,0 | 3,8 | SN..150608 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244702 | PSKNR3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 4,6 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| left hand | | | | | | | | | | | | | | |
| 1244690 | PSKNL2525M12 | 25 | 25 | 32,0 | 150 | 23,0 | 3,1 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244693 | PSKNL3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 4,6 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |


■ PSSN 45°


| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|------|------|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 1244718 | PSSNR2020K09 | 20 | 20 | 25,0 | 125 | 26,0 | 6,1 | 6,1 | SN..090308 | 512.053 | 513.019 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244837 | PSSNR2020K12 | 20 | 20 | 25,0 | 125 | 28,0 | 8,3 | 8,3 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1156961 | PSSNR2525M12 | 25 | 25 | 32,0 | 150 | 28,0 | 8,3 | 8,3 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244719 | PSSNR2525M15 | 25 | 25 | 32,0 | 150 | 32,0 | 10,2 | 10,2 | SN..150608 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244720 | PSSNR3225P12 | 32 | 25 | 32,0 | 170 | 29,0 | 8,3 | 8,3 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244722 | PSSNR3232P15 | 32 | 32 | 40,0 | 170 | 32,0 | 10,0 | 11,5 | SN..150612 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244838 | PSSNR3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 12,5 | 12,5 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244723 | PSSNR4040S19 | 40 | 40 | 50,0 | 250 | 37,5 | 12,5 | 12,5 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| left hand | | | | | | | | | | | | | | | |
| 1244709 | PSSNL2020K12 | 20 | 20 | 25,0 | 125 | 28,0 | 8,3 | 8,3 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244789 | PSSNL2525M12 | 25 | 25 | 32,0 | 150 | 28,0 | 8,3 | 8,3 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244710 | PSSNL2525M15 | 25 | 25 | 32,0 | 150 | 32,0 | 10,2 | 10,2 | SN..150608 | 512.025 | 513.025 | 515.022 | 511.025 | 514.125 | 15 IP |
| 1244711 | PSSNL3225P12 | 32 | 25 | 32,0 | 170 | 29,0 | 8,3 | 8,3 | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244714 | PSSNL3232P19 | 32 | 32 | 40,0 | 170 | 37,5 | 12,5 | 12,5 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |
| 1244715 | PSSNL4040S19 | 40 | 40 | 50,0 | 250 | 37,5 | 12,5 | 12,5 | SN..190612 | 512.083 | 513.033 | 515.022 | 511.033 | 514.133 | 25 IP |

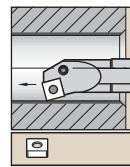


Steel shank with through coolant.

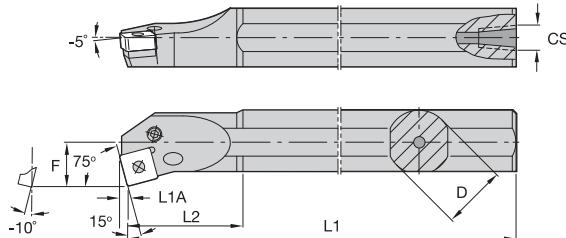


■ A-MSKN 75°

| order number | catalogue number | D | D min | F | L1 | L1A | CS | γF° | gage insert | shim | lock pin | hex | clamp | clamp screw | clamp hex |
|-------------------|------------------|----|-------|------|-----|-----|------------|------------------|-------------|---------|----------|--------|-------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 1098116 | A40TMSKNR12 | 40 | 50,0 | 27,0 | 300 | 3,1 | 1/4-18 NPT | -10,0 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098120 | A50UMSKNR19 | 50 | 63,0 | 35,0 | 350 | 4,6 | 1/4-18 NPT | -12,0 | SN..190608 | ISSN633 | KLM68 | 4 mm | CKM12 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | | | |
| 1098115 | A32SMSKNL12 | 32 | 40,0 | 22,0 | 250 | 3,1 | 1/4-18 NPT | -14,0 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |
| 1098117 | A40TMSKNL12 | 40 | 50,0 | 27,0 | 300 | 3,1 | 1/4-18 NPT | -10,0 | SN..120408 | ISSN432 | KLM46 | 2.5 mm | CKM21 | STCM20 | 3 mm |

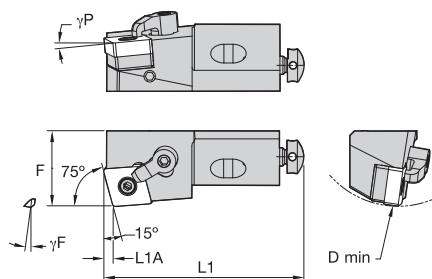
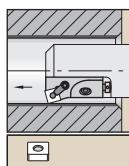


Steel shank with through coolant.



■ A-PSKN 75°

| order number | catalogue number | D | D min | F | L1 | L2 | L1A | CS | gage insert | shim | shim pin | pin | toggle lever | lever screw | Torx Plus |
|-------------------|------------------|----|-------|------|-----|----|-----|------------|-------------|---------|----------|---------|--------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 2447480 | A25TPSKNR12 | 25 | 30,0 | 17,0 | 300 | 43 | 3,0 | 1/4-18 NPT | SN..120408 | — | — | — | 511.022 | 514.122 | 10 IP |
| 2447482 | A32UPSKNR12 | 32 | 40,0 | 22,0 | 350 | 52 | 3,0 | 1/4-18 NPT | SN..120408 | 512.063 | 513.023 | 515.018 | 511.023 | 514.124 | 15 IP |

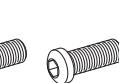
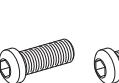


■ MSKN 75°

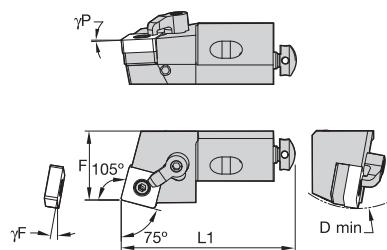
| order number | catalogue number | D min | F | L1 | L1A | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|-----|-----|------------------|------------------|--------------------|
| right hand | | | | | | | | |
| 2114011 | MSKNR10CA09 | 40 | 14,0 | 50 | 2,2 | -9.0 | -5.0 | SN..090308/SN..322 |
| 2114013 | MSKNR12CA12 | 50 | 20,0 | 55 | 3,0 | -9.0 | -5.0 | SN..120408/SN..432 |
| 2074430 | MSKNR16CA12 | 60 | 25,0 | 63 | 3,0 | -9.0 | -5.0 | SN..120408/SN..432 |
| 2072222 | MSKNR20CA15 | 70 | 25,0 | 70 | 3,7 | -9.0 | -5.0 | SN..150612/SN..543 |
| 2987166 | MSKNR25CA19 | 100 | 32,0 | 100 | 4,6 | -9.0 | -5.0 | SN..190612/SN..543 |
| left hand | | | | | | | | |
| 3346242 | MSKNL12CA12 | 50 | 20,0 | 55 | 3,0 | -9.0 | -5.0 | SN..120408/SN..432 |
| 3330202 | MSKNL20CA15 | 70 | 25,0 | 70 | 3,7 | -9.0 | -5.0 | SN..150612/SN..543 |

NOTE: Select spare parts based off of D min and the insert size selected.

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | mounting screw | hex | washer |
|-------|----------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|----------------|----------------|------|--------------|
| 40 | — | KLM33 | 2 mm | CKM36 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | — | — | 4 mm | CSWM 060 050 |
| 50 | — | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | — | 191.406 | — | 4 mm | CSWM 060 050 |
| 60 | ISSN432 | KLM46S | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | — | 5 mm | CSWM 080 050 |
| 70 | SKSN566K | KLM54 | 2.5 mm | CKM37 | STCM40 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | — | 5 mm | CSWM 080 050 |
| 100 | ISSN633 | KLM68 | 4 mm | CKM35 | STCM8 | 4 mm | KUAM27 | 4 mm | KUAM32 | — | — | MS364 | 8 mm | CSWM 100 080 |



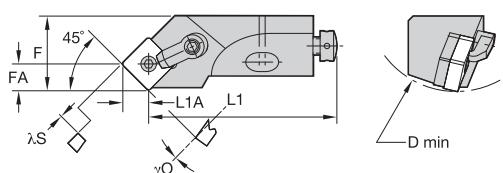
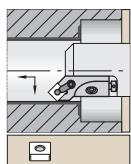
■ MSRN 75°

| order number | catalogue number | D min | F | L1 | γ_F° | γ_P° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand | | | | | | | |
| 1098436 | MSRNR10CA09 | 40 | 14,0 | 50 | -9.0 | -5.0 | SN..090308/SN..322 |
| 2078231 | MSRNR12CA12 | 50 | 20,0 | 55 | -9.0 | -5.0 | SN..120408/SN..432 |
| 2074432 | MSRNR16CA12 | 60 | 25,0 | 63 | -9.0 | -5.0 | SN..120408/SN..432 |
| left hand | | | | | | | |
| 1282803 | MSRNL12CA12 | 50 | 20,0 | 55 | -9.0 | -5.0 | SN..120408/SN..432 |
| 3330279 | MSRNL16CA12 | 60 | 25,0 | 63 | -9.0 | -5.0 | SN..120408/SN..432 |
| 3330203 | MSRNL20CA15 | 70 | 25,0 | 70 | -9.0 | -5.0 | SN..150612/SN..543 |

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|----------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|----------------|------|--------------|
| 40 | — | KLM33 | 2 mm | CKM36 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | — | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |
| 60 | ISSN432 | KLM46S | 2.5 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | 5 mm | CSWM 080 050 |
| 70 | SKSN566K | KLM54 | 2.5 mm | CKM37 | STCM40 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | 5 mm | CSWM 080 050 |



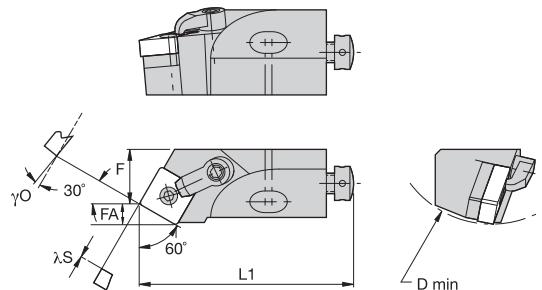
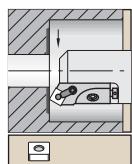
■ MSSN 45°

| order number | catalogue number | D min | F | L1 | L1A | λS° | γO° | gage insert |
|-------------------|------------------|-------|------|----|------|-------------------|------------------|--------------------|
| right hand | | | | | | | | |
| 1339367 | MSSNR10CA09 | 40 | 14,0 | 44 | 6,1 | -13.0 | 0.0 | SN..090308/SN..322 |
| 1282807 | MSSNR12CA12 | 50 | 20,0 | 47 | 8,3 | -13.0 | 0.0 | SN..120408/SN..432 |
| 3330281 | MSSNR16CA12 | 60 | 25,0 | 53 | 8,3 | -13.0 | 0.0 | SN..120408/SN..432 |
| 3330206 | MSSNR20CA15 | 70 | 25,0 | 60 | 10,3 | -13.0 | 0.0 | SN..150612/SN..543 |
| left hand | | | | | | | | |
| 2071758 | MSSNL10CA09 | 40 | 14,0 | 44 | 6,1 | -13.0 | 0.0 | SN..090308/SN..322 |
| 2071739 | MSSNL12CA12 | 50 | 20,0 | 47 | 8,3 | -13.0 | 0.0 | SN..120408/SN..432 |

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|----------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|----------------|------|--------------|
| 40 | — | KLM33 | 2 mm | CKM36 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | — | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |
| 60 | ISSN432 | KLM46S | 2.5 mm | CKM36 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | 5 mm | CSWM 080 050 |
| 70 | SKSN566K | KLM54 | 2.5 mm | CKM37 | STCM40 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | 5 mm | CSWM 080 050 |



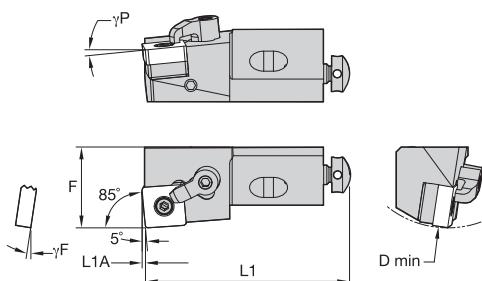
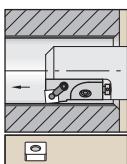
■ MSTN 60°

| order number | catalogue number | D min | F | L1 | FA | λₛ° | γ₀° | gage insert |
|-------------------|------------------|-------|------|----|------|-------|-----|--------------------|
| right hand | | | | | | | | |
| 3331149 | MSTNR10CA09 | 40,0 | 9,0 | 50 | 13,3 | -11,0 | 0,0 | SN..090308/SN..322 |
| 2074904 | MSTNR12CA12 | 50,0 | 13,0 | 55 | 5,9 | -11,0 | 0,0 | SN..120408/SN..432 |

■ Spare Parts



| D min | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|----------|------|-------|-------------|------|------------------------|------|-----------------------|----------------|----------------|------|--------------|
| 40 | KLM33 | 2 mm | CKM36 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |



■ MSYN 85°

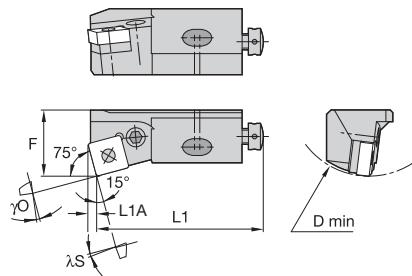
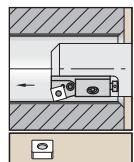
| order number | catalogue number | D min | F | L1 | L1A | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|-----|-----|------------------|------------------|--------------------|
| right hand | | | | | | | | |
| 2114015 | MSYNR10CA09 | 40 | 14,0 | 50 | 0,8 | -9.0 | -5.0 | SN..090308/SN..322 |
| 3346274 | MSYNR12CA12 | 50 | 20,0 | 55 | 1,0 | -9.0 | -5.0 | SN..120408/SN..432 |
| 3330283 | MSYNR16CA12 | 60 | 25,0 | 63 | 1,0 | -9.0 | -5.0 | SN..120408/SN..432 |
| 1098465 | MSYNR25CA19 | 100 | 32,0 | 100 | 1,5 | -9.0 | -5.0 | SN..190612/SN..643 |
| left hand | | | | | | | | |
| 3331150 | MSYNL10CA09 | 40 | 14,0 | 50 | 0,8 | -9.0 | -5.0 | SN..090308/SN..322 |
| 3346273 | MSYNL12CA12 | 50 | 20,0 | 55 | 1,0 | -9.0 | -5.0 | SN..120408/SN..432 |
| 1098691 | MSYNL20CA15 | 70 | 25,0 | 70 | 1,3 | -9.0 | -5.0 | SN..150612/SN..543 |

NOTE: Select spare parts based off of D min and insert size selected.

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | mounting screw | hex | washer |
|-------|----------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|----------------|----------------|------|--------------|
| 40 | — | KLM33 | 2 mm | CKM36 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | — | — | 4 mm | CSWM 060 050 |
| 50 | — | KLM43 | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | — | 191.406 | — | 4 mm | CSWM 060 050 |
| 60 | ISSN432 | KLM46S | 2.5 mm | CKM36 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | — | 5 mm | CSWM 080 050 |
| 70 | SKSN566K | KLM54 | 2.5 mm | CKM37 | STCM40 | 2.5 mm | KUAM25 | 2.5 mm | KUAM33 | — | 191.407 | — | 6 mm | CSWM 080 050 |
| 100 | ISSN633 | KLM68 | 4 mm | CKM34 | STCM8 | 4 mm | KUAM27 | 4 mm | KUAM33 | — | — | MS364 | 8 mm | CSWM 100 080 |



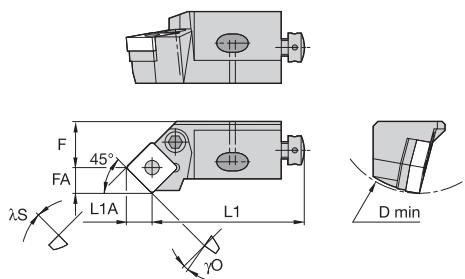
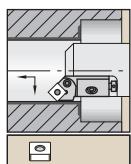
■ PSKN 75°

| order number | catalogue number | D min | F | L1 | L1A | λS° | $\gamma 0^\circ$ | gage insert |
|-----------------------|------------------|-------|------|----|-----|-------------------|------------------|--------------------|
| right hand 1188639 | PSKNR12CA-12 | 50 | 20,0 | 55 | 3,1 | -8,0 | -6,0 | SN..120408/SN..432 |

■ Spare Parts



| D min | toggle lever | lever screw | wrench size lever screw | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|-------------|-------------------------|------------------------|------|-----------------------|----------------|------|--------------|
| 50 | 511.022 | 514.122 | 10 IP | KUAM28 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |



■ PSSN 45°

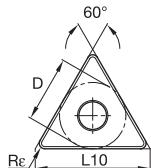
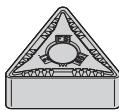
| order number | catalogue number | D min | F | L1 | FA | L1A | λS° | γO° | γP° | gage insert |
|-------------------|------------------|-------|------|----|-----|-----|-------------------|------------------|------------------|--------------------|
| right hand | | | | | | | | | | |
| 1244455 | PSSNR12CA-12 | 50,0 | 20,0 | 47 | 8,7 | 8,3 | -10,0 | 0,0 | — | SN..120408/SN..432 |
| left hand | | | | | | | | | | |
| 1244452 | PSSNL12CA12 | 50,0 | 11,3 | 47 | 8,7 | 8,3 | 0,0 | 0,0 | -10,0 deg | SN..120408/SN..432 |

■ Spare Parts



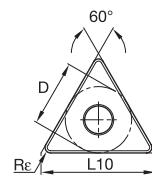
| D min | toggle lever | lever screw | wrench size lever screw | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|-------------|-------------------------|------------------------|------|-----------------------|----------------|------|--------------|
| 50 | 511.022 | 514.122 | 10 IP | KUAM28 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |

● first choice
○ alternate choice



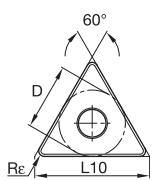
■ TNGG-FS

| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| TNGG160402FS | 9,53 | 16,50 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TNGG160404FS | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TNGG220408FS | 12,70 | 22,00 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



■ TNGG-LF

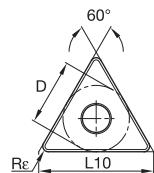
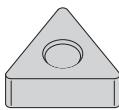
| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| TNGG160402LF | 9,53 | 16,50 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TNGG160404LF | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TNGG160408LF | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



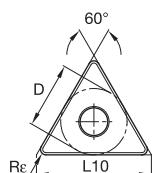
■ TNGP

| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| TNGP160402 | 9,53 | 16,50 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TNGP160404 | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TNGP160408 | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |

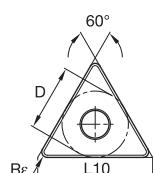
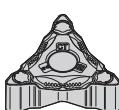
- first choice
- alternate choice



■ TNMA

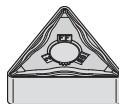


■ TNMG

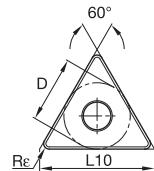


■ TNMG-GT

| ISO catalogue number | D | L10 | R _E | - | KCP05B | - | KCP05 | - | KCP10B | - | KCP10 | - | KCP25B | - | KCP25 | - | KCP30B | - | KCP30 | - | KCP40B | - | KCP40 | - | KCK05B | - | KCK05 | - | KCK15B | - | KCK15 | - | KCK20B | - | KCK20 | - | KCM15B | - | KCM25B | - | KCM25 | - | KCM35B | - | KCM35 | - | KCPK05 | ● | K313 | - | K68 | - | KCU10 | - | KCU25 | - | KC5010 | - | KC5025 | - | KC5410 | - | KT315 | - |
|----------------------|------|-------|----------------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|--------|---|-------|---|--------|---|-------|---|--------|---|------|---|-----|---|-------|---|-------|---|--------|---|--------|---|--------|---|-------|---|
| TNMG160408CT | 9,53 | 16,50 | 0,8 | - | KCP05B | - | KCP05 | - | KCP10B | - | KCP10 | - | KCP25B | - | KCP25 | - | KCP30B | - | KCP30 | - | KCP40B | - | KCP40 | - | KCK05B | - | KCK05 | - | KCK15B | - | KCK15 | - | KCK20B | - | KCK20 | - | KCM15B | - | KCM25B | - | KCM25 | - | KCM35B | - | KCM35 | - | KCPK05 | ● | K313 | - | K68 | - | KCU10 | - | KCU25 | - | KC5010 | - | KC5025 | - | KC5410 | - | KT315 | - |

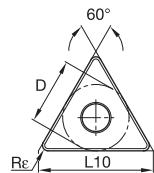
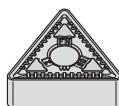


● first choice
○ alternate choice



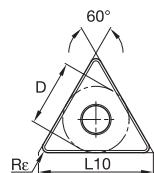
■ TNMG-FF

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|-------|-----|---|---|--------|-------|-------|-------|
| TNMG110304FF | 6,35 | 11,00 | 0,4 | - | - | KCP05B | KCP05 | KCP05 | KCP05 |
| TNMG110308FF | 6,35 | 11,00 | 0,8 | - | - | KCP10B | KCP10 | KCP10 | KCP10 |
| TNMG160404FF | 9,53 | 16,50 | 0,4 | - | ● | KCP10 | KCP10 | KCP10 | KCP10 |
| TNMG160408FF | 9,53 | 16,50 | 0,8 | - | ● | - | - | - | - |



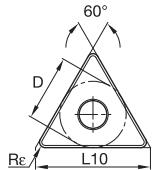
■ TNMG-FN

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|---|--------|-------|-------|-------|
| TNMG110304FN | 6,35 | 11,00 | 0,4 | - | - | KCP05B | KCP05 | KCP05 | KCP05 |
| TNMG110308FN | 6,35 | 11,00 | 0,8 | - | - | KCP10B | KCP10 | KCP10 | KCP10 |
| TNMG160404FN | 9,53 | 16,50 | 0,4 | - | ● | KCP10 | KCP10 | KCP10 | KCP10 |
| TNMG160408FN | 9,53 | 16,50 | 0,8 | - | ● | - | - | - | - |
| TNMG160412FN | 9,53 | 16,50 | 1,2 | - | ● | - | - | - | - |
| TNMG220404FN | 12,70 | 22,00 | 0,4 | - | ● | - | - | - | - |
| TNMG220408FN | 12,70 | 22,00 | 0,8 | - | ● | - | - | - | - |
| TNMG220412FN | 12,70 | 22,00 | 1,2 | - | ● | - | - | - | - |



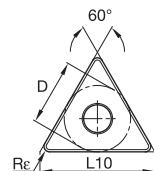
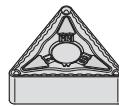
■ TNMG-FP

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|---|--------|-------|-------|-------|
| TNMG160404FP | 9,53 | 16,50 | 0,4 | - | - | KCP05B | KCP05 | KCP05 | KCP05 |
| TNMG160408FP | 9,53 | 16,50 | 0,8 | - | - | KCP10B | KCP10 | KCP10 | KCP10 |
| TNMG160412FP | 9,53 | 16,50 | 1,2 | - | - | KCP10 | KCP10 | KCP10 | KCP10 |
| TNMG220404FP | 12,70 | 22,00 | 0,4 | - | - | - | - | - | - |
| TNMG220408FP | 12,70 | 22,00 | 0,8 | - | - | - | - | - | - |

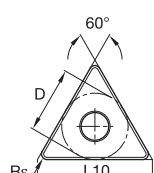


- first choice
- alternate choice

■ TNMG-FW



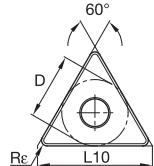
■ TNMG-MN



■ TNMG-MP

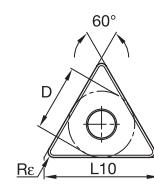


● first choice
○ alternate choice



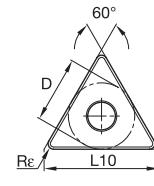
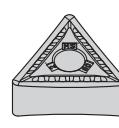
■ TNMG-MR

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|-------|--------|--------|--------|--------|--------|
| TNMG160408MR | 9,53 | 16,50 | 0,8 | - - - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B |
| TNMG160412MR | 9,53 | 16,50 | 1,2 | - - - | ● - - | KCP10 | KCP10 | KCP30B | KCP30 |
| TNMG220408MR | 12,70 | 22,00 | 0,8 | - - - | ● - - | KCP25 | KCP30B | KCP30 | KCP40B |
| TNMG220412MR | 12,70 | 22,00 | 1,2 | - - - | ● - - | KCP30 | KCP30 | KCP30 | KCK05 |
| TNMG270612MR | 15,88 | 27,50 | 1,2 | - - - | ● - - | KCP40B | KCP40B | KCP40B | KCK15B |



■ TNMG-MG

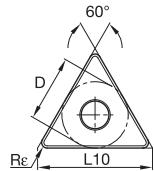
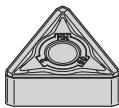
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|----------------------|------|-------|-----|-------|--------|-------|--------|-------|--------|
| TNMG160408MG | 9,53 | 16,50 | 0,8 | - - - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B |



■ TNMG-MS

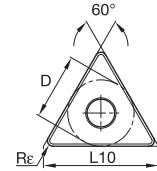
| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|-------|--------|--------|--------|--------|--------|
| TNMG160402MS | 9,53 | 16,50 | 0,2 | - - - | KCP05B | KCP05 | KCP20B | KCP20 | KCM15B |
| TNMG160404MS | 9,53 | 16,50 | 0,4 | - - - | KCP10B | KCP10 | KCM15B | KCM15B | KCM25B |
| TNMG160408MS | 9,53 | 16,50 | 0,8 | - - - | KCP10 | KCP10 | KCM15B | KCM15B | KCM35B |
| TNMG220404MS | 12,70 | 22,00 | 0,4 | - - - | KCP25B | KCP25B | KCM25B | KCM25B | KCM35 |
| TNMG220408MS | 12,70 | 22,00 | 0,8 | - - - | KCP30B | KCP30B | KCM35B | KCM35 | KCPK05 |
| TNMG220412MS | 12,70 | 22,00 | 1,2 | - - - | KCP30 | KCP30 | KCM35B | KCM35B | K313 |
| TNMG270608MS | 15,88 | 27,50 | 0,8 | - - - | KCP40B | KCP40B | KCM35 | KCM35 | K68 |
| TNMG270616MS | 15,88 | 27,50 | 1,6 | - - - | KCP40 | KCP40 | KCPK05 | KCPK05 | KC10 |

● first choice
○ alternate choice



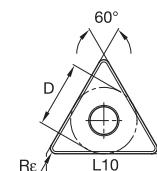
■ TNMG-MW

| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| TNMG160408MW | 9,53 | 16,50 | 0,8 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| TNMG160412MW | 9,53 | 16,50 | 1,2 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |



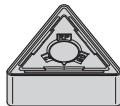
■ TNMG-P

| ISO catalogue number | D | L10 | R _ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| TNMG160404P | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| TNMG160408P | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| TNMG220404P | 12,70 | 22,00 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| TNMG220408P | 12,70 | 22,00 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| TNMG220412P | 12,70 | 22,00 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |

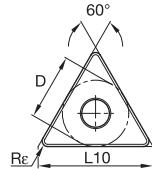


■ TNMG-RN

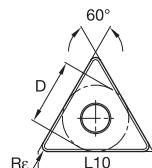
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|----------------------|-------|-------|----------------|--------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| TNMG160408RN | 9,53 | 16,50 | 0,8 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG160412RN | 9,53 | 16,50 | 1,2 | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG220408RN | 12,70 | 22,00 | 0,8 | - | - | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG220412RN | 12,70 | 22,00 | 1,2 | - | - | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG220416RN | 12,70 | 22,00 | 1,6 | - | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG270608RN | 15,88 | 27,50 | 0,8 | - | - | - | ● | ● | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG270612RN | 15,88 | 27,50 | 1,2 | - | - | - | ● | ● | ● | ● | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG270616RN | 15,88 | 27,50 | 1,6 | - | - | - | ● | ● | ● | ● | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TNMG330924RN | 19,05 | 33,00 | 2,4 | - | - | ● | - | ● | ● | ● | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |



- first choice
- alternate choice

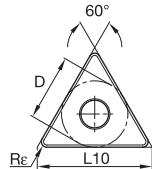


■ TNMG-RP

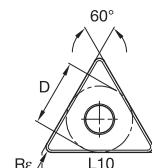


■ TNMG-UN

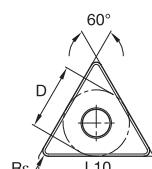
- first choice
- alternate choice



■ TNMG-UP

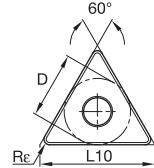
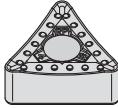


■ TNMM-MR



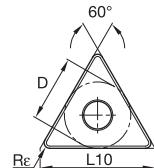
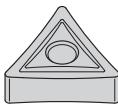
■ TNMM-RM

● first choice
○ alternate choice



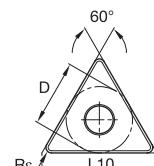
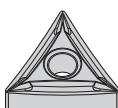
■ TNMM-RP

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-------|--------------|---|--------|--------|-------|---|---|
| TNMM220408RP | 12,70 | 22,00 | 0,8 | - | KCP05B | - | - | - | - |
| TNMM220412RP | 12,70 | 22,00 | 1,2 | - | KCP05 | KCP10B | - | - | - |
| TNMM220416RP | 12,70 | 22,00 | 1,6 | - | KCP10 | ● | KCP10 | - | - |



■ TNMP

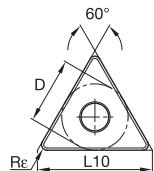
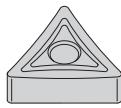
| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-------|--------------|---|--------|--------|-------|---|---|
| TNMP160404 | 9,53 | 16,50 | 0,4 | - | KCP05B | - | - | - | - |
| TNMP160408 | 9,53 | 16,50 | 0,8 | - | KCP05 | KCP10B | - | - | - |
| TNMP220416 | 12,70 | 22,00 | 1,6 | - | KCP10 | ● | KCP10 | - | - |



■ TNMP-K

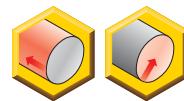
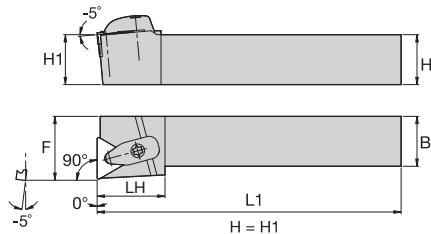
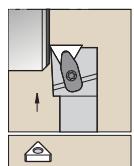
| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-------|--------------|---|--------|--------|-------|---|---|
| TNMP160404K | 9,53 | 16,50 | 0,4 | - | KCP05B | - | - | - | - |
| TNMP160408K | 9,53 | 16,50 | 0,8 | - | KCP05 | KCP10B | - | - | - |
| TNMP220408K | 12,70 | 22,00 | 0,8 | - | KCP10 | ● | KCP10 | - | - |

- first choice
- alternate choice



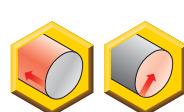
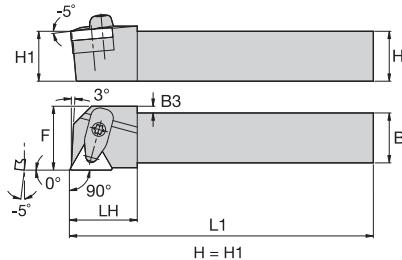
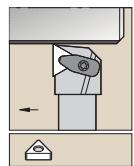
■ TNMS

| ISO catalogue number | D | L10 | R ε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|-----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| TNMS160404 | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | |
| TNMS160408 | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | |
| TNMS220408 | 12,70 | 22,00 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | ● | - | | |



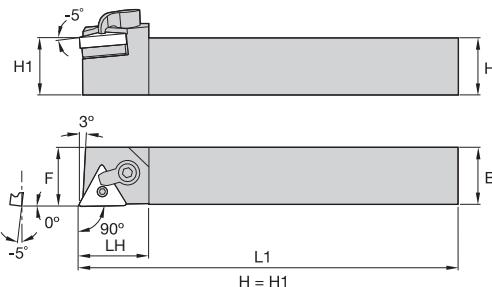
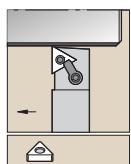
■ DTFN-KC 90°

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-----------------------|------------------|----|----|------|-----|------|-------------|--|------------|-----------|----------------|-----------|-------------|-------------------|
| right hand 2273392 | DTFNR2020K16KC04 | 20 | 20 | 25,0 | 125 | 32,0 | TN..160408 | ITSN323 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM34L9IP | | | | | |
| left hand 1875233 | DTFNL2525M22KC04 | 25 | 25 | 32,0 | 150 | 34,0 | TN..220408 | ITSN443 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | | |

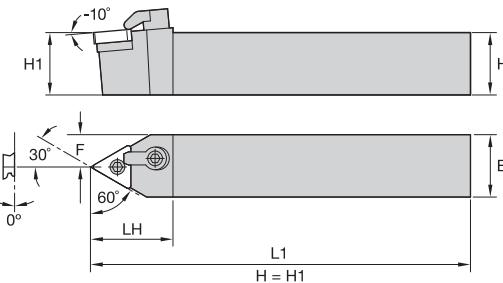
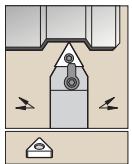


■ DTGN-KC 90°

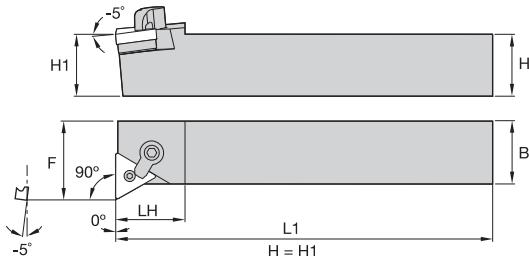
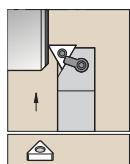
| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|--|------------|-----------|----------------|-----------|-------------|-------------------|
| right hand 2273440 | DTGMR2020K16KC04 | 20 | 20 | 25,0 | 125 | 25,0 | 6,5 | TN..160408 | ITSN323 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM34L9IP | | | | | |
| 2273441 | DTGMR2525M16KC04 | 25 | 25 | 32,0 | 150 | 25,0 | — | TN..160408 | ITSN323 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM34L9IP | | | | | |
| 1875222 | DTGMR2525M22KC04 | 25 | 25 | 32,0 | 150 | 32,0 | 3,0 | TN..220408 | ITSN443 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | | |
| left hand 1875234 | DTGNL2525M22KC04 | 25 | 25 | 32,0 | 150 | 32,0 | 3,0 | TN..220408 | ITSN443 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | KLM46L15IP | | | | | |


■ MTAN-S 90°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|------|-------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 1102172 | MTANRS2020K16 | 20 | 20 | 20,5 | 125 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM21 | STCM20 | 3 mm |
| 1102173 | MTANRS2525M16 | 25 | 25 | 25,5 | 150 | 30,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM21 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | |
| 1102726 | MTANLS2525M16 | 25 | 25 | 25,5 | 150 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM21 | STCM20 | 3 mm |

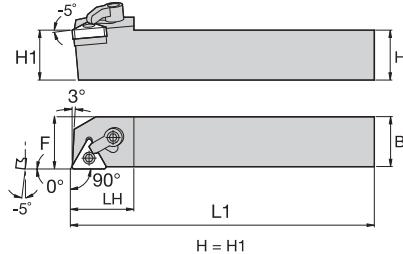
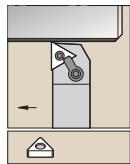

■ MTEN-S 60°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|------|
| 1102169 | MTENNNS2020K16 | 20 | 20 | 10,0 | 125 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM21 | STCM20 | 3 mm |
| 1102170 | MTENNNS2525M16 | 25 | 25 | 12,0 | 150 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM21 | STCM20 | 3 mm |
| 1102171 | MTENNNS2525M22 | 25 | 25 | 12,0 | 150 | 35,0 | TN..220408 | ITSN433 | KLM46 | 2.5 mm | CKM9 | STCM4 | 4 mm |
| 1102168 | MTENNNS3225P22 | 32 | 25 | 12,0 | 170 | 35,0 | TN..220408 | ITSN433 | KLM46 | 2.5 mm | CKM9 | STCM4 | 4 mm |



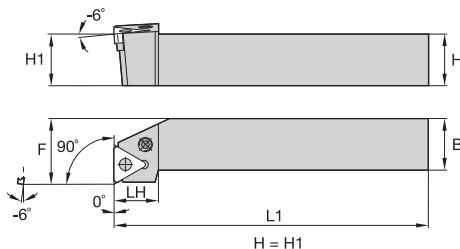
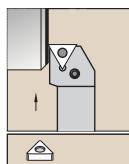
■ MTFN 90°

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|------|-------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 1101961 | MTFNR2525M16 | 25 | 25 | 32,0 | 150 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM20 | STCM11 | 3 mm |
| left hand | | | | | | | | | | | | | |
| 1102643 | MTFNL2020K16 | 20 | 20 | 25,0 | 125 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM20 | STCM11 | 3 mm |
| 1102694 | MTFNL2525M16 | 25 | 25 | 32,0 | 150 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM20 | STCM11 | 3 mm |



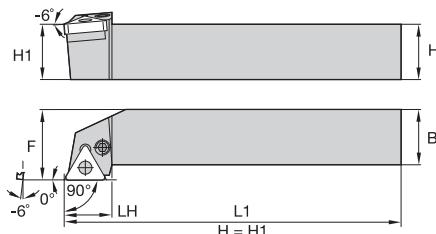
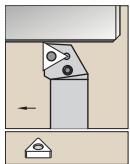
■ MTGN 90°

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|-----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 1102088 | MTGNR1616H16 | 36 | 25 | 20,0 | 100 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM20 | STCM11 | 3 mm |
| 1102090 | MTGNR2525M16 | 86 | 32 | 32,0 | 150 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM21 | STCM20 | 3 mm |
| 1102091 | MTGNR2525M22 | 86 | 38 | 32,0 | 150 | 32,0 | TN..220408 | ITSN433 | KLM46 | 2.5 mm | CKM9 | STCM4 | 4 mm |
| 1102093 | MTGNR3232P22 | 106 | 32 | 40,0 | 170 | 32,0 | TN..220408 | ITSN433 | KLM46 | 2.5 mm | CKM9 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1102714 | MTGNL2525M16 | 86 | 32 | 32,0 | 150 | 32,0 | TN..160408 | ITSN322 | KLM34L | 2 mm | CKM21 | STCM20 | 3 mm |
| 1102715 | MTGNL2525M22 | 86 | 38 | 32,0 | 150 | 32,0 | TN..220408 | ITSN433 | KLM46 | 2.5 mm | CKM9 | STCM4 | 4 mm |
| 1102716 | MTGNL3232P22 | 106 | 25 | 40,0 | 170 | 32,0 | TN..220408 | ITSN433 | KLM46 | 2.5 mm | CKM9 | STCM4 | 4 mm |



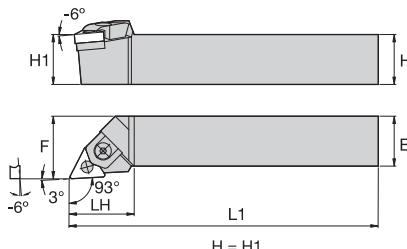
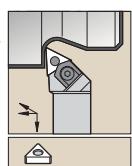
■ PTFN 90°

| order number | catalogue number | | | | | | gage insert | shim | shim pin | punch pin | lever | lever screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|-----------|---------|-------------|-------|
| | | H | B | F | L1 | LH | | | | | | | |
| right hand | | | | | | | | | | | | | |
| 1244843 | PTFNR2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244844 | PTFNR2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| left hand | | | | | | | | | | | | | |
| 1244839 | PTFNL2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244726 | PTFNL2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |



■ PTGN 90°

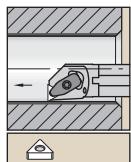
| order number | catalogue number | | | | | | gage insert | shim | shim pin | punch pin | lever | lever screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|-----------|---------|-------------|-------|
| | | H | B | F | L1 | LH | | | | | | | |
| right hand | | | | | | | | | | | | | |
| 1156972 | PTG NR1616H16 | 16 | 16 | 20,0 | 100 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244850 | PTG NR2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1192394 | PTG NR2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244851 | PTG NR2525M22 | 25 | 25 | 32,0 | 150 | 26,0 | TN..220408 | 512.023 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| left hand | | | | | | | | | | | | | |
| 1244791 | PTG NL1616H16 | 16 | 16 | 20,0 | 100 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244848 | PTG NL2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244792 | PTG NL2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244778 | PTG NL2525M22 | 25 | 25 | 32,0 | 150 | 26,0 | TN..220408 | 512.023 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |



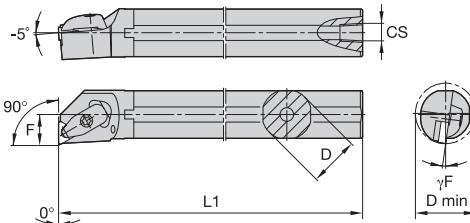
■ MTJN 93°



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim pin | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|----------------|------|
| right hand | | | | | | | | | | | |
| 1192350 | MTJNR2020K16H4 | 20 | 20 | 25,0 | 125 | 32,0 | TN..160408 | 512.125 | 513.125 | 551.125 | 3 mm |
| 1192352 | MTJNR2525M16H4 | 25 | 25 | 32,0 | 150 | 32,0 | TN..160408 | 512.125 | 513.125 | 551.125 | 3 mm |
| 1245000 | MTJNR2525M22H4 | 25 | 25 | 32,0 | 150 | 36,0 | TN..220408 | 512.126 | 513.126 | 551.126 | 3 mm |
| 1244998 | MTJNR3225P16H4 | 32 | 25 | 32,0 | 170 | 32,0 | TN..160408 | 512.125 | 513.125 | 551.125 | 3 mm |
| 1244999 | MTJNR3225P22H4 | 32 | 25 | 32,0 | 170 | 36,0 | TN..220408 | 512.126 | 513.126 | 551.126 | 3 mm |
| left hand | | | | | | | | | | | |
| 1244996 | MTJNL2020K16H4 | 20 | 20 | 25,0 | 125 | 32,0 | TN..160408 | 512.125 | 513.125 | 551.125 | 3 mm |
| 1245002 | MTJNL2525M16H4 | 25 | 25 | 32,0 | 150 | 32,0 | TN..160408 | 512.125 | 513.125 | 551.125 | 3 mm |
| 1245001 | MTJNL2525M22H4 | 25 | 25 | 32,0 | 150 | 36,0 | TN..220408 | 512.126 | 513.126 | 551.126 | 3 mm |
| 1244997 | MTJNL3225P16H4 | 32 | 25 | 32,0 | 170 | 32,0 | TN..160408 | 512.125 | 513.125 | 551.125 | 3 mm |



Steel shank with
through coolant.

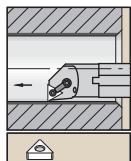


ISO Turning

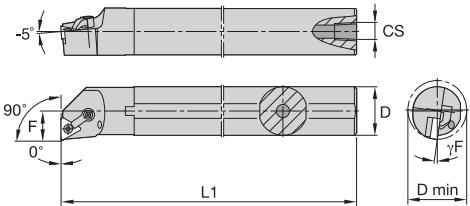
■ A-DTFN-KC 90°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | shim | shim screw | Torx Plus | clamp assembly | slotted pin | Torx Plus |
|-------------------|------------------|----|-------|------|-----|------------|------------------|-------------|-------------------|------------|-------------|----------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 2441866 | A25RDTFNR16KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -14.0 | TN..160408 | ITSN323 KMSP315IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| 2441870 | A32SDTFNR16KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12.0 | TN..160408 | ITSN323 KMSP315IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |
| left hand | | | | | | | | | | | | | | |
| 2441869 | A25RDTFNL16KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -14.0 | TN..160408 | ITSN323 KMSP315IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP | |

Kenloc™ Boring Bars

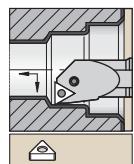


Steel shank with
through coolant.

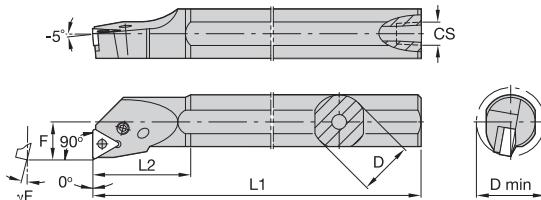


■ A-MTFN 90°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------------|------------------|-------------|----------------|----------|-------|--------|-------------|-----|
| right hand | | | | | | | | | | | | | | |
| 1098121 | A25RMTFNR16 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -14.0 | TN..160408 | ITSN322 KLM34L | 2 mm | CKM21 | STCM20 | 3 mm | |
| 1098123 | A32SMTFNR16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12.0 | TN..160408 | ITSN322 KLM34L | 2 mm | CKM21 | STCM20 | 3 mm | |
| 1098125 | A40TMTFNR16 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -9.0 | TN..160408 | ITSN322 KLM34L | 2 mm | CKM21 | STCM20 | 3 mm | |
| left hand | | | | | | | | | | | | | | |
| 1098122 | A25RMTFNL16 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -14.0 | TN..160408 | ITSN322 KLM34L | 2 mm | CKM21 | STCM20 | 3 mm | |
| 1098124 | A32SMTFNL16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -12.0 | TN..160408 | ITSN322 KLM34L | 2 mm | CKM21 | STCM20 | 3 mm | |



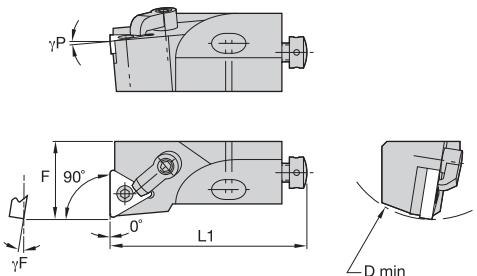
Steel shank with through coolant.



■ A-PTFN 90°



| order number | catalogue number | D | D min | F | L1 | L2 | CS | γF° | gage insert | shim | shim pin | toggle lever | lever screw | Torx Plus | |
|-------------------|------------------|----|-------|------|-----|----|------------|------------------|-------------|---------|----------|--------------|-------------|-----------|-------|
| right hand | | | | | | | | | | | | | | | |
| 2447535 | A16RPTFNR11 | 16 | 20,0 | 11,0 | 200 | 28 | 1/8-27 NPT | -14,0 | TN..110304 | — | — | — | 511.011 | 514.111 | 8 IP |
| 2447536 | A20SPTFNR11 | 20 | 25,0 | 13,0 | 250 | 30 | 1/8-27 NPT | -12,0 | TN..110304 | — | — | — | 511.011 | 514.111 | 8 IP |
| 2447537 | A25PTFNR16 | 25 | 32,0 | 17,0 | 300 | 40 | 1/4-18 NPT | -12,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 2447539 | A32UPTFNR16 | 32 | 40,0 | 22,0 | 350 | 50 | 1/4-18 NPT | -10,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 2447504 | A40VPTFNR22 | 40 | 48,0 | 27,0 | 400 | 55 | 1/4-18 NPT | -10,0 | TN..220408 | 512.023 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| left hand | | | | | | | | | | | | | | | |
| 2447489 | A20SPTFNL11 | 20 | 25,0 | 13,0 | 250 | 30 | 1/8-27 NPT | -12,0 | TN..110304 | — | — | — | 511.011 | 514.111 | 8 IP |
| 2447538 | A25PTFNL16 | 25 | 32,0 | 17,0 | 300 | 40 | 1/4-18 NPT | -12,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 2447503 | A32UPTFNL16 | 32 | 40,0 | 22,0 | 350 | 50 | 1/4-18 NPT | -10,0 | TN..160408 | 512.013 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |



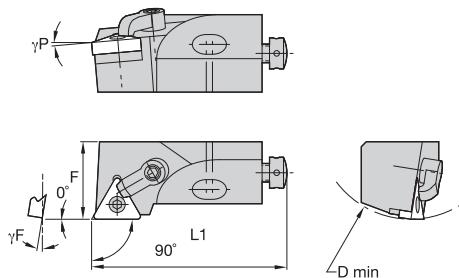
■ MTFN 90°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------|------|--------------------|
| right hand | | | | | | | |
| 2078236 | MTFNR12CA16 | 50 | 20,0 | 55 | -9.0 | -5.0 | TN..160408/TN..332 |
| 2074429 | MTFNR16CA16 | 60 | 25,0 | 63 | -9.0 | -5.0 | TN..160408/TN..332 |
| 3330208 | MTFNR20CA22 | 70 | 25,0 | 70 | -9.0 | -5.0 | TN..220408/TN..432 |
| left hand | | | | | | | |
| 2057426 | MTFNL12CA16 | 50 | 20,0 | 55 | -9.0 | -5.0 | TN..160408/TN..332 |
| 2193621 | MTFNL16CA16 | 60 | 25,0 | 63 | -9.0 | -5.0 | TN..160408/TN..332 |
| 3330207 | MTFNL20CA22 | 70 | 25,0 | 70 | -9.0 | -5.0 | TN..220408/TN..432 |

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|---------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | — | KLM33L | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |
| 60 | ITSN322 | KLM34L | 2 mm | CKM34 | STCM9 | 2 mm | KUAM25 | 2 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |
| 70 | ITSN433 | KLM46 | 2.5 mm | CKM35 | STCM37 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |



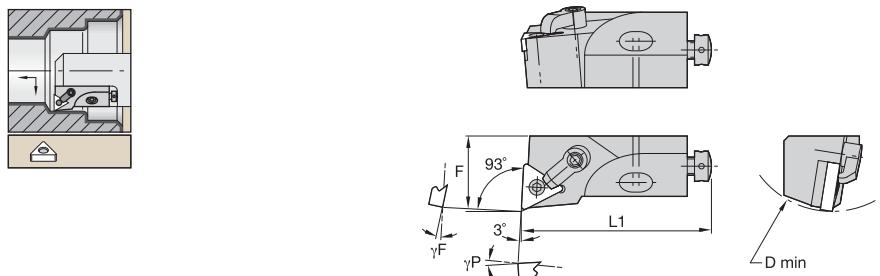
■ MTGN 90°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand | | | | | | | |
| 2114041 | MTGNR12CA16 | 50 | 20,0 | 55 | -9.0 | -5.0 | TN..160408/TN..332 |
| 3330285 | MTGNR16CA16 | 60 | 25,0 | 63 | -9.0 | -5.0 | TN..160408/TN..332 |
| left hand | | | | | | | |
| 3346275 | MTGNL12CA16 | 50 | 20,0 | 55 | -9.0 | -5.0 | TN..160408/TN..332 |
| 3330209 | MTGNL20CA22 | 70 | 25,0 | 70 | -9.0 | -5.0 | TN..220408/TN..432 |

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|---------|----------|--------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | — | KLM33L | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |
| 60 | ITSN322 | KLM34L | 2 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |
| 70 | ITSN433 | KLM46 | 2.5 mm | CKM35 | STCM37 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |



■ MTUN 93°

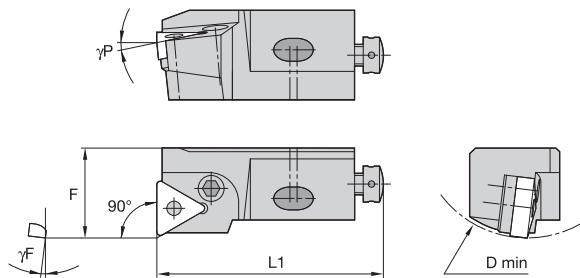
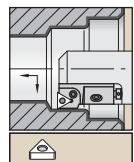
| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------|------|--------------------|
| right hand | | | | | | | |
| 1098536 | MTUNR20CA22 | 70 | 25,0 | 70 | -9.0 | -5.0 | TN..220408/TN..432 |
| left hand | | | | | | | |
| 1098529 | MTUNL12CA16 | 50 | 20,0 | 55 | -9.0 | -5.0 | TN..160408/TN..332 |
| 1098535 | MTUNL16CA16 | 60 | 25,0 | 63 | -9.0 | -5.0 | TN..160408/TN..332 |

NOTE: Select spare parts based off of D min and the insert size selected.

■ Spare Parts



| D min | shim | lock pin | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|---------|----------|------|-------|-------------|--------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | — | KLM33L | 2 mm | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |
| 60 | ITSN322 | KLM34L | 2 mm | CKM34 | STCM9 | 2.5 mm | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |
| 70 | ITSN433 | KLM46 | — | CKM35 | STCM37 | 2.5 mm | KUAM25 | 2.5 mm | KUAM33 | 191.407 | 5 mm | CSWM 080 050 |



■ PTFN 90°

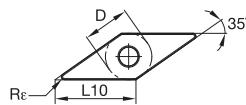
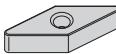
| order number | catalogue number | D min | F | L1 | γ_F° | γ_P° | gage insert |
|-----------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand 1188641 | PTFNR12CA-16 | 50 | 20,0 | 55 | -7.0 | -6.0 | TN..160408/TN..332 |
| left hand 1244457 | PTFNL12CA-16 | 50 | 20,0 | 55 | -7.0 | -6.0 | TN..160408/TN..332 |

■ Spare Parts

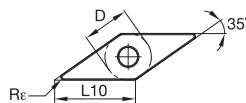
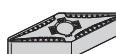


| D min | toggle lever | lever screw | wrench size lever screw | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|-------------|-------------------------|------------------------|------|-----------------------|----------------|------|--------------|
| 50 | 511.030 | 514.112 | 8 IP | KUAM28 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |

- first choice
- alternate choice

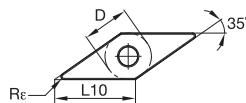
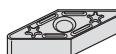


VNGA



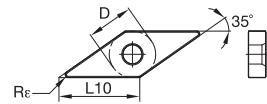
■ VNGG-FS

| ISO catalogue number | D | L10 | R _E | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| VNGG160401FS | 9,53 | 16,61 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | |
| VNGG160402FS | 9,53 | 16,61 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | - | | |
| VNGG160404FS | 9,53 | 16,61 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | - | | |
| VNGG160408FS | 9,53 | 16,61 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | - | | |



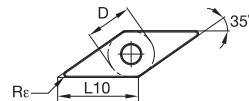
VNGG-LF

| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU10 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|-------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| VNGG160402LF | 9,53 | 16,61 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| VNGG160404LF | 9,53 | 16,61 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| VNGG160408LF | 9,53 | 16,61 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | | | |
| VNGG220408LF | 12,70 | 22,14 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | | | |



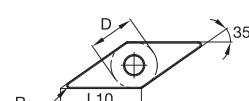
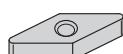
VNGP

● first choice
○ alternate choice



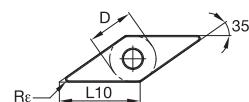
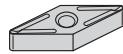
VNGP-K

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|--------|--------|--------|--------|-------|
| VNGP160404K | 9,53 | 16,61 | 0,4 | - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25 |
| VNGP160408K | 9,53 | 16,61 | 0,8 | - | - | KCP10B | - | KCP30B | KCP30 |
| VPGP443K | 12,70 | 22,14 | 1,2 | - | - | - | - | KCP25B | - |



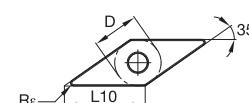
VNMA

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|-------|-----|---|--------|-------|--------|-------|-------|
| VNMA160408 | 9,53 | 16,61 | 0,8 | - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25 |



VNMG

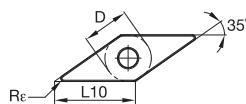
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|----------------------|-------|-------|-----|---|--------|--------|--------|--------|-------|
| VNMG160408 | 9,53 | 16,61 | 0,8 | - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25 |
| VNMG160412 | 9,53 | 16,61 | 1,2 | - | - | KCP10B | - | KCK05B | KCK05 |
| VNMG220408 | 12,70 | 22,14 | 0,8 | - | - | - | - | KCK15B | KCK15 |
| VNMG220412 | 12,70 | 22,14 | 1,2 | - | - | - | - | - | - |



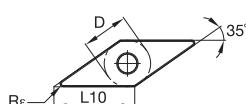
VNMG-LF

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|-------|-------|-----|---|--------|--------|--------|--------|--------|
| VNMG160408LF | 9,53 | 16,61 | 0,8 | - | KCP05B | KCP05 | KCP10B | KCP10 | KCP25 |
| VNMG220404LF | 12,70 | 22,14 | 0,4 | - | - | KCP10B | - | KCM35B | KCM35 |
| VNMG220408LF | 12,70 | 22,14 | 0,8 | - | - | - | - | KCPK05 | KCPK05 |

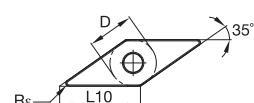
- first choice
- alternate choice



VNMG-FF

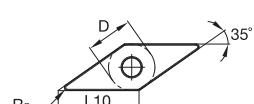


VNMG-FN



VNMG-FP

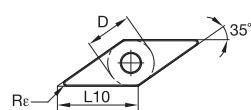
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|----------------------|------|-------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| VNMG160404FP | 9,53 | 16,61 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| VNMG160408FP | 9,53 | 16,61 | 0,8 | - | - | - | ● | ● | - | - | - | - | - | - | - | ● | - | - | - | ● | - | - | - | - | - | - | ● | ● | - | - | - | - | | |



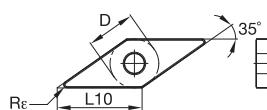
■ VNMG-MN



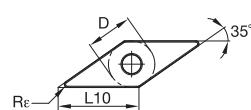
- first choice
- alternate choice



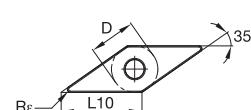
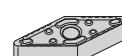
VNMG-MP



■ VNMG-MR

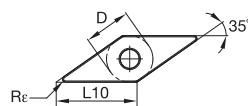


VNMG-MS



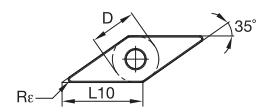
VNMG-P

● first choice
○ alternate choice



■ VNMG-RN

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|-------|-------|--------------|---|---|---|---|---|--------|
| VNMG160408RN | 9,53 | 16,61 | 0,8 | - | - | - | - | - | KCP05B |
| VNMG160412RN | 9,53 | 16,61 | 1,2 | - | - | ● | - | - | KCP05 |
| VNMG220408RN | 12,70 | 22,14 | 0,8 | - | - | ● | ● | ● | KCP10B |
| VNMG220412RN | 12,70 | 22,14 | 1,2 | - | - | ● | ● | ● | KCP10 |
| | | | | | | ● | ● | ● | KCP25B |
| | | | | | | ● | ● | ● | KCP25 |
| | | | | | | ● | ● | ● | KCP30B |
| | | | | | | ● | ● | ● | KCP30 |
| | | | | | | ● | ● | ● | KCP40B |
| | | | | | | ● | ● | ● | KCP40 |
| | | | | | | ● | ● | ● | KCK05B |
| | | | | | | ● | ● | ● | KCK05 |
| | | | | | | ● | ● | ● | KCK15B |
| | | | | | | ● | ● | ● | KCK15 |
| | | | | | | ● | ● | ● | KCK20B |
| | | | | | | ● | ● | ● | KCK20 |
| | | | | | | ● | ● | ● | KCM15B |
| | | | | | | ● | ● | ● | KCM15 |
| | | | | | | ● | ● | ● | KCM25B |
| | | | | | | ● | ● | ● | KCM25 |
| | | | | | | ● | ● | ● | KCM35B |
| | | | | | | ● | ● | ● | KCM35 |
| | | | | | | ● | ● | ● | KCPK05 |
| | | | | | | ● | ● | ● | K313 |
| | | | | | | ● | ● | ● | K68 |
| | | | | | | ● | ● | ● | KCU10 |
| | | | | | | ● | ● | ● | KCU25 |
| | | | | | | ● | ● | ● | KC5010 |
| | | | | | | ● | ● | ● | KC5025 |
| | | | | | | ● | ● | ● | KC5410 |
| | | | | | | ● | ● | ● | KT315 |



■ VNMG-RP

| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|------|-------|--------------|---|---|---|---|---|--------|
| VNMG160408RP | 9,53 | 16,61 | 0,8 | - | - | - | - | - | KCP05B |
| VNMG160412RP | 9,53 | 16,61 | 1,2 | - | - | ● | - | - | KCP05 |
| | | | | | | ● | ● | ● | KCP10B |
| | | | | | | ● | ● | ● | KCP10 |
| | | | | | | ● | ● | ● | KCP25B |
| | | | | | | ● | ● | ● | KCP25 |
| | | | | | | ● | ● | ● | KCP30B |
| | | | | | | ● | ● | ● | KCP30 |
| | | | | | | ● | ● | ● | KCP40B |
| | | | | | | ● | ● | ● | KCP40 |
| | | | | | | ● | ● | ● | KCK05B |
| | | | | | | ● | ● | ● | KCK05 |
| | | | | | | ● | ● | ● | KCK15B |
| | | | | | | ● | ● | ● | KCK15 |
| | | | | | | ● | ● | ● | KCK20B |
| | | | | | | ● | ● | ● | KCK20 |
| | | | | | | ● | ● | ● | KCM15B |
| | | | | | | ● | ● | ● | KCM15 |
| | | | | | | ● | ● | ● | KCM25B |
| | | | | | | ● | ● | ● | KCM25 |
| | | | | | | ● | ● | ● | KCM35B |
| | | | | | | ● | ● | ● | KCM35 |
| | | | | | | ● | ● | ● | KCPK05 |
| | | | | | | ● | ● | ● | K313 |
| | | | | | | ● | ● | ● | K68 |
| | | | | | | ● | ● | ● | K68 |
| | | | | | | ● | ● | ● | KCU10 |
| | | | | | | ● | ● | ● | KCU25 |
| | | | | | | ● | ● | ● | KC5010 |
| | | | | | | ● | ● | ● | KC5025 |
| | | | | | | ● | ● | ● | KC5410 |
| | | | | | | ● | ● | ● | KT315 |

■ VNMG-UN

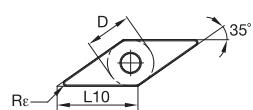
| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|------|-------|--------------|---|---|---|---|---|--------|
| VNMG160404UN | 9,53 | 16,61 | 0,4 | - | - | - | - | - | KCP05B |
| VNMG160408UN | 9,53 | 16,61 | 0,8 | - | - | - | - | - | KCP05 |
| | | | | | | ● | ● | ● | KCP10B |
| | | | | | | ● | ● | ● | KCP10 |
| | | | | | | ● | ● | ● | KCP25B |
| | | | | | | ● | ● | ● | KCP25 |
| | | | | | | ● | ● | ● | KCP30B |
| | | | | | | ● | ● | ● | KCP30 |
| | | | | | | ● | ● | ● | KCP40B |
| | | | | | | ● | ● | ● | KCP40 |
| | | | | | | ● | ● | ● | KCK05B |
| | | | | | | ● | ● | ● | KCK05 |
| | | | | | | ● | ● | ● | KCK15B |
| | | | | | | ● | ● | ● | KCK15 |
| | | | | | | ● | ● | ● | KCK20B |
| | | | | | | ● | ● | ● | KCK20 |
| | | | | | | ● | ● | ● | KCM15B |
| | | | | | | ● | ● | ● | KCM15 |
| | | | | | | ● | ● | ● | KCM25B |
| | | | | | | ● | ● | ● | KCM25 |
| | | | | | | ● | ● | ● | KCM35B |
| | | | | | | ● | ● | ● | KCM35 |
| | | | | | | ● | ● | ● | KCPK05 |
| | | | | | | ● | ● | ● | K313 |
| | | | | | | ● | ● | ● | K68 |
| | | | | | | ● | ● | ● | K68 |
| | | | | | | ● | ● | ● | KCU10 |
| | | | | | | ● | ● | ● | KCU25 |
| | | | | | | ● | ● | ● | KC5010 |
| | | | | | | ● | ● | ● | KC5025 |
| | | | | | | ● | ● | ● | KC5410 |
| | | | | | | ● | ● | ● | KT315 |

■ VNMG-UP

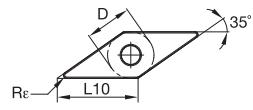
| ISO catalogue number | D | L10 | R ϵ | P | M | K | N | S | H |
|----------------------|------|-------|--------------|---|---|---|---|---|--------|
| VNMG160404UP | 9,53 | 16,61 | 0,4 | - | - | - | - | - | KCP05B |
| VNMG160408UP | 9,53 | 16,61 | 0,8 | - | - | - | - | - | KCP05 |
| VNMG160412UP | 9,53 | 16,61 | 1,2 | - | - | - | - | - | KCP10B |
| | | | | | | ● | ● | ● | KCP10 |
| | | | | | | ● | ● | ● | KCP25B |
| | | | | | | ● | ● | ● | KCP25 |
| | | | | | | ● | ● | ● | KCP30B |
| | | | | | | ● | ● | ● | KCP30 |
| | | | | | | ● | ● | ● | KCP40B |
| | | | | | | ● | ● | ● | KCP40 |
| | | | | | | ● | ● | ● | KCK05B |
| | | | | | | ● | ● | ● | KCK05 |
| | | | | | | ● | ● | ● | KCK15B |
| | | | | | | ● | ● | ● | KCK15 |
| | | | | | | ● | ● | ● | KCK20B |
| | | | | | | ● | ● | ● | KCK20 |
| | | | | | | ● | ● | ● | KCM15B |
| | | | | | | ● | ● | ● | KCM15 |
| | | | | | | ● | ● | ● | KCM25B |
| | | | | | | ● | ● | ● | KCM25 |
| | | | | | | ● | ● | ● | KCM35B |
| | | | | | | ● | ● | ● | KCM35 |
| | | | | | | ● | ● | ● | KCPK05 |
| | | | | | | ● | ● | ● | K313 |
| | | | | | | ● | ● | ● | K68 |
| | | | | | | ● | ● | ● | K68 |
| | | | | | | ● | ● | ● | KCU10 |
| | | | | | | ● | ● | ● | KCU25 |
| | | | | | | ● | ● | ● | KC5010 |
| | | | | | | ● | ● | ● | KC5025 |
| | | | | | | ● | ● | ● | KC5410 |
| | | | | | | ● | ● | ● | KT315 |



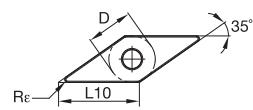
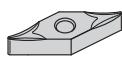
- first choice
- alternate choice



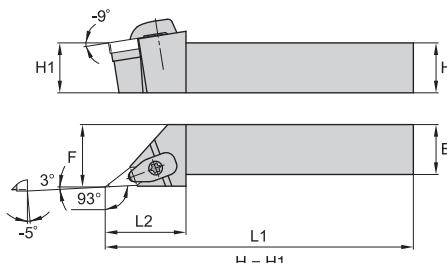
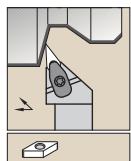
VNMP



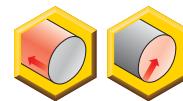
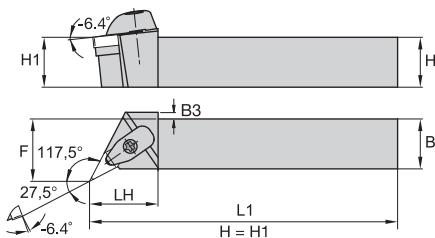
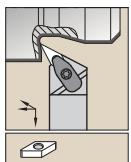
VNMP-K



VNMS


■ DVJN-KC 93°

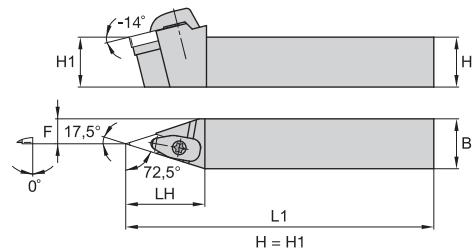
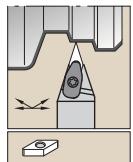

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|--------------|------------------|----|----|------|-----|------|-------------|-------------------|------------|-------------|----------------|------------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | |
| 2439399 | DVJNR2020K16KC04 | 20 | 20 | 25,0 | 125 | 46,0 | VN..160408 | IVSN322 KMSP315IP | 15 IP | CM215R ASSY | 15 IP | SSP025016M | KLM34L9IP | |
| 2439401 | DVJNR2525M16KC04 | 25 | 25 | 32,0 | 150 | 46,0 | VN..160408 | IVSN322 KMSP315IP | 15 IP | CM215R ASSY | 15 IP | SSP025016M | KLM34L9IP | |
| 2439443 | DVJNR3225P16KC04 | 32 | 25 | 32,0 | 170 | 46,0 | VN..160408 | IVSN322 KMSP315IP | 15 IP | CM215R ASSY | 15 IP | SSP025016M | KLM34L9IP | |
| left hand | | | | | | | | | | | | | | |
| 2439400 | DVJNL2020K16KC04 | 20 | 20 | 25,0 | 125 | 46,0 | VN..160408 | IVSN322 KMSP315IP | 15 IP | CM215R ASSY | 15 IP | SSP025016M | KLM34L9IP | |
| 2439402 | DVJNL2525M16KC04 | 25 | 25 | 32,0 | 150 | 46,0 | VN..160408 | IVSN322 KMSP315IP | 15 IP | CM215R ASSY | 15 IP | SSP025016M | KLM34L9IP | |
| 2439444 | DVJNL3225P16KC04 | 32 | 25 | 32,0 | 170 | 46,0 | VN..160408 | IVSN322 KMSP315IP | 15 IP | CM215R ASSY | 15 IP | SSP025016M | KLM34L9IP | |



■ DVON-KC 117,5°



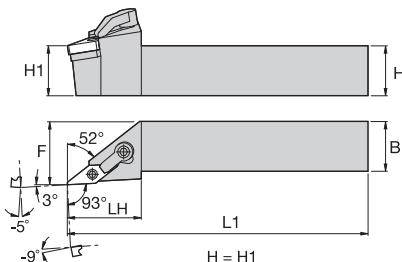
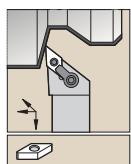
| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|-------------------------|-------------------|------------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | |
| 2439449 | DVONR2020K16KC04 | 20 | 20 | 27,0 | 125 | 38,0 | 5,0 | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |
| 2439451 | DVONR2525M16KC04 | 25 | 25 | 32,0 | 150 | 38,0 | — | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |
| 2439453 | DVONR3225P16KC04 | 32 | 25 | 32,0 | 170 | 38,0 | — | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |
| left hand | | | | | | | | | | | | | | | |
| 2439450 | DVONL2020K16KC04 | 20 | 20 | 27,0 | 125 | 38,0 | 5,0 | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |
| 2439452 | DVONL2525M16KC04 | 25 | 25 | 32,0 | 150 | 38,0 | — | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |
| 2439454 | DVONL3225P16KC04 | 32 | 25 | 32,0 | 170 | 38,0 | — | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |



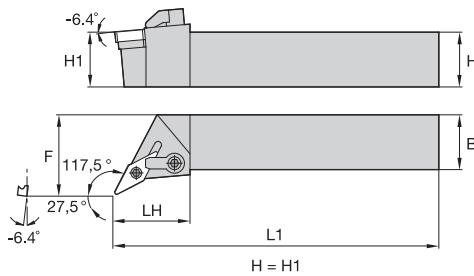
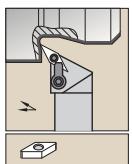
■ DVVN-KC 72,5°



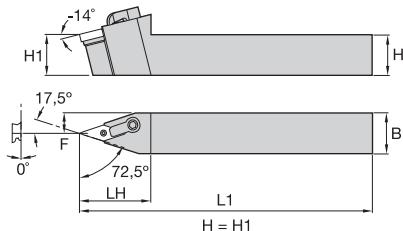
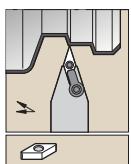
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|--------------|------------------|----|----|------|-----|------|-------------|-------------------------|-------------------|------------|----------------|-----------|-------------|-------------------|
| 2439455 | DVVNN2020K16KC04 | 20 | 20 | 10,0 | 150 | 48,0 | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |
| 2439456 | DVVNN2525M16KC04 | 25 | 25 | 12,0 | 150 | 48,0 | VN..160408 | IVSN322 KMSP315IP 15 IP | CM215R ASSY 15 IP | SSP025016M | KLM34L9IP | | | |


■ MVJN 93°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 1101362 | MVJNR2020K16 | 20 | 20 | 25,0 | 125 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1101634 | MVJNR2525M16 | 25 | 25 | 32,0 | 150 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1101363 | MVJNR3225P16 | 32 | 25 | 32,0 | 170 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1101635 | MVJNR3225P22 | 32 | 25 | 32,0 | 170 | 50,0 | VN..220408 | IVSN432 | KLM46 | 2.5 mm | CKM26 | STCM4 | 4 mm |
| 3612649 | MVJNR3232P16 | 32 | 32 | 40,5 | 171 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | |
| 1102320 | MVJNL2020K16 | 20 | 20 | 25,0 | 125 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1102321 | MVJNL2525M16 | 25 | 25 | 32,0 | 150 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1102322 | MVJNL3225P16 | 32 | 25 | 32,0 | 170 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1102323 | MVJNL3225P22 | 32 | 25 | 32,0 | 170 | 50,0 | VN..220408 | IVSN432 | KLM46 | 2.5 mm | CKM26 | STCM4 | 4 mm |
| 3612650 | MVJNL3232P16 | 32 | 32 | 40,5 | 170 | 37,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |


■ MVON 117,5°

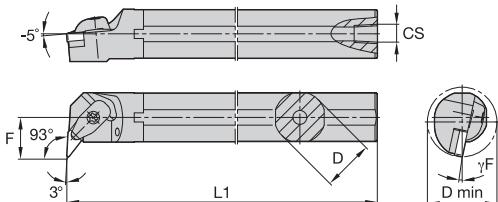
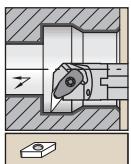

| order number | catalogue number | H | B | F | L1 | wLH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | |
| 1102238 | MVONR2525M16 | 25 | 25 | 32,0 | 150 | 30,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| left hand | | | | | | | | | | | | | |
| 1102730 | MVONL2525M16 | 25 | 25 | 32,0 | 150 | 30,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |



■ MVVN 72,5°



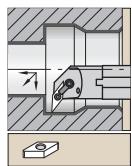
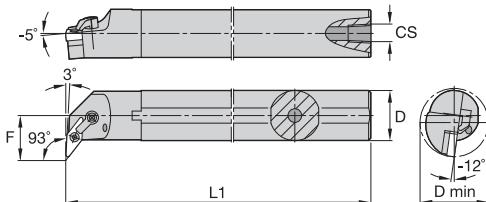
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|------|
| 1102723 | MVVNN2525M22 | 25 | 25 | 12,0 | 150 | 55,0 | VN..220408 | IVSN432 | KLM46 | 2.5 mm | CKM26 | STCM4 | 4 mm |
| 1102720 | MVVNN2020K16 | 42 | 20 | 10,0 | 125 | 42,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1102721 | MVVNN2525M16 | 66 | 25 | 12,5 | 150 | 42,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| 1102722 | MVVNN3225P16 | 86 | 32 | 12,5 | 170 | 42,0 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |



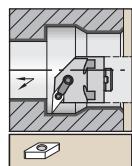
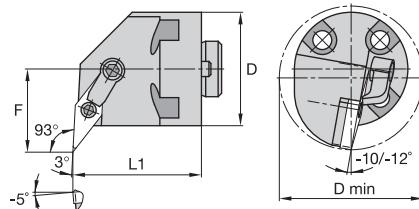
■ A-DVUN-KC 93°



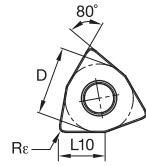
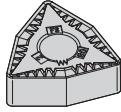
| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | shim | shim screw | Torx Plus | clamp assembly | slotted pin | Torx Plus |
|-------------------|------------------|----|-------|------|-----|------------|------------------|-------------|---------|------------|-----------|----------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 2441916 | A32SDVUNR16KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -9,0 | VN..160408 | IVSN322 | KMSP315IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP |
| 2441918 | A40TDVUNR16KC04 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -8,0 | VN..160408 | IVSN322 | KMSP315IP | 15 IP | CM215R ASSY | SSP025016M | 15 IP |
| left hand | | | | | | | | | | | | | | |
| 2441917 | A32SDVUNL16KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -9,0 | VN..160408 | IVSN322 | KMSP315IP | 15 IP | CM234R ASSY | SSP025016M | 15 IP |
| 2441919 | A40TDVUNL16KC04 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -8,0 | VN..160408 | IVSN322 | KMSP315IP | 15 IP | CM215R ASSY | SSP025016M | 15 IP |


 Steel shank with
through coolant.

■ A-MVUN 93°


| order number | catalogue number | D | D min | F | L1 | CS | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------------|-------------|---------|----------|------|-------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 1098128 | A25RMVUNR16 | 25 | 37,0 | 22,0 | 200 | 1/4-18 NPT | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM26 | 3 mm |
| 1098130 | A32SMVUNR16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | |
| 1098129 | A25RMVUNL16 | 25 | 37,0 | 22,0 | 200 | 1/4-18 NPT | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM26 | 3 mm |
| 1098131 | A32SMVUNL16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM31 | STCM20 | 3 mm |


 With through
coolant.

■ H-MVUN 93°

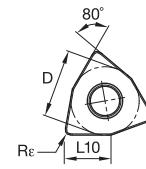
| order number | catalogue number | D | D min | F | L1 | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|----|-------------|---------|----------|------|-------|-------------|------|
| right hand | | | | | | | | | | | | |
| 3612215 | H40MVUNR16 | 40 | 50,0 | 27,0 | 41 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM22 | STCM20 | 3 mm |
| 3612219 | H50MVUNR16 | 50 | 63,0 | 35,0 | 41 | VN..160408 | IVSN322 | KLM34L | 2 mm | CKM22 | STCM20 | 3 mm |



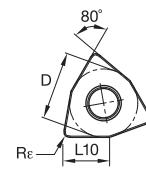
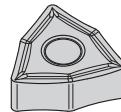
- first choice
- alternate choice

WNGG-FS

| ISO catalogue number | D | L10 | Rε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | KCJU25 | K68 | KCU10 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|--------|-----|-------|--------|--------|--------|-------|
| WNGG080404FS | 12,70 | 8,69 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| WNGG080408FS | 12,70 | 8,69 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | | | | |

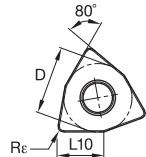
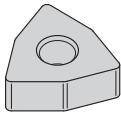


WNNG-LF

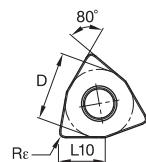
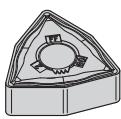


■ WNGP-K

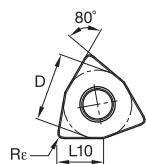
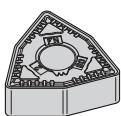
- first choice
- alternate choice



WNMA



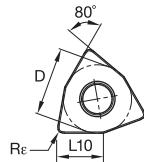
WNMG-FF



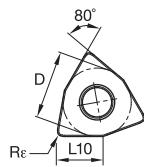
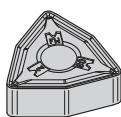
■ WNMG-FN



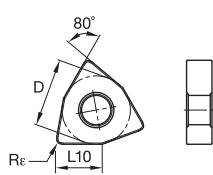
- first choice
- alternate choice



WNMG-FP

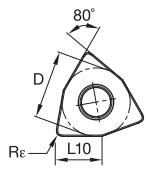
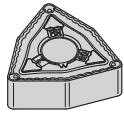


■ WNMG-FW



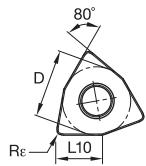
■ WNMG-MG

| ISO catalogue number | D | L10 | R _E | |
|----------------------|-------|------|----------------|---|
| WNMG080408MG | 12,70 | 8,69 | 0,8 | <ul style="list-style-type: none"> - KCP05B - KCP05 ● KCP10B - KCP10 ● KCP25B - KCP25 - KCP30B - KCP30 - KCP40B - KCP40 - KCK05B - KCK05 - KCK15B - KCK15 - KCK20B - KCK20 - KCM15B - KCM15 - KCM25B - KCM25 - KCM35B - KCM35 - KCPK05 - K313 - K68 - KCU10 - KCU25 - KC5010 - KC5025 - KC5410 - KT315 |

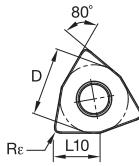
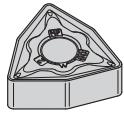


- first choice
- alternate choice

WNMG-MN

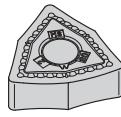


■ WNMG-MR

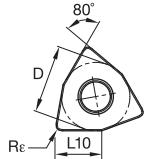


■ WNMG-MP

| ISO catalogue number | D | L10 | R ϵ | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | H68 | KCU10 | KCU10 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|------|--------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| WNMG060404MP | 9,53 | 6,52 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| WNMG060408MP | 9,53 | 6,52 | 0,8 | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| WNMG060412MP | 9,53 | 6,52 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| WNMG080408MP | 12,70 | 8,69 | 0,8 | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | - | - | - | ● | - | ● | - | - | | |
| WNMG080412MP | 12,70 | 8,69 | 1,2 | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | ● | - | - | ● | - | ● | - | - | | | |

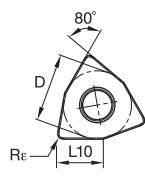
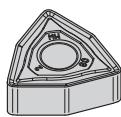


● first choice
○ alternate choice



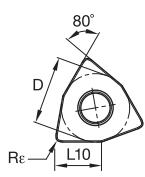
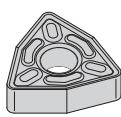
■ WNMG-MS

| ISO catalogue number | D | L10 | Rε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15 | KCM25B | KCK20B | KCK20 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|--------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| WNMG060408MS | 9,53 | 6,52 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| WNMG080401MS | 12,70 | 8,69 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| WNMG080402MS | 12,70 | 8,69 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| WNMG080404MS | 12,70 | 8,69 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| WNMG080408MS | 12,70 | 8,69 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



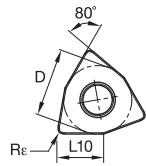
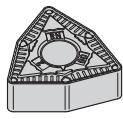
■ WNMG-MW

| ISO catalogue number | D | L10 | Rε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15 | KCM25B | KCK20B | KCK20 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|--------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| WNMG060408MW | 9,53 | 6,52 | 0,8 | - | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| WNMG080408MW | 12,70 | 8,69 | 0,8 | - | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| WNMG080412MW | 12,70 | 8,69 | 1,2 | - | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



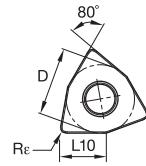
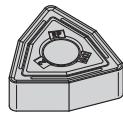
■ WNMG-P

| ISO catalogue number | D | L10 | Rε | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCK05B | KCK05 | KCK15B | KCK15 | KCM15B | KCM15 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | | |
|----------------------|-------|------|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|---|---|
| WNMG080404P | 12,70 | 8,69 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| WNMG080408P | 12,70 | 8,69 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



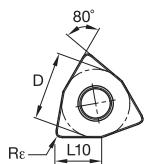
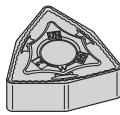
- first choice
- alternate choice

■ WNMG-RN



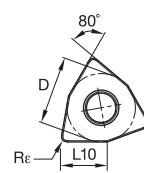
WNMG-RP

| ISO catalogue number | D | L10 | R _E | KCP05B | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30B | KCP30 | KCP40B | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35B | KCM35 | KCPK05 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 |
|----------------------|-------|------|----------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|-----|-------|-------|--------|--------|--------|-------|
| WNMG060408RP | 9,53 | 6,52 | 0,8 | - | - | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | ● | ● | ● | - | - | - | - | | | |
| WNMG060412RP | 9,53 | 6,52 | 1,2 | - | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| WNMG080408RP | 12,70 | 8,69 | 0,8 | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| WNMG080412RP | 12,70 | 8,69 | 1,2 | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| WNMG080416RP | 12,70 | 8,69 | 1,6 | - | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | | | | |

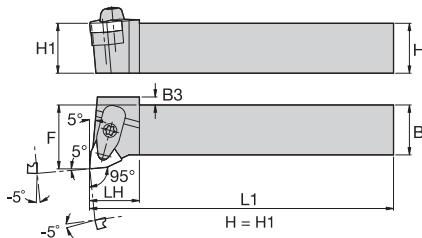
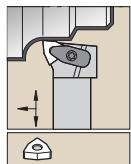


- first choice
- alternate choice

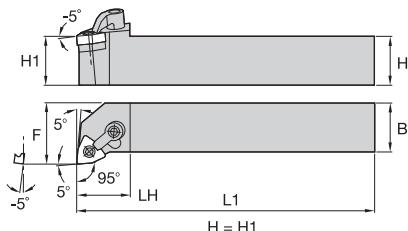
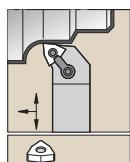
WNMG-UN



WNMG-UP


■ DWLN-KC 95°


| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | Torx Plus | clamp assembly | Torx Plus | slotted pin | optional lock pin |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|--|------------|-----------|----------------|-----------|-------------|-------------------|
| right hand | | | | | | | | | | | | | | | |
| 2439476 | DWLNR2020K06KC04 | 20 | 20 | 25,0 | 125 | 31,0 | — | WN..060408 | IWSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM34L9IP | | |
| 2439471 | DWLNR2020K08KC04 | 20 | 20 | 25,0 | 125 | 33,0 | — | WN..080408 | IWSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM4615IP | | |
| 2273451 | DWLNR2525M06KC04 | 25 | 25 | 32,0 | 150 | 25,0 | — | WN..060408 | IWSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM34L9IP | | |
| 1908860 | DWLNR2525M08KC04 | 25 | 25 | 32,0 | 150 | 25,0 | 4,0 | WN..080408 | IWSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM4615IP | | |
| 1908862 | DWLNR3232P08KC04 | 32 | 32 | 40,0 | 170 | 25,0 | — | WN..080408 | IWSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM4615IP | | |
| left hand | | | | | | | | | | | | | | | |
| 2439470 | DWLNL2020K06KC04 | 20 | 20 | 25,0 | 125 | 31,0 | — | WN..060408 | IWSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM34L9IP | | |
| 2439472 | DWLNL2020K08KC04 | 20 | 20 | 25,0 | 125 | 33,0 | — | WN..080408 | IWSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM4615IP | | |
| 2273455 | DWLNL2525M06KC04 | 25 | 25 | 32,0 | 150 | 25,0 | — | WN..060408 | IWSN322 KMSP315IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM34L9IP | | |
| 1908861 | DWLNL2525M08KC04 | 25 | 25 | 32,0 | 150 | 25,0 | 4,0 | WN..080408 | IWSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM4615IP | | |
| 1908893 | DWLNL3232P08KC04 | 32 | 32 | 40,0 | 170 | 25,0 | — | WN..080408 | IWSN433 KMSP415IP 15 IP CM234R ASSY 15 IP SSP025016M | | | | KLM4615IP | | |

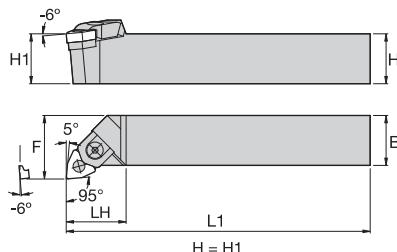
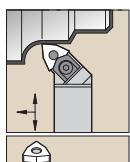


■ MWLN 95°



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|--------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | |
| 1101293 | MWLNR2020K06 | 20 | 20 | 25,0 | 125 | 25,0 | WN..060408 | IWSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1101355 | MWLNR2525M06 | 25 | 25 | 32,0 | 150 | 25,0 | WN..060408 | IWSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 3612259 | MWLNR3232P08 | 32 | 32 | 40,0 | 170 | 32,0 | WNMA080408 | IWSN433 | KLM46 | 2.5 mm | CKM7 | STCM5 | 2.5 mm |
| left hand | | | | | | | | | | | | | |
| 1101292 | MWLNL2020K06 | 20 | 20 | 25,0 | 125 | 25,0 | WN..060408 | IWSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1101354 | MWLNL2525M06 | 25 | 25 | 32,0 | 150 | 25,0 | WN..060408 | IWSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 3612260 | MWLNL3232P08 | 32 | 32 | 40,0 | 170 | 32,0 | WNMA080408 | IWSN433 | KLM46 | 2.5 mm | CKM7 | STCM5 | 2.5 mm |

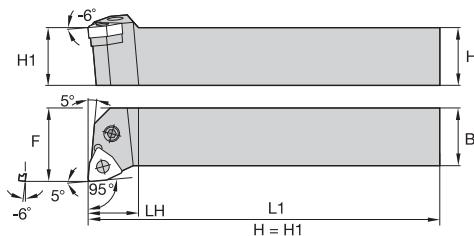
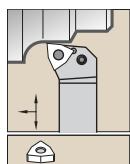
WedgeLock™ Toolholders • WedgeLock Inserts



■ MWLN 95°



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | lock pin | set screw | Torx | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|-----------|------|----------------|------|
| right hand | | | | | | | | | | | | | |
| 1244924 | MWLNR2020K08H4 | 20 | 20 | 25,0 | 125 | 32,0 | WN..080408 | 512.131 | 513.132 | 192.636 | T15 | 551.131 | 3 mm |
| 1192355 | MWLNR2525M08H4 | 25 | 25 | 32,0 | 150 | 36,0 | WN..080408 | 512.131 | 513.132 | 192.636 | T15 | 551.131 | 3 mm |
| 1244925 | MWLNR3225P08H4 | 32 | 25 | 32,0 | 170 | 36,0 | WN..080408 | 512.131 | 513.132 | 192.636 | T15 | 551.131 | 3 mm |
| left hand | | | | | | | | | | | | | |
| 1244921 | MWLNL2020K08H4 | 20 | 20 | 25,0 | 125 | 32,0 | WN..080408 | 512.131 | 513.132 | 192.636 | T15 | 551.131 | 3 mm |
| 1244922 | MWLNL2525M08H4 | 25 | 25 | 32,0 | 150 | 36,0 | WN..080408 | 512.131 | 513.132 | 192.636 | T15 | 551.131 | 3 mm |
| 1244923 | MWLNL3225P08H4 | 32 | 25 | 32,0 | 170 | 36,0 | WN..080408 | 512.131 | 513.132 | 192.636 | T15 | 551.131 | 3 mm |

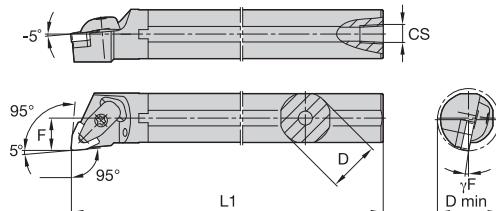
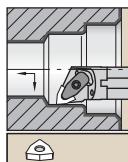


■ PWLN 95°



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim pin | punch pin | lever | lever screw | Torx Plus |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|----------|-----------|---------|-------------|-----------|
| right hand | | | | | | | | | | | | | |
| 1244771 | PWLNR1616H06 | 16 | 16 | 20,0 | 100 | 14,0 | WN..060404 | 512.134 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1192397 | PWLNR2020K06 | 20 | 20 | 25,0 | 125 | 14,0 | WN..060404 | 512.134 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1192398 | PWLNR2020K08 | 20 | 20 | 25,0 | 125 | 20,0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1192399 | PWLNR2525M08 | 25 | 25 | 32,0 | 150 | 26,0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244772 | PWLNR3225P08 | 32 | 25 | 32,0 | 170 | 26,0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| left hand | | | | | | | | | | | | | |
| 1192396 | PWLNL1616H06 | 16 | 16 | 20,0 | 100 | 14,0 | WN..060404 | 512.134 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244767 | PWLNL2020K06 | 20 | 20 | 25,0 | 125 | 14,0 | WN..060404 | 512.134 | 513.018 | 515.018 | 511.018 | 514.118 | 10 IP |
| 1244768 | PWLNL2020K08 | 20 | 20 | 25,0 | 125 | 20,0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244769 | PWLNL2525M08 | 25 | 25 | 32,0 | 150 | 26,0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244770 | PWLNL3225P08 | 32 | 25 | 32,0 | 170 | 26,0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |

Kenclamp™ Boring Bars



Steel shank with through coolant.

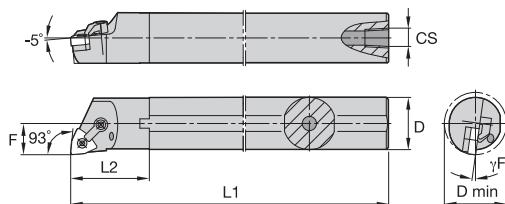
■ A-DWLN-KC 95°



| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | shim | shim screw | Torx Plus | clamp assembly | slotted pin | Torx Plus |
|-------------------|------------------|----|-------|------|-----|------------|-------|-------------|-------------------|------------|------------------------|------------------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | |
| 2441921 | A25RDWLN06KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -14,0 | WN..060408 | — | — | — | CM234R ASSY SSP025016M | 15 IP | |
| 2441923 | A25RDWLN08KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -12,0 | WN..080408 | — | — | — | CM234R ASSY SSP025016M | 15 IP | |
| 2441925 | A32SDWLN08KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -14,0 | WN..080408 | IWSN433 KMSP415IP | 15 IP | CM234R ASSY SSP025016M | 15 IP | | |
| 2441927 | A40TDWLN08KC04 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -14,0 | WN..080408 | IWSN433 KMSP415IP | 15 IP | CM234R ASSY SSP025016M | 15 IP | | |
| left hand | | | | | | | | | | | | | | |
| 2441922 | A25RDWLN06KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -14,0 | WN..060408 | — | — | — | CM234R ASSY SSP025016M | 15 IP | |
| 2441924 | A25RDWLN08KC04 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -12,0 | WN..080408 | — | — | — | CM234R ASSY SSP025016M | 15 IP | |
| 2441926 | A32SDWLN08KC04 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -14,0 | WN..080408 | IWSN433 KMSP415IP | 15 IP | CM234R ASSY SSP025016M | 15 IP | | |



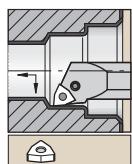
Steel shank with through coolant.



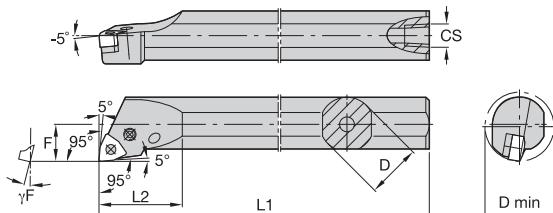
■ A-MWLN 95°



| order number | catalogue number | D | D min | F | L1 | LH | CS | γF° | gage insert | shim | lock pin | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------|------------|------------------|-------------|---------|----------|--------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | | | |
| 1098771 | A25RMWLNR06 | 25 | 32,0 | 17,0 | 200 | — | 1/4-18 NPT | -12,0 | WN..060408 | — | KLM33L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1098773 | A25RMWLNR08 | 25 | 32,0 | 17,0 | 200 | 39,0 | 1/4-18 NPT | -12,0 | WN..080408 | — | KLM43 | 2 mm | CKM20 | STCM11 | 3 mm |
| 1098772 | A32SMWLNR06 | 32 | 40,0 | 22,0 | 250 | — | 1/4-18 NPT | -10,0 | WN..060408 | IWSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1098774 | A32SMWLNR08 | 32 | 40,0 | 22,0 | 250 | 39,7 | 1/4-18 NPT | -14,0 | WN..080408 | IWSN433 | KLM46 | 2.5 mm | CKM20 | STCM20 | 3 mm |
| 1098775 | A40TMWLNR08 | 40 | 50,0 | 27,0 | 300 | 41,6 | 1/4-18 NPT | -12,0 | WN..080408 | IWSN433 | KLM46 | 2.5 mm | CKM20 | STCM20 | 3 mm |
| left hand | | | | | | | | | | | | | | | |
| 1098783 | A25RMWLNL08 | 25 | 32,0 | 17,0 | 200 | 39,0 | 1/4-18 NPT | -12,0 | WN..080408 | — | KLM43 | 2 mm | CKM20 | STCM11 | 3 mm |
| 1098782 | A32SMWLNL06 | 32 | 40,0 | 22,0 | 250 | — | 1/4-18 NPT | -10,0 | WN..060408 | IWSN322 | KLM34L | 2 mm | CKM6 | STCM5 | 2.5 mm |
| 1098784 | A32SMWLNL08 | 32 | 40,0 | 22,0 | 251 | 39,7 | 1/4-18 NPT | -14,0 | WN..080408 | IWSN433 | KLM46 | 2.5 mm | CKM20 | STCM20 | 3 mm |
| 1098785 | A40TMWLNL08 | 40 | 50,0 | 27,0 | 300 | 41,6 | 1/4-18 NPT | -12,0 | WN..080408 | IWSN433 | KLM46 | 2.5 mm | CKM20 | STCM20 | 3 mm |



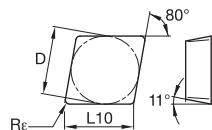
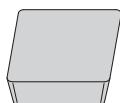
Steel shank with
through coolant.



■ A-PWLN 95°



| order number | catalogue number | D | D min | F | L1 | L2 | CS | γF° | gage insert | shim | shim pin | pin | toggle lever | lever screw | Tors Plus |
|-------------------|------------------|----|-------|------|-----|----|------------|------------------|-------------|---------|----------|---------|--------------|-------------|-----------|
| right hand | | | | | | | | | | | | | | | |
| 1244113 | A16RPWLNR06 | 16 | 27,0 | 11,0 | 200 | 32 | 1/8-27 NPT | -12.0 | WN..060404 | — | — | — | 511.030 | 514.112 | — |
| 1244115 | A20SPWLNR06 | 20 | 25,0 | 13,0 | 250 | — | 1/8-27 NPT | -14.0 | WN..060408 | — | — | — | 511.030 | 514.112 | 8 IP |
| 1194440 | A25RPWLNR08 | 25 | 32,0 | 17,0 | 200 | — | 1/4-18 NPT | -12.0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244118 | A32SPWLNR08 | 32 | 40,0 | 22,0 | 250 | 50 | 1/4-18 NPT | -10.0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | — |
| 1244120 | A40TPWLNR08 | 40 | 50,0 | 27,0 | 300 | 54 | 1/4-18 NPT | -8.0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | — |
| left hand | | | | | | | | | | | | | | | |
| 1191396 | A16RPWLNL06 | 16 | 27,0 | 11,0 | 200 | 32 | 1/8-27 NPT | -12.0 | WN..060404 | — | — | — | 511.030 | 514.112 | — |
| 1244114 | A20SPWLNL06 | 20 | 25,0 | 13,0 | 250 | — | 1/8-27 NPT | -14.0 | WN..060408 | — | — | — | 511.030 | 514.112 | 8 IP |
| 1244116 | A25RPWLNL08 | 25 | 32,0 | 17,0 | 200 | — | 1/4-18 NPT | -12.0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | 15 IP |
| 1244117 | A32SPWLNL08 | 32 | 40,0 | 22,0 | 250 | 50 | 1/4-18 NPT | -10.0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | — |
| 1244119 | A40TPWLNL08 | 40 | 50,0 | 27,0 | 300 | 54 | 1/4-18 NPT | -8.0 | WN..080408 | 512.135 | 513.023 | 515.018 | 511.023 | 514.123 | — |

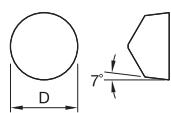


● first choice
○ alternate choice

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

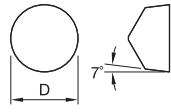
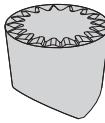
■ CPGN

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| CPGN120304 | 12,70 | 12,90 | 0,4 | - | - | - | ● ● | ● ● | - | - | - |
| CPGN120308 | 12,70 | 12,90 | 0,8 | - | - | - | ● ● | ● ● | - | - | - |



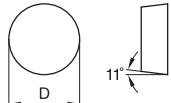
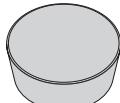
■ RCGV

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-----|----|--------|--------|-------|------|-----|-------|-------|--------|
| RCGV060400 | 6,35 | - | - | - | - | - | - | - | - | ● ● | - |
| RCGV090700 | 9,53 | - | - | - | - | - | - | - | - | ● ● | - |
| RCGV120700 | 12,70 | - | - | - | - | - | ● | - | - | - | ● |



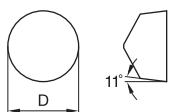
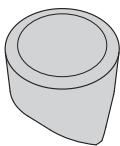
■ RCGV-MP

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-----|----|--------|--------|-------|------|-----|-------|-------|--------|
| RCGX060400MP | 6,35 | - | - | - | - | - | - | - | - | ● | - |
| RCGX120700MP | 12,70 | - | - | - | - | - | - | - | - | ● | - |



■ RPGN

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-----|----|--------|--------|-------|------|-----|-------|-------|--------|
| RPGN120300 | 12,70 | - | - | - | - | - | ● | - | - | - | - |

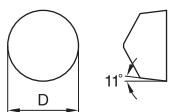
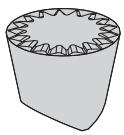


● first choice
○ alternate choice

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

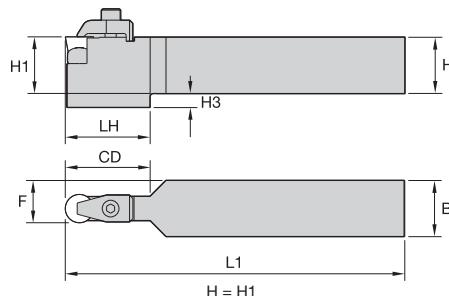
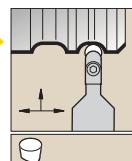
■ RPGV

| ISO catalogue number | D | L10 | R _e | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-----|----------------|--------|--------|-------|------|-----|-------|-------|--------|
| RPGV060400 | 6,35 | — | — | — | — | — | — | — | — | — | ● |
| RPGV090700 | 9,53 | — | — | — | — | — | — | — | — | — | ● |
| RPGV120700 | 12,70 | — | — | — | — | — | — | — | — | — | ● |

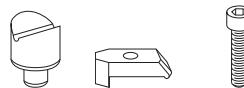


■ RPGV-MP

| ISO catalogue number | D | L10 | R _e | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-----|----------------|--------|--------|-------|------|-----|-------|-------|--------|
| RPGX060400MP | 6,35 | — | — | — | — | — | — | — | ● | — | — |
| RPGX090700MP | 9,53 | — | — | — | — | — | — | — | ● | — | — |
| RPGV120700MP | 12,70 | — | — | — | — | — | — | — | — | — | ● |
| RPGX120700MP | 12,70 | — | — | — | — | — | — | — | ● | — | — |

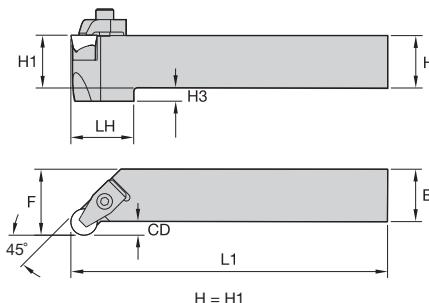
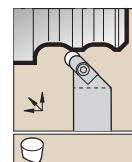


■ CRDP

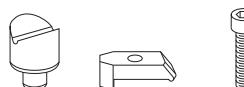


| order number | catalogue number | H | B | F | L1 | LH | H3 | CD | gage insert | nest | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-----|------|-------------|------|-------|-------------|--------|
| 3642247 | CRDPN2525M06V | 25 | 25 | 12,5 | 151 | — | — | 19,0 | RPGX060400E | NST1 | CM214 | MS1321 | 2.5 mm |
| 3642249 | CRDPN3232P09V | 32 | 32 | 16,0 | 171 | — | — | 29,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |
| 3642248 | CRDPN2525M09V | 25 | 25 | 12,5 | 151 | — | — | 29,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |
| 3642251 | CRDPN3232P12V | 32 | 32 | 16,0 | 171 | — | — | 38,0 | RPGX120700E | NST3 | CM216 | CS412 | 3.5 mm |
| 3642252 | CRDPN3232P15V | 32 | 32 | 16,0 | 171 | 38,1 | 6,4 | 38,0 | RPGX151000 | NST4 | CM217 | MS1294 | 6 mm |

NOTE: CRDP toolholders are able to use RPGX and RCGX insert styles.

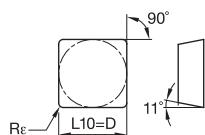
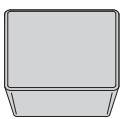


■ CRGP



| order number | catalogue number | H | B | F | L1 | CD | gage insert | nest | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|-----|-------------|------|-------|-------------|--------|
| right hand | | | | | | | | | | | |
| 3642276 | CRGPR2525M06V | 25 | 25 | 32,0 | 151 | 7,0 | RPGX060400E | NST1 | CM214 | MS1321 | 2.5 mm |
| 3642280 | CRGPR3232P09V | 32 | 32 | 40,0 | 171 | 8,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |
| left hand | | | | | | | | | | | |
| 3642277 | CRGPL2525M06V | 25 | 25 | 32,0 | 151 | 7,0 | RPGX060400E | NST1 | CM214 | MS1321 | 2.5 mm |
| 3642281 | CRGPL3232P09V | 32 | 32 | 40,0 | 171 | 8,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |

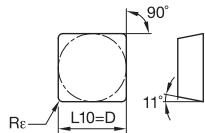
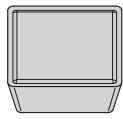
NOTE: CRGP toolholders are able to use RPGX and RCGX insert styles.


● first choice
○ alternate choice

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

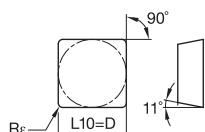
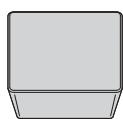
■ SPGN

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| SPGN090304 | 9,53 | 9,53 | 0,4 | - | - | - | - | - | - | - | ● |
| SPGN090308 | 9,53 | 9,53 | 0,8 | - | - | ● | - | ● | - | - | ● |
| SPGN120304 | 12,70 | 12,70 | 0,4 | - | - | - | - | ● | - | ● | ● |
| SPGN120308 | 12,70 | 12,70 | 0,8 | - | - | ● | ● | ● | - | ● | ● |
| SPGN120312 | 12,70 | 12,70 | 1,2 | - | - | - | - | ● | - | - | - |
| SPGN120412 | 12,70 | 12,70 | 1,2 | - | - | - | - | - | - | ● | - |
| SPGN120316 | 12,70 | 12,70 | 1,6 | - | - | - | - | - | - | - | ● |
| SPGN190408 | 19,05 | 19,05 | 0,8 | - | - | - | ● | - | - | - | - |
| SPGN190412 | 19,05 | 19,05 | 1,2 | - | - | ● | - | - | ● | - | - |



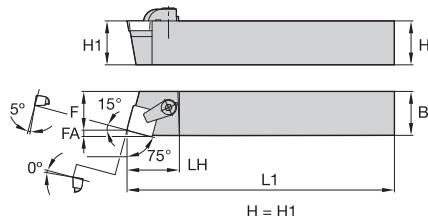
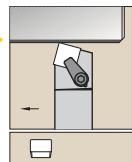
■ SPGR-K

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| SPGR090308K | 9,53 | 9,53 | 0,8 | - | - | - | - | - | - | ● | ● |
| SPGR120308K | 12,70 | 12,70 | 0,8 | ● | - | - | - | - | - | - | - |



■ SPUN

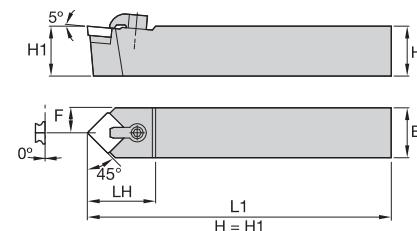
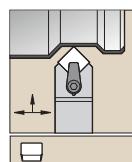
| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| SPUN120304 | 12,70 | 12,70 | 0,4 | ● | - | - | - | ● | - | - | - |
| SPUN120308 | 12,70 | 12,70 | 0,8 | ● | - | - | ● | ● | - | - | - |
| SPUN120312 | 12,70 | 12,70 | 1,2 | ● | - | - | - | - | - | - | - |



■ CSBP 75°



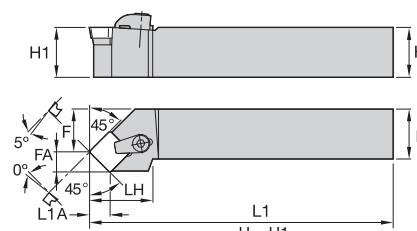
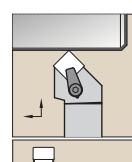
| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|-------|------------|------|-------|-------------|------|
| right hand 1097750 | CSBPR2020K12 | 20 | 20 | 17,0 | 125 | 30,0 | 3,1 | SP..120308 | SM840 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |



■ CSDP 45°



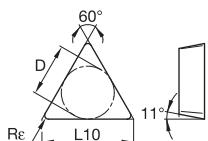
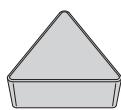
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-------------|-------|------------|------|-------|-------------|------|
| 1097754 | CSDPN2020K12 | 20 | 20 | 10,0 | 125 | 32,0 | SP..120308 | SM840 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1097755 | CSDPN2525M12 | 25 | 25 | 12,5 | 150 | 32,0 | SP..120308 | SM840 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |



■ CSSP 45°



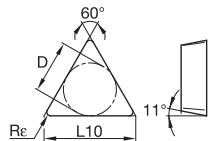
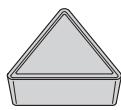
| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-----|-------------|-------|------------|------|-------|-------------|------|
| right hand 1244605 | CSSPR2020K12 | 20 | 20 | 25,0 | 125 | 32,0 | 8,7 | 8,3 | SP..120308 | SM840 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1244606 | CSSPR2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 8,7 | 8,3 | SP..120308 | SM840 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |
| left hand 1244604 | CSSPL2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 8,7 | 8,3 | SP..120308 | SM840 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |


• first choice
○ alternate choice

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

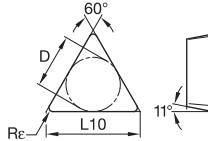
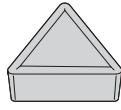
■ TPGN/TPG

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| TPGN110304 | 6,35 | 11,00 | 0,4 | - | - | - | - | - | - | ● | ● |
| TPGN110308 | 6,35 | 11,00 | 0,8 | - | - | - | - | - | - | ● | ● |
| TPGN160302 | 9,53 | 16,50 | 0,2 | - | - | - | - | - | - | ● | ● |
| TPGN160304 | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | ● | ● |
| TPGN160308 | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | ● | ● |
| TPGN160312 | 9,53 | 16,50 | 1,2 | - | - | - | - | - | - | - | ● |
| TPGN160316 | 9,53 | 16,50 | 1,6 | - | - | - | - | - | - | - | ● |
| TPGN220404 | 12,70 | 22,00 | 0,4 | - | - | - | - | - | - | ● | ● |
| TPGN220408 | 12,70 | 22,00 | 0,8 | ● | - | - | - | - | - | ● | ● |
| TPGN220412 | 12,70 | 22,00 | 1,2 | - | - | - | - | - | - | ● | ● |
| TPGN220416 | 12,70 | 22,00 | 1,6 | - | - | - | - | - | - | ● | ● |



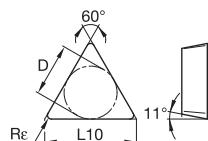
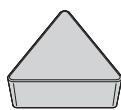
■ TPGR-K

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| TPGR110304K | 6,35 | 11,00 | 0,4 | - | - | - | - | - | - | - | ● |
| TPGR110308K | 6,35 | 11,00 | 0,8 | - | - | - | - | - | - | - | ● |
| TPGR160304K | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | ● | ● |
| TPGR160308K | 9,53 | 16,50 | 0,8 | ● | - | - | - | - | - | ● | ● |
| TPGR220404K | 12,70 | 22,00 | 0,4 | - | - | - | - | - | - | ● | - |
| TPGR220408K | 12,70 | 22,00 | 0,8 | - | - | - | - | - | - | ● | - |



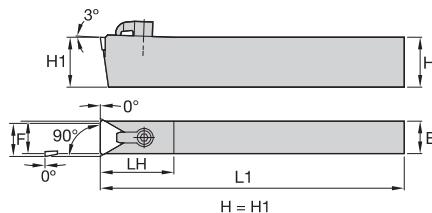
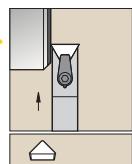
■ TPMR

| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| TPMR110304 | 6,35 | 11,00 | 0,4 | ● | ● | - | - | - | - | - | - |
| TPMR110308 | 6,35 | 11,00 | 0,8 | ● | ● | - | - | - | - | - | - |
| TPMR160304 | 9,53 | 16,50 | 0,4 | ● | ● | - | - | - | - | - | - |
| TPMR160308 | 9,53 | 16,50 | 0,8 | ● | ● | - | - | - | - | - | - |
| TPMR220408 | 12,70 | 22,00 | 0,8 | ● | ● | - | - | - | - | - | - |



■ TPUN

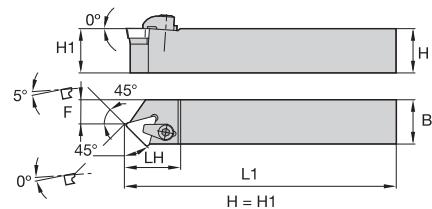
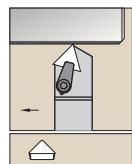
| ISO catalogue number | D | L10 | Rε | KCP25B | KCK15B | KCK15 | K313 | K68 | KCS10 | KCU10 | KC5010 |
|----------------------|-------|-------|-----|--------|--------|-------|------|-----|-------|-------|--------|
| TPUN110304 | 6,35 | 11,00 | 0,4 | - | ● | - | - | - | ● | - | - |
| TPUN110308 | 6,35 | 11,00 | 0,8 | - | ● | - | - | - | ● | - | - |
| TPUN160304 | 9,53 | 16,50 | 0,4 | ● | ● | - | - | - | ● | - | - |
| TPUN160308 | 9,53 | 16,50 | 0,8 | ● | ● | - | - | - | ● | - | - |
| TPUN220408 | 12,70 | 22,00 | 0,8 | ● | ● | - | - | - | ● | - | - |
| TPUN220412 | 12,70 | 22,00 | 1,2 | ● | ● | - | - | - | ● | - | - |



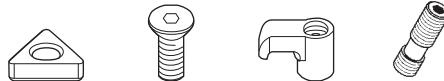
■ CTCP 90°



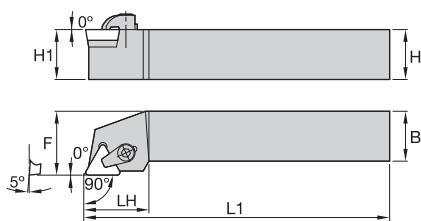
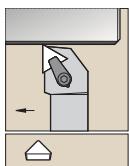
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-------------|-------|------------|--------|-------|-------------|--------|
| 1097775 | CTCPN2510M11 | 25 | 10 | 10,0 | 150 | 26,0 | TP..110304 | SM819 | MS960 | — | CKM7 | STCM5 | 2.5 mm |
| 1097776 | CTCPN2514M16 | 25 | 14 | 14,4 | 150 | 28,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM13 | STCM4 | 4 mm |
| 1097781 | CTCPN2518M22 | 25 | 18 | 19,2 | 150 | 41,0 | TP..220408 | SM837 | MS125 | 2.5 mm | CKM13 | STCM4 | 4 mm |
| 1097778 | CTCPN2520M22 | 25 | 20 | 20,2 | 150 | 41,0 | TP..220408 | SM837 | MS125 | 2.5 mm | CKM13 | STCM4 | 4 mm |



■ CTDP 45°



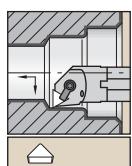
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | clamp | clamp screw | hex |
|-----------------------|------------------|----|----|-----|----|------|-------------|-------|------------|-------|-------------|--------|
| right hand 1244613 | CTDPR1212F11 | 12 | 12 | 6,0 | 80 | 22,0 | TP..110304 | SM819 | MS960 | CKM19 | STCM9 | 2.5 mm |



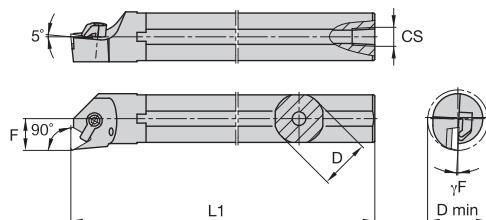
■ CTGP 90°



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|-------|------------|------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | |
| 1097762 | CTGPR1212F11 | 12 | 12 | 16,0 | 80 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1097763 | CTGPR1616H11 | 16 | 16 | 20,0 | 100 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1244595 | CTGPR2020K11 | 20 | 20 | 25,0 | 125 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1097764 | CTGPR2020K16 | 20 | 20 | 25,0 | 125 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1097765 | CTGPR2525M16 | 25 | 25 | 32,0 | 150 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1097916 | CTGPL1212F11 | 12 | 12 | 16,0 | 80 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1097918 | CTGPL2020K16 | 20 | 20 | 25,0 | 125 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1097919 | CTGPL2525M16 | 25 | 25 | 32,0 | 150 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |

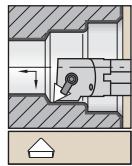


Steel shank with through coolant.

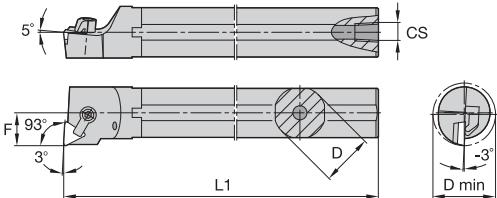


■ A-CTFP 90°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------------|------------------|-------------|-------|------------|------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | | |
| 1886492 | A16RCTFPR11 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | -4,0 | TP..110304 | — | — | — | CKM19 | STCM9 | 2.5 mm |
| 1098051 | A20QCTFPR11 | 20 | 25,0 | 13,0 | 180 | 1/8-27 NPT | 0,0 | TP..110304 | SM815 | MS961 | — | CKM19 | STCM9 | 2.5 mm |
| 1098053 | A25RCTFPR16 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1098055 | A32SCTFPR16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1886494 | A40VCTFPR16 | 40 | 48,0 | 27,0 | 400 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| 1098054 | A25RCTFPL16 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1098056 | A32SCTFPL16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |



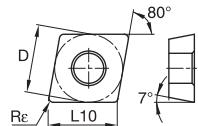
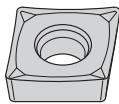
Steel shank with through coolant.



■ A-CTUP 93°

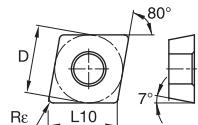
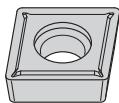
| order number | catalogue number | D | D min | F | L1 | CS | gage insert | shim | shim screw | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------------|-------------|-------|------------|-------|-------------|--------|
| right hand | | | | | | | | | | | | |
| 1098057 | A16MCTUPR11 | 16 | 20,0 | 11,0 | 150 | 1/8-27 NPT | TP..110304 | SM815 | MS961 | CKM19 | STCM9 | 2.5 mm |
| left hand | | | | | | | | | | | | |
| 1098058 | A16MCTUPL11 | 16 | 20,0 | 11,0 | 150 | 1/8-27 NPT | TP..110304 | SM815 | MS961 | CKM19 | STCM9 | 2.5 mm |

- first choice
- alternate choice

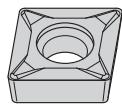


■ CCGT-HP

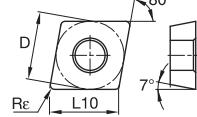
| ISO catalogue number | D | L10 | Re | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CCGT060202HP | 6,35 | 6,45 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CCGT060204HP | 6,35 | 6,45 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CCGT060208HP | 6,35 | 6,45 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CCGT09T302HP | 9,53 | 9,67 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | ● | ● | ● | - | - | | |
| CCGT09T304HP | 9,53 | 9,67 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | ● | ● | ● | ● | - | | |
| CCGT09T308HP | 9,53 | 9,67 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | ● | ● | ● | ● | - | | |
| CCGT120402HP | 12,70 | 12,90 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | - | - | - | | |
| CCGT120404HP | 12,70 | 12,90 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | - | - | | |
| CCGT120408HP | 12,70 | 12,90 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | ● | ● | ● | - | ● | | |



CCGT-LF



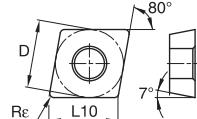
● first choice
○ alternate choice



■ CCMT-11

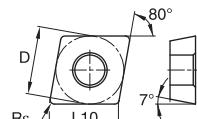
| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KU10 | K313 | K68 |
|----------------------|------|------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|------|-----|
| CCMT06020411 | 6,35 | 6,45 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT09T30411 | 9,53 | 9,67 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT09T30811 | 9,53 | 9,67 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

NOTE: Indexable Inserts for S-clamping.



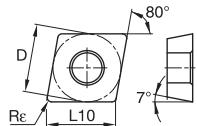
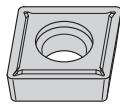
■ CCMT-FP

| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KU10 | K313 | K68 |
|----------------------|-------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|------|-----|
| CCMT060202FP | 6,35 | 6,45 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT060204FP | 6,35 | 6,45 | 0,4 | - | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT060208FP | 6,35 | 6,45 | 0,8 | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT09T302FP | 9,53 | 9,67 | 0,2 | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT09T304FP | 9,53 | 9,67 | 0,4 | - | ● | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT09T308FP | 9,53 | 9,67 | 0,8 | - | ● | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT120404FP | 12,70 | 12,90 | 0,4 | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT120408FP | 12,70 | 12,90 | 0,8 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT120412FP | 12,70 | 12,90 | 1,2 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |



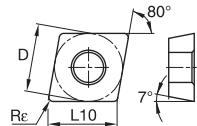
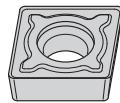
■ CCMT-FW

| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KU10 | K313 | K68 |
|----------------------|------|------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|------|-----|
| CCMT060202FW | 6,35 | 6,45 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT060204FW | 6,35 | 6,45 | 0,4 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | ● | - | |
| CCMT060208FW | 6,35 | 6,45 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT09T304FW | 9,53 | 9,67 | 0,4 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | |
| CCMT09T308FW | 9,53 | 9,67 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | ● | - | |



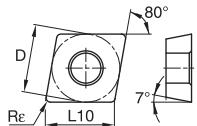
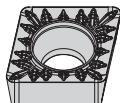
- first choice
- alternate choice

CCMT-LF



CCMT-MF

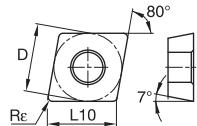
| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 |
|----------------------|-------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|
| CCMTO60204MF | 6,35 | 6,45 | 0,4 | - | ● | ● | ● | ● | ● | - | - | - | - | ● | - | ● | ● | ● | ● | ● | - | - | - | |
| CCMTO9T304MF | 9,53 | 9,67 | 0,4 | - | ● | - | ● | ● | ● | ● | - | - | - | ● | ● | ● | ● | ● | ● | ● | - | - | - | |
| CCMTO9T308MF | 9,53 | 9,67 | 0,8 | - | ● | - | ● | ● | ● | ● | - | - | - | ● | ● | ● | ● | ● | ● | ● | - | - | ● | |
| CCMTO9T312MF | 9,53 | 9,67 | 1,2 | - | - | ● | ● | ● | ● | ● | - | - | - | ● | ● | ● | ● | ● | ● | ● | - | - | - | |
| CCMT120408MF | 12,70 | 12,90 | 0,8 | - | ● | ● | ● | ● | ● | ● | - | - | - | ● | ● | ● | ● | ● | ● | ● | - | - | - | |
| CCMT120412MF | 12,70 | 12,90 | 1,2 | - | - | - | ● | ● | ● | ● | - | - | - | ● | - | ● | ● | ● | ● | ● | - | - | ● | |



CCMT-MP

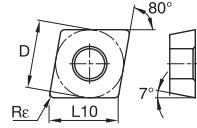
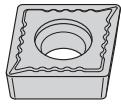
| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CCMT060204MP | 6,35 | 6,45 | 0,4 | - | - | ● | - | ● | - | - | - | - | - | - | - | - | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | | | |
| CCMT09T304MP | 9,53 | 9,67 | 0,4 | - | - | ● | - | ● | ● | - | - | - | - | - | - | - | ● | ● | - | ● | ● | - | - | - | - | ● | - | - | - | | | |
| CCMT09T308MP | 9,53 | 9,67 | 0,8 | - | - | ● | - | ● | - | - | - | - | - | - | - | ● | ● | ● | - | ● | ● | - | - | - | - | ● | - | - | - | | | |
| CCMT09T312MP | 9,53 | 9,67 | 1,2 | - | - | - | - | ● | - | - | - | - | - | - | - | - | ● | ● | - | ● | ● | - | - | - | - | ● | - | - | - | | | |
| CCMT120408MP | 12,70 | 12,90 | 0,8 | - | - | ● | - | ● | - | - | - | - | - | - | - | ● | ● | - | ● | - | - | - | - | - | ● | - | - | - | - | | | |
| CCMT120412MP | 12,70 | 12,90 | 1,2 | - | - | - | - | ● | - | - | - | - | - | - | - | ● | ● | - | ● | ● | - | - | - | - | ● | - | - | - | - | | | |

● first choice
○ alternate choice



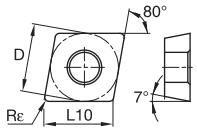
■ CCMT-MW

| ISO catalogue number | D | L10 | R _e | P | M | K | N | S | H |
|----------------------|-------|-------|----------------|---|---|--------|---|---|---|
| CCMT09T304MW | 9,53 | 9,67 | 0,4 | - | - | KCP05 | | | |
| CCMT09T308MW | 9,53 | 9,67 | 0,8 | - | - | KCP10B | | | |
| CCMT120404MW | 12,70 | 12,90 | 0,4 | - | - | KCP10 | | | |
| CCMT120408MW | 12,70 | 12,90 | 0,8 | - | - | KCP25B | | | |
| | | | | - | - | KCP25 | | | |
| | | | | - | - | KCP30 | | | |
| | | | | - | - | KCP40 | | | |
| | | | | - | - | KCK05B | | | |
| | | | | - | - | KCK05 | | | |
| | | | | - | - | KCK15B | | | |
| | | | | - | - | KCK15 | | | |
| | | | | - | - | KCK20B | | | |
| | | | | - | - | KCM15B | | | |
| | | | | - | - | KCM15 | | | |
| | | | | - | - | KCM25B | | | |
| | | | | - | - | KCM25 | | | |
| | | | | - | - | KCM35 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | KU25 | | | |
| | | | | - | - | KC5010 | | | |
| | | | | - | - | KC5025 | | | |
| | | | | - | - | KC5410 | | | |
| | | | | - | - | KT315 | | | |
| | | | | - | - | KTP10 | | | |



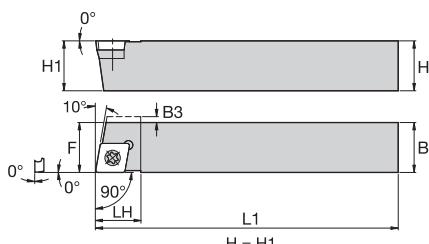
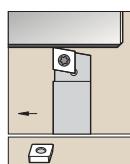
■ CCMT-UF

| ISO catalogue number | D | L10 | R _e | P | M | K | N | S | H |
|----------------------|------|------|----------------|---|---|--------|---|---|---|
| CCMT060204UF | 6,35 | 6,45 | 0,4 | ● | - | KCP05 | | | |
| CCMT09T302UF | 9,53 | 9,67 | 0,2 | ● | - | KCP10 | | | |
| CCMT09T304UF | 9,53 | 9,67 | 0,4 | - | - | KCP25B | | | |
| CCMT09T308UF | 9,53 | 9,67 | 0,8 | - | - | KCP25 | | | |
| | | | | - | - | KCP30 | | | |
| | | | | - | - | KCP40 | | | |
| | | | | - | - | KCK05B | | | |
| | | | | - | - | KCK05 | | | |
| | | | | - | - | KCK15B | | | |
| | | | | - | - | KCK15 | | | |
| | | | | - | - | KCK20B | | | |
| | | | | - | - | KCM15B | | | |
| | | | | - | - | KCM15 | | | |
| | | | | - | - | KCM25B | | | |
| | | | | - | - | KCM25 | | | |
| | | | | - | - | KCM35 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | KU25 | | | |
| | | | | - | - | KC5010 | | | |
| | | | | - | - | KC5025 | | | |
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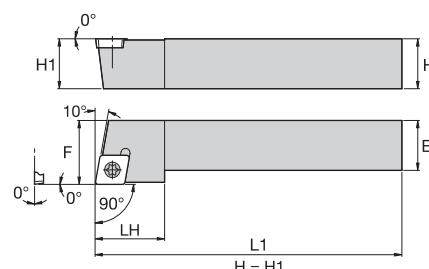
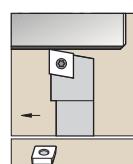


■ CCMW

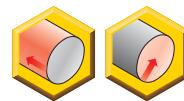
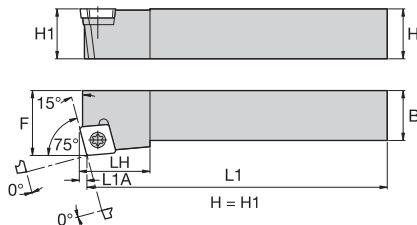
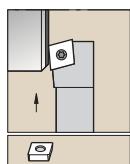
| ISO catalogue number | D | L10 | R _e | P | M | K | N | S | H |
|----------------------|-------|-------|----------------|---|---|--------|---|---|---|
| CCMW060204 | 6,35 | 6,45 | 0,4 | - | - | KCP05 | | | |
| CCMW09T308 | 9,53 | 9,67 | 0,8 | - | - | KCP10B | | | |
| CCMW120408 | 12,70 | 12,90 | 0,8 | - | - | KCP10 | | | |
| CCMW120412 | 12,70 | 12,90 | 1,2 | - | - | KCP25B | | | |
| | | | | - | - | KCP25 | | | |
| | | | | - | - | KCM35 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | KU25 | | | |
| | | | | - | - | KC5010 | | | |
| | | | | - | - | KC5025 | | | |
| | | | | - | - | KC5410 | | | |
| | | | | - | - | KT315 | | | |
| | | | | - | - | KTP10 | | | |


■ SCAC 90°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|-----|
| right hand | | | | | | | | | | | | |
| 1097708 | SCACR1010M06Q | 10 | 10 | 10,0 | 150 | 11,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1097710 | SCACR1212M06Q | 12 | 12 | 12,0 | 150 | 11,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1097714 | SCACR1616K09Q | 16 | 16 | 16,0 | 125 | 16,0 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |

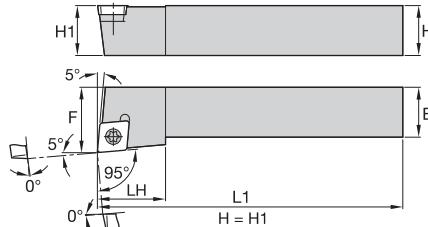
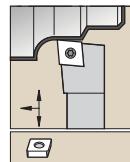

■ SCGC 90°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|--------------|------|
| right hand | | | | | | | | | |
| 1097824 | SCGCR1010M06 | 10 | 10 | 12,0 | 150 | 11,0 | CC..060204 | MS1153 | T7 |
| 1097825 | SCGCR1212N09 | 12 | 12 | 16,0 | 160 | 16,0 | CC..09T308 | MS1155 | T15 |
| left hand | | | | | | | | | |
| 1097970 | SCGCL1212N09 | 12 | 12 | 16,0 | 160 | 16,0 | CC..09T308 | MS1155 | T15 |



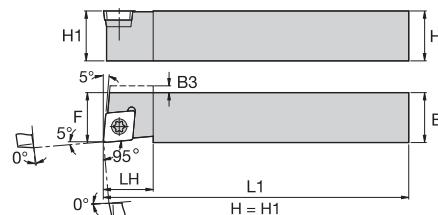
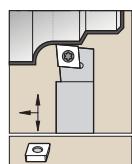
■ SCKC 75°

| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim screw | hex | insert screw | Torx |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|------|
| right hand 1097840 | SCKCR2020K09 | 20 | 20 | 25,0 | 125 | 16,0 | 2,3 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |

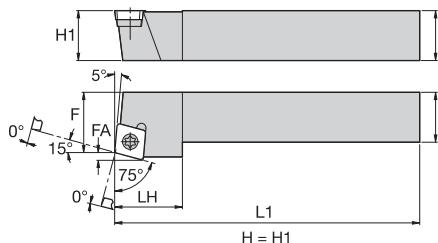
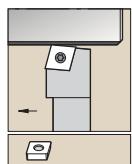


■ SCLC 95°

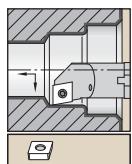
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|-----------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand 1097814 | SCLCR0808L06 | 8 | 8 | 10,0 | 140 | 12,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1097816 | SCLCR1010M06 | 10 | 10 | 12,0 | 150 | 12,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1097818 | SCLCR1212N09 | 12 | 12 | 16,0 | 160 | 16,0 | CC..09T308 | — | — | — | MS1155 | T15 |
| 1097819 | SCLCR1616H09 | 16 | 16 | 20,0 | 100 | 15,8 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097821 | SCLCR2020K09 | 20 | 20 | 25,0 | 125 | 15,8 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097820 | SCLCR2020K12 | 20 | 20 | 25,0 | 125 | 19,8 | CC..120408 | SKCP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1244995 | SCLCR2525M09 | 25 | 25 | 32,0 | 150 | 15,8 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097822 | SCLCR2525M12 | 25 | 25 | 32,0 | 150 | 20,0 | CC..120408 | SKCP453 | SRS4 | 4 mm | MS1158 | T15 |
| left hand 1097959 | SCLCL0808L06 | 8 | 8 | 10,0 | 140 | 12,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1097961 | SCLCL1010M06 | 10 | 10 | 12,0 | 150 | 12,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1097963 | SCLCL1212N09 | 12 | 12 | 16,0 | 160 | 16,0 | CC..09T308 | — | — | — | MS1155 | T15 |
| 1097964 | SCLCL1616H09 | 16 | 16 | 20,0 | 100 | 15,8 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097966 | SCLCL2020K09 | 20 | 20 | 25,0 | 125 | 15,8 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097965 | SCLCL2020K12 | 20 | 20 | 25,0 | 125 | 19,8 | CC..120408 | SKCP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1318353 | SCLCL2525M09 | 25 | 25 | 32,0 | 150 | 15,8 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097967 | SCLCL2525M12 | 25 | 25 | 32,0 | 150 | 20,0 | CC..120408 | SKCP453 | SRS4 | 4 mm | MS1158 | T15 |


SCLC-F 95°

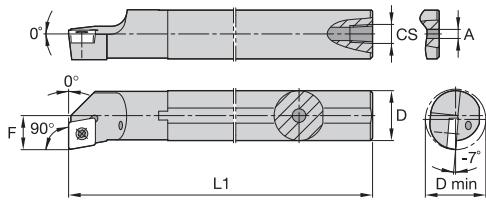

| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | | |
| 1772152 | SCLCRF0808M06Q | 8 | 8 | 8,0 | 150 | 12,0 | 1,5 | CC..060204 | — | — | — | MS1153 | T7 |
| 1097812 | SCLCRF1010M06Q | 10 | 10 | 10,0 | 150 | 11,0 | — | CC..060204 | — | — | — | MS1153 | T7 |
| 1097813 | SCLCRF1212M06Q | 12 | 12 | 12,0 | 150 | 11,0 | — | CC..060204 | — | — | — | MS1153 | T7 |
| 1097817 | SCLCRF1616K09Q | 16 | 16 | 16,0 | 125 | 16,0 | — | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |


SCRC 75°


| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | | |
| 1097828 | SCRCCR1212N09 | 12 | 12 | 13,0 | 160 | 14,0 | 2,3 | CC..09T308 | — | — | — | MS1155 | T15 |
| 1097829 | SCRCCR1616H09 | 16 | 16 | 17,0 | 100 | 14,0 | 2,3 | CC..09T308 | SKCP343 | SRS3 | 3.5 mm | MS1156 | T15 |



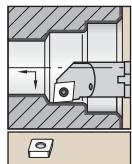
Steel shank with through coolant.



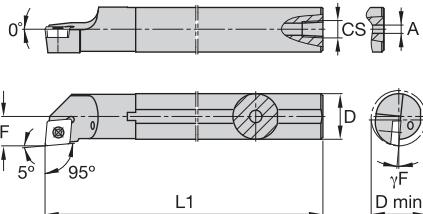
■ A-SCFC 90°



| order number | catalogue number | D | D min | F | L1 | CS | gage insert | insert screw | Torx |
|-----------------------|------------------|----|-------|------|-----|------------|-------------|--------------|------|
| right hand 1098266 | A25TSCFCR12 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | CC..120408 | MS1157 | T15 |
| left hand 1098270 | A25TSCFCL12 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | CC..120408 | MS1157 | T15 |



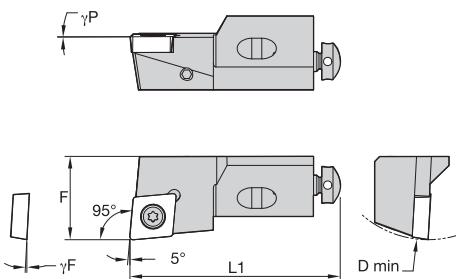
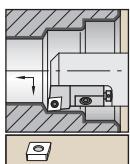
Steel shank with through coolant.



■ A-SCLC 95°



| order number | catalogue number | D | D min | F | L1 | A | CS | γF° | gage insert | shim | shim screw | hex | insert screw | Torx |
|-----------------------|------------------|----|-------|------|-----|-----|-------------|------|-------------|---------|------------|------|--------------|------|
| right hand 1098159 | A08JSCLCR06 | 8 | 11,0 | 6,0 | 110 | 2,4 | — | -8,0 | CC..060204 | — | — | — | MS1939 | T7 |
| 1098168 | A10KSCLCR06 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -7,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1098178 | A12MSCLCR06 | 12 | 16,0 | 9,0 | 150 | 4,0 | 1/16-27 NPT | -6,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1098225 | A16RSCLCR09 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | -7,0 | CC..09T308 | — | — | — | MS1155 | T15 |
| 1098239 | A20SSCLCR09 | 20 | 25,0 | 13,0 | 250 | 4,0 | 1/8-27 NPT | -5,0 | CC..09T308 | — | — | — | MS1155 | T15 |
| 1098268 | A25TSCLCR12 | 25 | 32,0 | 17,0 | 300 | 6,4 | 1/4-18 NPT | -7,0 | CC..120408 | — | — | — | MS1157 | T15 |
| 1098280 | A32TSCLCR12 | 32 | 40,0 | 22,0 | 300 | 6,4 | 1/4-18 NPT | -7,0 | CC..120408 | SKCP453 | SRS4 | 4 mm | MS1158 | T15 |
| left hand 1098163 | A08JSCLCL06 | 8 | 11,0 | 6,0 | 110 | 2,4 | — | -8,0 | CC..060204 | — | — | — | MS1939 | T7 |
| 1098173 | A10KSCLCL06 | 10 | 13,0 | 7,0 | 25 | 3,2 | — | -7,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1098183 | A12MSCLCL06 | 12 | 16,0 | 9,0 | 150 | 4,0 | 1/16-27 NPT | -6,0 | CC..060204 | — | — | — | MS1153 | T7 |
| 1098231 | A16RSCLCL09 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | -7,0 | CC..09T308 | — | — | — | MS1155 | T15 |
| 1098244 | A20SSCLCL09 | 20 | 25,0 | 13,0 | 250 | 4,0 | 1/8-27 NPT | -5,0 | CC..09T308 | — | — | — | MS1155 | T15 |
| 1098272 | A25TSCLCL12 | 25 | 32,0 | 17,0 | 300 | 6,4 | 1/4-18 NPT | -7,0 | CC..120408 | — | — | — | MS1157 | T15 |
| 1098282 | A32TSCLCL12 | 32 | 40,0 | 22,0 | 300 | 6,4 | 1/4-18 NPT | -7,0 | CC..120408 | SKCP453 | SRS4 | 4 mm | MS1158 | T15 |



■ SCLC 95°

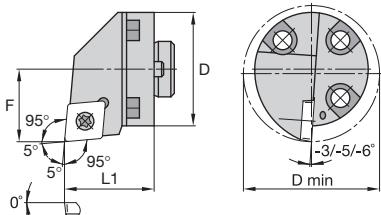
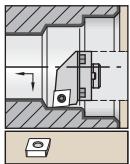
| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|--------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand | | | | | | | |
| 1098544 | SCLCR12CA12 | 50 | 20,0 | 55 | -3.0 | 0.0 | CC..120408/CC..432 |
| 1098545 | SCLCR16CA12 | 60 | 25,0 | 63 | -3.0 | 0.0 | CC..120408/CC..432 |
| left hand | | | | | | | |
| 1098732 | SCLCL12CA12 | 50 | 20,0 | 55 | -3.0 | 0.0 | CC..120408/CC..432 |

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | MS1157 | T15 | KUAM23 | 2.5 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |
| 60 | MS1157 | T15 | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |

Screw-On Boring Heads



With through coolant.

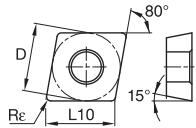
■ H-SCLC 95°



| order number | catalogue number | D | D min | F | L1 | gage insert | insert screw | Torx |
|--------------|------------------|----|-------|------|----|-------------|--------------|------|
| right hand | | | | | | | | |
| 1772253 | H32SCLCR09 | 32 | 40,0 | 21,9 | 25 | CC..09T308 | MS1155 | T15 |
| 3612090 | H40SCLCR12 | 40 | 50,0 | 27,0 | 41 | CC..120408 | MS1158 | T15 |

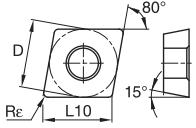
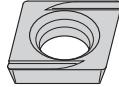


- first choice
- alternate choice



CDHB

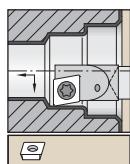
| ISO catalogue number | D | L10 |
|----------------------|------|------|
| CDHBS4T0S0 | 3,97 | 4,03 |
| CDHBS4TOX0 | 3,97 | 4,03 |
| CDHBS4T002 | 3,97 | 4,03 |
| CDHBS4T004 | 3,97 | 4,03 |



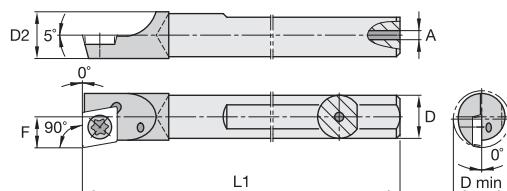
CDHH

| ISO catalogue number | D | L10 |
|----------------------|------|------|
| CDHHS4T002L | 3,97 | 4,03 |
| CDHHS4T002R | 3,97 | 4,03 |
| CDHHS4T004L | 3,97 | 4,03 |
| CDHHS4T004R | 3,97 | 4,03 |

NOTE: Right-hand insert uses left-hand bars.
Left-hand insert uses right-hand bars.



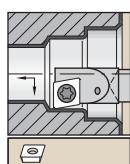
Carbide shank
with through
coolant.



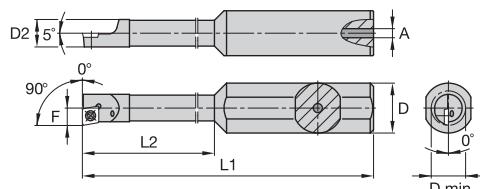
E-SCFD 90°



| order number | catalogue number | D | D min | F | L1 | A | gage insert | insert screw | Torx |
|-------------------|------------------|---|-------|-----|-----|-----|-------------|--------------|------|
| right hand | | | | | | | | | |
| 1930354 | E05HSCFDRS4 | 5 | 5,9 | 3,2 | 101 | 1,0 | CD..S4T002 | CC11 | T6 |
| 1930360 | E06HSCFDRS4 | 6 | 7,1 | 3,7 | 100 | 1,2 | CD..S4T002 | CC11 | T6 |



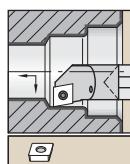
Necked steel
shank with
through coolant.



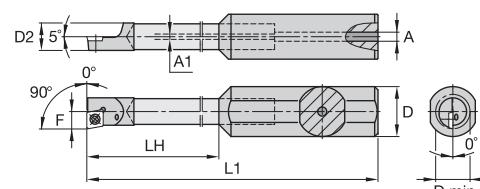
A-SCFD 90° • Stepped



| order number | catalogue number | D | D min | D2 | F | L1 | L2 | A | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|-----|-----|----|------|-----|-------------|--------------|------|
| right hand | | | | | | | | | | | |
| 1930376 | A0510ESCFDRS412 | 10 | 5,9 | 5,2 | 3,1 | 70 | 12,7 | 1,0 | CD..S4T002 | CC11 | T6 |
| 1930380 | A0510ESCFDRS425 | 10 | 5,9 | 5,2 | 3,1 | 70 | 25,4 | 1,0 | CD..S4T002 | CC11 | T6 |
| 1930404 | A0612ESCFDRS431 | 12 | 7,4 | 6,6 | 3,9 | 70 | 31,8 | 1,0 | CD..S4T002 | CC11 | T6 |



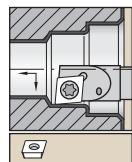
Necked carbide
shank with
through coolant.



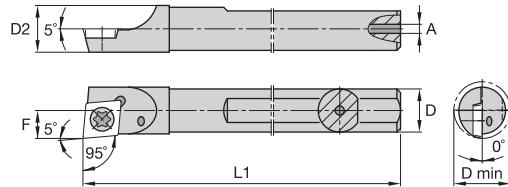
E-SCFD 90° • Stepped



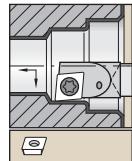
| order number | catalogue number | D | D min | D2 | F | L1 | LH | A | A1 | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|-----|-----|-----|------|-----|-----|-------------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1930408 | E0512XSCFDRS425 | 12 | 5,9 | 5,0 | 3,2 | 64 | 10,0 | 1,0 | 1,2 | CD..S4T002 | CC11 | T6 |
| 1930412 | E0512XSCFDRS450 | 12 | 5,9 | 5,0 | 3,2 | 89 | 10,0 | 3,2 | 1,2 | CD..S4T002 | CC11 | T6 |
| 1930436 | E0616XSCFDRS463 | 16 | 7,4 | 6,3 | 3,9 | 127 | 12,3 | 3,2 | 1,2 | CD..S4T002 | CC11 | T6 |



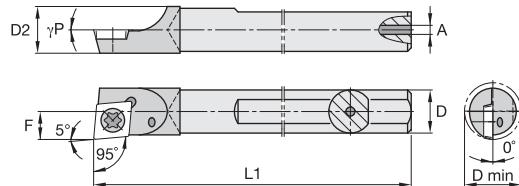
Steel shank with through coolant.

**■ A-SCLD 95°**

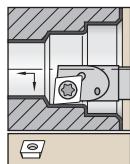
| order number | catalogue number | D | D min | D2 | F | L1 | A | gage insert | insert screw | Torx |
|-------------------|------------------|---|-------|-----|-----|----|-----|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1288877 | A04XSCLDRS4 | 4 | 4,6 | 4,2 | 2,4 | 65 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1930298 | A05XSCLDRS4 | 5 | 5,8 | 5,2 | 3,0 | 64 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1288893 | A06XSCLDRS4 | 6 | 7,1 | 6,2 | 3,7 | 64 | 1,0 | CD..S4T002 | CC11 | T6 |
| 1288906 | A08XSCLDRS4 | 8 | 9,0 | 8,2 | 4,7 | 76 | 1,5 | CD..S4T002 | CC11 | T6 |
| left hand | | | | | | | | | | |
| 1288876 | A04XSCLDLS4 | 4 | 4,6 | 4,2 | 2,4 | 65 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1930297 | A05XSCLDLS4 | 5 | 5,8 | 5,2 | 3,0 | 64 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1288892 | A06XSCLDLS4 | 6 | 7,1 | 6,2 | 3,7 | 64 | 1,0 | CD..S4T002 | CC11 | T6 |
| 1288905 | A08XSCLDLS4 | 8 | 9,0 | 8,2 | 4,7 | 76 | 1,5 | CD..S4T002 | CC11 | T6 |



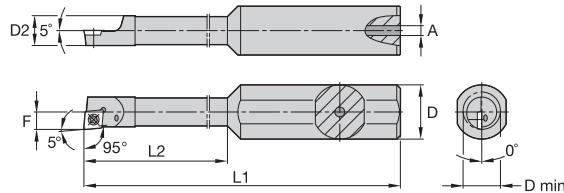
Carbide shank with through coolant.

**■ E-SCLD 95°**

| order number | catalogue number | D | D min | D2 | F | L1 | A | γP° | gage insert | insert screw | Torx |
|-------------------|------------------|---|-------|-----|-----|-----|-----|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | | |
| 1930300 | E04HSCLDRS4 | 4 | 4,6 | 4,2 | 2,4 | 100 | 1,0 | 0,0 | CD..S4T002 | CC09 | T6 |
| 1270967 | E04MSCLDRS4 | 4 | 4,6 | 4,2 | 2,4 | 152 | 1,0 | 0,0 | CD..S4T002 | CC09 | T6 |
| 1930356 | E05HSCLDRS4 | 5 | 5,9 | — | 3,0 | 101 | 1,0 | 5,0 | CD..S4T002 | CC09 | T6 |
| 1930358 | E05MSCLDRS4 | 5 | 5,9 | — | 3,0 | 152 | 1,0 | 5,0 | CD..S4T002 | CC09 | T6 |
| 1930362 | E06HSCLDRS4 | 6 | 7,1 | — | 3,7 | 100 | 1,2 | 5,0 | CD..S4T002 | CC11 | T6 |
| 1270978 | E06MSCLDRS4 | 6 | 6,9 | — | 3,7 | 152 | 1,2 | 5,0 | CD..S4T002 | CC09 | T6 |
| 1270988 | E08MSCLDRS4 | 8 | 9,1 | — | 4,7 | 150 | 2,4 | 5,0 | CD..120605 | CC11 | T6 |
| left hand | | | | | | | | | | | |
| 1930299 | E04HSCLDLS4 | 4 | 4,6 | 4,2 | 2,4 | 100 | 1,0 | 0,0 | CD..S4T002 | CC09 | T6 |
| 1270966 | E04MSCLDLS4 | 4 | 4,6 | 4,2 | 2,4 | 152 | 1,0 | 0,0 | CD..S4T002 | CC09 | T6 |
| 1930355 | E05HSCLDLS4 | 5 | 5,9 | — | 3,0 | 101 | 1,0 | 5,0 | CD..S4T002 | CC11 | T6 |
| 1930357 | E05MSCLDLS4 | 5 | 5,9 | — | 3,0 | 152 | 1,0 | 5,0 | CD..S4T002 | CC09 | T6 |
| 1930361 | E06HSCLDLS4 | 6 | 7,1 | — | 3,7 | 100 | 1,2 | 5,0 | CD..S4T002 | CC11 | T6 |
| 1270977 | E06MSCLDLS4 | 6 | 7,1 | — | 3,7 | 152 | 1,2 | 5,0 | CD..S4T002 | CC11 | T6 |
| 1270987 | E08MSCLDLS4 | 8 | 9,0 | — | 4,7 | 152 | 2,4 | 5,0 | CD..S4T002 | CC11 | T6 |

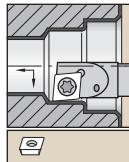


Necked steel shank with through coolant.

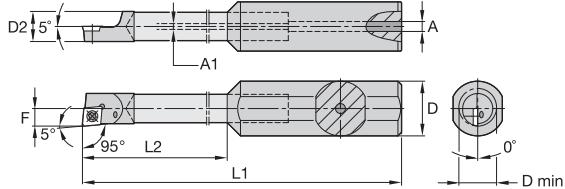


■ A-SCLD 95° • Stepped

| order number | catalogue number | D | D min | F | L1 | L2 | A | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|-----|-----|------|-----|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1930372 | A0410ESCLDRS412 | 10 | 5,2 | 2,6 | 70 | 12,7 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1930374 | A0410ESCLDRS425 | 10 | 5,2 | 2,6 | 70 | 25,4 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1289129 | A0412ESCLDRS412 | 12 | 5,2 | 2,6 | 70 | 12,7 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1289130 | A0412ESCLDRS425 | 12 | 5,2 | 2,6 | 70 | 25,4 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1930378 | A0510ESCLDRS412 | 10 | 5,8 | 3,0 | 70 | 12,3 | 1,0 | CD..S4T002 | CC11 | T6 |
| 1930382 | A0510ESCLDRS425 | 10 | 5,8 | 3,0 | 70 | 25,0 | 1,0 | CD..S4T002 | CC09 | T6 |
| 1098071 | A0510GSCLDRS4 | 10 | 6,0 | 3,2 | 90 | 25,0 | 3,2 | CD..S4T002 | MS1454 | T5 |
| 1098073 | A0610HSCLDRS4 | 10 | 7,6 | 3,8 | 100 | 32,0 | 3,2 | CD..S4T002 | MS1454 | T5 |
| 1930402 | A0612ESCLDRS419 | 12 | 7,2 | 3,7 | 70 | 19,1 | 1,0 | CD..S4T002 | CC11 | T6 |



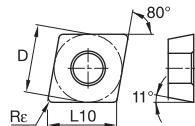
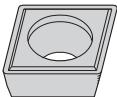
Necked carbide shank with through coolant.



■ E-SCLD 95° • Stepped

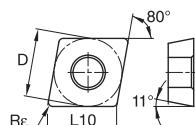
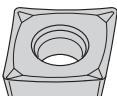
| order number | catalogue number | D | D min | D2 | F | L1 | L2 | A | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|-----|-----|-----|------|-----|-------------|--------------|------|
| right hand | | | | | | | | | | | |
| 1930406 | E0412DSCLDRS422 | 12 | 5,3 | 5,0 | 2,6 | 60 | 22,2 | 3,2 | CD..S4T002 | CC09 | T6 |
| 1262129 | E0412XSCLDRS447 | 12 | 5,3 | 5,0 | 2,6 | 86 | 47,6 | 3,2 | CD..S4T002 | CC09 | T6 |
| 1262131 | E0416KSCLDRS447 | 16 | 5,3 | 5,0 | 2,6 | 111 | 47,6 | 3,2 | CD..S4T002 | CC09 | T6 |
| 1930410 | E0512XSCLDRS425 | 12 | 5,9 | — | 3,0 | 64 | 25,4 | 1,0 | CD..S4T002 | CC11 | T6 |
| 1930418 | E0612ESCLDRS431 | 12 | 7,2 | — | 3,7 | 70 | 31,8 | 3,2 | CD..S4T002 | CC11 | T6 |
| 1262178 | E0612HSCLDRS463 | 12 | 7,2 | — | 3,7 | 102 | 63,5 | 3,2 | CD..S4T002 | CC11 | T6 |
| 1930434 | E0616HSCLDRS431 | 16 | 7,2 | — | 3,7 | 95 | 31,8 | 3,2 | CD..S4T002 | CC11 | T6 |
| 1262175 | E0616XSCLDRS463 | 16 | 7,2 | — | 3,7 | 127 | 63,5 | 3,2 | CD..120605 | CC11 | T6 |

● first choice
○ alternate choice



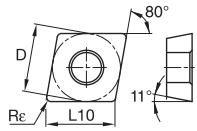
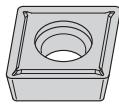
■ CPGH (T)

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|------|-----|---|-------|--------|-------|--------|---|
| CPGT060202K | 6,35 | 6,45 | 0,2 | - | KCP05 | KCP10B | KCP10 | - | - |
| CPGT060204K | 6,35 | 6,45 | 0,4 | - | - | KCP25B | KCP25 | - | - |
| CPGH09T301 | 9,53 | 9,67 | 0,1 | - | - | KCP30 | KCP40 | KCK05B | - |
| CPGH09T302 | 9,53 | 9,67 | 0,2 | - | - | - | - | - | - |
| CPGH09T304 | 9,53 | 9,67 | 0,4 | - | ● | ● | - | - | - |
| CPGH09T308 | 9,53 | 9,67 | 0,8 | - | ● | ● | - | - | - |



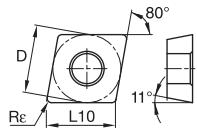
■ CPGT-HP

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|------|-----|---|-------|--------|-------|--------|---|
| CPGT060202HP | 6,35 | 6,45 | 0,2 | - | KCP05 | KCP10B | KCP10 | - | - |
| CPGT060204HP | 6,35 | 6,45 | 0,4 | - | - | KCP25B | KCP25 | - | - |
| CPGT060208HP | 6,35 | 6,45 | 0,8 | - | - | KCP30 | KCP40 | KCK05B | - |
| CPGT09T302HP | 9,53 | 9,67 | 0,2 | - | - | - | - | - | - |
| CPGT09T304HP | 9,53 | 9,67 | 0,4 | - | - | - | - | - | - |
| CPGT09T308HP | 9,53 | 9,67 | 0,8 | - | - | - | - | - | - |



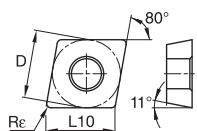
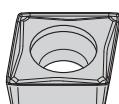
- first choice
- alternate choice

■ CPGT-LF



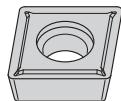
CPMT-FP

| ISO catalogue number | D | L10 | R ε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KU10 | K313 | K68 | KC510 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CPMT050202FP | 5,56 | 5,65 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT050204FP | 5,56 | 5,65 | 0,4 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | | |
| CPMT060202FP | 6,35 | 6,45 | 0,2 | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | ● | | |
| CPMT060204FP | 6,35 | 6,45 | 0,4 | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | ● | - | - | ● | - | - | - | - | ● | ● | - | - | ● | | |
| CPMT060208FP | 6,35 | 6,45 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | | |
| CPMT09T302FP | 9,53 | 9,67 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | |
| CPMT09T304FP | 9,53 | 9,67 | 0,4 | - | - | ● | ● | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | - | - | - | ● | ● | - | - | - | - | |
| CPMT09T308FP | 9,53 | 9,67 | 0,8 | - | - | ● | ● | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | - | - | - | ● | ● | - | - | ● | - | |

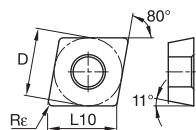


CPMT-FW

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KCS010 | KCS025 | KCS410 | KT315 | KTP10 | |
|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|---|
| CPMT060202FW | 6,35 | 6,45 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | |
| CPMT060204FW | 6,35 | 6,45 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | ● | - | - | ● | - | - | - | - | |
| CPMT060208FW | 6,35 | 6,45 | 0,8 | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | - | - | |
| CPMT09T304FW | 9,53 | 9,67 | 0,4 | - | - | - | - | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | - | - | ● | - | - | - | - |
| CPMT09T308FW | 9,53 | 9,67 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | ● | - | ● | - | - | - | - | - | |

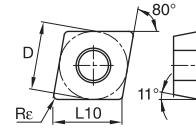
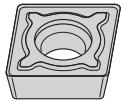


● first choice
○ alternate choice



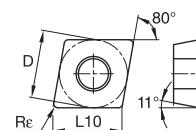
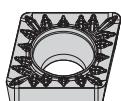
■ CPMT-LF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CPMT050202LF | 5,56 | 5,65 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT050204LF | 5,56 | 5,65 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT060202LF | 6,35 | 6,45 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT060204LF | 6,35 | 6,45 | 0,4 | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT060208LF | 6,35 | 6,45 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT09T302LF | 9,53 | 9,67 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT09T304LF | 9,53 | 9,67 | 0,4 | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT09T308LF | 9,53 | 9,67 | 0,8 | - | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



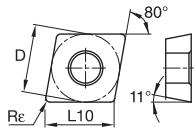
■ CPMT-MF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CPMT060208MF | 6,35 | 6,45 | 0,8 | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CPMT09T308MF | 9,53 | 9,67 | 0,8 | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CPMT09T312MF | 9,53 | 9,67 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |



■ CPMT-MP

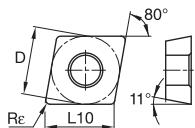
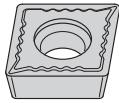
| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CPMT060208MP | 6,35 | 6,45 | 0,8 | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CPMT09T308MP | 9,53 | 9,67 | 0,8 | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | - | - | - | | | | | |



- first choice
- alternate choice

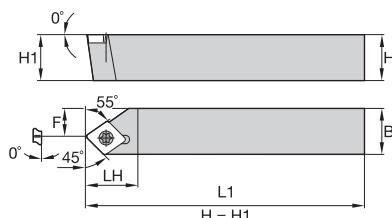
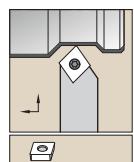
CPMT-MW

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCK15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CPMT09T304MW | 9,53 | 9,67 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| CPMT09T308MW | 9,53 | 9,67 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | - | - | ● | - | - | - | - | - | | |



CPMT-UF

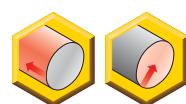
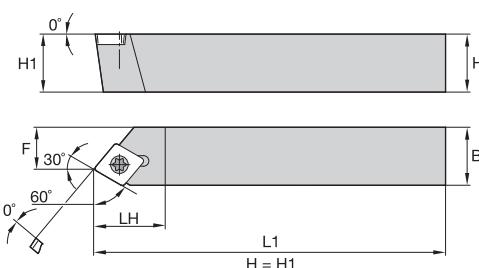
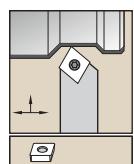
| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|----------------|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| CPMT060204UF | 6,35 | 6,45 | 0,4 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| CPMT09T304UF | 9,53 | 9,67 | 0,4 | - | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | |



■ SCDP 45°



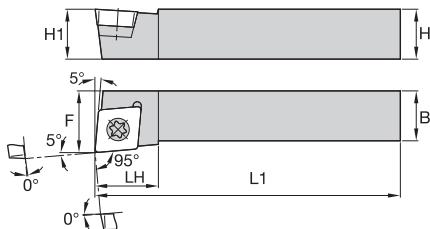
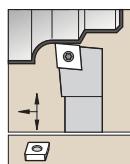
| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|-----------------------|------------------|----|----|-----|-----|------|-------------|--------------|------|
| right hand 1244893 | SCDPR1212H06 | 12 | 12 | 7,0 | 100 | 14,0 | CP..060203 | MS1153 | T7 |



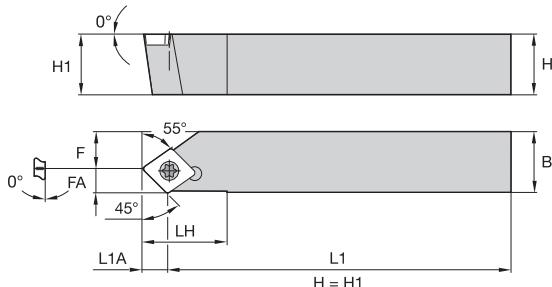
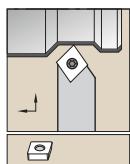
■ SCEP 60°



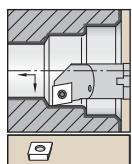
| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|-----------------------|------------------|----|----|-----|-----|------|--------------|--------------|------|
| right hand 1244896 | SCEPR1010H06 | 10 | 10 | 6,5 | 100 | 12,0 | CP..060203R. | MS1153 | T7 |
| 1250901 | SCEPR1212H06 | 12 | 12 | 8,5 | 100 | 12,0 | CP..060203R. | MS1153 | T7 |


SCLP 95°

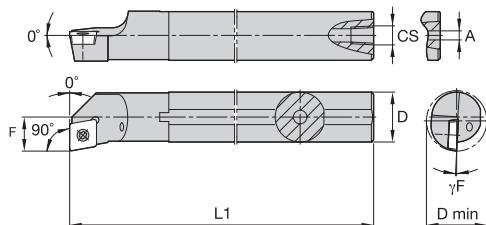
| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|-----------------------|------------------|----|----|------|-----|------|-------------|--------------|------|
| right hand 1192469 | SCLPR1212M06 | 12 | 12 | 13,0 | 150 | 11,4 | CP..060203 | MS1153 | T7 |
| left hand 1244913 | SCLPL1212M06 | 12 | 12 | 13,0 | 150 | 11,4 | CP..060203 | MS1153 | T7 |


SCSP 45°

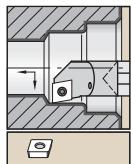
| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | insert screw | Torx |
|-----------------------|------------------|----|----|-----|-----|------|-----|-----|-------------|--------------|------|
| right hand 1244917 | SCSPR1010H06 | 10 | 10 | 6,0 | 100 | 14,0 | 4,2 | 4,2 | CP..060203 | MS1153 | T7 |



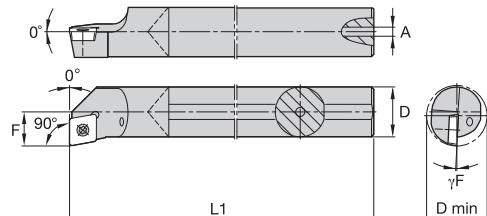
Steel shank with through coolant.

**■ A-SCFP 90°**

| order number | catalogue number | D | D min | F | L1 | A | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|-------------|------|-------------|--------------|------|
| right hand | | | | | | | | | | | |
| 1098157 | A08JSCFPR06 | 8 | 11,0 | 6,0 | 110 | 2,4 | — | -8,0 | CP..060204 | MS1153 | T7 |
| 1098165 | A10KSCFPR06 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -6,0 | CP..060204 | MS1153 | T7 |
| 1098175 | A12MSCFPR06 | 12 | 16,0 | 9,0 | 150 | 4,0 | 1/16-27 NPT | -4,0 | CP..060204 | MS1153 | T7 |
| 1886498 | A16RSCFPR06 | 16 | 20,0 | 11,0 | 200 | — | 1/8-27 NPT | -5,0 | CP..060203 | MS1153 | T7 |
| 1098221 | A16RSCFPR09 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | -4,0 | CP..09T308 | MS1155 | T15 |
| 1098235 | A20SSCFPR09 | 20 | 25,0 | 13,0 | 250 | 4,0 | 1/8-27 NPT | -2,0 | CP..09T308 | MS1155 | T15 |
| left hand | | | | | | | | | | | |
| 1098161 | A08JSCFPL06 | 8 | 11,0 | 6,0 | 110 | 2,4 | — | -8,0 | CP..060204 | MS1153 | T7 |
| 1098170 | A10KSCFPL06 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -6,0 | CP..060204 | MS1153 | T7 |
| 1098180 | A12MSCFPL06 | 12 | 16,0 | 9,0 | 150 | 4,0 | 1/16-27 NPT | -4,0 | CP..060204 | MS1153 | T7 |
| 1098227 | A16RSCFPL09 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | -4,0 | CP..09T308 | MS1155 | T15 |
| 1098241 | A20SSCFPL09 | 20 | 25,0 | 13,0 | 250 | 4,0 | 1/8-27 NPT | -2,0 | CP..09T308 | MS1155 | T15 |



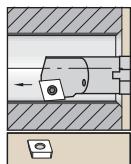
Carbide shank
with through
coolant.



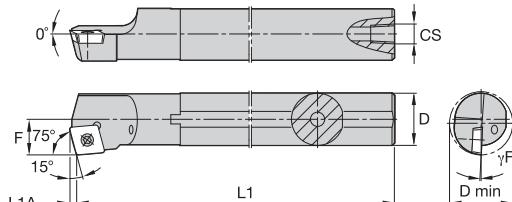
ISO Turning

■ E-SCFP 90°

| order number | catalogue number | D | D min | F | L1 | A | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|-----|-----|-----|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1152852 | E08KSCFPR06A | 8 | 11,0 | 6,0 | 125 | 2,4 | -8,0 | CP..060204 | MS1939 | T7 |
| 1152854 | E10MSCFPR06A | 10 | 13,0 | 7,0 | 150 | 3,2 | -4,0 | CP..060204 | MS1939 | T7 |
| 1152888 | E12QSCFPR06 | 12 | 16,0 | 9,0 | 180 | 4,8 | -3,0 | CP..060204 | MS1153 | T7 |
| left hand | | | | | | | | | | |
| 1152853 | E08KSCFPL06A | 8 | 11,0 | 6,0 | 125 | 2,4 | -8,0 | CP..060204 | MS1939 | T7 |

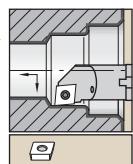


Steel shank with
through coolant.

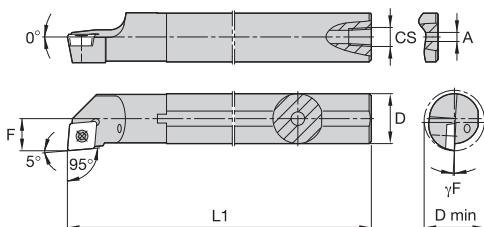


■ A-SCKP 75°

| order number | catalogue number | D | D min | F | L1 | L1A | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|------------|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | | |
| 1098236 | A20SSCKPR09 | 20 | 25,0 | 13,0 | 250 | 2,3 | 1/8-27 NPT | -3,0 | CP..09T308 | MS1155 | T15 |



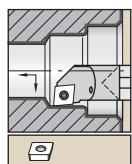
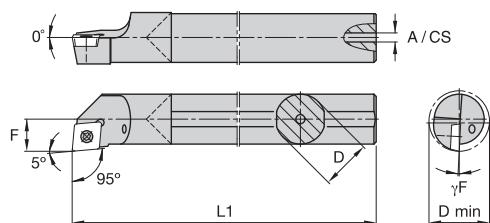
Steel shank with through coolant.



■ A-SCLP 95°



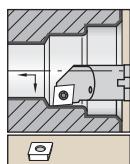
| order number | catalogue number | D | D min | F | L1 | A | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|------|-------|------|------|-----|-------------|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | | |
| 1098156 | A08JSCLPR06 | .315 | .433 | .236 | 4.33 | .09 | — | -6.0 | CP..060204 | MS1939 | T7 |
| 1098164 | A10KSCLPR06 | .390 | .512 | .276 | 4.92 | .13 | — | -4.0 | CP..060204 | MS1939 | T7 |
| 1098174 | A12MSCLPR06 | .472 | .630 | .354 | 5.91 | .16 | 1/16-27 NPT | -3.0 | CP..060204 | MS1153 | T7 |
| 1886502 | A16RSCLPR06 | .630 | .787 | .433 | 7.87 | — | 1/8-27 NPT | -5.0 | CP..060203 | MS1153 | T7 |
| 1098220 | A16RSCLPR09 | .630 | .787 | .433 | 7.87 | .16 | 1/8-27 NPT | -4.0 | CP..09T308 | MS1155 | T15 |
| 1098234 | A20SSCLPR09 | .787 | .984 | .512 | 9.84 | .16 | 1/8-27 NPT | -2.0 | CP..09T308 | MS1155 | T15 |
| 1886504 | A20SSCLPR06 | .787 | .984 | .512 | 9.84 | — | 1/8-27 NPT | -3.0 | CP..060203 | MS1153 | T7 |
| left hand | | | | | | | | | | | |
| 1098160 | A08JSCLPL06 | .315 | .433 | .236 | 4.33 | .09 | — | -6.0 | CP..060204 | MS1939 | T7 |
| 1098169 | A10KSCLPL06 | .390 | .512 | .276 | 4.92 | .13 | — | -4.0 | CP..060204 | MS1939 | T7 |
| 1098179 | A12MSCLPL06 | .472 | .630 | .354 | 5.91 | .16 | 1/16-27 NPT | -3.0 | CP..060204 | MS1153 | T7 |
| 1886501 | A16RSCLPL06 | .630 | .787 | .433 | 7.87 | — | 1/8-27 NPT | -5.0 | CP..060203 | MS1153 | T7 |
| 1098226 | A16RSCLPL09 | .630 | .787 | .433 | 7.87 | .16 | 1/8-27 NPT | -4.0 | CP..09T308 | MS1155 | T15 |
| 1098240 | A20SSCLPL09 | .787 | .984 | .512 | 9.84 | .16 | 1/8-27 NPT | -2.0 | CP..09T308 | MS1155 | T15 |


Carbide shank
with through
coolant.


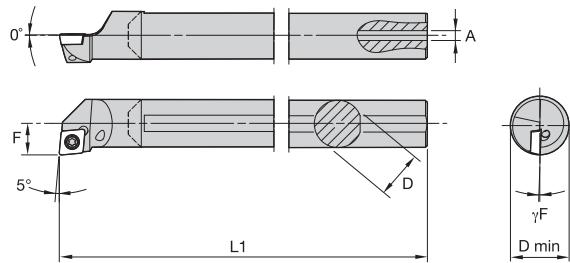
ISO Turning

E-SCLP 95°


| order number | catalogue number | D | D min | F | L1 | A | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1152856 | E08KSCLPR06A | 8 | 11,0 | 6,0 | 122 | 2,4 | -6,0 | CP..060204 | MS1939 | T7 |
| 1152858 | E10MSCLPR06A | 10 | 13,0 | 7,0 | 150 | 3,2 | -4,0 | CP..060204 | MS1939 | T7 |
| 1152889 | E12QSCLPR06 | 12 | 16,0 | 9,0 | 180 | 4,8 | -3,0 | CP..060204 | MS1153 | T7 |
| 1152897 | E16RSCLPR09 | 16 | 20,0 | 11,0 | 200 | 5,5 | -4,0 | CP..09T308 | MS1155 | T15 |
| 1152902 | E20SSCLPR09 | 20 | 25,0 | 13,0 | 250 | 7,1 | -2,0 | CP..09T308 | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 1152857 | E08KSCLPL06A | 8 | 11,0 | 6,0 | 122 | 2,4 | -6,0 | CP..060204 | MS1939 | T7 |
| 1152859 | E10MSCLPL06A | 10 | 13,0 | 7,0 | 150 | 3,2 | -4,0 | CP..060204 | MS1939 | T7 |
| 1152891 | E12QSCLPL06 | 12 | 16,0 | 9,0 | 180 | 4,8 | -3,0 | CP..060204 | MS1153 | T7 |
| 1152899 | E16RSCLPL09 | 16 | 20,0 | 11,0 | 200 | 5,5 | -4,0 | CP..09T308 | MS1155 | T15 |
| 1152905 | E20SSCLPL09 | 20 | 25,0 | 13,0 | 250 | 7,1 | -2,0 | CP..09T308 | MS1155 | T15 |



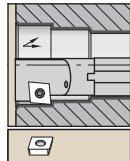
Heavy metal bar with through coolant.



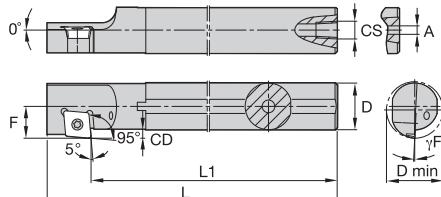
■ L-SCLP 95°



| order number | catalogue number | D | D min | F | L1 | A | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|------------------|--------------|--------------|------|
| right hand | | | | | | | | | | |
| 3331115 | L08KSCLPR06 | 8 | 11,0 | 6,0 | 123 | 2,4 | -6,0 | CP..060204.. | MS1939 | T7 |
| 3331107 | L10MSCLPR06 | 10 | 13,0 | 7,0 | 149 | 3,2 | -4,0 | CP..060204.. | MS1939 | T7 |
| 3331110 | L12QSCLPR06 | 12 | 16,0 | 9,0 | 181 | 4,0 | -3,0 | CP..060204.. | MS1153 | T7 |
| 3331108 | L16RSCLPR09 | 16 | 20,0 | 11,0 | 203 | 4,0 | -4,0 | CP..09T308.. | MS1155 | T15 |
| 3331106 | L20SSCLPR09 | 20 | 25,0 | 13,0 | 251 | 4,0 | -2,0 | CP..09T308.. | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 3331112 | L12QSCLPL06 | 12 | 16,0 | 9,0 | 181 | 4,0 | -3,0 | CP..060204.. | MS1153 | T7 |
| 3331114 | L16RSCLPL09 | 16 | 20,0 | 11,0 | 203 | 4,0 | -4,0 | CP..09T308.. | MS1155 | T15 |
| 3331109 | L20SSCLPL09 | 20 | 25,0 | 13,0 | 251 | 4,0 | -2,0 | CP..09T308.. | MS1155 | T15 |



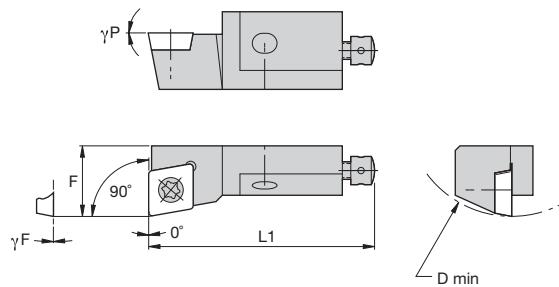
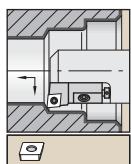
Steel shank with through coolant.



■ A-SCXP 95°



| order number | catalogue number | D | D min | F | L1 | L | A | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-------|-----|-------------|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1098167 | A10KSCXPR06 | 10 | 13,0 | 7,0 | 125 | 136,0 | 3,2 | — | -4,0 | CP..060204 | MS1153 | T7 |
| 1098177 | A12MSCXPR06 | 12 | 16,0 | 9,0 | 150 | 161,0 | 4,0 | 1/16-27 NPT | -3,0 | CP..060204 | MS1153 | T7 |
| 1098223 | A16RSCXPR09 | 16 | 20,0 | 11,0 | 200 | 218,0 | 4,0 | 1/8-27 NPT | -4,0 | CP..09T308 | MS1155 | T15 |



■ SCFP 90°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|----------------------|
| right hand | | | | | | | |
| 1098551 | SCFPR06CA05 | 20 | 8,0 | 25 | 0.0 | 0.0 | CP..050204/CP..18151 |
| 1082671 | SCFPR08CA06 | 25 | 10,0 | 32 | 0.0 | 0.0 | CP..060204/CP..2151 |
| 1797235 | SCFPR10CA09 | 40 | 14,0 | 50 | 0.0 | 0.0 | CP..09T308/CP..3252 |
| left hand | | | | | | | |
| 1098766 | SCFPL08CA06 | 25 | 10,0 | 32 | 0.0 | 0.0 | CP..060204/CP..2151 |

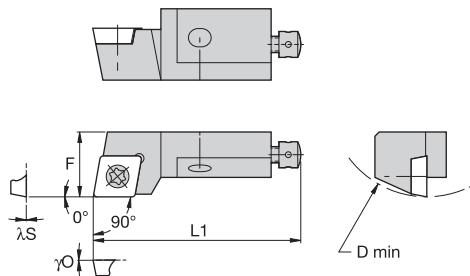
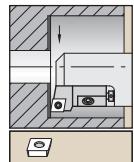
NOTE: ANSI/ISO compatible 60° countersunk hole inserts.

This tool also accepts CPGM/CPGT/CPGW-21.5_ inserts.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|--------|--------------|
| 20 | MS1933 | T7 | KUAM34 | 1.5 mm | KUAM35 | MS2173 | 2 mm | CSWM 035 040 |
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | 2.5 mm | CSWM 040 050 |
| 40 | MS1155 | T15 | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



■ SCGP 90°

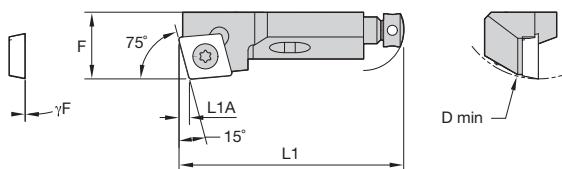
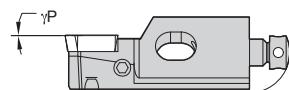
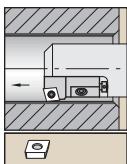
| order number | catalogue number | D min | F | L1 | λS° | γO° | gage insert |
|-----------------------|------------------|-------|------|----|-------------------|------------------|---------------------|
| right hand 1098554 | SCGPR08CA06 | 25 | 10,0 | 32 | 0.0 | 0.0 | CP..060204/CP..2151 |

NOTE: ANSI/ISO compatible 60° countersunk hole inserts.
This tool also accepts CPGM/CPGT/CPGW-21.5_ inserts.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|--------|--------------|
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | 2.5 mm | CSWM 040 050 |



■ SCKP 75°

| order number | catalogue number | D min | F | L1 | L1A | γF° | γP° | gage insert |
|-----------------------|------------------|-------|------|----|-----|------------------|------------------|---------------------|
| right hand 1098552 | SCKPR08CA06 | 25 | 10,0 | 32 | 1,6 | 0.0 | 0.0 | CP..060204/CP..2151 |
| left hand 1098763 | SCKPL08CA06 | 25 | 10,0 | 32 | 1,6 | 0.0 | 0.0 | CP..060204/CP..2151 |

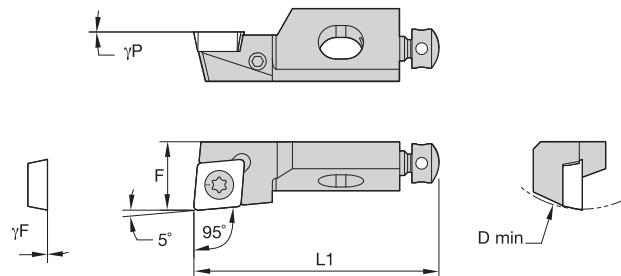
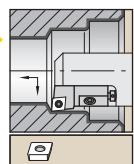
NOTE: ANSI/ISO compatible 60° countersunk hole inserts.

This tool also accepts CPGM/CPGT/CPGW-21.5_ inserts.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|--------|--------------|
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | 2.5 mm | CSWM 040 050 |



■ SCLP 95°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|----------------------|
| right hand | | | | | | | |
| 1098541 | SCLPR06CA05 | 20 | 8,0 | 25 | 0.0 | 0.0 | CP..050204/CP..18151 |
| 1098542 | SCLPR08CA06 | 25 | 10,0 | 32 | 0.0 | 0.0 | CP..060204/CP..2151 |
| 1098543 | SCLPR10CA09 | 40 | 14,0 | 50 | 0.0 | 0.0 | CP..09T308/CP..3252 |
| left hand | | | | | | | |
| 1098730 | SCLPL08CA06 | 25 | 10,0 | 32 | 0.0 | 0.0 | CP..060204/CP..2151 |
| 1098731 | SCLPL10CA09 | 40 | 14,0 | 50 | 0.0 | 0.0 | CP..09T308/CP..3252 |

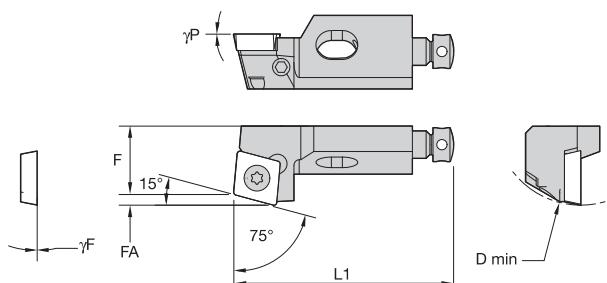
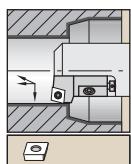
NOTE: ANSI/ISO compatible 60° countersunk hole inserts. This tool also accepts CPGM/CPGT/CPGW-21.5_ inserts.

ANSI/ISO compatible 60° countersunk hole inserts (i.e., CPMT/CPGT/CPGW-32.5_). 90° countersunk hole inserts (i.e., CPGM/CPGB-32.5_) do not fit this tool.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|--------|--------------|
| 20 | MS1933 | T7 | KUAM34 | 1.5 mm | KUAM35 | MS2173 | 2 mm | CSWM 035 040 |
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | 2.5 mm | CSWM 040 050 |
| 40 | MS1155 | T15 | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



■ SCRP 75°

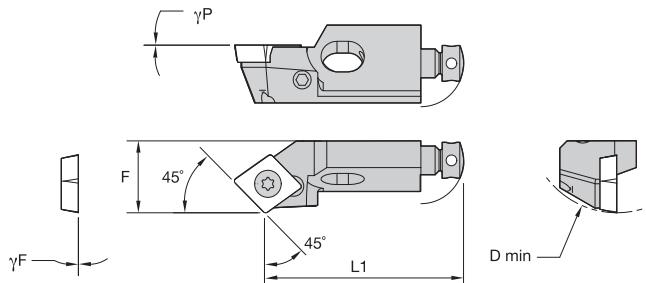
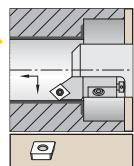
| order number | catalogue number | D min | F | L1 | FA | γF° | γP° | gage insert |
|-------------------------------------|--------------------|-------|------|----|-----|------------------|------------------|---------------------|
| right hand 1098555 | SCRPR08CA06 | 25 | 10,0 | 32 | 1,5 | 0.0 | 0.0 | CP..060204/CP..2151 |

NOTE: ANSI/ISO compatible 60° countersunk hole inserts.
This tool also accepts CPGM/CPGT/CPGW-21.5_ inserts.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|--------|--------------|
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | 2.5 mm | CSWM 040 050 |



■ SCSP 45°

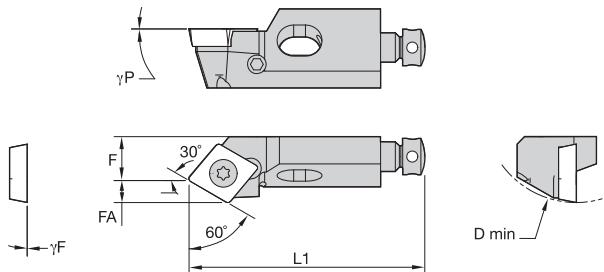
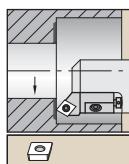
| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|----------------------|
| right hand | | | | | | | |
| 1098328 | SCSPR06CA05 | 20 | 8,0 | 21 | 0.0 | 0.0 | CP..050204/CP..18151 |
| 1086536 | SCSPR08CA06 | 25 | 10,0 | 28 | 0.0 | 0.0 | CP..060204/CP..2151 |
| left hand | | | | | | | |
| 1098548 | SCSPL06CA05 | 20 | 8,0 | 21 | 0.0 | 0.0 | CP..050204/CP..18151 |
| 1098549 | SCSPL08CA06 | 25 | 10,0 | 28 | 0.0 | 0.0 | CP..060204/CP..2151 |

NOTE: ANSI/ISO compatible 60° countersunk hole inserts.
This tool also accepts CPGM/CPGT/CPGW-21.5_ inserts.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|--------|--------------|
| 20 | MS1933 | T7 | — | — | KUAM35 | MS2173 | 2 mm | CSWM 035 040 |
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | 2.5 mm | CSWM 040 050 |



■ SCTP 60°

| order number | catalogue number | D_{min} | F | $L1$ | FA | γ_F° | γ_P° | gage insert |
|-------------------|------------------|-----------|-----|------|------|------------------|------------------|----------------------|
| right hand | | | | | | | | |
| 1098556 | SCTPR06CA05 | 20 | 5,5 | 25 | 2,6 | 0.0 | 0.0 | CP..050204/CP..18151 |
| 1098557 | SCTPR08CA06 | 25 | 6,0 | 32 | 3,0 | 0.0 | 0.0 | CP..060204/CP..2151 |
| left hand | | | | | | | | |
| 1098736 | SCTPL08CA06 | 25 | 6,0 | 32 | 3,0 | 0.0 | 0.0 | CP..060204/CP..2151 |

NOTE: ANSI/ISO compatible 60° countersunk hole inserts.
This tool also accepts CPGM/CPGT/CPGW-21.5_ inserts.

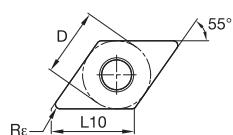
■ Spare Parts



| D_{min} | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-----------|--------------|------|------------------------|--------|-----------------------|----------------|--------|--------------|
| 20 | MS1933 | T7 | — | — | KUAM35 | MS2173 | 2 mm | CSWM 035 040 |
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | 2.5 mm | CSWM 040 050 |

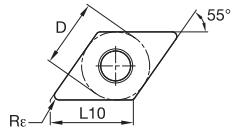


● first choice
○ alternate choice



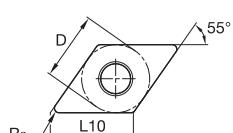
■ DCGT-HP

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM35 | KCM25 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DCGT070202HP | 6,35 | 7,75 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | | |
| DCGT070204HP | 6,35 | 7,75 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | - | | |
| DCGT070208HP | 6,35 | 7,75 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DCGT11T302HP | 9,53 | 11,63 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | | |
| DCGT11T304HP | 9,53 | 11,63 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | | |
| DCGT11T308HP | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | - | | |



■ DCGT-LF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM35 | KCM25 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DCGT0702X0LF | 6,35 | 7,75 | 0,0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | | |
| DCGT070201LF | 6,35 | 7,75 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | - | | |
| DCGT11T3X0LF | 9,53 | 11,63 | 0,0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DCGT11T301LF | 9,53 | 11,63 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | - | | |
| DCGT150408LF | 12,70 | 15,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | - | | |

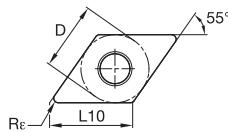


■ DCMT-11

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM35 | KCM25 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DCMT07020211 | 6,35 | 7,75 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DCMT07020411 | 6,35 | 7,75 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | - | | |
| DCMT11T30411 | 9,53 | 11,63 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DCMT11T30811 | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | - | | |

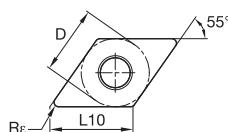
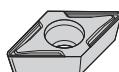


- first choice
- alternate choice



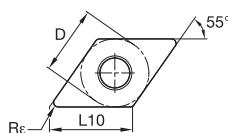
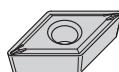
■ DCMT-FP

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KCS010 | KCS025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DCMT070202FP | 6,35 | 7,75 | 0,2 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | |
| DCMT070204FP | 6,35 | 7,75 | 0,4 | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | - | - | - | ● | ● | ● | - | - | - | - | |
| DCMT070208FP | 6,35 | 7,75 | 0,8 | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | ● | - | - | - | - | - | - | |
| DCMT11T302FP | 9,53 | 11,63 | 0,2 | - | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | - | - | - | ● | ● | - | - | - | - | ● | |
| DCMT11T304FP | 9,53 | 11,63 | 0,4 | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | - | - | - | ● | ● | - | - | - | - | ● | |
| DCMT11T308FP | 9,53 | 11,63 | 0,8 | ● | ● | ● | - | ● | - | - | - | - | - | - | - | - | ● | - | ● | ● | ● | - | - | - | ● | ● | - | - | - | - | ● | |
| DCMT11T312FP | 9,53 | 11,63 | 1,2 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DCMT150404FP | 12,70 | 15,50 | 0,4 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - |
| DCMT150408FP | 12,70 | 15,50 | 0,8 | ● | - | - | ● | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | - |



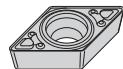
■ DCMT-FW

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK10 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DCMT11T304FW | 9,53 | 11,63 | 0,2 | - | - | - | - | ● | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DCMT11T308FW | 9,53 | 11,63 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | | | |

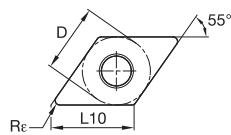


DCMT-LF

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KCS010 | KCS025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DCMT070202LF | 6,35 | 7,75 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DCMT070204LF | 6,35 | 7,75 | 0,4 | - | ● | ● | ● | ● | ● | ● | - | - | ● | - | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| DCMT11T302LF | 9,53 | 11,63 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | | | | |
| DCMT11T304LF | 9,53 | 11,63 | 0,4 | ● | ● | ● | ● | ● | ● | ● | - | - | ● | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| DCMT11T308LF | 9,53 | 11,63 | 0,8 | - | ● | ● | ● | ● | ● | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| DCMT11T312LF | 9,53 | 11,63 | 1,2 | - | ● | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DCMT150404LF | 12,70 | 15,50 | 0,4 | - | - | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | | | |
| DCMT150408LF | 12,70 | 15,50 | 0,8 | - | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | | | |

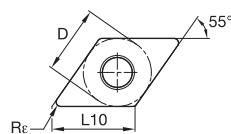


● first choice
○ alternate choice



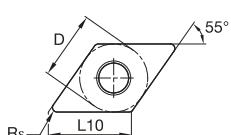
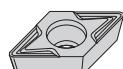
■ DCMT-MF

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|-------|-----|---|--------|---|---|---|---|
| DCMT11T304MF | 9,53 | 11,63 | 0,4 | - | KCP05 | - | - | - | - |
| DCMT11T308MF | 9,53 | 11,63 | 0,8 | - | KCP10B | - | - | - | - |
| DCMT11T312MF | 9,53 | 11,63 | 1,2 | - | KCP10 | - | - | - | - |



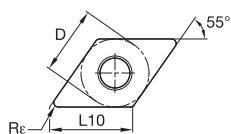
■ DCMT-MP

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|-------|-----|---|--------|---|---|---|---|
| DCMT11T304MP | 9,53 | 11,63 | 0,4 | - | KCP05 | - | - | - | - |
| DCMT11T308MP | 9,53 | 11,63 | 0,8 | - | KCP10B | - | - | - | - |
| DCMT11T312MP | 9,53 | 11,63 | 1,2 | - | KCP10 | - | - | - | - |



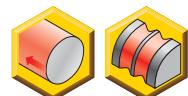
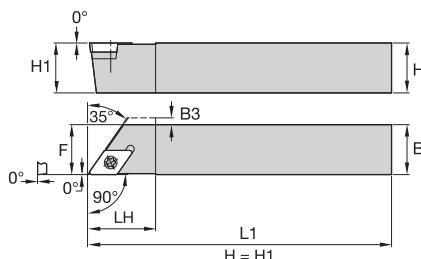
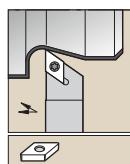
■ DCMT-MW

| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|-------|-----|---|--------|---|---|---|---|
| DCMT11T304MW | 9,53 | 11,63 | 0,4 | - | KCP05 | - | - | - | - |
| DCMT11T308MW | 9,53 | 11,63 | 0,8 | - | KCP10B | - | - | - | - |

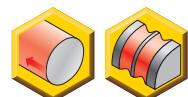
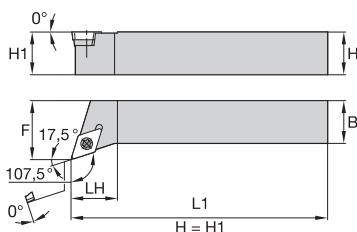
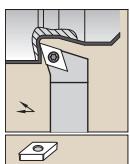


■ DCMT-UF

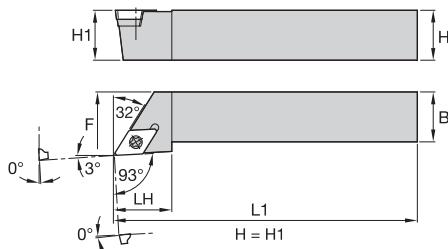
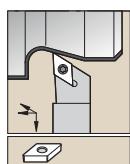
| ISO catalogue number | D | L10 | Rε | P | M | K | N | S | H |
|----------------------|------|-------|-----|---|--------|---|---|---|---|
| DCMT070204UF | 6,35 | 7,75 | 0,4 | - | KCP05 | - | - | - | - |
| DCMT11T302UF | 9,53 | 11,63 | 0,2 | ● | KCP10B | - | - | - | - |
| DCMT11T304UF | 9,53 | 11,63 | 0,4 | ● | KCP10 | - | - | - | - |
| DCMT11T308UF | 9,53 | 11,63 | 0,8 | ● | KCP25B | - | - | - | - |


SDAC 90°


| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | hex | insert screw | Torx |
|--------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | | |
| 1772159 | SDACR1212M11Q | 12 | 12 | 12,0 | 150 | 22,0 | 1,5 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1097720 | SDACR1616K11Q | 16 | 16 | 16,0 | 125 | 22,0 | — | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | | |
| 1772160 | SDACL1212M11Q | 12 | 12 | 12,0 | 150 | 22,0 | 1,5 | DC..11T308 | — | — | — | MS1155 | T15 |


SDHC 107,5°

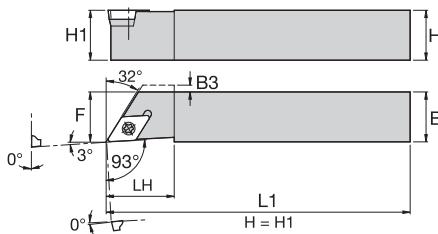
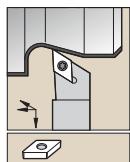

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|--------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1097841 | SDHCR1616H11 | 16 | 16 | 20,0 | 100 | 20,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097989 | SDHCR2020K11 | 20 | 20 | 25,0 | 125 | 20,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1130381 | SDHCR2525M11 | 25 | 25 | 32,0 | 150 | 20,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097843 | SDHCR2525M15 | 25 | 25 | 32,0 | 150 | 25,0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |
| left hand | | | | | | | | | | | | |
| 1097986 | SDHCL1616H11 | 16 | 16 | 20,0 | 100 | 20,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097930 | SDHCL2020K11 | 20 | 20 | 25,0 | 125 | 20,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1124630 | SDHCL2525M11 | 25 | 25 | 32,0 | 150 | 20,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097988 | SDHCL2525M15 | 25 | 25 | 32,0 | 150 | 25,0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |



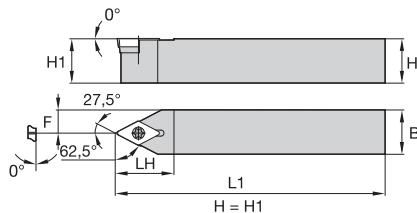
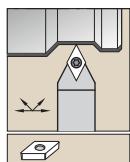
■ SDJC 93°



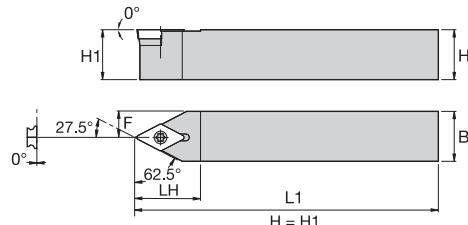
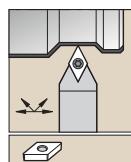
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1097847 | SDJCR0808L07 | 8 | 8 | 10,0 | 140 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097848 | SDJCR1010M07 | 10 | 10 | 12,0 | 150 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097849 | SDJCR1212N07 | 12 | 12 | 16,0 | 160 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097850 | SDJCR1212N11 | 12 | 12 | 16,0 | 160 | 22,0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1244972 | SDJCR1616H07 | 16 | 16 | 20,0 | 100 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097851 | SDJCR1616H11 | 16 | 16 | 20,0 | 100 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1244974 | SDJCR2020K07 | 20 | 20 | 25,0 | 125 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097853 | SDJCR2020K11 | 20 | 20 | 25,0 | 125 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097852 | SDJCR2020K15 | 20 | 20 | 25,0 | 125 | 32,0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1097854 | SDJCR2525M11 | 25 | 25 | 32,0 | 150 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097855 | SDJCR2525M15 | 25 | 25 | 32,0 | 150 | 32,0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |
| left hand | | | | | | | | | | | | |
| 1097997 | SDJCL0808L07 | 8 | 8 | 10,0 | 140 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097998 | SDJCL1010M07 | 10 | 10 | 12,0 | 150 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097999 | SDJCL1212N07 | 12 | 12 | 16,0 | 160 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1098000 | SDJCL1212N11 | 12 | 12 | 16,0 | 160 | 22,0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1244966 | SDJCL1616H07 | 16 | 16 | 20,0 | 100 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1098001 | SDJCL1616H11 | 16 | 16 | 20,0 | 100 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1244968 | SDJCL2020K07 | 20 | 20 | 25,0 | 125 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1098003 | SDJCL2020K11 | 20 | 20 | 25,0 | 125 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1192473 | SDJCL2525M11 | 25 | 25 | 32,0 | 150 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1098004 | SDJCL2525M15 | 25 | 25 | 32,0 | 150 | 32,0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |


■ SDJC-F 93°

| order number | catalogue number | H | B | F | L1 | LH | B3 | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | | |
| 1772157 | SDJCRF0808M07Q | 8 | 8 | 8,0 | 150 | 16,0 | 1,5 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097844 | SDJCRF1010M07Q | 10 | 10 | 10,0 | 150 | 16,0 | — | DC..070204 | — | — | — | MS1153 | T7 |
| 1097845 | SDJCRF1212M07Q | 12 | 12 | 12,0 | 150 | 16,0 | — | DC..070204 | — | — | — | MS1153 | T7 |
| 1097846 | SDJCRF1616K11Q | 16 | 16 | 16,0 | 125 | 22,0 | — | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | | |
| 1097996 | SDJCLF1616K11Q | 16 | 16 | 16,0 | 125 | 22,0 | — | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |


■ SDNC 62,5°

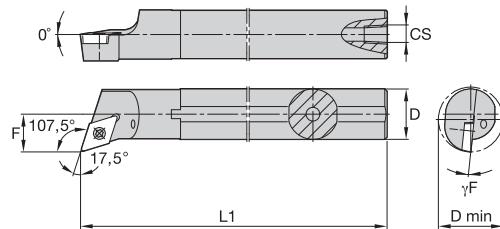
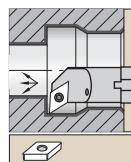
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| left hand | | | | | | | | | | | | |
| 1097856 | SDNCN0808L07 | 8 | 8 | 4,0 | 140 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097857 | SDNCN1010M07 | 10 | 10 | 5,0 | 150 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097858 | SDNCN1212N07 | 12 | 12 | 6,0 | 160 | 16,0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1097859 | SDNCN1616H11 | 16 | 16 | 8,0 | 100 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097861 | SDNCN2020K11 | 20 | 20 | 10,0 | 125 | 22,0 | DC..11T308 | SKDP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097860 | SDNCN2020K15 | 20 | 20 | 10,0 | 125 | 28,0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1097862 | SDNCN2525M15 | 25 | 25 | 12,5 | 150 | 28,0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |



■ SDPC 62,5°

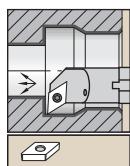
| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|--------------|------------------|----|----|-----|-----|------|-------------|--------------|------|
| 1772173 | SDPCN1212M11Q | 12 | 12 | 6,0 | 150 | 22,0 | DC..11T308 | MS1155 | T15 |

Screw-On Boring Bars

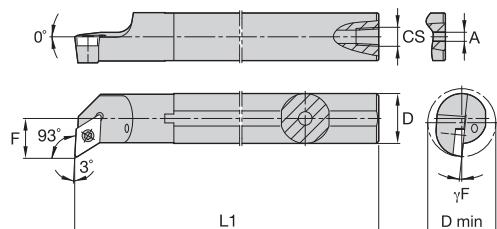


■ A-SDQC 107,5°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-------------|------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1098188 | A12MSDQCR07 | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -6,0 | DC..070204 | MS1153 | T7 |
| 1098198 | A16RSDQCR07 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | -5,0 | DC..070204 | MS1153 | T7 |
| 1098147 | A20SSDQCR11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -5,0 | DC..11T308 | MS1155 | T15 |
| 1098260 | A25TSDQCR11 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | -4,0 | DC..11T308 | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 1098193 | A12MSDQCL07 | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -6,0 | DC..070204 | MS1153 | T7 |
| 1098203 | A16RSDQCL07 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | -5,0 | DC..070204 | MS1153 | T7 |
| 1098149 | A20SSDQCL11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -5,0 | DC..11T308 | MS1155 | T15 |
| 1098264 | A25TSDQCL11 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | -4,0 | DC..11T308 | MS1155 | T15 |



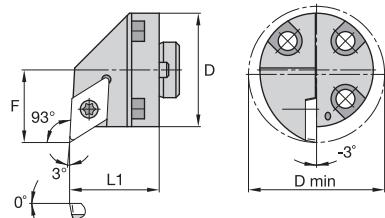
Steel shank with through coolant.


■ A-SDUC 93°


| order number | catalogue number | D | D min | F | L1 | A | CS | γF° | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|-------------|------------------|-------------|---------|------------|------|--------------|------|
| right hand | | | | | | | | | | | | | | |
| 1886506 | A10KSDUCR07 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -7.0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1098187 | A12MSDUCR07 | 12 | 16,0 | 9,0 | 150 | — | 1/16-27 NPT | -4.0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1098197 | A16RSDUCR07 | 16 | 20,0 | 11,0 | 200 | — | 1/8-27 NPT | -4.0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1886508 | A16RSDUCR11 | 16 | 20,0 | 11,0 | 200 | — | 1/8-27 NPT | -6.0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1098146 | A20SSDUCR11 | 20 | 25,0 | 13,0 | 250 | — | 1/8-27 NPT | -5.0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1098259 | A25TSDUCR11 | 25 | 32,0 | 17,0 | 300 | — | 1/4-18 NPT | -4.0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1098283 | A32TSDUCR15 | 32 | 40,0 | 22,0 | 300 | — | 1/4-18 NPT | -7.0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |
| left hand | | | | | | | | | | | | | | |
| 1886505 | A10KSDUCL07 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -7.0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1098192 | A12MSDUCL07 | 12 | 16,0 | 9,0 | 150 | — | 1/16-27 NPT | -4.0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1098202 | A16RSDUCL07 | 16 | 20,0 | 11,0 | 200 | — | 1/8-27 NPT | -4.0 | DC..070204 | — | — | — | MS1153 | T7 |
| 1886507 | A16RSDUCL11 | 16 | 20,0 | 11,0 | 200 | — | 1/8-27 NPT | -6.0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1098148 | A20SSDUCL11 | 20 | 25,0 | 13,0 | 250 | — | 1/8-27 NPT | -5.0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1098263 | A25TSDUCL11 | 25 | 32,0 | 17,0 | 300 | — | 1/4-18 NPT | -4.0 | DC..11T308 | — | — | — | MS1155 | T15 |
| 1098284 | A32TSDUCL15 | 32 | 40,0 | 22,0 | 300 | — | 1/4-18 NPT | -7.0 | DC..150408 | SKDP453 | SRS4 | 4 mm | MS1158 | T15 |

Screw-On Boring Heads

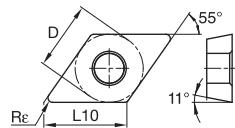

With through coolant.


■ H-SDUC 93°


| order number | catalogue number | D | D min | F | L1 | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|----|-------------|--------------|------|
| right hand | | | | | | | | |
| 1772255 | H25SDUCR11 | 25 | 32,0 | 17,0 | 20 | DC..11T308 | MS1155 | T15 |
| 1772257 | H32SDUCR11 | 32 | 40,0 | 22,0 | 25 | DC..11T308 | MS1155 | T15 |
| 3612136 | H40SDUCR11 | 40 | 50,0 | 27,0 | 41 | DC..11T308 | MS1156 | T15 |
| 3612138 | H50SDUCR11 | 50 | 63,0 | 35,0 | 41 | DC..11T308 | MS1156 | T15 |
| left hand | | | | | | | | |
| 1772256 | H25SDUCL11 | 25 | 32,0 | 17,0 | 20 | DC..11T308 | MS1155 | T15 |
| 1772258 | H32SDUCL11 | 32 | 40,0 | 22,0 | 25 | DC..11T308 | MS1155 | T15 |
| 3612139 | H50SDUCL11 | 50 | 63,0 | 35,0 | 41 | DC..11T308 | MS1156 | T15 |

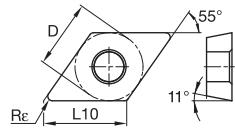


● first choice
○ alternate choice



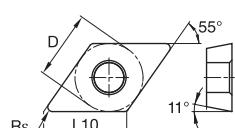
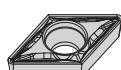
■ DPGT-HP

| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DPGT070202HP | 6,35 | 7,75 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT070204HP | 6,35 | 7,75 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT070208HP | 6,35 | 7,75 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT11T304HP | 9,53 | 11,63 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT11T308HP | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



■ DPGT-LF

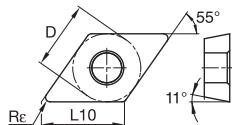
| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DPGT070201LF | 6,35 | 7,75 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT070202LF | 6,35 | 7,75 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT070204LF | 6,35 | 7,75 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT11T301LF | 9,53 | 11,63 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT11T302LF | 9,53 | 11,63 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT11T304LF | 9,53 | 11,63 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPGT11T308LF | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



■ DPMT-FP

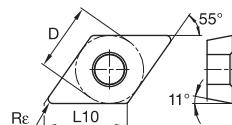
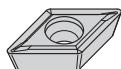
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|----------------------|------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DPMT070202FP | 6,35 | 7,75 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPMT070204FP | 6,35 | 7,75 | 0,4 | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | | | |
| DPMT070208FP | 6,35 | 7,75 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPMT11T304FP | 9,53 | 11,63 | 0,4 | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPMT11T308FP | 9,53 | 11,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | | | |

● first choice
○ alternate choice



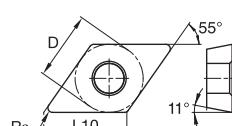
■ DPMT-FW

| ISO catalogue number | D | L10 | Re | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DPMT070204FW | 6,35 | 7,75 | 0,4 | - | - | - | - | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| DPMT070208FW | 6,35 | 7,75 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



■ DPMT-LF

| ISO catalogue number | D | L10 | Re | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DPMT070202LF | 6,35 | 7,75 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| DPMT070204LF | 6,35 | 7,75 | 0,4 | - | ● | ● | ● | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | - | - | - | | | | |
| DPMT11T302LF | 9,53 | 11,63 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| DPMT11T304LF | 9,53 | 11,63 | 0,4 | - | ● | ● | ● | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | | | | |
| DPMT11T308LF | 9,53 | 11,63 | 0,8 | - | ● | ● | ● | ● | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | - | | | |

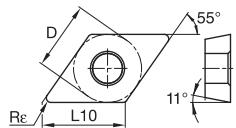


■ DPMT-MF

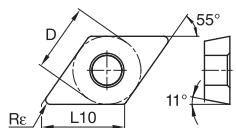
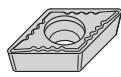
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|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| DPMT11T308MF | 9,53 | 11,63 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



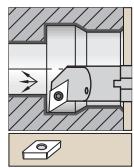
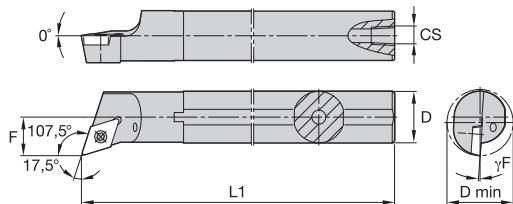
- first choice
- alternate choice



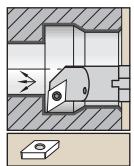
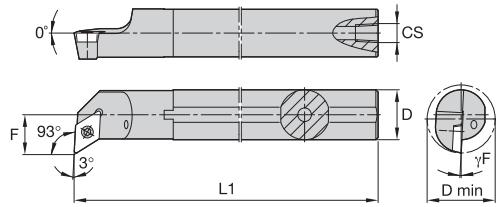
■ DPMT-MP



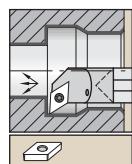
DPMT-UF


 Steel shank with
through coolant.

■ A-SDQP 107,5°

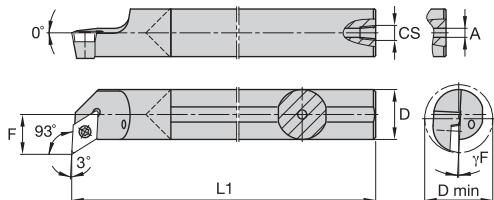
| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-------------|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1098186 | A12MSDQPR07 | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -2.0 | DP..070204 | MS1153 | T7 |
| 1098196 | A16RSDQPR07 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | 0.0 | DP..070204 | MS1153 | T7 |
| 1098247 | A20SSDQPR11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -2.0 | DP..11T308 | MS1155 | T15 |
| 1098258 | A25TSDQPR11 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | 0.0 | DP..11T308 | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 1098191 | A12MSDQPL07 | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -2.0 | DP..070204 | MS1153 | T7 |
| 1098201 | A16RSDQPL07 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | 0.0 | DP..070204 | MS1153 | T7 |
| 1098252 | A20SSDQPL11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -2.0 | DP..11T308 | MS1155 | T15 |
| 1098262 | A25TSDQPL11 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | 0.0 | DP..11T308 | MS1155 | T15 |


 Steel shank with
through coolant.

■ A-SDUP 93°

| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-------------|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1098184 | A12MSDUPR07 | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -2.0 | DP..070204 | MS1153 | T7 |
| 1098194 | A16RSDUPR07 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | 0.0 | DP..070204 | MS1153 | T7 |
| 1098245 | A20SSDUPR11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -2.0 | DP..11T308 | MS1155 | T15 |
| 1098257 | A25TSDUPR11 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | 0.0 | DP..11T308 | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 1098189 | A12MSDUPL07 | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -2.0 | DP..070204 | MS1153 | T7 |
| 1098199 | A16RSDUPL07 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | 0.0 | DP..070204 | MS1153 | T7 |
| 1098250 | A20SSDUPL11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -2.0 | DP..11T308 | MS1155 | T15 |

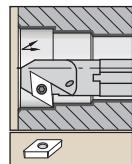


Carbide shank with through coolant.

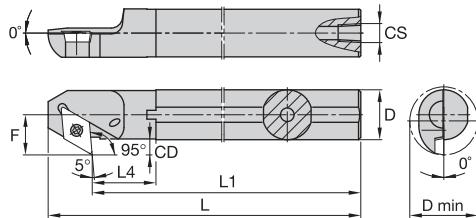


■ E-SDUP 93°

| order number | catalogue number | D | D min | F | L1 | A | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1152892 | E12QSDUPR07 | 12 | 16,0 | 9,0 | 180 | 4,8 | -2,0 | DP..070204 | MS1153 | T7 |
| 1152894 | E16RSDUPR07 | 16 | 20,0 | 11,0 | 200 | 5,5 | 0,0 | DP..070204 | MS1153 | T7 |
| 1152906 | E20SSDUPR11 | 20 | 25,0 | 13,0 | 250 | 7,1 | -2,0 | DP..11T308 | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 1152893 | E12QSDUPL07 | 12 | 16,0 | 9,0 | 180 | 4,8 | -2,0 | DP..070204 | MS1153 | T7 |
| 1152895 | E16RSDUPL07 | 16 | 20,0 | 11,0 | 200 | 5,5 | 0,0 | DP..070204 | MS1153 | T7 |
| 1152907 | E20SSDUPL11 | 20 | 25,0 | 13,0 | 250 | 7,1 | -2,0 | DP..11T308 | MS1155 | T15 |

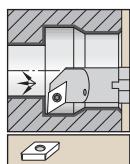


Steel shank with through coolant.

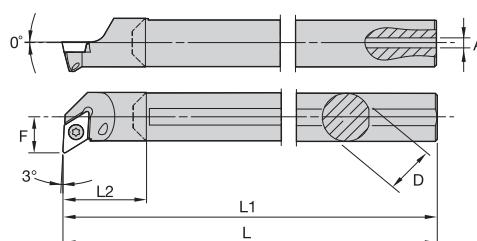


■ A-SDXP 95°

| order number | catalogue number | D | D min | F | L1 | L | L4 | CD | CS | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-------|-------|------|-------------|-------------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1098185 | A12MSDXPR07 | 12 | 16,0 | 9,0 | 150 | 162,0 | — | 3,09 | 1/16-27 NPT | DP..070204 | MS1153 | T7 |
| 1098195 | A16RSDXPR07 | 16 | 20,0 | 11,0 | 200 | 212,0 | — | 3,20 | 1/8-27 NPT | DP..070204 | MS1153 | T7 |
| 1098246 | A20SSDXPR11 | 20 | 25,0 | 13,0 | 250 | 270,0 | 48,44 | 4,31 | 1/8-27 NPT | DP..11T308 | MS1155 | T15 |
| left hand | | | | | | | | | | | | |
| 1098190 | A12MSDXPL07 | 12 | 16,0 | 9,0 | 150 | 162,0 | — | 3,09 | 1/16-27 NPT | DP..070204 | MS1153 | T7 |
| 1098200 | A16RSDXPL07 | 16 | 20,0 | 11,0 | 200 | 212,0 | — | 3,20 | 1/8-27 NPT | DP..070204 | MS1153 | T7 |
| 1098251 | A20SSDXPL11 | 20 | 25,0 | 13,0 | 250 | 270,0 | 48,44 | 4,31 | 1/8-27 NPT | DP..11T308 | MS1155 | T15 |



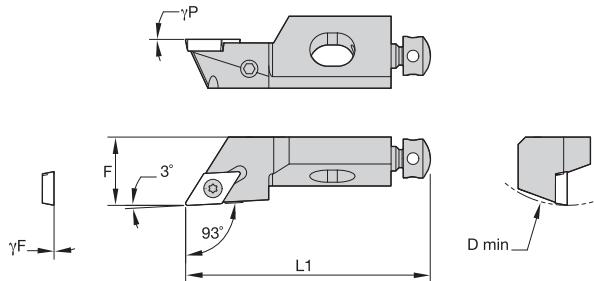
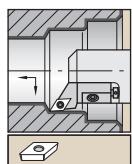
Heavy metal bar
with through
coolant.



■ L-SDUP 93°



| order number | catalogue number | D | D min | F | L1 | L | L2 | A | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-------|------|-----|------------------|--------------|--------------|------|
| right hand | | | | | | | | | | | | |
| 3331116 | L12QSDUPR07 | 12 | 16,0 | 9,0 | 181 | 181,2 | 22,4 | 4,0 | -2,0 | DP..070204.. | MS1153 | T7 |
| 3331117 | L20SSDUPR11 | 20 | 25,0 | 13,0 | 251 | 251,5 | 33,6 | 4,0 | -2,0 | DP..11T308.. | MS1155 | T15 |
| left hand | | | | | | | | | | | | |
| 3331121 | L12QSDUPL07 | 12 | 16,0 | 9,0 | 181 | 181,2 | 22,4 | 4,0 | -2,0 | DP..070204.. | MS1153 | T7 |



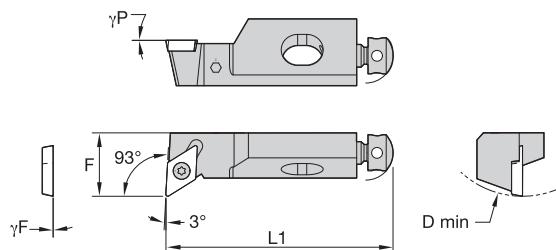
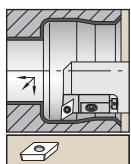
■ SDJP 93°

| order number | catalogue number | D min | F | L1 | γ_F° | γ_P° | gage insert |
|-----------------------|------------------|-------|------|----|------------------|------------------|---------------------|
| right hand 1098757 | SDJPR10CA07 | 40 | 14,0 | 50 | 0,0 | 0,0 | DP..070204/DP..2151 |
| left hand 1098758 | SDJPL10CA07 | 40 | 14,0 | 50 | 0,0 | 0,0 | DP..070204/DP..2151 |

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 40 | MS1153 | T7 | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



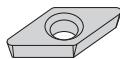
■ SDUP 93°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-----------------------|------------------|-------|------|----|-----|-----|---------------------|
| right hand 1098728 | SDUPR10CA07 | 40 | 14,0 | 50 | 0.0 | 0.0 | DP..070204/DP..2151 |

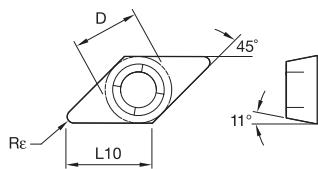
■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 40 | MS1153 | T7 | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |

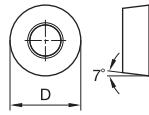
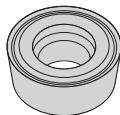


- first choice
- alternate choice

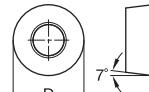
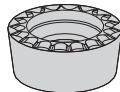


■ GPCD

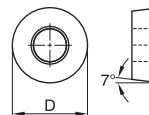
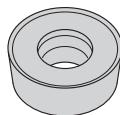
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|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| GPCD050102 | 3,97 | 5,61 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| GPCD050104 | 3,97 | 5,61 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | | | |



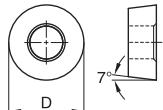
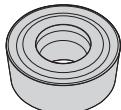
RCGH



■ BCGH-MP



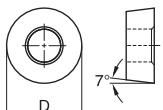
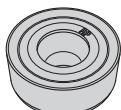
RCGT-HP



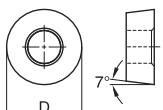
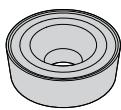
- first choice
- alternate choice

RCGT-MS

| ISO catalogue number | D | L10 | R ε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-----|-----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RCGT0803M0MS | 8,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| RCGT1204M0MS | 12,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | — | | | | |
| RCGT1606M0MS | 16,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | — | — | | | |

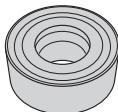


■ RCGT-RP

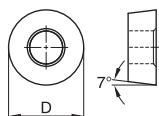


■ BCMH-K

| ISO catalogue number | D | L10 | R _E |
|----------------------|-------|-----|----------------|
| RCMH190600K | 19,05 | — | — |

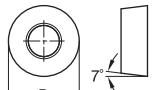


● first choice
○ alternate choice



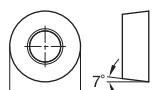
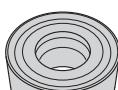
■ RCMT

| ISO catalogue number | D | L10 | R _e | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-----|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RCMT0602M0 | 6,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT060200 | 6,35 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT0803M0 | 8,00 | — | — | — | — | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT09T300 | 9,53 | — | — | — | — | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT10T3M0 | 10,00 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT1204M0 | 12,00 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT120400 | 12,70 | — | — | — | — | ● | — | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT1605M0 | 16,00 | — | — | — | — | — | — | ● | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | | |
| RCMT2006M0 | 20,00 | — | — | — | — | — | — | ● | — | — | — | — | — | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | | |



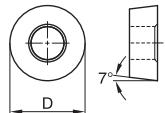
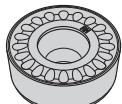
■ RCMT-MP

| ISO catalogue number | D | L10 | R _e | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-----|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RCMT0803M0MP | 8,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | |
| RCMT10T3M0MP | 10,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | |
| RCMT1204M0MP | 12,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | |
| RCMT120400MP | 12,70 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | |
| RCMT1606M0MP | 16,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | |

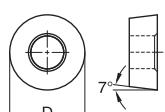


■ RCMT-M0

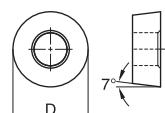
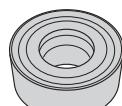
| ISO catalogue number | D | L10 | R _e | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-----|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RCMT1204M0 | 12,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | |

● first choice
 ○ alternate choice

■ RCMT-RH

| ISO catalogue number | D | L10 | R _e | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-----|----------------|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RCMT2006M0RH | 20,00 | — | — | — | — | ● | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |

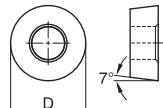
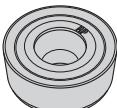

■ RCMX-RH

| ISO catalogue number | D | L10 | R _e | KCP05 | KCP10B | KCP10 | KCP25B | KCK05 | KCK05 | KCK30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-----|----------------|-------|--------|-------|--------|-------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RCMX2507M0RH | 25,00 | — | — | — | — | ● | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | | |
| RCMX3209M0RH | 32,00 | — | — | — | — | ● | — | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | | |


■ RCMT-RM

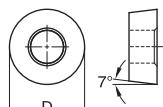
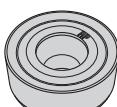
| ISO catalogue number | D | L10 | R _e | KCP05 | KCP10B | KCP10 | KCP25B | KCK05 | KCK05 | KCK30 | KCK15 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-----|----------------|-------|--------|-------|--------|-------|-------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RCMT2006M0RM | 20,00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● |
| M | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | ● | ● |
| K | ○ | ○ | ○ | ○ | ○ | ○ | ○ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | ● | ● |
| N | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | ● | ● |
| S | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | ● | ● |
| H | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

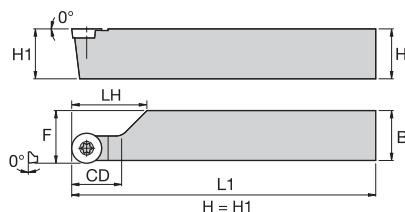
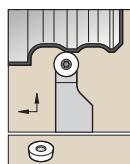


- first choice
- alternate choice

■ RCMT-RP

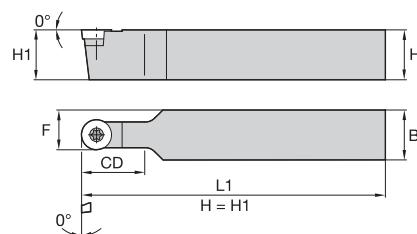
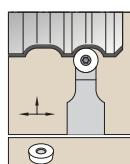


RCMX-RP



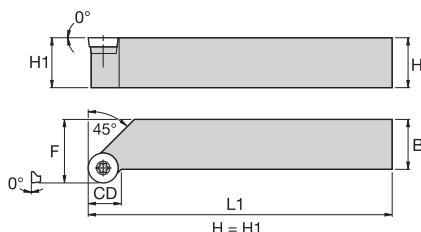
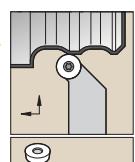
■ SRAC

| order number | catalogue number | H | B | F | L1 | LH | CD | gage insert | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1097887 | SRACR1212N08 | 12 | 12 | 13,0 | 160 | 31,0 | 12,0 | RC..0803M0 | MS1154 | T9 |
| 1097888 | SRACR1616Q08 | 16 | 16 | 17,0 | 180 | 35,0 | 16,0 | RC..0803M0 | MS1154 | T9 |

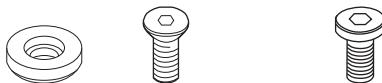


■ SRDC

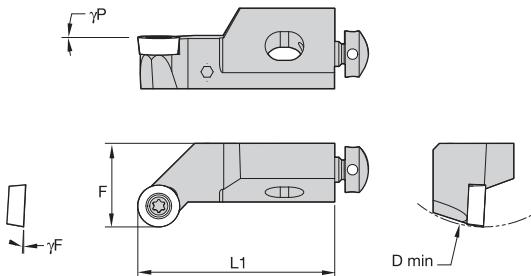
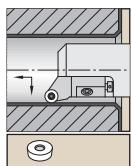
| order number | catalogue number | H | B | F | L1 | CD | gage insert | shim | shim screw | hex | insert screw | Torx |
|--------------|------------------|----|----|------|-----|------|-------------|------------|------------|--------|--------------|------|
| 1097892 | SRDCN1212N06 | 12 | 12 | 9,0 | 160 | 12,0 | RC..0602M0 | — | — | — | MS1153 | T7 |
| 1097891 | SRDCN1212N08 | 12 | 12 | 10,0 | 160 | 12,0 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097899 | SRDCN1616H06 | 16 | 16 | 11,0 | 100 | 16,0 | RC..0602M0 | — | — | — | MS1153 | T7 |
| 1097897 | SRDCN1616H08 | 16 | 16 | 12,0 | 100 | 16,0 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097898 | SRDCN1616H10 | 16 | 16 | 13,0 | 100 | 16,0 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097893 | SRDCN1616Q08 | 16 | 16 | 12,0 | 180 | 16,0 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097900 | SRDCN2020K08 | 20 | 20 | 14,0 | 125 | 20,0 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097901 | SRDCN2020K10 | 20 | 20 | 15,0 | 125 | 20,0 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097894 | SRDCN2020K12 | 20 | 20 | 16,0 | 125 | 20,0 | RC..1204M0 | SKRN1203M0 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097903 | SRDCN2525M08 | 25 | 25 | 16,5 | 150 | 25,0 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097902 | SRDCN2525M10 | 25 | 25 | 17,5 | 150 | 25,0 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097895 | SRDCN2525M12 | 25 | 25 | 18,5 | 150 | 25,0 | RC..1204M0 | SKRN1203M0 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097896 | SRDCN2525M16 | 25 | 25 | 20,5 | 150 | 25,0 | RC..1605M0 | SKRN160400 | SRS5 | 4 mm | MS1160 | T15 |



■ SRGC



| order number | catalogue number | H | B | F | L1 | CD | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|------------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1097792 | SRGCR1616H06 | 16 | 16 | 20,0 | 100 | 7,0 | RC..0602M0 | — | — | — | MS1153 | T7 |
| 1097791 | SRGCR1616H10 | 16 | 16 | 20,0 | 100 | 7,9 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097793 | SRGCR2020K08 | 20 | 20 | 25,0 | 125 | 9,0 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097794 | SRGCR2020K10 | 20 | 20 | 25,0 | 125 | 9,3 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097796 | SRGCR2525M08 | 25 | 25 | 32,0 | 150 | 11,8 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097795 | SRGCR2525M10 | 25 | 25 | 32,0 | 150 | 12,1 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097788 | SRGCR2525M12 | 25 | 25 | 32,0 | 150 | 12,7 | RC..1204M0 | SKRN1203M0 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | |
| 1097937 | SRGCL1616H06 | 16 | 16 | 20,0 | 100 | 7,0 | RC..0602M0 | — | — | — | MS1153 | T7 |
| 1097936 | SRGCL1616H10 | 16 | 16 | 20,0 | 100 | 7,9 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097938 | SRGCL2020K08 | 20 | 20 | 25,0 | 125 | 9,0 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097941 | SRGCL2525M08 | 25 | 25 | 32,0 | 150 | 11,8 | RC..0803M0 | — | — | — | MS1154 | T9 |
| 1097940 | SRGCL2525M10 | 25 | 25 | 32,0 | 150 | 12,1 | RC..10T3M0 | SKRN100300 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097933 | SRGCL2525M12 | 25 | 25 | 32,0 | 150 | 12,7 | RC..1204M0 | SKRN1203M0 | SRS3 | 3.5 mm | MS1156 | T15 |



■ SRGC

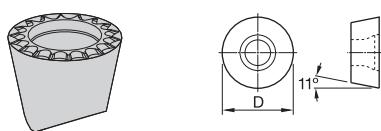
| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|--------------|------------------|-------|------|----|------------------|------------------|-----------------------|
| right hand | | | | | | | |
| 1098711 | SRGCR08CA06 | 25 | 10,0 | 32 | -4.0 | 0.0 | RC..0602M0/RC..215 |
| 1098713 | SRGCR12CA10 | 50 | 20,0 | 55 | -3.0 | 0.0 | RC..10T3M0/RC..10T3M0 |

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|----------------|--------|--------------|
| 25 | MS1153 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | — | 2.5 mm | CSWM 040 050 |
| 50 | MS1155 | T15 | KUAM23 | 2.5 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |

ISO Carbide Inserts

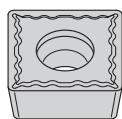


- first choice
- alternate choice

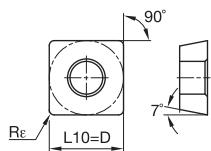
■ RPGT-MP

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-----|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| RPGT060400MP | 6,35 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | |

NOTE: For V-Bottom style holders, please see page B370.

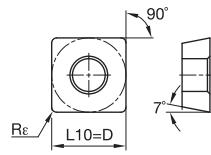


● first choice
○ alternate choice



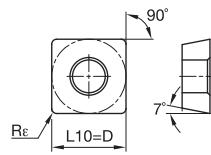
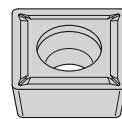
■ SCMT-11

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 |
|----------------------|-------|-------|-----|-------|--------|-------|-------|--------|-------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|
| SCMT09T30411 | 9,53 | 9,53 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT09T30811 | 9,53 | 9,53 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT12040411 | 12,70 | 12,70 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT12040811 | 12,70 | 12,70 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |



■ SCMT-FP

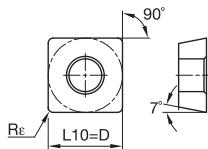
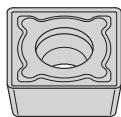
| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 |
|----------------------|-------|-------|-----|-------|--------|-------|-------|--------|-------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|
| SCMT09T304FP | 9,53 | 9,53 | 0,4 | - | - | ● - | KCP10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT09T308FP | 9,53 | 9,53 | 0,8 | - | - | ● - | ● - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT120404FP | 12,70 | 12,70 | 0,4 | - | - | - | - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT120408FP | 12,70 | 12,70 | 0,8 | - | - | - | - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT120412FP | 12,70 | 12,70 | 1,2 | - | - | - | - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |



■ SCMT-LF

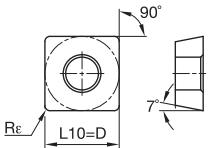
| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 |
|----------------------|-------|-------|-----|-------|--------|-------|-------|--------|-------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|
| SCMT09T304LF | 9,53 | 9,53 | 0,4 | - | ● - | ● - | KCP10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT09T308LF | 9,53 | 9,53 | 0,8 | - | ● - | ● - | ● - | ● - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT120404LF | 12,70 | 12,70 | 0,4 | - | - | ● - | - | ● - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT120408LF | 12,70 | 12,70 | 0,8 | - | ● - | - | ● - | ● - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| SCMT120412LF | 12,70 | 12,70 | 1,2 | - | ● - | - | ● - | ● - | ● - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |

● first choice
○ alternate choice



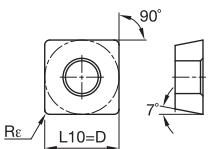
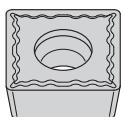
■ SCMT-MF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| SCMT09T312MF | 9,53 | 9,52 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SCMT09T308MF | 9,53 | 9,53 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SCMT120408MF | 12,70 | 12,70 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SCMT120412MF | 12,70 | 12,70 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |



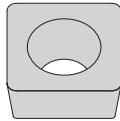
■ SCMT-MP

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| SCMT09T304MP | 9,53 | 9,53 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SCMT09T308MP | 9,53 | 9,53 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SCMT120404MP | 12,70 | 12,70 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SCMT120408MP | 12,70 | 12,70 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SCMT120412MP | 12,70 | 12,70 | 1,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |

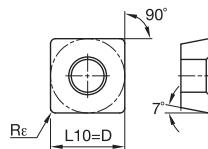


■ SCMT-UF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| SCMT09T308UF | 9,53 | 9,53 | 0,8 | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |



- first choice
- alternate choice



SCMW

Mobile Apps

The Kennametal mobile app provides easy access to product information and calculators on both iPhone® and Android™ devices. We've highlighted a few of the key features...

There's an app for that.

SPEEDS & FEEDS

View speeds and feeds
information for
metalworking products.

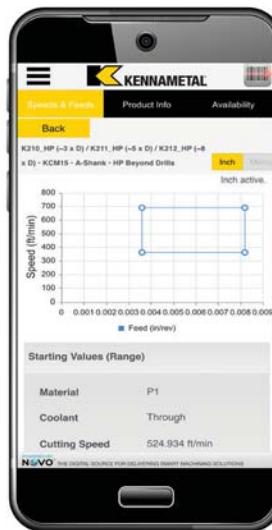
PRODUCT AVAILABILITY

Check global availability of products. View available quantities by providing your Konnect login credentials.

CALCULATORS

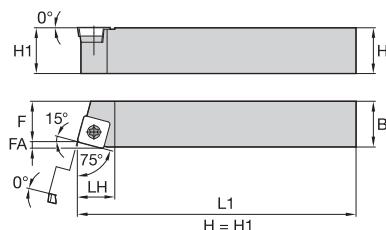
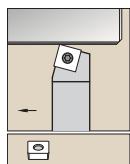
Utilise our machining calculators for milling and drilling applications.

By just scanning the bar code on the insert packet, you can find the most productive cutting conditions for tool life, process time, and chip control.

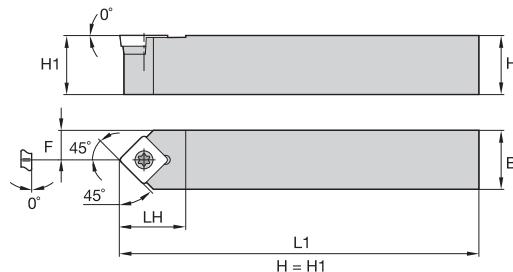
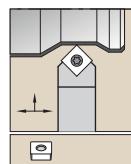


NOTE: The app is currently only available in the English-language version. We have plans to translate the app in different languages with future releases.

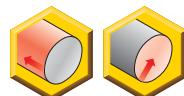
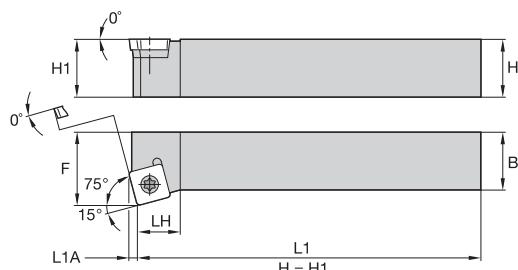
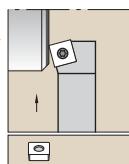



■ SSBC 75°


| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | | |
| 1097863 | SSBCR1212N09 | 12 | 12 | 11,0 | 160 | 16,0 | 2,2 | SC..09T308 | — | — | — | MS1155 | T15 |
| 1097867 | SSBCR2525M12 | 25 | 25 | 22,0 | 150 | 21,0 | 3,1 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |
| left hand | | | | | | | | | | | | | |
| 1098009 | SSBCL1616H09 | 16 | 16 | 13,0 | 100 | 16,0 | 2,2 | SC..09T308 | SKSP343 | SRS3 | 3.5 mm | MS1156 | T15 |


■ SSDC 45°

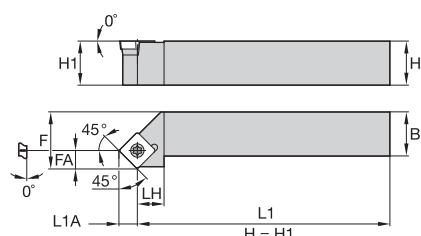
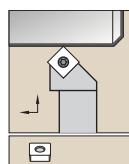

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|--------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| 1098005 | SSDCN1212N09 | 12 | 12 | 6,0 | 160 | 18,0 | SC..09T308 | — | — | — | MS1155 | T15 |
| 1098006 | SSDCN1616H09 | 16 | 16 | 8,0 | 100 | 18,0 | SC..09T308 | SKSP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1098007 | SSDCN2020K09 | 20 | 20 | 10,0 | 125 | 18,0 | SC..09T308 | SKSP343 | SRS3 | 3.5 mm | MS1156 | T15 |



■ SSKC 75°



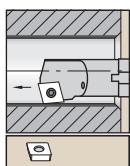
| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim screw | hex | insert screw | Torx |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|------|
| right hand 1097882 | SSKCR1616H09 | 16 | 16 | 20,0 | 100 | 16,0 | 2,2 | SC..09T308 | SKSP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand 1098027 | SSKCL2020K12 | 20 | 20 | 25,0 | 125 | 22,0 | 3,1 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |



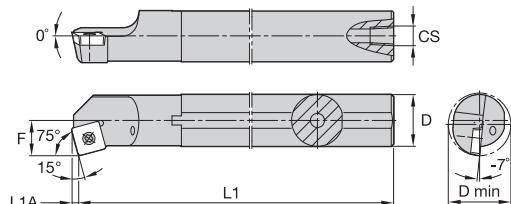
■ SSSC 45°



| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim screw | hex | insert screw | Torx |
|-----------------------|------------------|----|----|------|-----|------|-----|-----|-------------|---------|------------|--------|--------------|------|
| right hand 1097808 | SSSCR1212N09 | 12 | 12 | 16,0 | 160 | 18,0 | 5,8 | 6,1 | SC..09T308 | — | — | — | MS1155 | T15 |
| 1097809 | SSSCR1616H09 | 16 | 16 | 20,0 | 100 | 18,0 | 6,1 | 6,1 | SC..09T308 | SKSP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097811 | SSSCR1616H12 | 16 | 16 | 20,0 | 100 | 25,0 | 8,3 | 8,3 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1097810 | SSSCR2020K12 | 20 | 20 | 25,0 | 125 | 25,0 | 8,1 | 8,3 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1244982 | SSSCR2525M12 | 25 | 25 | 32,0 | 150 | 25,0 | 8,1 | 8,3 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |
| left hand 1097953 | SSSCL1212N09 | 12 | 12 | 16,0 | 160 | 18,0 | 5,8 | 6,1 | SC..09T308 | — | — | — | MS1155 | T15 |
| 1097954 | SSSCL1616H09 | 16 | 16 | 20,0 | 100 | 18,0 | 5,8 | 6,1 | SC..09T308 | SKSP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097956 | SSSCL1616H12 | 16 | 16 | 20,0 | 100 | 25,0 | 8,1 | 8,3 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1097955 | SSSCL2020K12 | 20 | 20 | 25,0 | 125 | 25,0 | 8,1 | 8,3 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |
| 1514473 | SSSCL2525M12 | 25 | 25 | 32,0 | 150 | 25,0 | 8,1 | 8,3 | SC..120408 | SKSP453 | SRS4 | 4 mm | MS1158 | T15 |



Steel shank with
through coolant.

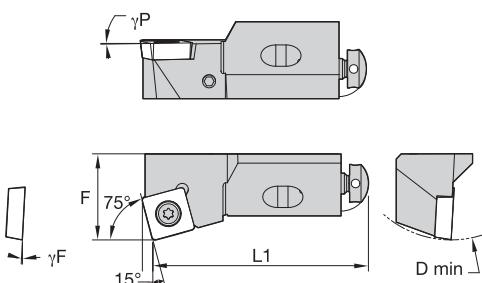


■ A-SSKC 75°



| order number | catalogue number | D | D min | F | L1 | L1A | CS | gage insert | insert screw | Torx |
|------------------------------|--------------------|----|-------|------|-----|-----|------------|-------------|---------------|------|
| right hand 1886510 | A16RSSKCR09 | 16 | 20,0 | 11,0 | 200 | 2,2 | 1/8-27 NPT | SC..09T308 | MS1155 | T15 |

Screw-On Cartridges



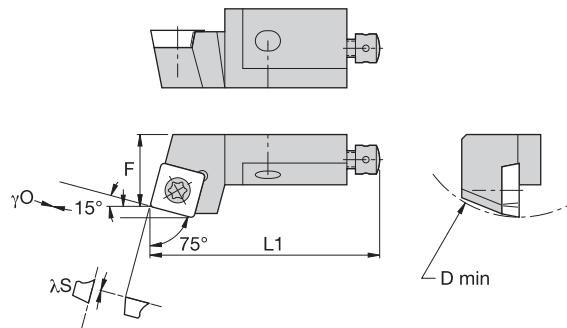
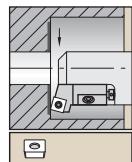
■ SSKC 75°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|------------------------------|--------------------|-------|------|----|------------------|------------------|--------------------|
| right hand 1098719 | SSKCR12CA12 | 50 | 20,0 | 55 | -3.0 | 0.0 | SC..120408/SC..432 |
| 1098720 | SSKCR16CA12 | 60 | 25,0 | 63 | -3.0 | 0.0 | SC..120408/SC..432 |
| left hand 1098721 | SSKCL12CA12 | 50 | 20,0 | 55 | -3.0 | 0.0 | SC..120408/SC..432 |

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|---------------|------|------------------------|--------|-----------------------|----------------|------|---------------------|
| 50 | MS1157 | T15 | KUAM23 | 2.5 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |
| 60 | MS1157 | T15 | KUAM25 | 2.5 mm | KUAM32 | 191.407 | 5 mm | CSWM 080 050 |



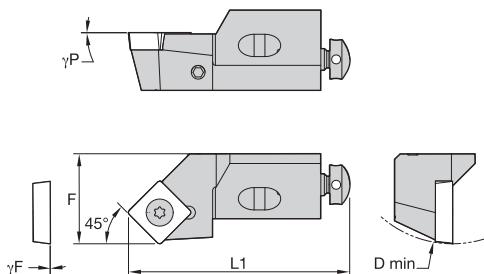
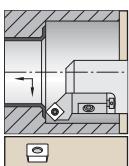
■ **SSRC 75°**

| order number | catalogue number | D min | F | L1 | α_s° | γ_O° | gage insert |
|-----------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand 1098723 | SSRCR12CA12 | 50 | 20,0 | 55 | -3.0 | 0.0 | SC..120408/SC..432 |
| left hand 1098725 | SSRCL12CA12 | 50 | 20,0 | 55 | -3.0 | 0.0 | SC..120408/SC..432 |

■ **Spare Parts**



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | MS1157 | T15 | KUAM23 | 2.5 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |



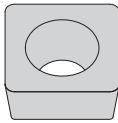
■ SSSC 45°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-----------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand 1098737 | SSSCR12CA12 | 50 | 20,0 | 47 | -3.0 | 0.0 | SC..120408/SC..432 |
| left hand 1098739 | SSSCL12CA12 | 50 | 20,0 | 47 | -3.0 | 0.0 | SC..120408/SC..432 |

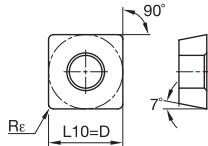
■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|------|--------------|
| 50 | MS1157 | T15 | KUAM23 | 2.5 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |

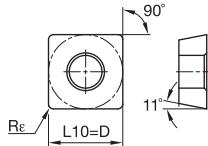
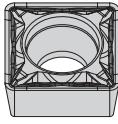


- first choice
- alternate choice

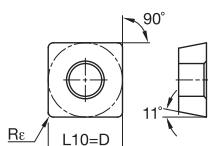
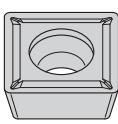


■ SPGT-LF

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| SPGT09T304LF | 9,53 | 9,53 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SPGT09T308LF | 9,53 | 9,53 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | ● | ● | - | - | - | - |



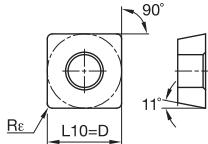
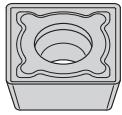
■ SPMT-FP



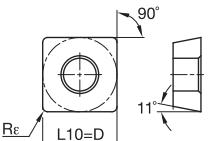
■ SPMT-1 F

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KUJ10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KCS010 | KCS025 | KCS410 | KT315 | KTP10 |
|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|-------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| SPMTO9T304LF | 9,53 | 9,53 | 0,4 | - | - | ● | - | - | - | - | - | - | ● | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| SPMTO9T308LF | 9,53 | 9,53 | 0,8 | - | ● | - | ● | - | - | - | - | - | ● | ● | - | ● | - | - | - | - | - | - | - | ● | ● | - | - | - | | | | |

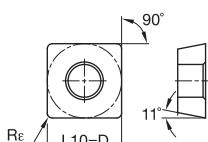
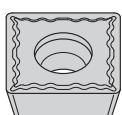
- first choice
- alternate choice



■ SPMT-MF

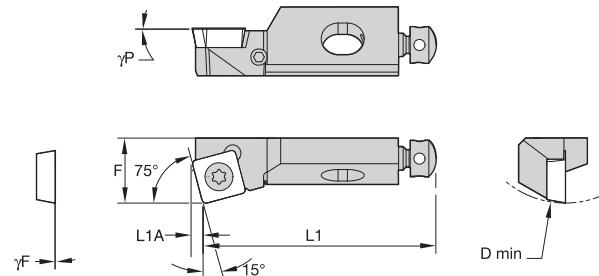
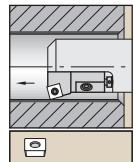


■ SPMT-MP



■ SPMT-LIE

| ISO catalogue number | D | L10 | R _E | - | KCP05 | - | KCP10B | - | ● | KCP10 | - | KCP10 | - | KCP25B | - | KCP25 | - | KCP30 | - | KCP40 | - | KCK05B | - | KCK05 | - | KCK15B | - | KCK15 | - | KCK20B | - | KCK20 | - | KCM15B | - | KCM15 | - | KCM25B | - | KCM25 | - | KCM35 | - | KU10 | - | K313 | - | K68 | - | KCS10 | - | KCU10 | - | KCU25 | - | ● | KC5010 | - | KC5025 | - | KC5410 | - | KT315 | - | KTP10 | - |
|----------------------|------|------|----------------|---|-------|---|--------|---|---|-------|---|-------|---|--------|---|-------|---|-------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|--------|---|-------|---|-------|---|------|---|------|---|-----|---|-------|---|-------|---|-------|---|---|--------|---|--------|---|--------|---|-------|---|-------|---|
| SPMT09T304UF | 9,53 | 9,53 | 0,4 | - | KCP05 | - | KCP10B | - | ● | KCP10 | - | KCP10 | - | KCP25B | - | KCP25 | - | KCP30 | - | KCP40 | - | KCK05B | - | KCK05 | - | KCK15B | - | KCK15 | - | KCK20B | - | KCK20 | - | KCM15B | - | KCM15 | - | KCM25B | - | KCM25 | - | KCM35 | - | KU10 | - | K313 | - | K68 | - | KCS10 | - | KCU10 | - | KCU25 | - | ● | KC5010 | - | KC5025 | - | KC5410 | - | KT315 | - | KTP10 | - |



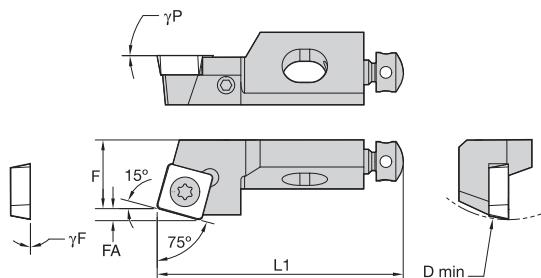
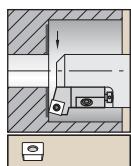
■ **SSKP 75°**

| order number | catalogue number | D min | F | L1 | λS° | γF° | γP° | gage insert |
|-----------------------|------------------|-------|------|----|-----|-----|-----|---------------------|
| right hand 1098570 | SSKPR10CA09 | 40 | 14,0 | 50 | 0.0 | 0.0 | 0.0 | SP..09T308/SP..3252 |

■ **Spare Parts**



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 40 | MS1155 | T15 | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



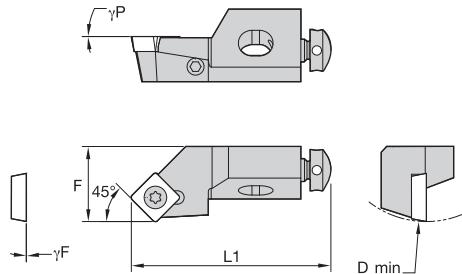
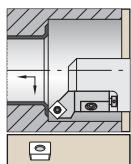
■ SSRP 75°

| order number | catalogue number | D min | F | FA | L1 | γ_F° | γ_P° | gage insert |
|-----------------------|------------------|-------|------|-----|----|------------------|------------------|---------------------|
| right hand 1098574 | SSPR10CA09 | 40 | 14,0 | 2,2 | 50 | 0,0 | 0,0 | SP..09T308/SP..3252 |

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 40 | MS1155 | T15 | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



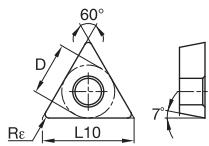
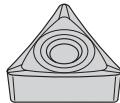
■ SSSP 45°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-----------------------|------------------|-------|------|----|------------------|------------------|---------------------|
| right hand 1098572 | SSSPR10CA09 | 40 | 14,0 | 44 | 0.0 | 0.0 | SP..09T308/SP..3252 |
| left hand 1098764 | SSSPL10CA09 | 40 | 14,0 | 44 | 0.0 | 0.0 | SP..09T308/SP..3252 |

■ Spare Parts



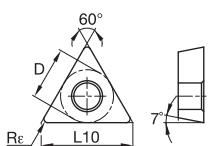
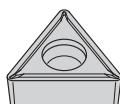
| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 40 | MS1155 | T15 | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



- first choice
- alternate choice

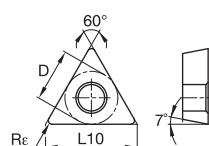
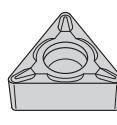
■ TCGT-HP

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP15 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15 | KCM25B | KCM25 | KCU10 | K313 | K68 |
|----------------------|------|-------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|-------|--------|-------|-------|------|-----|
| TCGT110202HP | 6,35 | 11,00 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| TCGT110204HP | 6,35 | 11,00 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | |
| TCGT110208HP | 6,35 | 11,00 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | |
| TCGT16T302HP | 9,53 | 16,50 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | |
| TCGT16T304HP | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | |
| TCGT16T308HP | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | |

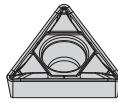


TCGT-LF

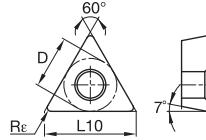
| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TCGT110201LF | 6,35 | 11,00 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TCGT110204LF | 6,35 | 11,00 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | | | |
| TCGT16T301LF | 9,53 | 16,50 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | |
| TCGT16T302LF | 9,53 | 16,50 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | |
| TCGT16T304LF | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | - | | | |
| TCGT16T308LF | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | - | | | |



TCMT-11

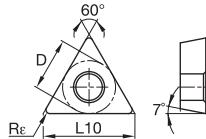
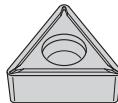


● first choice
○ alternate choice



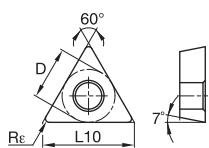
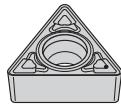
TCMT-FP

| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|--------|--------|--------|-------|-------|
| TCMT090204FP | 5,56 | 9,63 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TCMT090208FP | 5,56 | 9,63 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TCMT110202FP | 6,35 | 11,00 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | | |
| TCMT110204FP | 6,35 | 11,00 | 0,4 | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| TCMT110304FP | 6,35 | 11,00 | 0,4 | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| TCMT110208FP | 6,35 | 11,00 | 0,8 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| TCMT110308FP | 6,35 | 11,00 | 0,8 | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| TCMT110312FP | 6,35 | 11,00 | 1,2 | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| TCMT16T304FP | 9,53 | 16,50 | 0,4 | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| TCMT16T308FP | 9,53 | 16,50 | 0,8 | - | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● |
| TCMT16T312FP | 9,53 | 16,50 | 1,2 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| TCMT220408FP | 12,70 | 22,00 | 0,8 | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



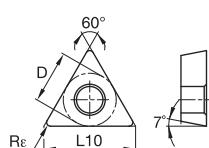
TCMT-LF

| ISO catalogue number | D | L10 | R ϵ | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KOK05B | KOK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|--------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|--------|--------|--------|-------|-------|
| TCMT110202LF | 6,35 | 11,00 | 0,2 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TCMT110204LF | 6,35 | 11,00 | 0,4 | - | ● | ● | - | ● | ● | ● | - | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | | |
| TCMT110208LF | 6,35 | 11,00 | 0,8 | - | - | ● | ● | ● | ● | ● | - | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| TCMT16T302LF | 9,53 | 16,50 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| TCMT16T304LF | 9,53 | 16,50 | 0,4 | - | ● | ● | ● | ● | ● | ● | - | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| TCMT16T308LF | 9,53 | 16,50 | 0,8 | - | ● | ● | ● | ● | ● | ● | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| TCMT16T312LF | 9,53 | 16,50 | 1,2 | - | ● | - | - | ● | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | |
| TCMT220408LF | 12,70 | 22,00 | 0,8 | - | ● | - | - | ● | - | - | - | - | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | - | |

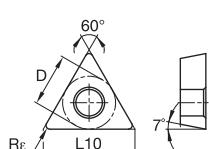
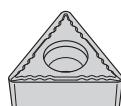


- first choice
- alternate choice

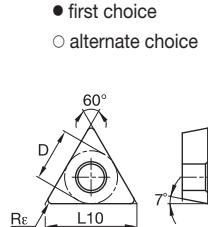
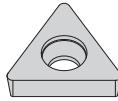
■ TCMT-MF



TCMT-MP



TCMTE-UE



- first choice
- alternate choice

TCMW

Mobile Apps

The Kennametal mobile app provides easy access to product information and calculators on both iPhone® and Android™ devices. We've highlighted a few of the key features...

There's an app for that.

SPEEDS & FEEDS

View speeds and feeds
information for
metalworking products.

PRODUCT AVAILABILITY

Check global availability of products. View available quantities by providing your Konnect login credentials.

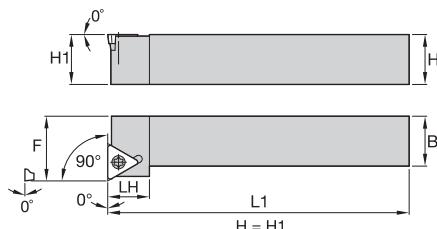
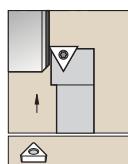
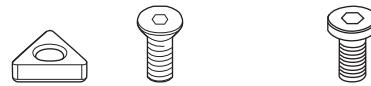
CALCULATORS

Utilise our machining calculators for milling and drilling applications.

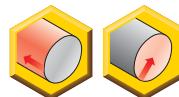
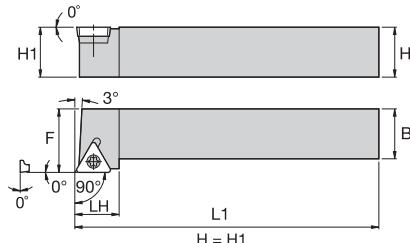
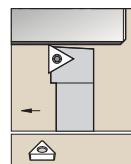
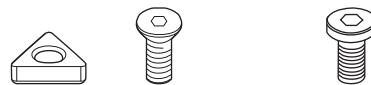
By just scanning the bar code on the insert packet, you can find the most productive cutting conditions for tool life, process time, and chip control.

NOTE: The app is currently only available in the English-language version. We have plans to translate the app in different languages with future releases.

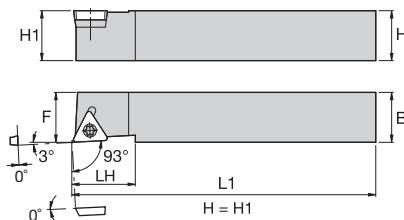
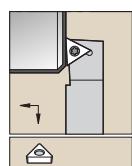



■ STFC 90°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1244940 | STFCR1616H11 | 16 | 16 | 20,0 | 100 | 16,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1097880 | STFCR1616H16 | 16 | 16 | 20,0 | 100 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097877 | STFCR2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097878 | STFCR2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | |
| 1098022 | STFCL2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1098023 | STFCL2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |


■ STGC 90°


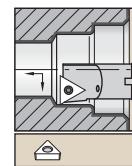
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1097869 | STGCR1212N11 | 12 | 12 | 16,0 | 160 | 16,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1244944 | STGCR1616H11 | 16 | 16 | 20,0 | 100 | 16,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1097874 | STGCR1616H16 | 16 | 16 | 20,0 | 100 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097870 | STGCR2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097871 | STGCR2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | |
| 1098014 | STGCL1212N11 | 12 | 12 | 16,0 | 160 | 16,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1244943 | STGCL1616H11 | 16 | 16 | 20,0 | 100 | 16,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1098019 | STGCL1616H16 | 16 | 16 | 20,0 | 100 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1098015 | STGCL2020K16 | 20 | 20 | 25,0 | 125 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1098016 | STGCL2525M16 | 25 | 25 | 32,0 | 150 | 20,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |



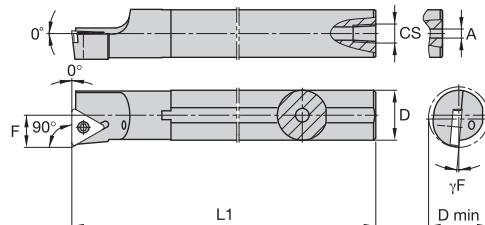
■ STJC-F 90°



| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|-----------------------|------------------|----|----|------|-----|------|-------------|--------------|------|
| right hand 1772197 | STJCRF1212M11Q | 12 | 12 | 12,0 | 150 | 16,0 | TC..110204 | MS1153 | T7 |
| left hand 1772198 | STJCLF1212M11Q | 12 | 12 | 12,0 | 150 | 16,0 | TC..110204 | MS1153 | T7 |



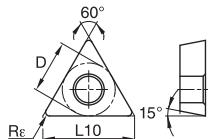
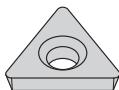
Steel shank with through coolant.



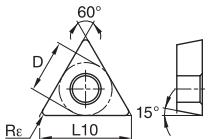
■ A-STFC 90°



| order number | catalogue number | D | D min | F | L1 | A | CS | γF° | gage insert | shim | shim screw | hex | insert screw | Torx |
|-----------------------|------------------|----|-------|------|-----|-----|-------------|------|-------------|---------|------------|--------|--------------|------|
| right hand 1098207 | A10KSTFCR11 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -7,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1098211 | A12MSTFCR11 | 12 | 16,0 | 9,0 | 150 | — | 1/16-27 NPT | -6,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1098286 | A32TSTFCR16 | 32 | 40,0 | 22,0 | 300 | — | 1/4-18 NPT | -2,0 | TC..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand 1098209 | A10KSTFCL11 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -7,0 | TC..110204 | — | — | — | MS1153 | T7 |
| 1098213 | A12MSTFCL11 | 12 | 16,0 | 9,0 | 150 | — | 1/16-27 NPT | -6,0 | TC..110204 | — | — | — | MS1153 | T7 |

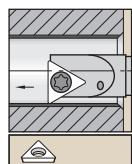
● first choice
○ alternate choice

TDHB

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TDHB07T12S0 | 4,06 | 7,04 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TDHB07T1202 | 4,06 | 7,04 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TDHB07T1204 | 4,06 | 7,04 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TDHB07T1208 | 4,06 | 7,04 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |

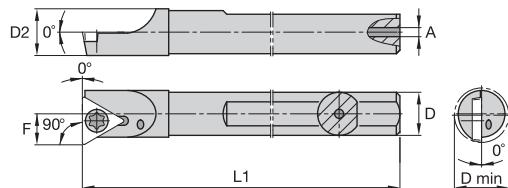

TDHH

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TDHH07T1202L | 4,06 | 7,04 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TDHH07T1202R | 4,06 | 7,04 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TDHH07T1204L | 4,06 | 7,04 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TDHH07T1204R | 4,06 | 7,04 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |

NOTE: Right-hand insert uses left-hand bars.
Left-hand insert uses right-hand bars.

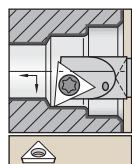


Steel shank with through coolant.

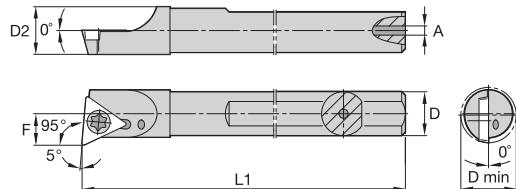


■ A-STFD 90°

| order number | catalogue number | D | D min | D2 | F | L1 | A | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|-----|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1288884 | A06HSTFDR07 | 6 | 7,1 | 6,2 | 3,7 | 100 | 1,0 | TD..07S102 | FC11 | T7 |
| 1288898 | A08HSTFDR07 | 8 | 9,1 | 8,2 | 4,8 | 102 | 1,5 | TD..07S102 | FC14 | T7 |
| left hand | | | | | | | | | | |
| 1930573 | A12MSTFDL11 | 12 | 13,2 | 12,2 | 6,8 | 152 | 3,0 | TP..110202 | QC26 | T9 |

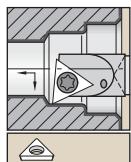


Steel shank with through coolant.

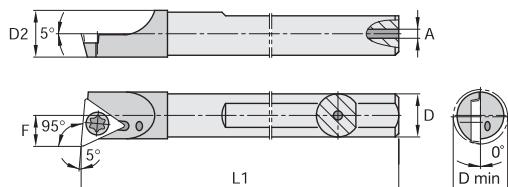


■ A-STLD 95°

| order number | catalogue number | D | D min | D2 | F | L1 | A | gage insert | insert screw | Torx |
|-------------------|------------------|---|-------|-----|-----|-----|-----|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1288886 | A06HSTLDR07 | 6 | 7,1 | 6,2 | 3,7 | 100 | 1,0 | TD..07S102 | FC11 | T7 |
| 1288900 | A08HSTLDR07 | 8 | 9,1 | 8,2 | 4,8 | 102 | 1,5 | TD..07S102 | FC14 | T7 |



Carbide shank
with through
coolant.

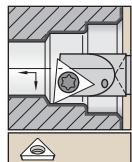


ISO Turning

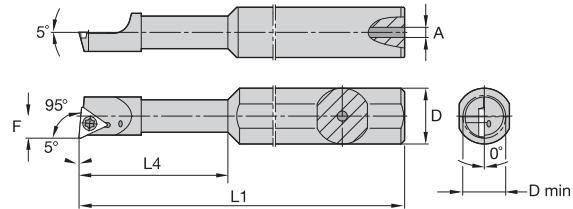
■ E-STLD 95°



| order number | catalogue number | D | D min | F | L1 | A | gage insert | insert screw | Torx |
|-------------------|------------------|---|-------|-----|-----|-----|-------------|--------------|------|
| right hand | | | | | | | | | |
| 1270982 | E06MSTLDR07 | 6 | 7,1 | 3,7 | 152 | 1,2 | TD..07S102 | FC11 | T7 |
| 1270992 | E08MSTLDR07 | 8 | 9,2 | 4,8 | 152 | 2,4 | TD..07S102 | FC11 | T7 |
| left hand | | | | | | | | | |
| 1270981 | E06MSTLDD07 | 6 | 7,1 | 3,7 | 152 | 1,2 | TD..130805 | FC11 | T7 |
| 1270991 | E08MSTLDD07 | 8 | 9,1 | 4,8 | 152 | 2,4 | TD..07S102 | FC14 | T7 |



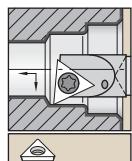
Necked steel
shank with
through coolant.



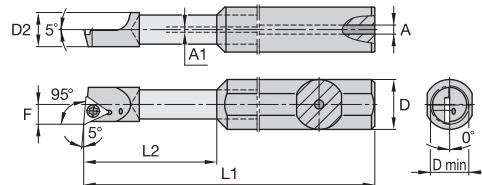
■ A-STLD 95° • Stepped



| order number | catalogue number | D | D min | F | L1 | L4 | A | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|-----|-----|-------|-----|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1289155 | A0612XSTLDR0731 | 12 | 7,5 | 4,0 | 76 | 31,75 | 1,0 | TD..07T1202 | FC11 | T7 |
| left hand | | | | | | | | | | |
| 1930492 | A0616HSTLDR0731 | 16 | 7,5 | 4,0 | 102 | 31,75 | 1,0 | TD..07S102 | FC14 | T7 |



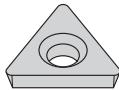
Necked carbide shank with through coolant.



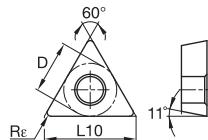
■ E-STLD 95° • Stepped



| order number | catalogue number | D | D min | D2 | F | L1 | L2 | A | A1 | gage insert | insert screw | Torx |
|-----------------------|------------------|----|-------|-----|-----|----|------|-----|-----|-------------|--------------|------|
| right hand 1930512 | E0812XSTLDR0738 | 12 | 9,1 | 7,9 | 4,8 | 76 | 38,1 | 3,2 | 2,0 | TD..07S102 | FC14 | T7 |

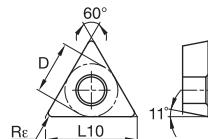
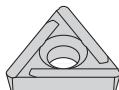


- first choice
- alternate choice



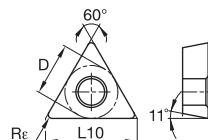
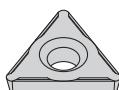
TPCB

| ISO catalogue number | D | L10 | R _ε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TPCB110202 | 6,35 | — | 0,2 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| TPCB160302 | 9,53 | 16,50 | 0,2 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | | | | |
| TPCB160304 | 9,53 | 16,50 | 0,4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | | | | |
| TD6P | 9,53 | 16,50 | 0,8 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | | | | |
| TPCB160308 | 9,53 | 16,50 | 0,8 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | | | |



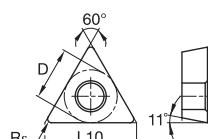
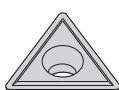
TPCG

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|----------------|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TPCG110202L | 6,35 | 11,00 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPCG110204L | 6,35 | 11,00 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | | | | |
| TPCG110208L | 6,35 | 11,00 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | | | | |



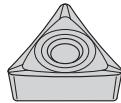
TPCH

| ISO catalogue number | D | L10 | R ε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K3:13 | K68 | KCS10 | KCU10 | KCU25 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|-------|-----|-------|-------|-------|--------|--------|-------|-------|
| TPCH110202 | 6,50 | 11,26 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPCH110204 | 6,50 | 11,26 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | • | - | - | - | - | - | | | |

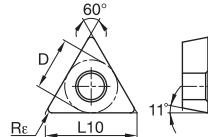


TPGH

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|----------------|-------|--------|-------|--------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TPGH160304 | 9,53 | 16,50 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPGH160308 | 9,53 | 16,50 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | - | | | |

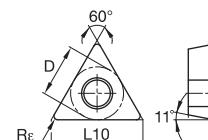


● first choice
○ alternate choice



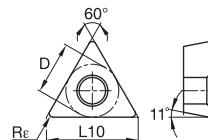
■ TPGT-HP

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KT1P10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|--------|
| TPGT110202HP | 6,35 | 11,00 | 0,2 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT110204HP | 6,35 | 11,00 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT110208HP | 6,35 | 11,00 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT16T302HP | 9,53 | 16,50 | 0,2 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT16T304HP | 9,53 | 16,50 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT16T308HP | 9,53 | 16,50 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |



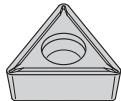
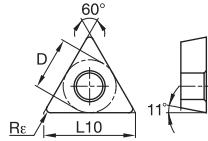
■ TPGT-LF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KT1P10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|--------|
| TPGT090204LF | 5,56 | 9,62 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT090202LF | 5,56 | 9,63 | 0,2 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT110201LF | 6,35 | 11,00 | 0,1 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT110202LF | 6,35 | 11,00 | 0,2 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT110204LF | 6,35 | 11,00 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT110208LF | 6,35 | 11,00 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT16T304LF | 9,53 | 16,50 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPGT16T308LF | 9,53 | 16,50 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |

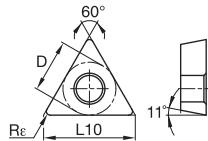


■ TPMT-FP

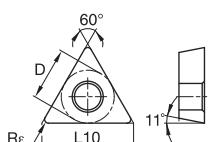
| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KT1P10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|--------|
| TPMT090204FP | 5,56 | 9,63 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT090208FP | 5,56 | 9,63 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT110202FP | 6,35 | 11,00 | 0,2 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT110204FP | 6,35 | 11,00 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT110304FP | 6,35 | 11,00 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT110208FP | 6,35 | 11,00 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT110308FP | 6,35 | 11,00 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT16T304FP | 9,53 | 16,50 | 0,4 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |
| TPMT16T308FP | 9,53 | 16,50 | 0,8 | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | - - | | | |


● first choice
○ alternate choice

TPMT-LF

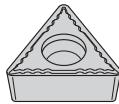
| ISO catalogue number | D | L10 | Re | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|-------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TPMT090202LF | 5,56 | 9,63 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT090204LF | 5,56 | 9,63 | 0,4 | - | ● | - | ● | ● | - | - | - | ● | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT110202LF | 6,35 | 11,00 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT110204LF | 6,35 | 11,00 | 0,4 | - | ● | ● | ● | ● | - | - | - | - | - | - | ● | - | - | ● | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT110208LF | 6,35 | 11,00 | 0,8 | - | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT16T304LF | 9,53 | 16,50 | 0,4 | - | ● | ● | ● | ● | - | - | ● | - | ● | - | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT16T308LF | 9,53 | 16,50 | 0,8 | - | ● | - | ● | ● | - | - | ● | ● | ● | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT220408LF | 12,70 | 22,00 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |


TPMT-MF

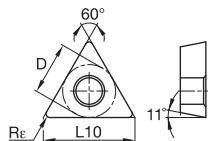
| ISO catalogue number | D | L10 | Re | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TPMT110208MF | 6,35 | 11,00 | 0,8 | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT16T308MF | 9,53 | 16,50 | 0,8 | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT16T312MF | 9,53 | 16,50 | 1,2 | - | - | - | ● | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |


TPMT-MP

| ISO catalogue number | D | L10 | Re | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TPMT110208MP | 6,35 | 11,00 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT16T308MP | 9,53 | 16,50 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| TPMT16T312MP | 9,53 | 16,50 | 1,2 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |

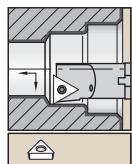


● first choice
○ alternate choice

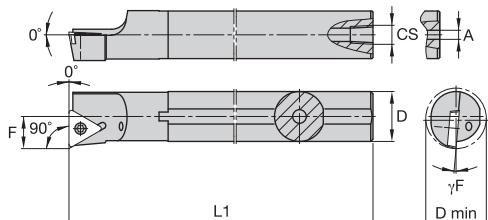


TPMT-UF

| ISO catalogue number | D | L10 | Rg | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| TPMT110202UF | 6,35 | 11,00 | 0,2 | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| TPMT110204UF | 6,35 | 11,00 | 0,4 | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | | | |
| TPMT16T308UF | 9,53 | 16,50 | 0,8 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |



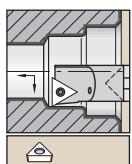
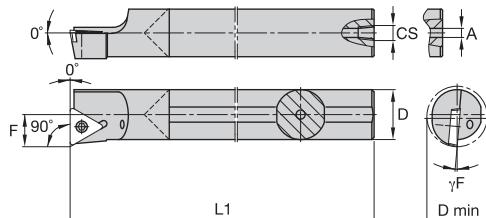
Steel shank with
through coolant.



■ A-STFP 90°



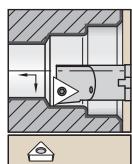
| order number | catalogue number | D | D min | F | L1 | A | CS | γF° | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|-------------|------------------|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | | | |
| 1098154 | A08JSTFPR09 | 8 | 11,0 | 6,0 | 110 | 2,4 | — | -8,0 | TP..090204 | — | — | — | MS1933 | T7 |
| 1098204 | A10KSTFPR11 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -4,0 | TP..110204 | — | — | — | MS1153 | T7 |
| 1098210 | A12MSTFPR11 | 12 | 16,0 | 9,0 | 150 | 4,0 | 1/16-27 NPT | -2,0 | TP..110204 | — | — | — | MS1153 | T7 |
| 1098214 | A16RSTFPR11 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | 0,0 | TP..110204 | — | — | — | MS1153 | T7 |
| 1098255 | A20SSTFPR16 | 20 | 25,0 | 13,0 | 250 | 4,0 | 1/8-27 NPT | -2,0 | TP..16T308 | — | — | — | MS1155 | T15 |
| 1098273 | A25TSTFPR16 | 25 | 32,0 | 17,0 | 300 | 6,4 | 1/4-18 NPT | 0,0 | TP..16T308 | — | — | — | MS1155 | T15 |
| 1098285 | A32TSTFPR16 | 32 | 40,0 | 22,0 | 300 | — | 1/4-18 NPT | -2,0 | TP..16T308 | SKTP343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | | | |
| 1098155 | A08JSTFPL09 | 8 | 11,0 | 6,0 | 110 | 2,4 | — | -8,0 | TP..090204 | — | — | — | MS1933 | T7 |
| 1098208 | A10KSTFPL11 | 10 | 13,0 | 7,0 | 125 | 3,2 | — | -4,0 | TP..110204 | — | — | — | MS1153 | T7 |
| 1098212 | A12MSTFPL11 | 12 | 16,0 | 9,0 | 150 | 4,0 | 1/16-27 NPT | -2,0 | TP..110204 | — | — | — | MS1153 | T7 |
| 1098215 | A16RSTFPL11 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | 0,0 | TP..110204 | — | — | — | MS1153 | T7 |
| 1098256 | A20SSTFPL16 | 20 | 25,0 | 13,0 | 250 | 4,0 | 1/8-27 NPT | -2,0 | TP..16T308 | — | — | — | MS1155 | T15 |
| 1098276 | A25TSTFPL16 | 25 | 32,0 | 17,0 | 300 | 6,4 | 1/4-18 NPT | 0,0 | TP..16T308 | — | — | — | MS1155 | T15 |

Carbide shank
with through
coolant.

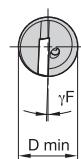
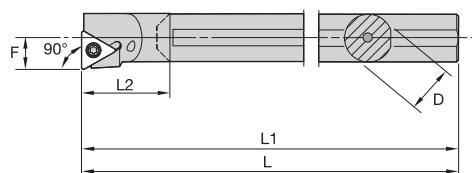
■ E-STFP 90°



| order number | catalogue number | D | D min | F | L1 | A | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1152860 | E08KSTFPR09A | 8 | 11,0 | 6,0 | 125 | 2,4 | -6,0 | TP..090204 | MS1933 | T7 |
| 1152862 | E10MSTFPR11A | 10 | 13,0 | 7,0 | 150 | 3,2 | -4,0 | TP..110204 | MS1153 | T7 |
| 1104311 | E12QSTFPR11 | 12 | 16,0 | 9,0 | 180 | 4,8 | -2,0 | TP..110204 | MS1153 | T7 |
| 1152874 | E16RSTFPR11 | 16 | 20,0 | 11,0 | 200 | 5,5 | 0,0 | TP..110204 | MS1153 | T7 |
| 1152908 | E20SSTFPR16 | 20 | 25,0 | 13,0 | 250 | 7,1 | -2,0 | TP..16T308 | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 1152863 | E10MSTFPL11A | 10 | 13,0 | 7,0 | 150 | 3,2 | -4,0 | TP..110204 | MS1153 | T7 |
| 1152873 | E12QSTFPL11 | 12 | 16,0 | 9,0 | 180 | 4,8 | -2,0 | TP..110204 | MS1153 | T7 |
| 1152875 | E16RSTFPL11 | 16 | 20,0 | 11,0 | 200 | 5,5 | 0,0 | TP..110204 | MS1153 | T7 |
| 1152909 | E20SSTFPL16 | 20 | 25,0 | 13,0 | 250 | 7,1 | -2,0 | TP..16T308 | MS1155 | T15 |



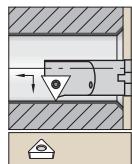
Heavy-metal
bar with through
coolant.



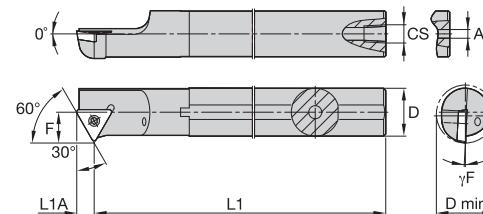
L-STFP 90°



| order number | catalogue number | D | D min | F | L1 | L2 | A | γF° | gage insert | insert screw | Torx |
|--------------|------------------|----|-------|-----|-----|------|-----|------------------|--------------|--------------|------|
| right hand | | | | | | | | | | | |
| 3331128 | L08KSTFPR09 | 8 | 11,0 | 6,0 | 125 | 19,1 | 2,4 | -6,0 | TP..090204.. | MS1933 | T7 |
| 3331123 | L12QSTFPR11 | 12 | 16,0 | 9,0 | 183 | 24,4 | 4,0 | -2,0 | TP..110204.. | MS1153 | T7 |
| left hand | | | | | | | | | | | |
| 3331131 | L08KSTFPL09 | 8 | 11,0 | 6,0 | 125 | 19,1 | 2,4 | -6,0 | TP..090204.. | MS1933 | T7 |

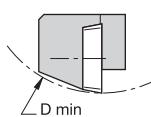
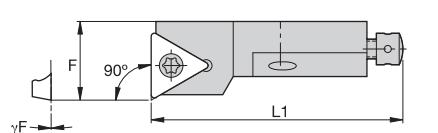
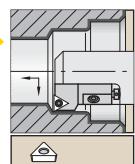


Steel shank with
through coolant.



A-STWP 60°

| order number | catalogue number | D | D min | F | L1 | L1A | A | CS | γF° | gage insert | insert screw | Torx |
|--------------|------------------|----|-------|------|-----|-----|-----|-------------|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1098205 | A10KSTWPR11 | 10 | 13,0 | 7,0 | 125 | 5,0 | 3,2 | — | -4,0 | TP..110204 | MS1153 | T7 |
| 1098216 | A12MSTWPR11 | 12 | 16,0 | 9,0 | 150 | — | 4,0 | 1/16-27 NPT | -2,0 | TP..110204 | MS1153 | T7 |
| 1098218 | A16RSTWPR11 | 16 | 20,0 | 11,0 | 200 | — | 4,0 | 1/8-27 NPT | -2,0 | TP..110204 | MS1153 | T7 |
| left hand | | | | | | | | | | | | |
| 1098206 | A10KSTWPL11 | 10 | 13,0 | 7,0 | 125 | — | 3,2 | — | -4,0 | TP..110204 | MS1153 | T7 |



■ STFP 90°

| order number | catalogue number | D min | F | L1 | γ_F° | γ_P° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|----------------------|
| right hand | | | | | | | |
| 1098565 | STFPR08CA09 | 25 | 10,0 | 32 | 0.0 | 0.0 | TP..090204/TP..18151 |
| 1098563 | STFPR10CA11 | 40 | 14,0 | 50 | 0.0 | 0.0 | TP..110204/TP..2151 |
| 1098562 | STFPR12CA16 | 50 | 20,0 | 55 | 0.0 | 0.0 | TP..16T308/TP..3252 |
| left hand | | | | | | | |
| 1098561 | STFPL08CA09 | 25 | 10,0 | 32 | 0.0 | 0.0 | TP..090204/TP..18151 |
| 1098559 | STFPL10CA11 | 40 | 14,0 | 50 | 0.0 | 0.0 | TP..110204/TP..2151 |
| 1098558 | STFPL12CA16 | 50 | 20,0 | 55 | 0.0 | 0.0 | TP..16T308/TP..3252 |

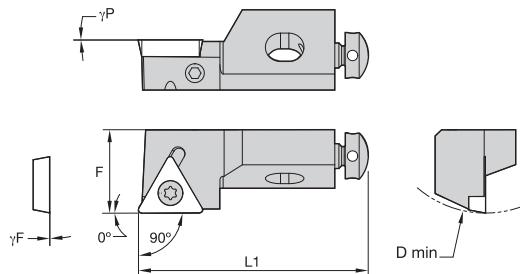
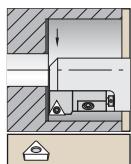
NOTE: ANSI/ISO compatible 60° countersunk hole inserts. This tool also accepts TPGM/TPGT/TPGW-21.5_ inserts.

ANSI/ISO compatible 60° countersunk hole inserts (i.e., TPMT/TPGT/TPGW-32.5_). 90° countersunk hole inserts (i.e., TPGM/TPGB-32.5_) do not fit this tool.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|----------------|--------|--------------|
| 25 | MS1152 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | — | 2.5 mm | CSWM 040 050 |
| 40 | MS1153 | T7 | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | MS1155 | T15 | KUAM23 | 2.5 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |



■ STGP 90°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|----------------------|
| right hand | | | | | | | |
| 1098567 | STGPR10CA11 | 40 | 14,0 | 50 | 0.0 | 0.0 | TP..110204/TP..2151 |
| 1098566 | STGPR12CA16 | 50 | 20,0 | 55 | 0.0 | 0.0 | TP..16T308/TP..3252 |
| left hand | | | | | | | |
| 1098762 | STGPL08CA09 | 25 | 10,0 | 32 | 0.0 | 0.0 | TP..090204/TP..18151 |
| 1098760 | STGPL10CA11 | 40 | 14,0 | 50 | 0.0 | 0.0 | TP..110204/TP..2151 |

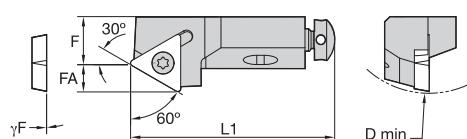
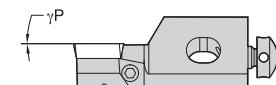
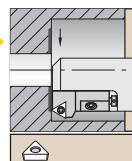
NOTE: ANSI/ISO compatible 60° countersunk hole inserts. This tool also accepts TPGM/TPGT/TPGW-21.5_ inserts.

ANSI/ISO compatible 60° countersunk hole inserts (i.e., TPMT/TPGT/TPGW-32.5_). 90° countersunk hole inserts (i.e., TPGM/TPGB-32.5_) do not fit this tool.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|----------------|--------|--------------|
| 25 | MS1152 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | — | 2.5 mm | CSWM 040 050 |
| 40 | MS1153 | T7 | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | MS1155 | T15 | KUAM23 | 2.5 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |



■ STTP 60°

| order number | catalogue number | D min | F | L1 | γ_F° | γ_P° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|----------------------|
| right hand | | | | | | | |
| 1098744 | STTPR08CA09 | 25 | 6,0 | 32 | 0.0 | 0.0 | TP..090204/TP..18151 |
| 1098742 | STTPR10CA11 | 40 | 9,0 | 50 | 0.0 | 0.0 | TP..110204/TP..2151 |
| 1098741 | STTPR12CA16 | 50 | 13,0 | 55 | 0.0 | 0.0 | TP..16T308/TP..3252 |

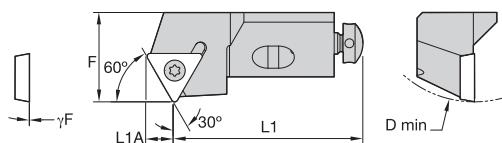
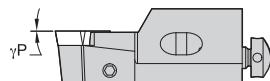
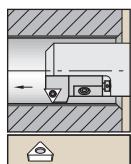
NOTE: ANSI/ISO compatible 60° countersunk hole inserts.

This tool also accepts TPGM/TPGT/TPGW-21.5_ inserts.

■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|----------------|--------|--------------|
| 25 | MS1152 | T7 | KUAM34 | 1.5 mm | KUAM20 | MS2175 | — | 2.5 mm | CSWM 040 050 |
| 40 | MS1153 | T7 | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | MS1155 | T15 | KUAM23 | 2.5 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |



■ STWP 60°

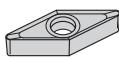
| order number | catalogue number | D min | F | L1 | γ_F° | γ_P° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|---------------------|
| right hand | | | | | | | |
| 1098750 | STWPR10CA11 | 40 | 14,0 | 44 | 0.0 | 0.0 | TP..110204/TP..2151 |
| 1098749 | STWPR12CA16 | 50 | 20,0 | 47 | 0.0 | 0.0 | TP..16T308/TP..3252 |

NOTE: ANSI/ISO compatible 60° countersunk hole inserts.
This tool also accepts TPGM/TPGT/TPGW-21.5_ inserts.

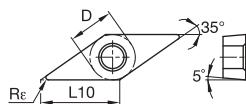
■ Spare Parts



| D min | insert screw | Torx | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|--------------|------|------------------------|--------|-----------------------|----------------|----------------|------|--------------|
| 40 | MS1153 | T7 | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | MS1155 | T15 | KUAM23 | 2.5 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |

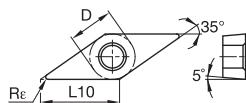
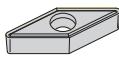


● first choice
○ alternate choice



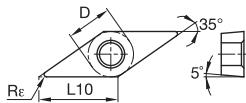
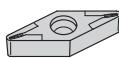
■ VBGT-HP

| ISO catalogue number | D | L10 | R _ε | P | M | K | N | S | H |
|----------------------|------|-------|----------------|---|---|--------|---|---|---|
| VBGT110302HP | 6,35 | 11,07 | 0,2 | - | - | KCP05 | ● | ● | ● |
| VBGT110304HP | 6,35 | 11,07 | 0,4 | - | - | KCP10B | | | |
| VBGT160404HP | 9,53 | 16,61 | 0,4 | - | - | KCP10 | | | |
| VBGT160408HP | 9,53 | 16,61 | 0,8 | - | - | KCP25B | | | |
| | | | | - | - | KCP25 | | | |
| | | | | - | - | KCP30 | | | |
| | | | | - | - | KCP40 | | | |
| | | | | - | - | KCK05B | | | |
| | | | | - | - | KCK05 | | | |
| | | | | - | - | KCK15B | | | |
| | | | | - | - | KCK15 | | | |
| | | | | - | - | KCK20B | | | |
| | | | | - | - | KCK20 | | | |
| | | | | - | - | KCM15B | | | |
| | | | | - | - | KCM15 | | | |
| | | | | - | - | KCM25B | | | |
| | | | | - | - | KCM25 | | | |
| | | | | - | - | KCM35 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | K313 | | | |
| | | | | - | - | K68 | | | |
| | | | | - | - | KCS10 | | | |
| | | | | - | - | KCU10 | | | |
| | | | | - | - | KCU25 | | | |
| | | | | - | - | KC5010 | | | |
| | | | | - | - | KC5025 | | | |
| | | | | - | - | KC5410 | | | |
| | | | | - | - | KT315 | | | |
| | | | | - | - | KTP10 | | | |



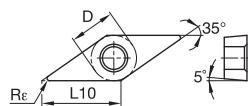
■ VBGT-LF

| ISO catalogue number | D | L10 | R _ε | P | M | K | N | S | H |
|----------------------|------|-------|----------------|---|---|--------|---|---|---|
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| VBGT110301LF | 6,35 | 11,07 | 0,1 | - | - | KCP10B | | | |
| VBGT110302LF | 6,35 | 11,07 | 0,2 | - | - | KCP10 | | | |
| VBGT110304LF | 6,35 | 11,07 | 0,4 | - | - | KCP25B | | | |
| VBGT1604X0LF | 9,53 | 16,61 | 0,0 | - | - | KCP25 | | | |
| VBGT160401LF | 9,53 | 16,61 | 0,1 | - | - | KCP30 | | | |
| VBGT160402LF | 9,53 | 16,61 | 0,2 | - | - | KCP40 | | | |
| VBGT160404LF | 9,53 | 16,61 | 0,4 | - | - | KCK05B | | | |
| | | | | - | - | KCK05 | | | |
| | | | | - | - | KCK15B | | | |
| | | | | - | - | KCK15 | | | |
| | | | | - | - | KCK20B | | | |
| | | | | - | - | KCK20 | | | |
| | | | | - | - | KCM15B | | | |
| | | | | - | - | KCM15 | | | |
| | | | | - | - | KCM25B | | | |
| | | | | - | - | KCM25 | | | |
| | | | | - | - | KCM35 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | K313 | | | |
| | | | | - | - | K68 | | | |
| | | | | - | - | KCS10 | | | |
| | | | | - | - | KCU10 | | | |
| | | | | - | - | KCU25 | | | |
| | | | | - | - | KC5010 | | | |
| | | | | - | - | KC5025 | | | |
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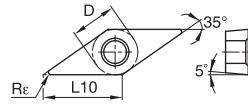
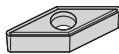


■ VBMT-11

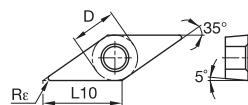
| ISO catalogue number | D | L10 | R _ε | P | M | K | N | S | H |
|----------------------|------|-------|----------------|---|---|--------|---|---|---|
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| VBMT11030411 | 6,35 | 11,07 | 0,4 | - | - | KCP10B | | | |
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| VBMT16040811 | 9,53 | 16,61 | 0,8 | - | - | KCP25B | | | |
| | | | | - | - | KCP25 | | | |
| | | | | - | - | KCM35 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | KU10 | | | |
| | | | | - | - | K313 | | | |
| | | | | - | - | K68 | | | |
| | | | | - | - | KCS10 | | | |
| | | | | - | - | KCU10 | | | |
| | | | | - | - | KCU25 | | | |
| | | | | - | - | KC5010 | | | |
| | | | | - | - | KC5025 | | | |
| | | | | - | - | KC5410 | | | |
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| | | | | - | - | KTP10 | | | |

● first choice
○ alternate choice

VBMT-FP

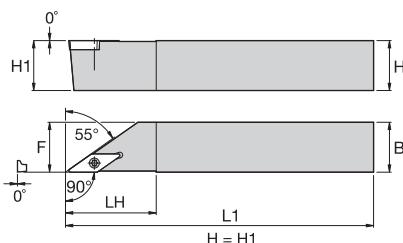
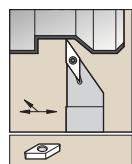
| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| VBMT110302FP | 6,35 | 11,07 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| VBMT110304FP | 6,35 | 11,07 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| VBMT110308FP | 6,35 | 11,07 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| VBMT160402FP | 9,53 | 16,61 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| VBMT160404FP | 9,53 | 16,61 | 0,4 | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| VBMT160408FP | 9,53 | 16,61 | 0,8 | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| VBMT160412FP | 9,53 | 16,61 | 1,2 | - | ● | - | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |


VBMT-LF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|-------|-----|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| VBMT110302LF | 6,35 | 11,07 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| VBMT110304LF | 6,35 | 11,07 | 0,4 | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
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| VBMT160402LF | 9,53 | 16,61 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| VBMT160404LF | 9,53 | 16,61 | 0,4 | - | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| VBMT160408LF | 9,53 | 16,61 | 0,8 | ● | ● | ● | ● | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| VBMT160412LF | 9,53 | 16,61 | 1,2 | - | - | - | - | - | ● | - | - | ● | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |


VBMT-MP

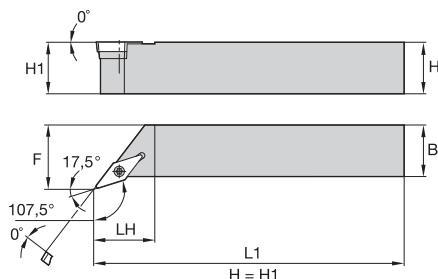
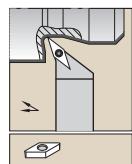
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|----------------------|------|-------|-----|-------|--------|-------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| VBMT160404MP | 9,53 | 16,61 | 0,4 | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | | | | | |
| VBMT160408MP | 9,53 | 16,61 | 0,8 | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | - | - | - | - | | | | | |



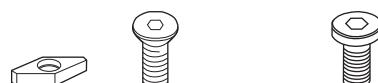
■ SVAB 90°



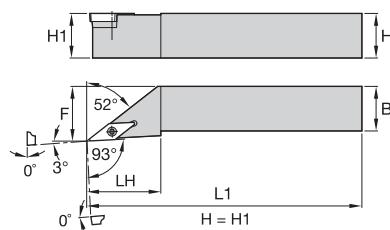
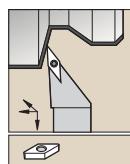
| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|--------------|------|
| right hand | | | | | | | | | |
| 1097722 | SVABR1010M11Q | 10 | 10 | 10,0 | 150 | 22,0 | VB..110304 | MS1153 | T7 |
| 1097724 | SVABR1212M11Q | 12 | 12 | 12,0 | 150 | 22,0 | VB..110304 | MS1153 | T7 |
| 1097726 | SVABR1616K16Q | 16 | 16 | 16,0 | 125 | 30,0 | VB..160408 | MS1155 | T15 |
| left hand | | | | | | | | | |
| 1097725 | SVABL1212M11Q | 12 | 12 | 12,0 | 150 | 22,0 | VB..110304 | MS1153 | T7 |
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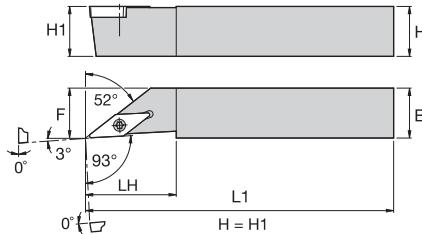
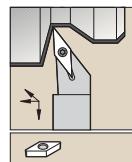
■ SVHB 107,5°



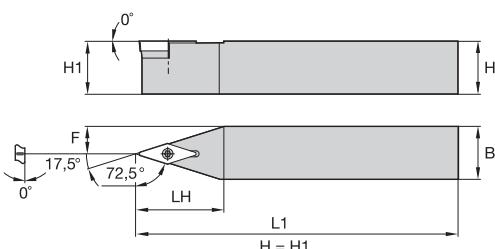
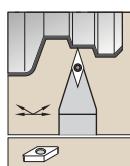
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1097804 | SVHBR1212N11 | 12 | 12 | 16,0 | 160 | 19,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097805 | SVHBR1616H11 | 16 | 16 | 20,0 | 100 | 19,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1244953 | SVHBR2020K11 | 20 | 20 | 25,0 | 125 | 26,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097806 | SVHBR2020K16 | 20 | 20 | 25,0 | 125 | 28,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097807 | SVHBR2525M16 | 25 | 25 | 32,0 | 150 | 28,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | |
| 1097949 | SVHBL1212N11 | 12 | 12 | 16,0 | 160 | 19,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097950 | SVHBL1616H11 | 16 | 16 | 20,0 | 100 | 19,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1244949 | SVHBL2020K11 | 20 | 20 | 25,0 | 125 | 26,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097951 | SVHBL2020K16 | 20 | 20 | 25,0 | 125 | 28,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097952 | SVHBL2525M16 | 25 | 25 | 32,0 | 150 | 28,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |


■ SVJB 93°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1097800 | SVJBR1212N11 | 12 | 12 | 16,0 | 160 | 22,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097801 | SVJBR1616H11 | 16 | 16 | 20,0 | 100 | 22,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1244959 | SVJBR1616H16 | 16 | 16 | 20,0 | 100 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1252235 | SVJBR2020K11 | 20 | 20 | 25,0 | 125 | 26,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097802 | SVJBR2020K16 | 20 | 20 | 25,0 | 125 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097803 | SVJBR2525M16 | 25 | 25 | 32,0 | 150 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1244992 | SVJBR3225P16 | 32 | 25 | 32,0 | 170 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| left hand | | | | | | | | | | | | |
| 1097945 | SVJBL1212N11 | 12 | 12 | 16,0 | 160 | 22,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097946 | SVJBL1616H11 | 16 | 16 | 20,0 | 100 | 22,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1244957 | SVJBL1616H16 | 16 | 16 | 20,0 | 100 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1252234 | SVJBL2020K11 | 20 | 20 | 25,0 | 125 | 26,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097947 | SVJBL2020K16 | 20 | 20 | 25,0 | 125 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097948 | SVJBL2525M16 | 25 | 25 | 32,0 | 150 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1192560 | SVJBL3225P16 | 32 | 25 | 32,0 | 170 | 35,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |


■ SVJB-F 93°


| order number | catalogue number | H | B | F | L1 | LH | gage insert | insert screw | Torx |
|-------------------|------------------|----|----|------|-----|------|-------------|--------------|------|
| right hand | | | | | | | | | |
| 1097797 | SVJBRF1010M11Q | 10 | 10 | 10,0 | 150 | 23,0 | VB..110304 | MS1153 | T7 |
| 1097798 | SVJBRF1212M11Q | 12 | 12 | 12,0 | 150 | 23,0 | VB..110304 | MS1153 | T7 |
| 1097799 | SVJBRF1616K16Q | 16 | 16 | 16,0 | 125 | 31,0 | VB..160408 | MS1155 | T15 |
| left hand | | | | | | | | | |
| 1097942 | SVJBLF1010M11Q | 10 | 10 | 10,0 | 150 | 23,0 | VB..110304 | MS1153 | T7 |
| 1097943 | SVJBLF1212M11Q | 12 | 12 | 12,0 | 150 | 23,0 | VB..110304 | MS1153 | T7 |
| 1097944 | SVJBLF1616K16Q | 16 | 16 | 16,0 | 125 | 31,0 | VB..160408 | MS1155 | T15 |

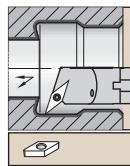


■ SVVB 72,5°

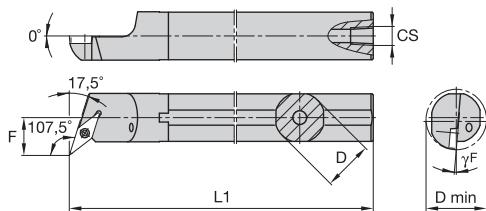


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|--------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| 1097990 | SVVBN1212N11 | 12 | 12 | 6,0 | 160 | 26,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097991 | SVVBN1616H11 | 16 | 16 | 8,0 | 100 | 26,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1244961 | SVVBN1616H16 | 16 | 16 | 8,0 | 100 | 33,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1244962 | SVVBN2020K11 | 20 | 20 | 10,0 | 125 | 26,0 | VB..110304 | — | — | — | MS1153 | T7 |
| 1097992 | SVVBN2020K16 | 20 | 20 | 10,0 | 125 | 33,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1097993 | SVVBN2525M16 | 25 | 25 | 12,5 | 150 | 33,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |
| 1192561 | SVVBN3225P16 | 32 | 25 | 12,5 | 170 | 33,0 | VB..160408 | SKVN343 | SRS3 | 3.5 mm | MS1156 | T15 |

Screw-On Boring Bars



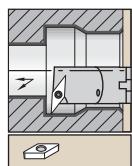
Steel shank with through coolant.



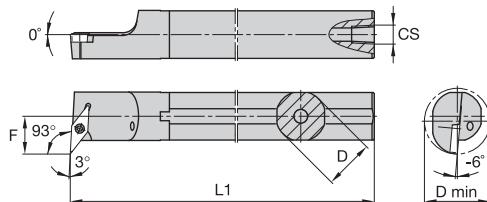
■ A-SVQB 107,5°



| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|------------|------------------|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1098232 | A16RSVQBR11 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | -7,0 | VB..110304 | MS1153 | T7 |
| 1098248 | A20SSVQBR11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -6,0 | VB..110304 | MS1153 | T7 |
| 1098274 | A25TSVQBR16 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | -6,0 | VB..160408 | MS1155 | T15 |
| left hand | | | | | | | | | | |
| 1098233 | A16RSVQBL11 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | -7,0 | VB..110304 | MS1153 | T7 |
| 1098253 | A20SSVQBL11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -6,0 | VB..110304 | MS1153 | T7 |
| 1098277 | A25TSVQBL16 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | -6,0 | VB..160408 | MS1155 | T15 |



Steel shank with
through coolant.

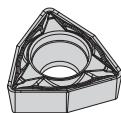


ISO Turning

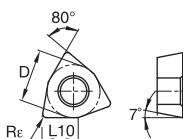
■ A-SVUB 93°



| order number | catalogue number | D | D min | F | L1 | CS | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|------------|-------------|--------------|------|
| right hand | | | | | | | | | |
| 1098249 | A20SSVUBR11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | VB..110304 | MS1153 | T7 |
| 1098275 | A25TSVUBR16 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | VB..160408 | MS1155 | T15 |
| left hand | | | | | | | | | |
| 1098254 | A20SSVUBL11 | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | VB..110304 | MS1153 | T7 |
| 1098278 | A25TSVUBL16 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | VB..160408 | MS1155 | T15 |

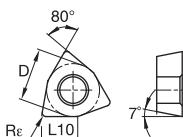
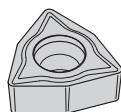


- first choice
- alternate choice



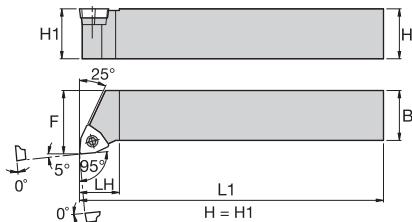
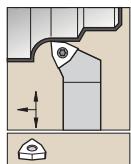
■ WCMT-FP

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| WCMT040204FP | 6,35 | 4,34 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| WCMT06T308FP | 9,53 | 6,52 | 0,8 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |

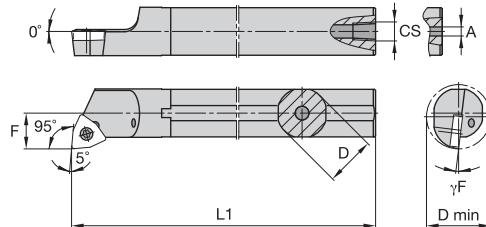
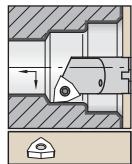


■ WCMT-LF

| ISO catalogue number | D | L10 | Rε | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KTP10 |
|----------------------|------|------|-----|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|-------|-------|-------|--------|--------|--------|-------|-------|
| WCMT040204LF | 6,35 | 4,34 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |
| WCMT06T308LF | 9,53 | 6,52 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | |

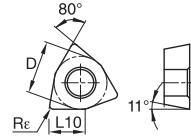
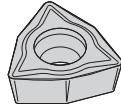

■ SWLC 95°

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | insert screw | Torx |
|-----------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|------|
| right hand 1097732 | SWLCR2020K06 | 20 | 20 | 25,0 | 125 | 16,0 | WC..06T308 | SKWP343 | SRS3 | 3.5 mm | MS1156 | T15 |

Screw-On Boring Bars

■ A-SWLC 95°

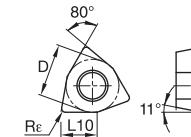
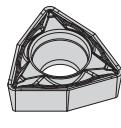
| order number | catalogue number | D | D min | F | L1 | A | CS | γF° | gage insert | insert screw | Torx |
|-----------------------|------------------|----|-------|------|-----|-----|-------------|------|-------------|--------------|------|
| right hand 1328642 | A06MSWLCR2 | 10 | 12,2 | 6,4 | 152 | 3,2 | — | -8,0 | WC..2151 | MS1939 | T7 |
| 1328644 | A08RSWLCR2 | 13 | 15,2 | 7,9 | 203 | 4,0 | 1/16-27 NPT | -6,0 | WC..2151 | MS1153 | T7 |
| 1098062 | A10KSWLCR04 | 10 | 13,0 | 7,0 | 125 | 3,0 | — | -7,0 | WC..040204 | MS1153 | T7 |
| 1328646 | A10SSWLCR3 | 16 | 19,6 | 10,3 | 254 | 4,0 | 1/8-27 NPT | -7,0 | WC..3252 | MS1155 | T15 |
| 1098063 | A12MSWLCR04 | 12 | 16,0 | 9,0 | 150 | — | 1/16-27 NPT | -6,0 | WC..040204 | MS1153 | T7 |
| 1098064 | A16RSWLCR06 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | -7,0 | WC..06T308 | MS1155 | T15 |
| 1098065 | A20SSWLCR06 | 20 | 25,0 | 13,0 | 250 | 4,0 | 1/8-27 NPT | -5,0 | WC..06T308 | MS1155 | T15 |
| left hand 1098069 | A16RSWLCL06 | 16 | 20,0 | 11,0 | 200 | 4,0 | 1/8-27 NPT | -7,0 | WC..06T308 | MS1155 | T15 |

- first choice
- alternate choice



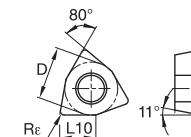
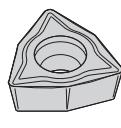
■ WP GT-UF

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 |
|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|
| WPGTS30101UF | 4,76 | 3,26 | 0,1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| WPGTS30102UF | 4,76 | 3,26 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| WPGT040202UF | 6,35 | 4,34 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |



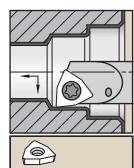
■ WP MT-FP

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 |
|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|
| WPMTS3T104FP | 4,76 | 3,25 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| WPMTO40204FP | 6,35 | 4,34 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| WPMTO6T304FP | 9,53 | 6,52 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| WPMTO6T308FP | 9,53 | 6,52 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

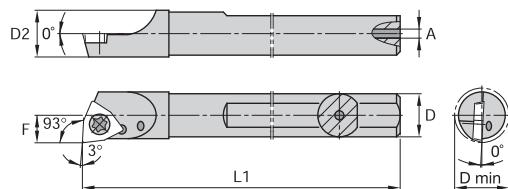


■ WP MT-LF

| ISO catalogue number | D | L10 | R _E | KCP05 | KCP10B | KCP10 | KCP25B | KCP25 | KCP30 | KCP40 | KCK05B | KCK05 | KCK15B | KCK15 | KCK20B | KCK20 | KCM15B | KCM15 | KCM25B | KCM25 | KCM35 | KU10 | K313 | K68 |
|----------------------|------|------|----------------|-------|--------|-------|--------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|-----|
| WPMTS3T104LF | 4,76 | 3,25 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| WPMTO40204LF | 6,35 | 4,34 | 0,4 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| WPMTO6T304LF | 9,53 | 6,52 | 0,4 | - | - | - | - | ● | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | |
| WPMTO6T308LF | 9,53 | 6,52 | 0,8 | - | - | - | - | ● | - | - | - | ● | - | - | - | ● | - | - | - | - | - | - | - | |



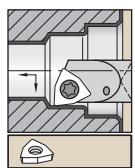
Steel shank with through coolant.



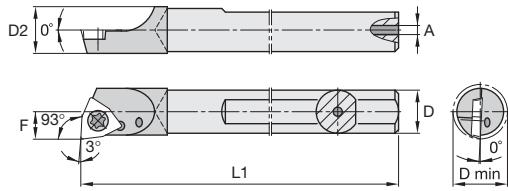
ISO Turning

■ A-SWUP 93°

| order number | catalogue number | D | D min | D2 | F | L1 | A | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|------|-----|-----|-----|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1930544 | A06HSWUPRS3 | 6 | 6,8 | 6,2 | 3,4 | 102 | 1,0 | WP..S30104 | CT11 | T6 |
| 1930546 | A08HSWUPRS3 | 8 | 8,8 | 8,2 | 4,4 | 102 | 2,4 | WP..S30104 | CT11 | T6 |
| 1930556 | A12MSWUPR04 | 12 | 12,9 | 12,2 | 6,6 | 152 | 4,0 | WP..040204 | QTM20 | T7 |



Carbide shank with through coolant.



■ E-SWUP 93°

| order number | catalogue number | D | D min | D2 | F | L1 | A | gage insert | insert screw | Torx |
|-------------------|------------------|----|-------|-----|-----|-----|-----|-------------|--------------|------|
| right hand | | | | | | | | | | |
| 1930550 | E06MSWUPRS3 | 6 | 6,8 | 6,2 | 3,4 | 152 | 1,2 | WP..S30104 | CT11 | T6 |
| 1930552 | E08MSWUPRS3 | 8 | 8,8 | — | 4,4 | 152 | 2,4 | WP..S30104 | CT11 | T6 |
| 1930558 | E10SSWUPR04 | 10 | 11,0 | — | 5,6 | 254 | 3,2 | WP..040204 | QTM20 | T7 |
| 1930560 | E12SSWUPR04 | 12 | 12,9 | — | 6,6 | 254 | 4,7 | WP..040204 | QTM20 | T7 |
| left hand | | | | | | | | | | |
| 1930549 | E06MSWUPLS3 | 6 | 6,8 | 6,2 | 3,4 | 152 | 1,2 | WP..S30104 | CT11 | T6 |

➤ Turning with Advanced Material Inserts

Ceramic, PcbN, and PCD Inserts

Turning inserts made from advanced materials, such as ceramics, PcbN (polycrystalline cubic boron nitride), and PCD (polycrystalline diamond), can be applied in hard-part turning and machining of cast irons, hardened materials, high-temp alloys, and non-ferrous materials.

Ceramic, PcbN, and PCD inserts offer:

- Improved performance.
- Greater wear resistance.



Ceramic Inserts

- Silicon-nitride based ceramic for cast iron machining.
- Mixed ceramic for hard machining and finishing of cast iron.
- Whisker ceramic for high-temp alloys and hard machining.



PcBN

Solid Inserts

- Inserts are made only from PcBN.
- No material joint.
- Best heat-absorption capacity.
- Can work at highest temperatures.

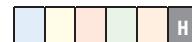
KBK45



Tipped Inserts

- Require a carrier and a PcBN tip.
- The tips are brazed to a carrier.
- The substrate has to have a pocket that will accommodate and support the tip.

KBH20™



PCD

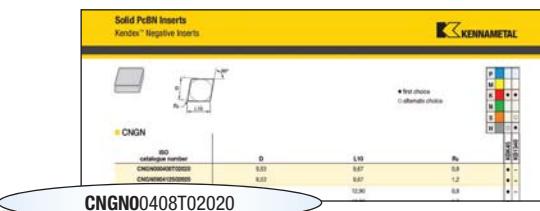
- Targeted machining of non-ferrous materials.
- Significant advantage in hardness over carbide tools.
- Increased productivity through higher speeds and longer tool life.
- Best used in processing materials that are un-machinable with conventional tooling.

KD1400



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.

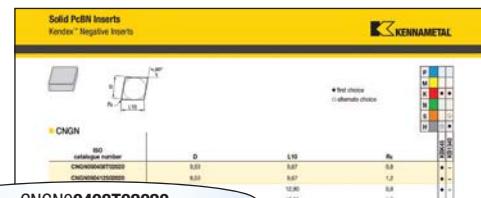


| C | N | G | N | O |
|--|--|---|-----------------|---|
| Insert Shape | Insert Clearance Angle | Tolerance Class | Insert Features | Size |
| H Hexagon 120° | A 3° | Tolerances apply prior to edge prep and coating | N | Code for metric cutting edge length "L10" |
| O Octagon 135° | B 5° | | R | "D" mm |
| P Pentagon 108° | C 7° | | F | 3,97 S4 04 03 03 06 — — |
| R Round | D 15° | | A | 4,76 04 05 04 04 08 08 S3 |
| S Square 90° | E 20° | | M | 5,56 05 06 05 05 09 09 03 |
| T Triangular 60° | F 25° | | G | 6,00 — — 06 — — — |
| C Rhomboid 80° | G 30° | | W | 6,35 06 07 06 06 11 11 04 |
| D 55° | | | T | 7,94 08 09 07 07 13 13 05 |
| E 75° | | | Q | 8,00 — — 08 — — — |
| M 86° | | | U | 9,52 09 11 09 09 16 16 06 |
| V 35° | | | B | 10,00 — — 10 — — — |
| W Trigon 80° with enlarged corner angles | N 0° | | H | 11,11 11 13 11 11 19 19 07 |
| L Rectangular 90° | P 11° | | C | 12,00 — — 12 — — — |
| A Parallelogram 85° | | | J | 12,70 12 15 12 12 22 22 08 |
| B 82° | | | X | 14,29 14 17 14 14 24 24 09 |
| N/K 55° | O For other clearance angles requiring descriptions. | | V | 15,88 16 19 15 15 27 27 10 |
| | | | | 16,00 — — 16 — — — |
| | | | | 17,46 17 21 17 17 30 30 11 |
| | | | | 19,05 19 23 19 19 33 33 13 |
| | | | | 20,00 — — 20 — — — |
| | | | | 22,22 22 27 22 22 38 38 15 |
| | | | | 25,00 — — 25 — — — |
| | | | | 25,40 25 31 25 25 44 44 17 |
| | | | | 31,75 32 38 31 31 54 54 21 |
| | | | | 32,00 — — 32 — — — |

| tolerance class* | tolerance on "D" | tolerance on "B" | tolerance on "S" |
|------------------|-------------------------|------------------|------------------|
| C | ±0,025 | ±0,013 | ±0,025 |
| H | ±0,013 | ±0,013 | ±0,025 |
| E | ±0,025 | ±0,025 | ±0,025 |
| G | ±0,025 | ±0,025 | ±0,013 |
| M | See tables on next page | | |
| U | See tables on next page | | |

*Tolerances apply prior to edge prep and coating.

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



| 04 | 08 | | T | 020 | 20 | | |
|---------------------|------------------------|---------------------------|----------------------------|---|---|----------------------|------------------------|
| Thickness "S" | Corner Radius "Re" | Hand of Insert (optional) | Cutting Edge (optional) | T-Land Width (optional) | T-Land Angle (optional) | Tip Style (optional) | Chipbreaker (optional) |
| symbol mm | thickness mm | symbol mm | corner radius mm | R = Right hand L = Left hand N = Neutral | F* Sharp E Rounded T* Chamfered S* Chamfered and Rounded K Double-Chamfered P Double-Chamfered and Rounded | symbol ISO | size mm |
| — | 0,79 | X0 | 0,4 | | 010 | 0,01 | |
| T0 | 1,00 | 01 | 0,1 | | 020 | 0,02 | |
| 01 | 11,59 | 02 | 0,2 | | | | |
| T1 | 1,98 | 04 | 0,4 | | | | |
| 02 | 2,38 | 08 | 0,8 | | | | |
| 03 | 3,18 | 12 | 1,2 | | | | |
| T3 | 3,97 | 16 | 1,6 | | | | |
| 04 | 4,76 | 20 | 2,0 | | | | |
| 05 | 5,56 | 24 | 2,4 | | | | |
| 06 | 6,35 | 28 | 2,8 | | | | |
| 07 | 7,94 | 32 | 3,2 | | | | |
| 09 | 9,52 | 00 | round insert | | | | |
| 11 | 11,11 | M0 | | | | | |
| 12 | 12,70 | | | | | | |

*Also available in wiper style.

| "D" | ± Tolerance on "D" | | | | "D" | ± Tolerance on "B" | | | | |
|-------|------------------------|---------|-------------------|------------------|-------|------------------------|---------|-------------------|------------------|--|
| | Class M Tolerance | | Class U Tolerance | | | Class M Tolerance | | Class U Tolerance | | |
| | Shapes S, T, C, R, & W | Shape D | Shape V | Shapes S, T, & C | | Shapes S, T, C, R, & W | Shape D | Shape V | Shapes S, T, & C | |
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 3,97 | 0,05 | — | — | — | 3,97 | 0,08 | — | — | — | |
| 4,76 | 0,05 | — | — | 0,08 | 4,76 | 0,08 | — | — | 0,13 | |
| 5,56 | 0,05 | 0,05 | 0,05 | 0,08 | 5,56 | 0,08 | 0,11 | — | 0,13 | |
| 6,35 | 0,05 | 0,05 | 0,05 | 0,08 | 6,35 | 0,08 | 0,11 | — | 0,13 | |
| 7,94 | 0,05 | 0,05 | 0,05 | 0,08 | 7,94 | 0,08 | 0,11 | — | 0,13 | |
| 9,52 | 0,05 | 0,05 | 0,05 | 0,08 | 9,52 | 0,08 | 0,11 | 0,18 | 0,13 | |
| 11,11 | 0,08 | 0,08 | 0,08 | 0,13 | 11,11 | 0,13 | 0,15 | — | — | |
| 12,70 | 0,08 | 0,08 | 0,08 | 0,13 | 12,70 | 0,13 | 0,15 | 0,25 | 0,20 | |
| 14,29 | 0,08 | 0,08 | 0,08 | 0,13 | 14,29 | 0,13 | 0,15 | — | — | |
| 15,88 | 0,10 | 0,10 | 0,10 | 0,18 | 15,88 | 0,15 | 0,18 | — | 0,27 | |
| 17,46 | 0,10 | 0,10 | 0,10 | 0,18 | 17,46 | 0,15 | 0,18 | — | 0,27 | |
| 19,05 | 0,10 | 0,10 | 0,10 | 0,18 | 19,05 | 0,15 | 0,18 | — | 0,27 | |
| 22,22 | 0,13 | — | — | 0,25 | 22,22 | 0,15 | — | — | 0,38 | |
| 25,40 | 0,13 | — | — | 0,25 | 25,40 | 0,18 | — | — | 0,38 | |
| 31,75 | 0,15 | — | — | 0,25 | 31,75 | 0,20 | — | — | 0,38 | |

➤ Advanced Materials for Cast Iron Machining



Primary Application

The Kennametal advanced materials, utilising Beyond™ technology, offer greater wear resistance and toughness, depending on the job.

KYK ceramic inserts are the first choice for high-speed, continuous, and lightly interrupted turning applications in cast iron materials. Benefits include improved fracture toughness, better wear resistance, and an extended application range. Combining grades KYK10™ and CVD-coated KYK25™ with our other ceramic grades for cast iron, Kennametal provides a complete high-performance ceramic portfolio that can reduce machining cycle times and lower manufacturing costs.

The Kennametal SiAlON grades, such as KYK10 grade, can be applied at high cutting speeds up to the PcbN range and at varying cast iron material machinability. Combining SiAlON material science, CVD coating technology, and PcbN grades for cast iron machining, Kennametal provides a complete high-performance portfolio that can reduce cycle time and lower machining costs.

Features and Benefits

Solid PcbN Inserts

KBK45™ Grade

- Designed for elevated abrasion-resistance.
- Go-to grade for cost-per-part manufacturing.
- For roughing and finishing.
- Gold colour for improved usage monitoring.

KB1340™ Grade

- Designed for elevated abrasion-resistance.
- High-temperature resistance.
- For roughing and finishing.

Tipped PcbN Inserts

KB5630™ Grade

- Laminated material for fine finishing.
- Excellent edge stability.
- PVD coating for reliable tool life, even at varying material machinability.

KB1345™ Grade

- Abrasion-resistant high CBN content tipped grade.
- Very fine PcbN structure suitable for fine finishing applications.

KBK45™ grade provides the best cost-per-part in cast irons.

KB5630™ grade has greater abrasion resistance for chilled and hardened irons.



Ceramic Inserts

KYK10™ Grade

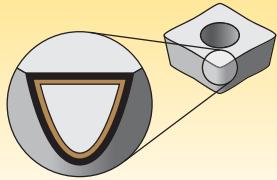
- Improved wear resistance and toughness with up to 20% longer tool life than current KY1310™ grade.
- Best suited for continuous turning of cast iron materials and in lightly interrupted cuts.

KYK25™ Grade

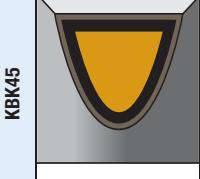
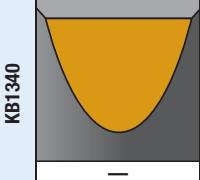
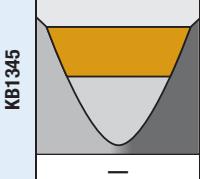
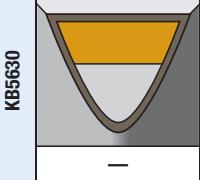
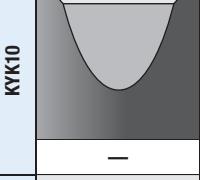
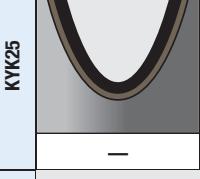
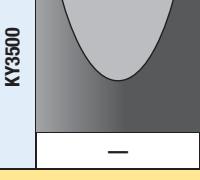
- 12-micron thick coating provides excellent wear resistance, and pre-coat treatment allows for very consistent tool life and performance in cast iron applications.
- Up to 30% longer tool life vs. competitors' CVD-coated ceramic grades.

KY3500™ Grade

- Excellent for roughing to finishing operations in wet or dry cuts with speeds up to 1000 m/min.
- Performs well in difficult interrupted cuts in ductile or malleable cast iron (<70 KSI tensile strength) at speeds of 250–450 m/min.

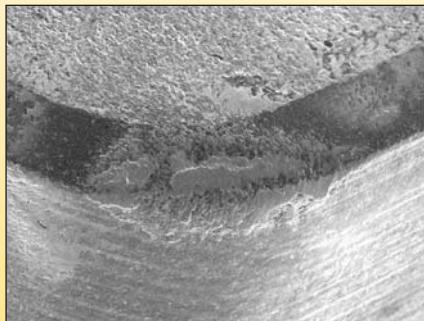


Coatings provide high-speed capability and are engineered for finishing to light roughing.

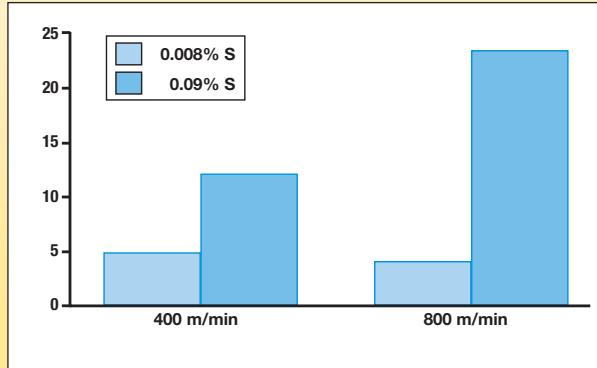
| | | | P | Steel | M | Stainless Steel | K | Cast Iron | N | Non-Ferrous | S | High-Temp Alloys | H | Hardened Materials |
|--------------------|--------|--|---|-------|----|-----------------|----|-----------|----|-------------|----|------------------|---|--------------------|
| | | | wear resistance ← → toughness | | | | | | | | | | | |
| | | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | | | |
| Solid PCBN Grades | KBK45 |  — | Composition: A PVD TiN coated high CBN content, solid PCBN insert having multiple cutting edges. Application: Applied in roughing to finishing of grey and hard cast irons. Also used for finishing chilled cast iron and fully pearlitic cast iron. The solid PCBN insert offers better security and shock resistance compared to tipped PCBN inserts, while also enabling deeper depth-of-cut capabilities. | | | | | | | | | | | |
| | | | K | K | K | K | K | K | K | K | K | K | K | K |
| Tipped PCBN Grades | KB1340 |  — | Composition: A high CBN content, solid PCBN insert having multiple cutting edges. Application: Applied in roughing to finishing of fully pearlitic grey cast iron, chilled irons, high-chrome alloyed steels, and heavy cuts in hardened steels (>45 HRC). The solid PCBN insert offers better security and shock resistance compared to tipped PCBN inserts, while also enabling deeper depth-of-cut capabilities. | | | | | | | | | | | |
| | | | K | K | K | K | K | K | K | K | K | K | K | K |
| Ceramic Grades | KB1345 |  — | Composition: A high CBN content, PCBN tip brazed onto a carbide insert. Application: Applied in roughing to finishing of fully pearlitic grey cast iron, chilled irons, high-chrome alloyed steels, sintered powdered metals, and heavy cuts in hardened steels (>45 HRC). Also used for finishing chilled cast iron and fully pearlitic cast iron. The tipped PCBN insert is available in a wide range of insert styles including positive rake geometries that are ideally suited for boring applications. | | | | | | | | | | | |
| | | | K | K | K | K | K | K | K | K | K | K | K | K |
| Ceramic Grades | KB5630 |  — | Composition: A high content PCBN with a PVD AlTiN coating for added wear resistance. Application: Designed for roughing to finishing of hardened steels (>45 HRC), abrasive workpiece materials such as sintered valve seat materials, powder metallurgy steels, and hard high-alloy cast irons. The PVD coating provides resistance to crater wear and increased resistance to chipping. A wide range of styles are available, including Screw-On geometries that are ideal for boring applications. | | | | | | | | | | | |
| | | | K | K | K | K | S | S | H | H | H | H | H | H |
| Ceramic Grades | KYK10 |  — | Composition: An advanced SiAlON ceramic grade. Application: Provides maximum wear resistance. Used for high-speed continuous turning of grey cast iron, including through scale. To be used for varying cast iron machinability. | | | | | | | | | | | |
| | | | K | K | K | K | K | K | K | K | K | K | K | K |
| Ceramic Grades | KYK25 |  — | Composition: Pure silicon nitride ceramic with an alumina CVD coating. Application: Excellent combination of toughness and edge wear resistance. Used for general purpose machining of grey, ductile, or nodular cast irons. To be used for varying cast iron machinability. | | | | | | | | | | | |
| | | | K | K | K | K | K | K | K | K | K | K | K | K |
| Ceramic Grades | KY3500 |  — | Composition: Pure silicon nitride grade. Application: Maximum toughness. Used at high feed rates for rough machining of grey cast iron, including machining through interruptions. | | | | | | | | | | | |
| | | | K | K | K | K | K | K | K | K | K | K | K | K |

■ Machinability of Cast Iron

- Unaged casting is difficult to machine and leads to shorter tool life.
- Low sulphur content leads to shorter tool life.
- High titanium content decreases the tool life significantly.
- Increased ferrite content leads to high chemical wear and a substantially shorter tool life.
- Compacted graphite cast iron shows high chemical wear.



Proper application of KB1340™ — formation of protective layer; tool life should exceed 70 km sliding distance.

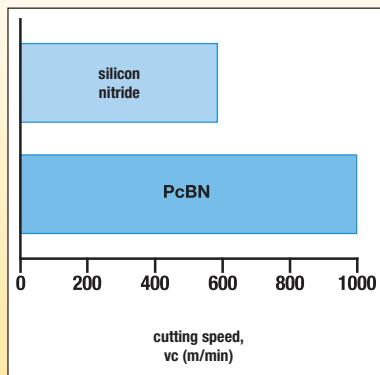


Comparison of the life of PCBN cutting tools in machining two different grey cast irons, primarily differing in sulphur content.

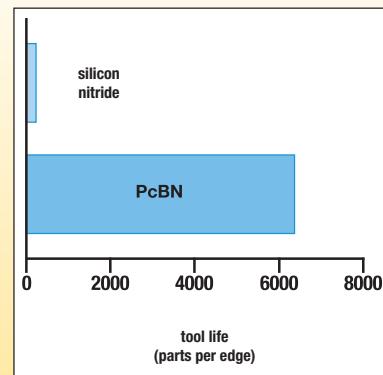
■ Grey Cast Iron Brake Disk Machining • Ceramic vs. PCBN



(a)



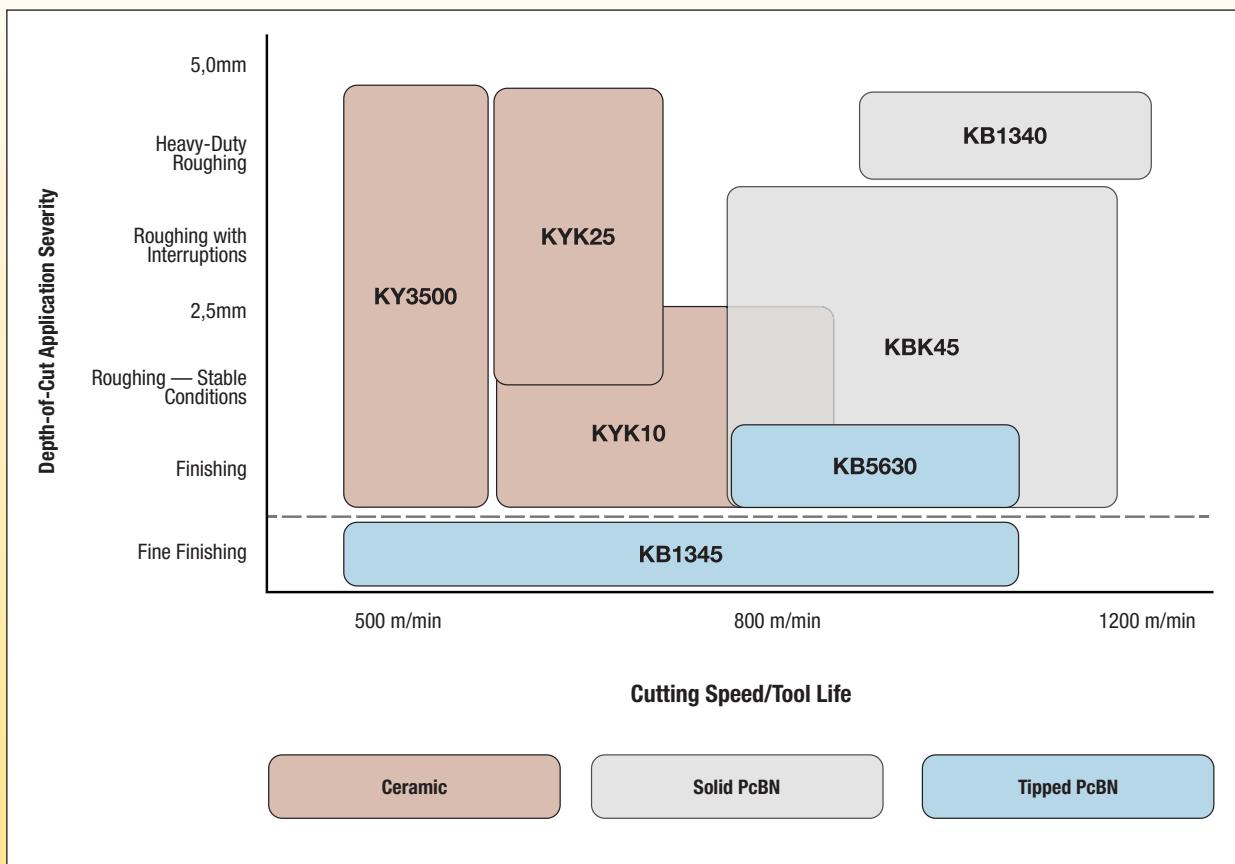
(b)



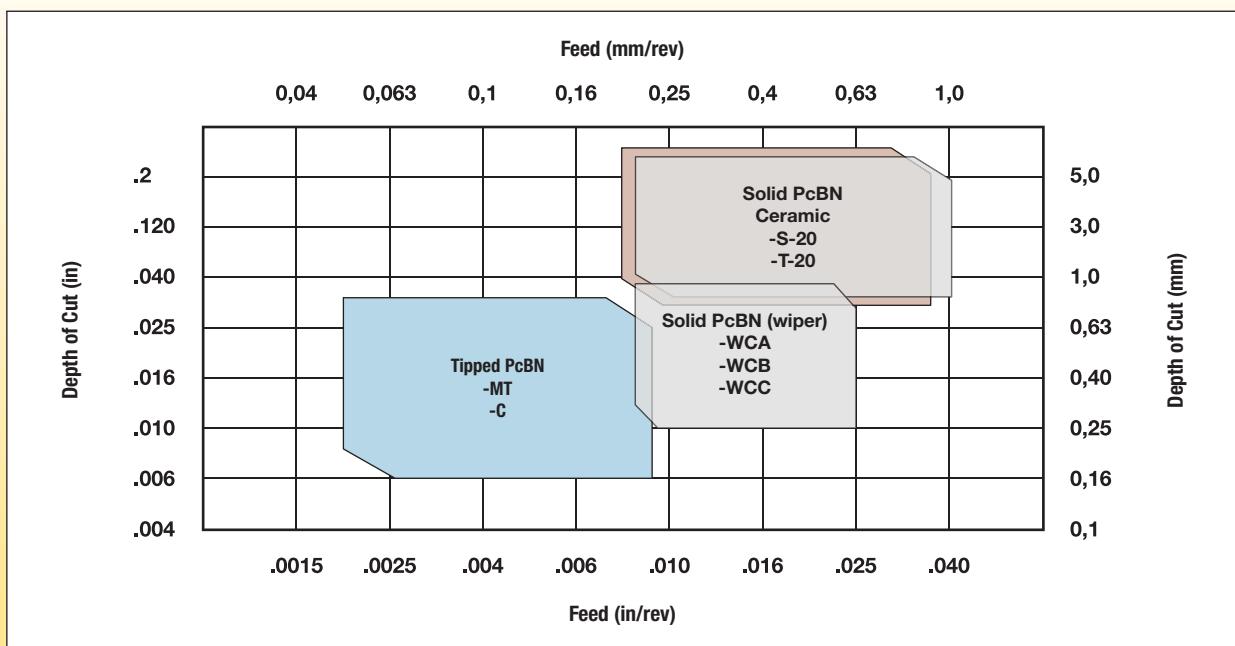
(c)

PCBN increases productivity when machining grey iron brake disks (a) in terms of cutting speed (b) and tool life (c) compared to silicon nitride ceramic.

■ Select the Cutting Material



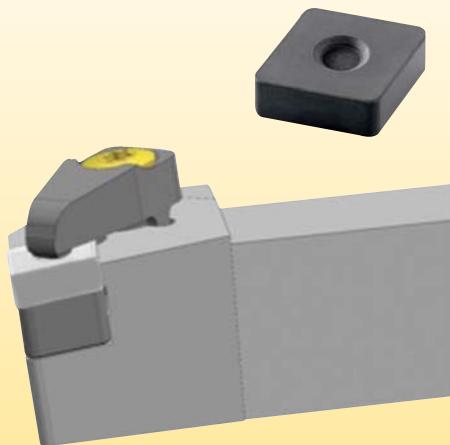
■ Depth of Cut



■ Dimple Clamps for Added Stability

Typical Application

Continuous cost pressures force manufacturers of grey cast iron brake disks to look for cost-cutting solutions. CBN inserts deliver high productivity and long tool life. Kennametal has developed the solid, high-content grade KB1340™, which provides superior performance when machining grey cast iron components, such as brake disks or fly wheels. To ensure secure seating in the toolholder, the inserts are available with dimple-design clamping. The clamps fit Ceramtec holders, which makes the conversion to Kennametal tooling easier.



Higher Productivity and Profitability

- Ensures tight and rigid clamping.
- Dimpled insert with special clamping provides increased stability in the pocket.
- Ideal for use in heavy-duty machining applications.
- Cladded clamps for improved resistance against chip wash are available upon request.
- The shallow dimple design enables the use of less expensive 4,76mm (3/16") inserts.
- Round dimple design works with custom tooling where clamping direction must be offset due to space limitations.

■ Clamp Selection Chart

| inserts | | clamp | |
|-----------------------|----------------------|---------------------|--------------|
| ANSI Catalogue Number | ISO Catalogue number | Catalogue Number | Order Number |
| CNGX433S0415 | CNGX120412S01015 | 551.718-100° Corner | 3968904 |
| CNGX433S0415FW | CNGX120412S01015FW | 551.718-100° Corner | 3968904 |
| CNGX434S0820 | CNGX120416S02020 | 551.718-100° Corner | 3968904 |
| CNGF432 | CNGF120408 | 551.718-100° Corner | 3968904 |
| DNGX434S0820 | DNGX150416S02020 | 551.720 | 4094234 |
| SNGX434S0820 | SNGX120416S02020 | 551.718 | 3968904 |
| SNGX534S0820 | SNGX150416S02020 | 551.718 | 3968904 |
| VNGX333S0820 | VNGX160412S02020 | 551.721 | 4094236 |
| TNGX333EFW | TNGX160412EFW | 551.733 | 4094235 |

■ Wipers for Cast Iron Machining

WCA

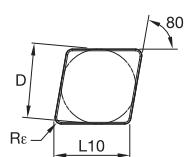
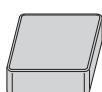
Wiper for cast iron machining for a feed rate up to $f = 0,25$ mm/rev.

WCB

Wiper for cast iron machining for a feed rate up to $f = 0,45$ mm/rev.

WCC

Wiper for cast iron machining for a feed rate up to $f = 0,65$ mm/rev.

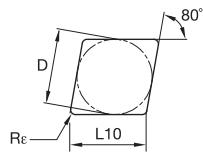


- first choice
- alternate choice

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

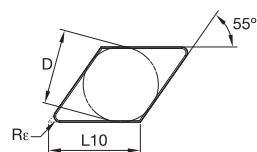
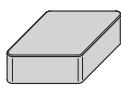
■ CNGN

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| CNGN090408T02020 | 9,53 | 9,67 | 0,8 | ● - | |
| CNGN090412S02020 | 9,53 | 9,67 | 1,2 | ● - | |
| CNGN120408T02020 | 12,70 | 12,90 | 0,8 | ● - | |
| CNGN120412S02020 | 12,70 | 12,90 | 1,2 | ● - | |
| CNGN120416S02020 | 12,70 | 12,90 | 1,6 | ● - | |



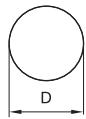
■ CNMN

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| CNMN120408S02020 | 12,70 | 12,90 | 0,8 | - ● | |
| CNMN120412S02020 | 12,70 | 12,90 | 1,2 | - ● | |



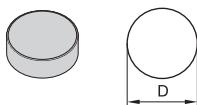
■ DNGN

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| DNGN120408S02020 | 10,00 | 12,21 | 0,8 | ● - | |
| DNGN120412S02020 | 10,00 | 12,21 | 1,2 | ● - | |



■ RNGN

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-----|----|-------|--------|
| RNGN090400S02020 | 9,53 | — | — | ● - | |
| RNGN120400S02020 | 12,70 | — | — | ● - | |



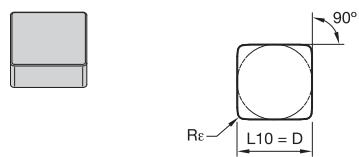
- first choice
- alternate choice

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

■ RNMN

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-----|----|-------|--------|
| RNMN090300S02020 | 9,53 | — | — | — | ● |
| RNMN120300S02020 | 12,70 | — | — | — | ● |
| RNMN120400S02020 | 12,70 | — | — | — | ● |

Kendex Positive Inserts

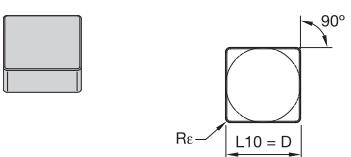


| | | | |
|---|---|---|--|
| P | | | |
| M | | | |
| K | ● | ● | |
| N | | | |
| S | | ○ | |
| H | ○ | ● | |

■ SNGN

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| SNGN120408T02020 | 12,70 | 12,70 | 0,8 | ● | — |
| SNGN120412S02020 | 12,70 | 12,70 | 1,2 | ● | — |
| SNGN120416S02020 | 12,70 | 12,70 | 1,6 | ● | — |

Kendex Positive Wiper Inserts

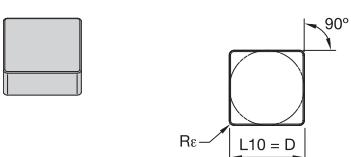


- first choice
- alternate choice

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

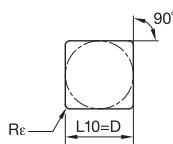
■ SNGN-WCB

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|------|------|-----|-------|--------|
| SNGN090408S01015WCB | 9,53 | 9,52 | 0,8 | ● | — |



■ SNGN-WCC

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|------|------|-----|-------|--------|
| SNGN090408S01015WCC | 9,53 | 9,53 | 0,8 | ● | — |

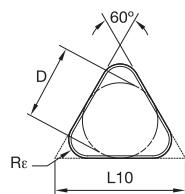


● first choice
○ alternate choice

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

■ SNMN

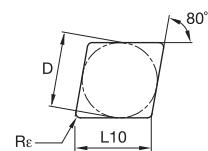
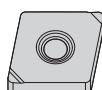
| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| SNMN090308S02020 | 9,53 | 9,53 | 0,8 | - | ● |
| SNMN090316S02020 | 9,53 | 9,53 | 1,6 | - | ● |
| SNMN120316S02020 | 12,70 | 12,70 | 1,6 | - | ● |
| SNMN120416T02020 | 12,70 | 12,70 | 1,6 | - | ● |



■ TNGN

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|------|-------|-----|-------|--------|
| TNGN110416S02020 | 6,35 | 11,00 | 1,6 | ● | - |
| TNGN160416S02020 | 9,53 | 16,50 | 1,6 | ● | - |

Kendex™ Negative Dimple Inserts



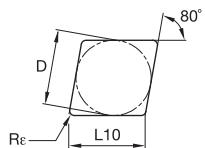
● first choice
○ alternate choice

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

■ CNGF

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| CNGF120408 | 12,70 | 12,90 | 0,8 | - | ● |

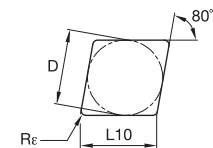
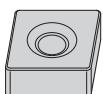
| | | | |
|---|---|---|---|
| P | | | |
| M | | | |
| K | ● | ● | |
| N | ● | | |
| S | | | ○ |
| H | ○ | ● | |



- first choice
- alternate choice

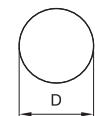
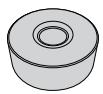
■ CNGX

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| CNGX120408T02020 | 12,70 | 12,90 | 0,8 | ● - | - |
| CNGX120412S01015 | 12,70 | 12,90 | 1,2 | - ● | - |
| CNGX120412S02020 | 12,70 | 12,90 | 1,2 | ● - | - |
| CNGX120416S02020 | 12,70 | 12,90 | 1,6 | ● ● | - |



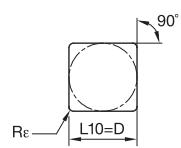
■ CNGX-FW

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| CNGX120412S01015FW | 12,70 | 12,90 | 1,2 | - ● | - |



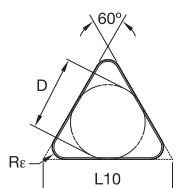
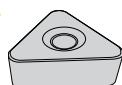
■ RNGX

| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-----|----|-------|--------|
| RNGX120400S02020 | 12,70 | - | - | ● - | - |



■ SNGX

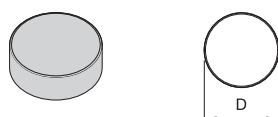
| ISO catalogue number | D | L10 | Rε | KBK45 | KB1340 |
|----------------------|-------|-------|-----|-------|--------|
| SNGX120408T02020 | 12,70 | 12,70 | 0,8 | ● - | - |
| SNGX120412S02020 | 12,70 | 12,70 | 1,2 | ● - | - |
| SNGX120416S02020 | 12,70 | 12,70 | 1,6 | ● ● | - |



■ TNGX

| ISO catalogue number | D | L10 | Re | |
|----------------------|------|-------|-----|------------------------|
| TNGX160416S02020 | 9,53 | 16,50 | 1,6 | KBK45 KB1340 ● - |

Kendex™ Positive Inserts



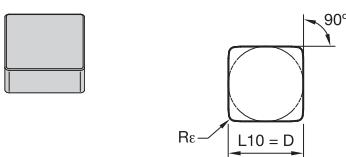
● first choice
○ alternate choice

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

■ RCGN

| ISO catalogue number | D | L10 | Re | |
|----------------------|------|-----|----|------------------------|
| RCGN090400T01015 | 9,53 | - | - | KBK45 KB1340 ● - |

Kendex™ Negative Wiper Inserts

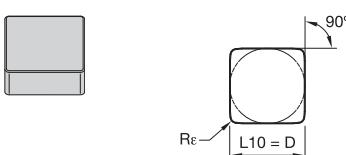


● first choice
○ alternate choice

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

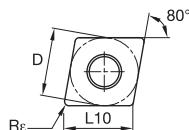
■ SCGN-WCB

| ISO catalogue number | D | L10 | Re | |
|----------------------|------|------|-----|------------------------|
| SCGN090408S01015WCB | 9,53 | 9,52 | 0,8 | KBK45 KB1340 ● - |



■ SCGN-WCC

| ISO catalogue number | D | L10 | Re | |
|----------------------|------|------|-----|------------------------|
| SCGN090408S01015WCC | 9,53 | 9,52 | 0,8 | KBK45 KB1340 ● - |

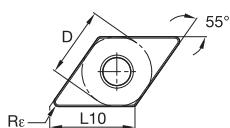
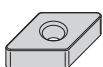


- first choice
- alternate choice

■ CNMA

| ISO catalogue number | D | L10 | Rε | |
|----------------------|-------|-------|-----|----------|
| CNMA120408S02020 | 12,70 | 12,90 | 0,8 | - KBK45 |
| CNMA120412S02020 | 12,70 | 12,90 | 1,2 | - KB1340 |

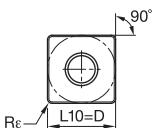
NOTE: For toolholders and boring bars, see pages B58–B73.



■ DNMA

| ISO catalogue number | D | L10 | Rε | |
|----------------------|------|-------|-----|-----|
| DNMA110408S02020 | 9,53 | 11,63 | 0,8 | - ● |
| DNMA110412S02020 | 9,53 | 11,63 | 1,2 | - ● |

NOTE: For toolholders and boring bars, see pages B85–B93.

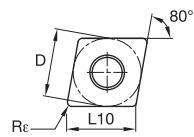


■ SNMA

| ISO catalogue number | D | L10 | Rε | |
|----------------------|-------|-------|-----|-----|
| SNMA120412S02020 | 12,70 | 12,70 | 1,2 | - ● |

NOTE: For toolholders and boring bars, see pages B105–B121.

Advanced Material Inserts • Hard Turning Materials

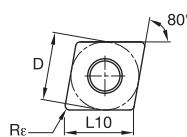


- first choice
- alternate choice

■ CNGA-FWMT

| ISO catalogue number | D | L10 | Rε | |
|----------------------|-------|-------|-----|----------|
| CNGA120404S01025FWMT | 12,70 | 12,90 | 0,4 | - KB1345 |
| CNGA120408S01025FWMT | 12,70 | 12,90 | 0,8 | - KB5650 |

NOTE: For toolholders and boring bars, see pages B58–B73.



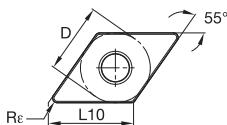
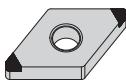
- first choice
- alternate choice

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

■ CNGA-MT

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|-------|-------|-----|--------|--------|
| CNGA120404S01025MT | 12,70 | 12,90 | 0,4 | - | ● |
| CNGA120408S01020MT | 12,70 | 12,90 | 0,8 | ● | - |
| CNGA120408S01025MT | 12,70 | 12,90 | 0,8 | - | ● |
| CNGA120408S02020MT | 12,70 | 12,90 | 0,8 | ● | - |
| CNGA120412S01020MT | 12,70 | 12,90 | 1,2 | - | ● |
| CNGA120412S01025MT | 12,70 | 12,90 | 1,2 | - | ● |

NOTE: For toolholders and boring bars, see pages B58–B73.

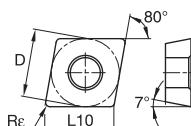


■ DNGA-MT

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|-------|-------|-----|--------|--------|
| DNGA150404S01025MT | 12,70 | 15,50 | 0,4 | - | ● |
| DNGA150408S01020MT | 12,70 | 15,50 | 0,8 | ● | - |
| DNGA150408S01025MT | 12,70 | 15,50 | 0,8 | - | ● |

NOTE: For toolholders and boring bars, see pages B85–B93.

Advanced Material Inserts • Hard Turning Materials



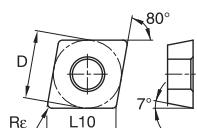
- first choice
- alternate choice

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

■ CCGW-C

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|------|------|-----|--------|--------|
| CCGW060202S01015C | 6,35 | 6,45 | 0,2 | - | ● |
| CCGW060204S01015C | 6,35 | 6,45 | 0,4 | - | ● |
| CCGW09T308EC | 9,53 | 9,67 | 0,8 | ● | - |

NOTE: For toolholders and boring bars, see pages B179–B183.



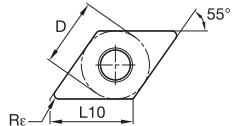
- first choice
- alternate choice

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

■ CCGW-MT

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|------|------|-----|--------|--------|
| CCGW09T304S01015MT | 9,53 | 9,67 | 0,4 | - | ● |
| CCGW09T308S01015MT | 9,53 | 9,67 | 0,8 | - | ● |

NOTE: For toolholders and boring bars, see pages B179–B183.

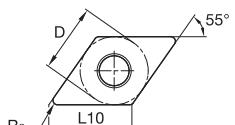
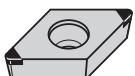


■ DCGW-C

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|------|------|-----|--------|--------|
| DCGW070202S01015C | 6,35 | 7,75 | 0,2 | - | ● |
| DCGW070204S01015C | 6,35 | 7,75 | 0,4 | - | ● |

NOTE: For toolholders and boring bars, see pages B209–B213.

Tipped PcBN Inserts • Screw-On Inserts



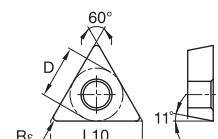
- first choice
- alternate choice

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

■ DCGW-MT

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|------|-------|-----|--------|--------|
| DCGW11T304S01015MT | 9,53 | 11,63 | 0,4 | ● | ● |
| DCGW11T308S01015MT | 9,53 | 11,63 | 0,8 | ● | ● |

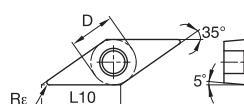
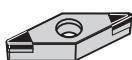
NOTE: For toolholders and boring bars, see pages B209–B213.



■ TPGW-C

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|------|-------|-----|--------|--------|
| TPGW110204EC | 6,35 | 11,00 | 0,4 | ● | - |
| TPGW110208S01015C | 6,35 | 11,00 | 0,8 | - | ● |

NOTE: For toolholders and boring bars, see pages B257–B263.



- first choice
- alternate choice

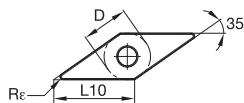
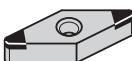
| | | | | | |
|---|---|---|---|--|--|
| P | | | | | |
| M | | | | | |
| K | | ● | ● | | |
| N | ● | | | | |
| S | ○ | | ● | | |
| H | ● | ● | | | |

■ VBGW-MT

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|------|-------|-----|--------|--------|
| VBGW160404S01015MT | 9,53 | 16,61 | 0,4 | - | ● |
| VBGW160408S01015MT | 9,53 | 16,61 | 0,8 | - | ● |

NOTE: For toolholders and boring bars, see pages B266–B269.

Kenloc™ Inserts



- first choice
- alternate choice

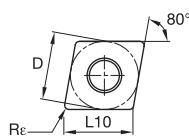
| | | | | | |
|---|---|---|---|--|--|
| P | | | | | |
| M | | | | | |
| K | | ● | ● | | |
| N | ● | | | | |
| S | ○ | | ● | | |
| H | ● | ● | | | |

■ VNGA-MT

| ISO catalogue number | D | L10 | Rε | KB1345 | KB5630 |
|----------------------|------|-------|-----|--------|--------|
| VNGA160404S01025MT | 9,53 | 16,61 | 0,4 | - | ● |
| VNGA160408S01025MT | 9,53 | 16,61 | 0,8 | - | ● |

NOTE: For toolholders and boring bars, see pages B149–B153.

ISO Ceramic Inserts • Kenloc™ Inserts



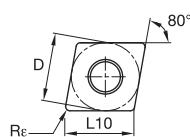
- first choice
- alternate choice

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

■ CNGA

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNGA120408T02020 | 12,70 | 12,90 | 0,8 | ● | ● | ● |
| CNGA120412T02020 | 12,70 | 12,90 | 1,2 | ● | ● | ● |
| CNGA120416T02020 | 12,70 | 12,90 | 1,6 | ● | ● | ● |
| CNGA160612T02020 | 15,88 | 16,12 | 1,2 | ● | – | ● |
| CNGA160616T02020 | 15,88 | 16,12 | 1,6 | – | – | ● |
| CNGA190612T02020 | 19,05 | 19,34 | 1,2 | – | – | ● |
| CNGA190616T02020 | 19,05 | 19,34 | 1,6 | ● | – | ● |

NOTE: For toolholders and boring bars, see pages B58–B73.



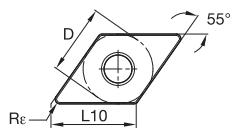
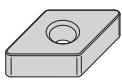
● first choice
○ alternate choice

| | | | | |
|---|---|---|---|--|
| P | | | | |
| M | | | | |
| K | ● | ● | ● | |
| N | ● | | | |
| S | | | | |
| H | | | | |

■ CNGA-FW

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNGA120408T01020FW | 12,70 | 12,90 | 0,8 | ● - | ● ● | |
| CNGA120412T01020FW | 12,70 | 12,90 | 1,2 | ● ● | ● ● | |
| CNGA120412T02020FW | 12,70 | 12,90 | 1,2 | - ● | - - | |
| CNGA120416T01020FW | 12,70 | 12,90 | 1,6 | - - | - - | ● |

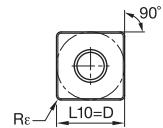
NOTE: For toolholders and boring bars, see pages B58–B73.



■ DNGA

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| DNGA150408T02020 | 12,70 | 15,50 | 0,8 | - - | ● ● | |
| DNGA150412T02020 | 12,70 | 15,50 | 1,2 | - - | - - | ● ● |
| DNGA150416T02020 | 12,70 | 15,50 | 1,6 | ● ● | ● ● | |
| DNGA150608T02020 | 12,70 | 15,50 | 0,8 | - - | ● ● | |
| DNGA150612T02020 | 12,70 | 15,50 | 1,2 | - - | - - | ● ● |

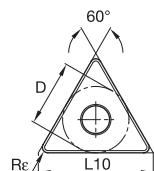
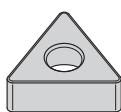
NOTE: For toolholders and boring bars, see pages B85–B93.



■ SNGA

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| SNGA120408T02020 | 12,70 | 12,70 | 0,8 | ● ● | ● ● | |
| SNGA120412T02020 | 12,70 | 12,70 | 1,2 | ● - | ● ● | |
| SNGA120416T02020 | 12,70 | 12,70 | 1,6 | - - | ● ● | |
| SNGA150612T02020 | 15,88 | 15,88 | 1,2 | - - | - - | ● ● |
| SNGA150616T02020 | 15,88 | 15,88 | 1,6 | - - | - - | ● ● |
| SNGA190612T02020 | 19,05 | 19,05 | 1,2 | - - | - - | ● ● |

NOTE: For toolholders and boring bars, see pages B105–B121.



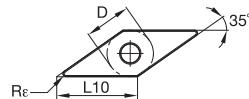
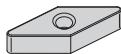
- first choice
- alternate choice

| | |
|---|---|
| P | |
| M | |
| K | ● |
| N | ● |
| S | |
| H | |

■ TNGA

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|------|-------|-----|-------|-------|--------|
| TNGA160408T02020 | 9,53 | 16,50 | 0,8 | - | ● | ● |
| TNGA160412T02020 | 9,53 | 16,50 | 1,2 | - | - | ● |
| TNGA160416T02020 | 9,53 | 16,50 | 1,6 | - | - | ● |

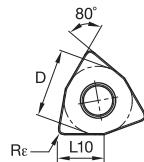
NOTE: For toolholders and boring bars, see pages B132–B142.



■ VNGA

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| VNGA160408T02020 | 9,53 | 16,61 | 0,8 | - | - | ● |
| VNGA220408T02020 | 12,70 | 22,14 | 0,8 | ● | - | - |

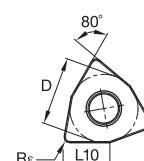
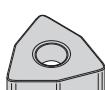
NOTE: For toolholders and boring bars, see pages B149–B153.



■ WNGA

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|------|-----|-------|-------|--------|
| WNGA080408T02020 | 12,70 | 8,69 | 0,8 | ● | - | ● |
| WNGA080412T02020 | 12,70 | 8,69 | 1,2 | ● | - | ● |
| WNGA080416T02020 | 12,70 | 8,69 | 1,6 | - | - | ● |

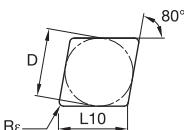
NOTE: For toolholders and boring bars, see pages B161–B165.



■ WNGA-FW

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|------|-----|-------|-------|--------|
| WNGA080408T01020FW | 12,70 | 8,69 | 0,8 | - | - | ● |

NOTE: For toolholders and boring bars, see pages B161–B165.

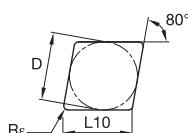
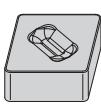


- first choice
- alternate choice

| | | | | |
|---|---|---|---|--|
| P | | | | |
| M | | | | |
| K | ● | ● | ● | |
| N | | | | |
| S | | | | |
| H | | | | |

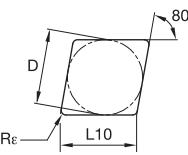
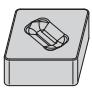
■ CNGN

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNGN120408T02020 | 12,70 | 12,90 | 0,8 | - | - | ● |
| CNGN120412T02020 | 12,70 | 12,90 | 1,2 | - | - | ● |
| CNGN120416T02020 | 12,70 | 12,90 | 1,6 | - | - | ● |
| CNGN120712T02020 | 12,70 | 12,90 | 1,2 | - | - | ● |
| CNGN120716T02020 | 12,70 | 12,90 | 1,6 | - | ● | - |



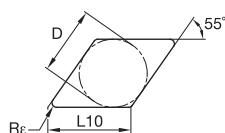
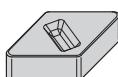
■ CNGX-FW

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNGX120708T01020FW | 12,70 | 12,90 | 0,8 | - | - | ● |
| CNGX120712T01020FW | 12,70 | 12,90 | 1,2 | - | - | ● |
| CNGX120716T01020FW | 12,70 | 12,90 | 1,6 | - | - | ● |



■ CNMX

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNMX120708T02020 | 12,70 | 12,90 | 0,8 | - | - | ● |
| CNMX120712T02020 | 12,70 | 12,90 | 1,2 | - | - | ● |
| CNMX120716T02020 | 12,70 | 12,90 | 1,6 | - | - | ● |

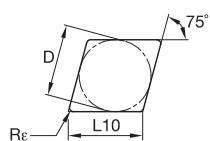


● first choice
○ alternate choice

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

■ DNGX

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| DNGX120708T02020 | 10,00 | 12,21 | 0,8 | - | - | ● |
| DNGX120712T02020 | 10,00 | 12,21 | 1,2 | ● | - | ● |
| DNGX120716T02020 | 10,00 | 12,21 | 1,6 | - | - | ● |
| DNGX150708T02020 | 12,70 | 15,50 | 0,8 | - | - | ● |
| DNGX150712T02020 | 12,70 | 15,50 | 1,2 | ● | - | ● |
| DNGX150716T02020 | 12,70 | 15,50 | 1,6 | - | - | ● |



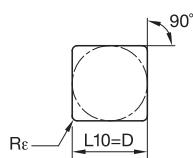
■ ENGX

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| ENGX130716T02020 | 12,70 | 13,15 | 1,6 | - | - | ● |



■ RNGN

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-----|----|-------|-------|--------|
| RNGN120400T02020 | 12,70 | - | - | - | ● | ● |
| RNGN120700T02020 | 12,70 | - | - | - | - | ● |
| RNGN190700T02020 | 19,05 | - | - | - | - | ● |

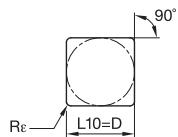


● first choice
○ alternate choice

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| P | | | | |
| M | | | | |
| K | ● | ● | ● | |
| N | ● | | | |
| S | | | | |
| H | | | | |

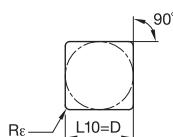
■ SNGN

| ISO catalogue number | D | L10 | R _e | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|----------------|-------|-------|--------|
| SNGN090308T02020 | 9,53 | 9,53 | 0,8 | - | - | ● |
| SNGN120408T02020 | 12,70 | 12,70 | 0,8 | ● | - | ● |
| SNGN120412T02020 | 12,70 | 12,70 | 1,2 | ● | - | ● |
| SNGN120416T02020 | 12,70 | 12,70 | 1,6 | - | - | ● |
| SNGN120432T02020 | 12,70 | 12,70 | 3,2 | - | - | ● |
| SNGN120712T02020 | 12,70 | 12,70 | 1,2 | ● | - | - |
| SNGN120716T02020 | 12,70 | 12,70 | 1,6 | - | - | ● |
| SNGN190416T02020 | 19,05 | 19,05 | 1,6 | - | - | ● |



■ SNGX

| ISO catalogue number | D | L10 | R _e | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|----------------|-------|-------|--------|
| SNGX120712T02020 | 12,70 | 12,70 | 1,2 | ● | ● | ● |
| SNGX120716T02020 | 12,70 | 12,70 | 1,6 | ● | ● | ● |
| SNGX150716T02020 | 15,88 | 15,88 | 1,6 | - | - | ● |
| SNGX150724T02020 | 15,88 | 15,88 | 2,4 | - | - | ● |

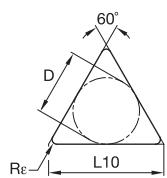
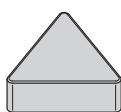


- first choice
- alternate choice

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| P | | | |
| M | | | |
| K | | ● | ● |
| N | | | |
| S | | | |
| H | | | |

■ SNMX

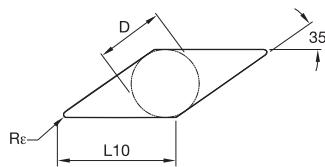
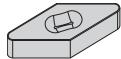
| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| SNMX120712T02020 | 12,70 | 12,70 | 1,2 | - | - | ● |
| SNMX120716T02020 | 12,70 | 12,70 | 1,6 | - | - | ● |
| SNMX150716T02020 | 15,88 | 15,88 | 1,6 | - | - | ● |



■ TNGN

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|-----|-------|-------|--------|
| TNGN160408T02020 | 9,53 | 16,50 | 0,8 | - | - | ● |
| TNGN220416T02020 | 12,70 | 22,00 | 1,6 | - | - | ● |

Kendex™ Negative Dimple Inserts

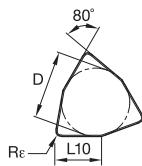


- first choice
- alternate choice

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|---|--|---|---|
| P | | | |
| M | | | |
| K | | ● | ● |
| N | | | |
| S | | | |
| H | | | |

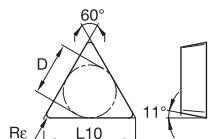
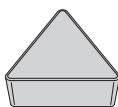
■ VNGX

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|------|-------|-----|-------|-------|--------|
| VNGX160712T02020 | 9,52 | 16,61 | 1,2 | - | - | ● |
| VNGX160716T02020 | 9,53 | 16,61 | 1,6 | - | - | ● |



■ WNGX

| ISO catalogue number | D | L10 | Rε | KYK25 | KYK10 | KY3500 |
|----------------------|-------|------|-----|-------|-------|--------|
| WNGX080712T02020 | 12,70 | 8,69 | 1,2 | - | ● | ● |

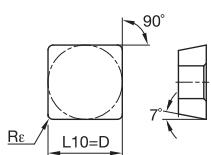
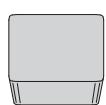


- first choice
- alternate choice

| | | | | |
|---|---|---|---|--|
| P | | | | |
| M | | | | |
| K | ● | ● | ● | |
| N | | | | |
| S | | | | |
| H | | | | |

■ TPGN

| ISO catalogue number | D | L10 | R _e | KYK25 | KYK10 | KY3500 |
|----------------------|-------|-------|----------------|-------|-------|--------|
| TPGN160308T02020 | 9,53 | 16,50 | 0,8 | - | - | ● |
| TPGN160312T02020 | 9,53 | 16,50 | 1,2 | - | ● | ● |
| TPGN220408T02020 | 12,70 | 22,00 | 0,8 | - | - | ● |
| TPGN220412T02020 | 12,70 | 22,00 | 1,2 | - | - | ● |

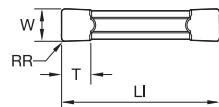
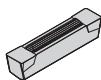


■ SCGN-FW

| ISO catalogue number | D | L10 | R _e | KYK25 | KYK10 | KY3500 |
|----------------------|------|------|----------------|-------|-------|--------|
| SCGN090408EFW | 9,53 | 9,53 | 0,8 | - | - | ● |

■ Clamp Selection Chart

| order number | catalogue number | clamp | |
|--------------|--------------------|---------------------|--------------------|
| 3960807 | CNGX120412S01015 | 551.718-100° Corner | 551.716-80° Corner |
| 3960808 | CNGX120412S01015FW | 551.718-100° Corner | 551.716-80° Corner |
| 3960806 | CNGX120416S02020 | 551.718-100° Corner | 551.716-80° Corner |
| 3960811 | DNGX150416S02020 | 551.720 | 551.720 |
| 3960812 | SNGX120416S02020 | 551.718 | 551.718 |
| 3960823 | SNGX150416S02020 | 551.718 | 551.718 |
| 3876843 | CNGF120408 | 551.718-100° Corner | 551.716-80° Corner |
| 3960825 | TNGX160412EFW | 551.733 | 551.733 |



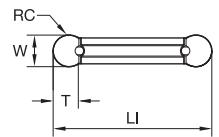
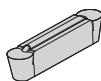
- first choice
- alternate choice

| | |
|---|---|
| P | |
| M | |
| K | ● |
| N | |
| S | |
| H | |

■ A4G-P-T

| ISO catalogue number | seat size | W | RR | LI | T | KY3500 |
|----------------------|-----------|------|-----|----|-----|--------|
| A4G0300M03P04T01025 | 3 | 3,00 | 0,4 | 20 | 3,4 | ● |
| A4G125I03P1T0425 | 3 | 3,18 | 0,4 | 20 | 3,4 | ● |
| A4G0400M04P04T01025 | 4 | 4,00 | 0,4 | 20 | 3,4 | ● |
| A4G0500M05P08T01025 | 5 | 5,00 | 0,8 | 25 | 4,2 | ● |
| A4G0600M06P08T01025 | 6 | 6,00 | 0,8 | 30 | 4,8 | ● |
| A4G250I06P2T0425 | 6 | 6,35 | 0,8 | 30 | 4,9 | ● |
| A4G0800M08P08T01025 | 8 | 8,00 | 0,8 | 30 | 6,4 | ● |

NOTE: For A4 holder, boring bars, and blades, see pages C104–C135.



■ A4R-P-T

| ISO catalogue number | seat size | W | RC | LI | T | KY3500 |
|----------------------|-----------|------|-----|----|-----|--------|
| A4R0300M03P00T01025 | 3 | 3,00 | 1,5 | 20 | 2,4 | ● |
| A4R0500M05P00T01025 | 5 | 5,00 | 2,5 | 25 | 4,1 | ● |
| A4R0600M06P00T01025 | 6 | 6,00 | 3,0 | 30 | 4,3 | ● |
| A4R250I06P00T0425 | 6 | 6,35 | 3,2 | 30 | 4,8 | ● |
| A4R0800M08P00T01025 | 8 | 8,00 | 4,0 | 30 | 6,4 | ● |

NOTE: For A4 holder, boring bars, and blades, see pages C104–C135.

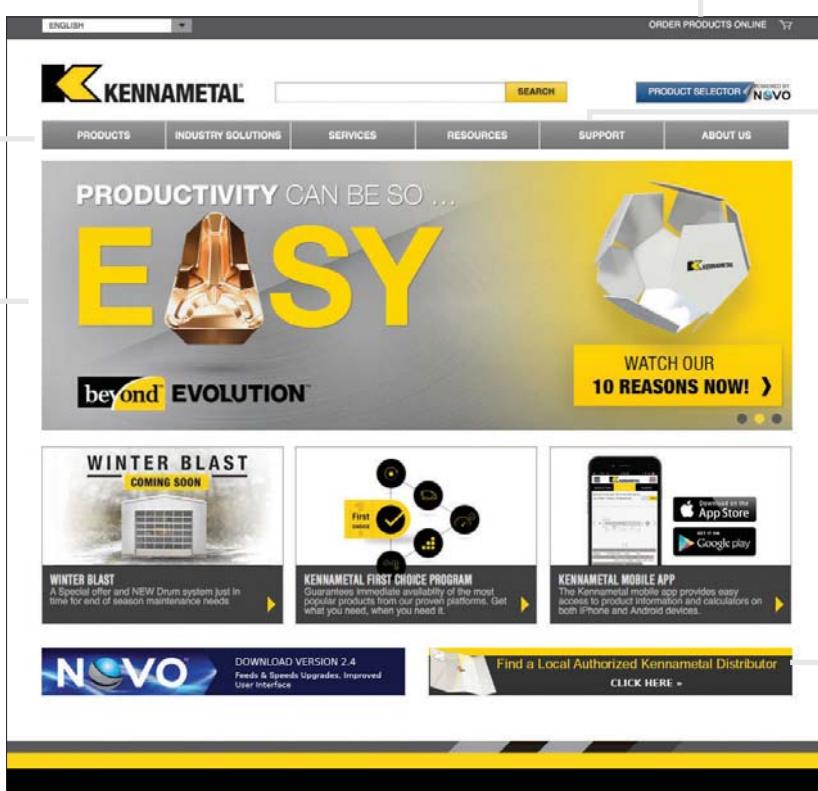
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High- and Low-Content PcbN Inserts

The current global metacutting climate has put increased focus on high productivity and cost reductions coming from cutting tools. These requirements lead to the rapid growth and implementation of cutting tools using superhard materials. As the name implies, these materials have a significant advantage in hardness over conventional tool materials. For the end user this translates into increased productivity (higher cutting speeds, longer tool life, etc.), lower tooling cost per part, and the ability to process materials that were previously not machinable with conventional tooling.

Kennametal is at the forefront of developing and implementing superhard materials in our standard and special tooling solutions across all our product lines. Our approach to superhard tooling starts with customer needs and constraints. We then develop the best superhard solutions for the customer's specific needs.



PcbN is thermally stable up to approximately 1200° C and has high resistance to chemical attack. As a result, extreme temperatures like those that occur when machining hard ferrous metals do not cause difficulties and can be used to promote self-induced hot cutting. This adds technical and productivity benefits, especially when compared with grinding. In most cases, performance is significantly better than that attained with conventional tool materials, such as tungsten carbides and ceramics.

There are limitations for PcbN, however, in the machining of austenitic steels and ferritic cast irons, which can cause increased PcbN edge wear.

PcBN Inserts

KBH10™ Grade

High Volume

- A new patented low PcBN content grade for continuous turning operations.
- Excellent performance in the machining of hardened steels with lower carbide inclusion content.
- Available as tipped and solid PcBN inserts.

KBH20™ Grade

Higher Productivity and Profitability

- Newly developed substrate allows application in a wide variety of demanding applications.
- Nano-composite coating enhances speed capabilities and tool life. Improved edge preparation technology for longer tool life, reliable performance, better surface finish, and tighter workpiece tolerances.
- Large standard portfolio.
- CB1 chipbreaker in positive and negative geometry, solving chipbreaking and chip control issues.



KB5630™ Grade

- Best applied in severe cutting conditions and heavy interruptions.
- Excellent abrasion resistance.
- PVD coating provides a thermal barrier to reduce crater wear and extend tool life.
- Excellent performance in machining of hardened steels and powder metals.
- Available as tipped and full face PCBN inserts.

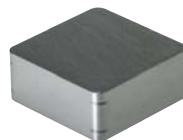


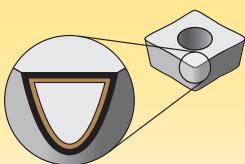
Ceramic Inserts

KY1615 Grade

Low Volume and Higher Process Variations

- Mixed (black) ceramic.
- Excellent wear resistance combined with good toughness properties.
- Excellent performance in the finishing and semi-finishing of hardened steels and iron-based materials.





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

| Coating | | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|--------|--|----|----|----|----|----|----|----|----|----|
| PcBN — Polycrystalline Cubic Boron Nitride Grades | KBH20 | Composition: A low content PcbN grade with a PVD TiN/AlTiN coating for added wear resistance. Application: KBH20™ is the ideal PcbN hard turning grade for continuous to lightly interrupted cutting applications. The structure, as well as the different edge preparations, enable repeatable workpiece tolerances, excellent surface finishes, and surface integrity. Typical applications are case-hardened steel components such as gears, shafts, and other drive-train components. | | | | | | | | | |
| | — | | H | | | | | | | | |
| Ceramic Grades | KBH10 | Composition: A low content PcbN grade with a patented binder structure. Application: Designed for the precision machining of hardened steels (>45 HRC). It can be effectively applied on bearing steels, hot and cold work tool steels, high speed steels, die steels, case hardened steels, carburised and nitrided irons, and some hard coatings. Available in a multi-tip format with a wide range of edge preps, insert styles, and wiper geometries. | | | | | | | | | |
| | — | | H | | | | | | | | |
| | KB5630 | Composition: A high content PcbN with a PVD AlTiN coating for added wear resistance. Application: Designed for roughing to finishing of hardened steels (>45 HRC), abrasive workpiece materials such as sintered valve seat materials, powder metallurgy steels, and hard high-alloy cast irons. The PVD coating provides resistance to crater wear and increased resistance to chipping. A wide range of styles are available, including Screw-On geometries that are ideal for boring applications. | | | | | | | | | |
| | — | | K | | | | | | | | |
| | KY1615 | Composition: An advanced lumina/TiC black ceramic grade. Application: Great combination of toughness and wear resistance; used for machining alloy steels, tool steels, and stainless steels to 60 HRC (653 HB). It is also applied in finish turning and boring of cast irons. | | | | | | | | | |
| | — | | H | | | | | | | | |

Tool Testing Information

| | Grade | Sharp | Light Cut Edge Metric Inch | Standard Cut Edge Metric Inch | Strong Cut Edge Metric Inch |
|-----------|-------|--------|----------------------------------|-------------------------------------|-----------------------------------|
| KBH10* | | E | 10 15 04 15 | 12 25 05 25 | custom |
| KBH20* | | custom | 10 15 04 15 | 12 25 05 25 | 17 35 07 35 |
| KB5630*** | | custom | custom | 10 25 04 25 | 17 35 07 35 |

- X Crater Wear
✓ Chipping
✓ Breakages
✓ Stability
- ✓ Crater Wear
X Chipping
✓ Breakages
X Stability

NOTE: KBH20™ Inserts with 1225 (0525 in inch) are the inserts of choice for initial testing.

For fine tuning, stay in the same grade but use either sharper edges in light cuts or heavier edges if need to overcome interruptions and variations.

If KBH20 is failing, change grade to either a more wear-resistant or fracture-resistant grade.

* Lowest toughness

** Medium toughness

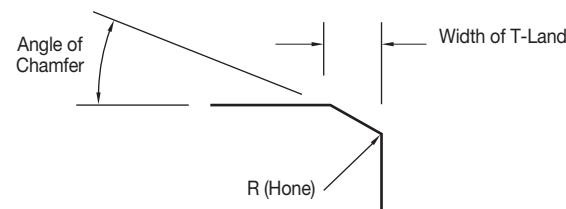
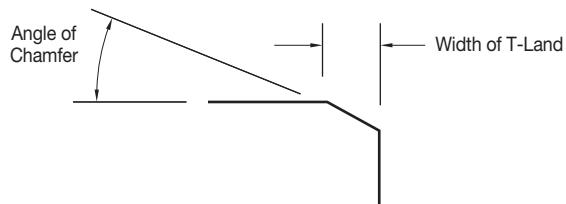
*** Highest toughness

E = Hone

T = T-land with angle

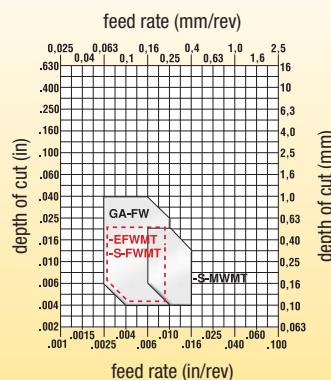
S = T-land with angle and hone

Example: S01015 is a 100 µm T-land at 15 degrees with honing.

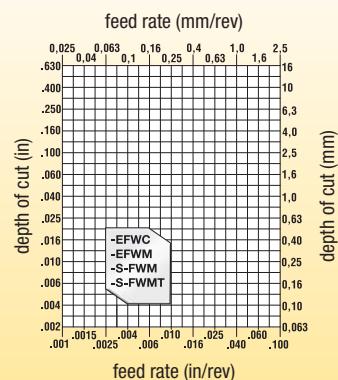


Step 1 • Select the insert geometry

Negative Wiper Inserts



Positive Wiper Inserts



Step 2 • Select the grade

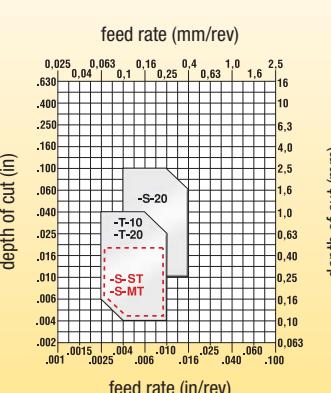
Negative Insert Geometry

Positive Insert Geometry

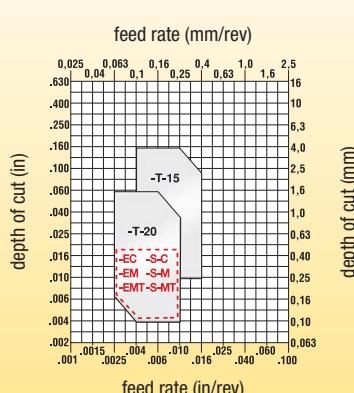
| cutting condition | | -S..FWMT | -EFWMT | -S..FWMT | -S..FWM -S..FWMT | -EFWM -EFWC |
|--|--|--------------|--------------|----------|---------------------|----------------|
| heavily interrupted cut | | KB5630 | KB5630 | — | — | — |
| lightly interrupted cut | | KB5630/KBH20 | KBH20 | KBH20 | KBH20 | KBH20 |
| varying depth of cut, casting, or forging skin | | KBH20 | KB1610/KBH10 | KBH20 | KBH20 | KBH20 |
| smooth cut, pre-turned surface | | KBH10 | KBH10 | KBH10 | KBH10 | KBH10 |

Step 1 • Select the insert geometry

Negative Wiper Inserts



Positive Wiper Inserts



Step 2 • Select the grade

Negative Insert Geometry

Positive Insert Geometry

| cutting condition | | -T..10 -T..20 | | -T..15 |
|--|--|------------------|---|--------|
| heavily interrupted cut | | — | — | — |
| lightly interrupted cut | | — | — | KY1615 |
| varying depth of cut, casting, or forging skin | | KY1615 | — | KY1615 |
| smooth cut, pre-turned surface | | KY1615 | — | KY1615 |

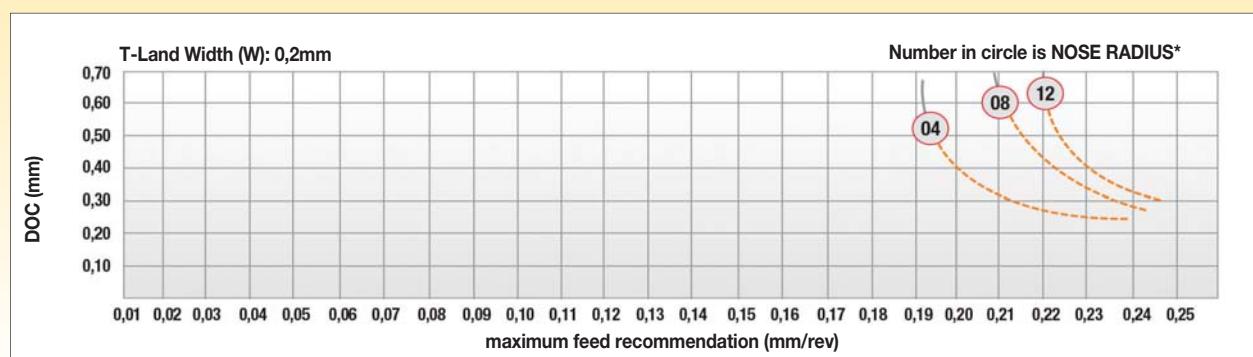
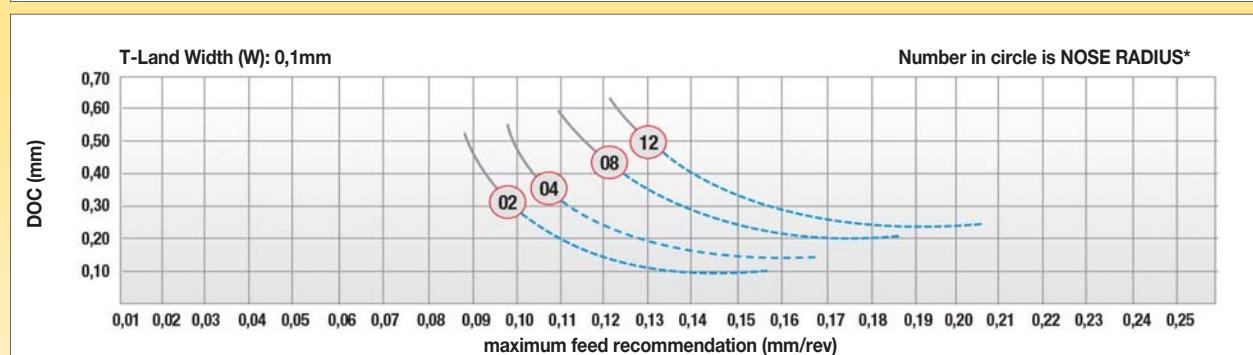
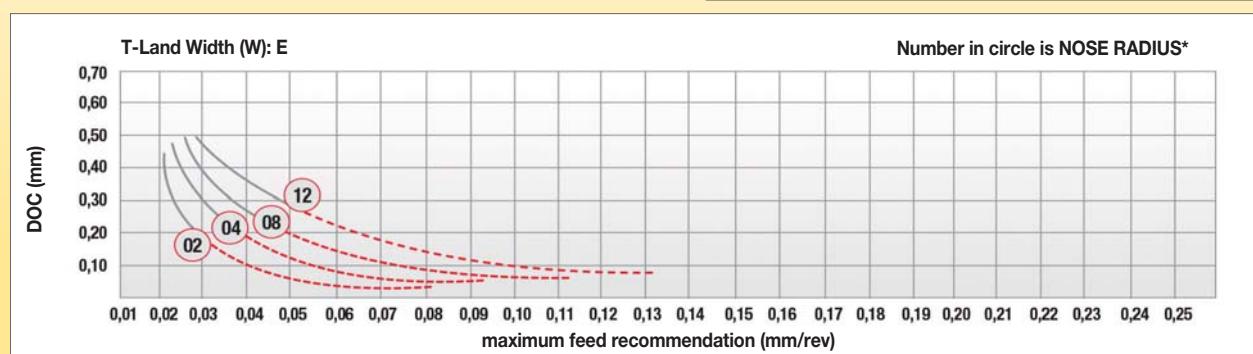
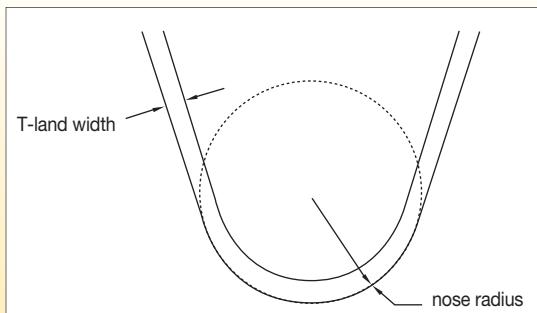
■ Step 1 • Select the cutting speed

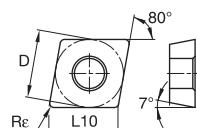
| material group | grade | speed — m/min (SFM) | | | | | | | | | Starting Conditions | |
|----------------|--------|---------------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 110 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | m/min | SFM |
| H1 | KBH20 | | | | | ◇ | | | | | 155 | 510 |
| | KBH10 | | | | | ◇ | | | | | 150 | 490 |
| | KB5630 | | | ◇ | | | | | | | 105 | 345 |
| | KY1615 | | | ◇ | | | | | | | 100 | 325 |

■ T-Land Width

Example 1: If the feed, depth of cut, and the tool nose radius are fixed, use these values to see what T-land width should be used.

Example 2: If you want to use a specific T-land width or hone only edge, use the chart below to see what maximum feeds and depths of cut are recommended for different nose radii.



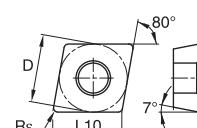


- first choice
- alternate choice

■ CCGM

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|-----------------------|------|------|----------------|-------|-------|--------|--------|
| CCGM09T304S01325MTCB1 | 9,53 | 9,67 | 0,4 | - | ● | - | - |
| CCGM09T308S01325MTCB1 | 9,53 | 9,67 | 0,8 | - | ● | - | - |

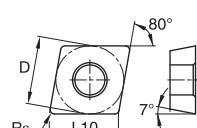
NOTE: For toolholders and boring bars, see pages B179–B183.



■ CCGW-C

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|------|----------------|-------|-------|--------|--------|
| CCGW060202S01015C | 6,35 | 6,45 | 0,2 | - | - | ● | - |
| CCGW060204S01015C | 6,35 | 6,45 | 0,4 | - | - | ● | - |

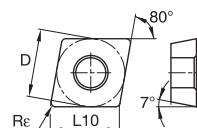
NOTE: For toolholders and boring bars, see pages B179–B183.



■ CCGW-FWMT

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|------|----------------|-------|-------|--------|--------|
| CCGW09T304S01015FWMT | 9,53 | 9,67 | 0,4 | - | ● | - | - |
| CCGW09T308S01015FWMT | 9,53 | 9,67 | 0,8 | ● | ● | - | - |

NOTE: For toolholders and boring bars, see pages B179–B183.



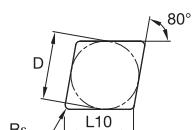
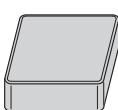
■ CCGW-MT

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|----------------|-------|-------|--------|--------|
| CCGW060202S01015MT | 6,35 | 6,45 | 0,2 | ● | - | - | - |
| CCGW060202S01225MT | 6,35 | 6,45 | 0,2 | - | ● | - | - |
| CCGW060204S01015MT | 6,35 | 6,45 | 0,4 | ● | - | - | - |
| CCGW060204S01225MT | 6,35 | 6,45 | 0,4 | - | ● | - | - |
| CCGW09T302S01015MT | 9,53 | 9,67 | 0,2 | ● | - | - | - |
| CCGW09T302S01225MT | 9,53 | 9,67 | 0,2 | - | ● | - | - |
| CCGW09T304S01015MT | 9,53 | 9,67 | 0,4 | ● | ● | ● | - |
| CCGW09T304S01225MT | 9,53 | 9,67 | 0,4 | ● | ● | - | - |
| CCGW09T308S01015MT | 9,53 | 9,67 | 0,8 | ● | ● | ● | - |
| CCGW09T308S01225MT | 9,53 | 9,67 | 0,8 | ● | ● | - | - |
| CCGW120408S01015MT | 12,70 | 12,90 | 0,8 | - | ● | - | - |

NOTE: For toolholders and boring bars, see pages B179–B183.

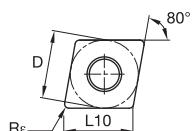
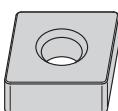
| | | | |
|---|---|---|---|
| P | | ● | |
| M | ● | | |
| K | ● | | ● |
| N | | ● | |
| S | ● | | ● |
| H | ● | ● | ● |

- first choice
- alternate choice



■ CNGN

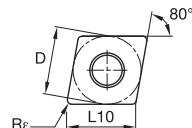
| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| CNGN120404T02020 | 12,70 | 12,90 | 0,4 | - | - | - | ● |
| CNGN120408T02020 | 12,70 | 12,90 | 0,8 | - | - | - | ● |
| CNGN120708T02020 | 12,70 | 12,90 | 0,8 | - | - | - | ● |
| CNGN120412T02020 | 12,70 | 12,90 | 1,2 | - | - | - | ● |
| CNGN120712T02020 | 12,70 | 12,90 | 1,2 | - | - | - | ● |
| CNGN120716T02020 | 12,70 | 12,90 | 1,6 | - | - | - | ● |
| CNGN160716T02020 | 15,88 | 16,12 | 1,6 | - | - | - | ● |
| CNGN160716T05015 | 15,88 | 16,12 | 1,6 | - | - | - | ● |



■ CNGA

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| CNGA120404T02020 | 12,70 | 12,90 | 0,4 | - | - | - | ● |
| CNGA120408T00520 | 12,70 | 12,90 | 0,8 | - | - | - | ● |
| CNGA120408T02020 | 12,70 | 12,90 | 0,8 | - | - | - | ● |
| CNGA120412T02020 | 12,70 | 12,90 | 1,2 | - | - | - | ● |
| CNGA120416T02020 | 12,70 | 12,90 | 1,6 | - | - | - | ● |
| CNGA160612T02020 | 15,88 | 16,12 | 1,2 | - | - | - | ● |
| CNGA190612T02020 | 19,05 | 19,34 | 1,2 | - | - | - | ● |
| CNGA190616T02020 | 19,05 | 19,34 | 1,6 | - | - | - | ● |

NOTE: For toolholders and boring bars, see pages B58–B73.



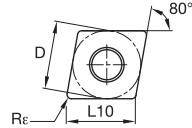
● first choice
○ alternate choice

| | | | | | |
|---|---|---|---|---|---|
| P | | | ● | | |
| M | ■ | | | | |
| K | ■ | | ● | | |
| N | ■ | | | | |
| S | ■ | | ● | | |
| H | ■ | ■ | ■ | ■ | ■ |

■ CNGA-FWMT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| CNGA120404S01015FWMT | 12,70 | 12,90 | 0,4 | ● | ● | - | - |
| CNGA120404S01025FWMT | 12,70 | 12,90 | 0,4 | - | - | ● | - |
| CNGA120408S01015FWMT | 12,70 | 12,90 | 0,8 | ● | ● | - | - |
| CNGA120408S01025FWMT | 12,70 | 12,90 | 0,8 | - | - | ● | - |
| CNGA120408S01225FWMT | 12,70 | 12,90 | 0,8 | ● | - | - | - |
| CNGA120412S01015FWMT | 12,70 | 12,90 | 1,2 | - | ● | - | - |
| CNGA120412S01225FWMT | 12,70 | 12,90 | 1,2 | ● | - | - | - |

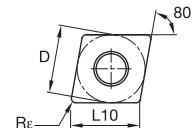
NOTE: For toolholders and boring bars, see pages B58–B73.



■ CNGA-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| CNGA120404S01015MT | 12,70 | 12,90 | 0,4 | ● | ● | - | - |
| CNGA120404S01025MT | 12,70 | 12,90 | 0,4 | - | - | ● | - |
| CNGA120404S01225MT | 12,70 | 12,90 | 0,4 | - | ● | - | - |
| CNGA120404S01735MT | 12,70 | 12,90 | 0,4 | - | ● | - | - |
| CNGA120408S01015MT | 12,70 | 12,90 | 0,8 | ● | ● | - | - |
| CNGA120408S01025MT | 12,70 | 12,90 | 0,8 | - | - | ● | - |
| CNGA120408S01225MT | 12,70 | 12,90 | 0,8 | ● | ● | - | - |
| CNGA120408S01735MT | 12,70 | 12,90 | 0,8 | ● | ● | - | - |
| CNGA120412S01015MT | 12,70 | 12,90 | 1,2 | ● | ● | - | - |
| CNGA120412S01020MT | 12,70 | 12,90 | 1,2 | - | - | ● | - |
| CNGA120412S01025MT | 12,70 | 12,90 | 1,2 | - | - | ● | - |
| CNGA120412S01225MT | 12,70 | 12,90 | 1,2 | ● | ● | - | - |
| CNGA120412S01735MT | 12,70 | 12,90 | 1,2 | ● | ● | - | - |

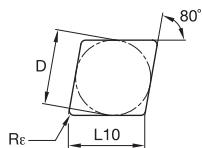
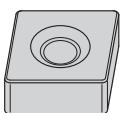
NOTE: For toolholders and boring bars, see pages B58–B73.



■ CNGM-CB1

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|-----------------------|-------|-------|-----|-------|-------|--------|--------|
| CNGM120404S01325MTCB1 | 12,70 | 12,90 | 0,4 | - | ● | - | - |
| CNGM120408S01325MTCB1 | 12,70 | 12,90 | 0,8 | - | ● | - | - |
| CNGM120412S01325MTCB1 | 12,70 | 12,90 | 1,2 | - | ● | - | - |

NOTE: For toolholders and boring bars, see pages B58–B73.



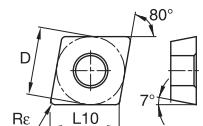
- first choice
- alternate choice

| | | |
|---|---|---|
| P | | ● |
| M | | |
| K | ● | |
| N | | |
| S | ● | |
| H | ● | ● |

■ CNGX

| ISO catalogue number | D | L10 | Rε | |
|----------------------|-------|-------|-----|-------------------------------------|
| CNGX120708T02020 | 12,70 | 12,90 | 0,8 | KBH10 KBH20 KB5630 KY1615 |
| CNGX120712T02020 | 12,70 | 12,90 | 1,2 | - - - - ● - - - - ● - - - - ● |

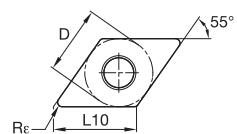
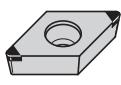
NOTE: For toolholders and boring bars, see pages B58–B73.



■ CPGW-MT

| ISO catalogue number | D | L10 | Rε | |
|----------------------|------|------|-----|-------------------------------------|
| CPGW09T304S01015MT | 9,53 | 9,67 | 0,4 | KBH10 KBH20 KB5630 KY1615 |
| CPGW09T308S01015MT | 9,53 | 9,67 | 0,8 | - - - - ● - - - - ● - - - - ● |

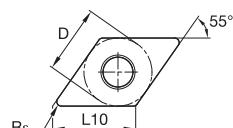
NOTE: For toolholders and boring bars, see pages B192–B205.



■ DCGM

| ISO catalogue number | D | L10 | Rε | |
|-----------------------|------|-------|-----|------------------------------------|
| DCGM11T304S01325MTCB1 | 9,53 | 11,63 | 0,4 | KBH10 KBH20 KB5630 KY1615 |

NOTE: For toolholders and boring bars, see pages B209–B213.



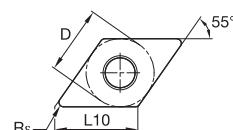
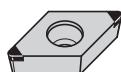
- first choice
- alternate choice

| | | | | |
|---|---|---|---|---|
| P | | | ● | |
| M | ■ | | | |
| K | ■ | | ● | |
| N | ■ | | | |
| S | ■ | | ● | |
| H | ■ | ● | ● | ● |

■ DCGW-C

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|------|-----|-------|-------|--------|--------|
| DCGW070202S01015C | 6,35 | 7,75 | 0,2 | - | - | ● | - |
| DCGW070204S01015C | 6,35 | 7,75 | 0,4 | - | - | ● | - |

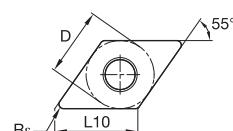
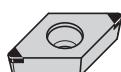
NOTE: For toolholders and boring bars, see pages B209–B213.



■ DCGW-FWMT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| DCGW11T308S01015FWMT | 9,53 | 11,63 | 0,4 | ● | ● | - | - |
| DCGW11T308S01225FWMT | 9,53 | 11,63 | 0,4 | ● | - | - | - |

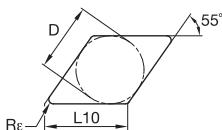
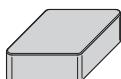
NOTE: For toolholders and boring bars, see pages B209–B213.



■ DCGW-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| DCGW070202S01225MT | 6,35 | 7,75 | 0,2 | - | ● | - | - |
| DCGW070204S01015MT | 6,35 | 7,75 | 0,4 | - | ● | - | - |
| DCGW070204S01225MT | 6,35 | 7,75 | 0,4 | - | ● | - | - |
| DCGW70202S01015MT | 6,35 | 7,75 | 0,4 | ● | - | - | - |
| DCGW70204S01015MT | 6,35 | 7,75 | 0,4 | ● | - | - | - |
| DCGW70204S01225MT | 6,35 | 7,75 | 0,4 | ● | - | - | - |
| DCGW11T302S01015MT | 9,53 | 11,63 | 0,2 | ● | - | - | - |
| DCGW11T302S01225MT | 9,53 | 11,63 | 0,2 | - | ● | - | - |
| DCGW11T304S01225MT | 9,53 | 11,63 | 0,4 | ● | ● | - | - |
| DCGW11T304S01015MT | 9,53 | 11,63 | 0,4 | ● | ● | ● | - |
| DCGW11T308S01015MT | 9,53 | 11,63 | 0,8 | ● | ● | ● | - |
| DCGW11T308S01225MT | 9,53 | 11,63 | 0,8 | ● | ● | - | - |

NOTE: For toolholders and boring bars, see pages B209–B213.

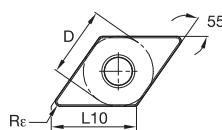
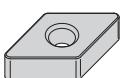


- first choice
- alternate choice

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|---|---|---|---|---|
| P | | | | ● |
| M | | | | |
| K | | | | ● |
| N | | | | |
| S | | | | ● |
| H | ● | ● | ● | ● |

■ DNGN/DNG

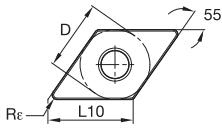
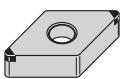
| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| DNGN150704T02020 | 12,70 | 15,50 | 0,4 | - | - | - | ● |
| DNGN150708T02020 | 12,70 | 15,50 | 0,8 | - | - | - | ● |
| DNGN150712T02020 | 12,70 | 15,50 | 1,2 | - | - | - | ● |
| DNGN150716T02020 | 12,70 | 15,50 | 1,6 | - | - | - | ● |



■ DNGA

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| DNGA150404T02020 | 12,70 | 15,50 | 0,4 | - | - | - | ● |
| DNGA150604T02020 | 12,70 | 15,50 | 0,4 | - | - | - | ● |
| DNGA150408T02020 | 12,70 | 15,50 | 0,8 | - | - | - | ● |
| DNGA150608T02020 | 12,70 | 15,50 | 0,8 | - | - | - | ● |
| DNGA150412T02020 | 12,70 | 15,50 | 1,2 | - | - | - | ● |
| DNGA150612T02020 | 12,70 | 15,50 | 1,2 | - | - | - | ● |
| DNGA150416T02020 | 12,70 | 15,50 | 1,6 | - | - | - | ● |

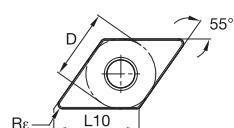
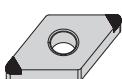
NOTE: For toolholders and boring bars, see pages B85–B93.



■ DNGA-FWMT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| DNGA150408S01015FWMT | 12,70 | 15,50 | 0,4 | ● | ● | - | - |
| DNGA150408S01225FWMT | 12,70 | 15,50 | 0,4 | ● | - | - | - |
| DNGA150412S01015FWMT | 12,70 | 15,50 | 0,8 | - | ● | - | - |
| DNGA150412S01225FWMT | 12,70 | 15,50 | 0,8 | ● | - | - | - |

NOTE: For toolholders and boring bars, see pages B85–B93.



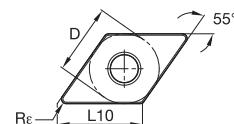
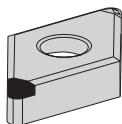
- first choice
- alternate choice

| | | | | |
|---|---|---|---|---|
| P | | | ● | |
| M | ● | | | |
| K | ● | | ● | |
| N | ● | | | |
| S | ● | | | ● |
| H | ● | ● | ● | ● |

■ DNGA-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| DNGA150404S01015MT | 12,70 | 15,50 | 0,4 | ● | ● | - | - |
| DNGA150404S01025MT | 12,70 | 15,50 | 0,4 | - | - | ● | - |
| DNGA150404S01225MT | 12,70 | 15,50 | 0,4 | - | ● | - | - |
| DNGA150404S01735MT | 12,70 | 15,50 | 0,4 | - | ● | - | - |
| DNGA150604S01015MT | 12,70 | 15,50 | 0,4 | ● | ● | - | - |
| DNGA150604S01225MT | 12,70 | 15,50 | 0,4 | - | ● | - | - |
| DNGA150604S01735MT | 12,70 | 15,50 | 0,4 | - | ● | - | - |
| DNGA150408S01015MT | 12,70 | 15,50 | 0,8 | ● | ● | - | - |
| DNGA150408S01025MT | 12,70 | 15,50 | 0,8 | - | - | ● | - |
| DNGA150408S01225MT | 12,70 | 15,50 | 0,8 | ● | ● | - | - |
| DNGA150608S01015MT | 12,70 | 15,50 | 0,8 | ● | ● | - | - |
| DNGA150608S01225MT | 12,70 | 15,50 | 0,8 | - | ● | - | - |
| DNGA150412S01015MT | 12,70 | 15,50 | 1,2 | ● | ● | - | - |
| DNGA150412S01225MT | 12,70 | 15,50 | 1,2 | ● | ● | - | - |
| DNGA150412S01735MT | 12,70 | 15,50 | 1,2 | ● | ● | - | - |
| DNGA150612S01015MT | 12,70 | 15,50 | 1,2 | ● | ● | - | - |
| DNGA150612S01225MT | 12,70 | 15,50 | 1,2 | ● | ● | - | - |
| DNGA150612S01735MT | 12,70 | 15,50 | 1,2 | - | ● | - | - |

NOTE: For toolholders and boring bars, see pages B85–B93.

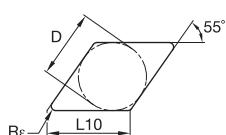
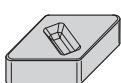


■ DNGM-CB1

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|-----------------------|-------|-------|-----|-------|-------|--------|--------|
| DNGM150408S01325MTCB1 | 12,70 | 15,50 | 0,8 | - | ● | - | - |
| DNGM150412S01325MTCB1 | 12,70 | 15,50 | 1,2 | - | ● | - | - |
| DNGM150608S01325MTCB1 | 12,70 | 15,50 | 0,8 | - | ● | - | - |
| DNGM150612S01325MTCB1 | 12,70 | 15,50 | 1,2 | - | ● | - | - |

NOTE: For toolholders and boring bars, see pages B85–B93.

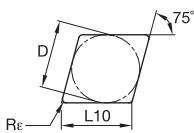
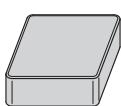
| | | | | | |
|---|---|---|---|---|---|
| P | | | | ● | |
| M | | | | | |
| K | | | | ● | |
| N | | | | | |
| S | | | | ● | |
| H | ● | ● | ● | ● | ● |



- first choice
- alternate choice

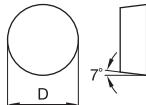
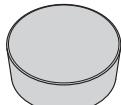
■ DNGX

| ISO catalogue number | D | L10 | Re | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|---------|-------|--------|--------|
| DNGX150708T02020 | 12,70 | 15,50 | 0,8 | - - - ● | | | |



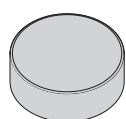
■ ENGN

| ISO catalogue number | D | L10 | Re | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| ENGN130704T02020 | 12,70 | 13,15 | 0,4 | - - - | | | ● |
| ENGN130708T02020 | 12,70 | 13,15 | 0,8 | - - - | | | ● |
| ENGN130712T02020 | 12,70 | 13,15 | 1,2 | - - - | | | ● |
| ENGN130716T02020 | 12,70 | 13,15 | 1,6 | - - - | | | ● |



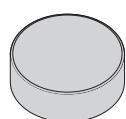
■ RCGX

| ISO catalogue number | D | L10 | Re | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-----|----|-------|-------|--------|--------|
| RCGX090700T01020 | 9,53 | — | — | - - - | | | ● |
| RCGX090700T02020 | 9,53 | — | — | - - - | | | ● |
| RCGX090700T10015 | 9,53 | — | — | - - - | | | ● |
| RCGX090700T20015 | 9,53 | — | — | - - - | | | ● |
| RCGX120700T02020 | 12,70 | — | — | - - - | | | ● |
| RCGX120700T10015 | 12,70 | — | — | - - - | | | ● |
| RCGX120700T20015 | 12,70 | — | — | - - - | | | ● |
| RCGX151000T20015 | 15,88 | — | — | - - - | | | ● |
| RCGX191000T20015 | 19,05 | — | — | - - - | | | ● |
| RCGX251200T20015 | 25,40 | — | — | - - - | | | ● |



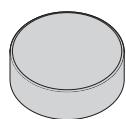
■ RCGW-T

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-----|----------------|-------|-------|--------|--------|
| RCGW1204M0T01020 | 12,00 | — | — | — | — | — | ● |



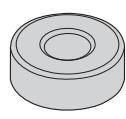
■ RCGX

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-----|----------------|-------|-------|--------|--------|
| RCGX0907-001 | 9,53 | — | — | — | — | — | ● |



■ RNGN

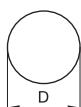
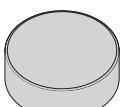
| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-----|----------------|-------|-------|--------|--------|
| RNGN090300T02020 | 9,53 | — | — | — | — | — | ● |
| RNGN090400T02020 | 9,53 | — | — | — | — | — | ● |
| RNGN120300T02020 | 12,70 | — | — | — | — | — | ● |
| RNGN120400T02020 | 12,70 | — | — | — | — | — | ● |
| RNGN120700T02020 | 12,70 | — | — | — | — | — | ● |
| RNGN120700T10015 | 12,70 | — | — | — | — | — | ● |
| RNGN120700T20015 | 12,70 | — | — | — | — | — | ● |
| RNGN190700T02020 | 19,05 | — | — | — | — | — | ● |



■ RNGA

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-----|----------------|-------|-------|--------|--------|
| RNGA090300T02020 | 9,53 | — | — | — | — | — | ● |
| RNGA120400T02020 | 12,70 | — | — | — | — | — | ● |

NOTE: For toolholders and boring bars, see page B95.

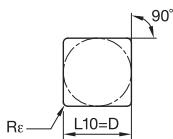
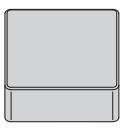


- first choice
- alternate choice

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| P | | | | ● | |
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| K | | | | ● | |
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| S | | | | ● | |
| H | ● | ● | ● | ● | ● |

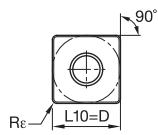
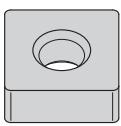
■ RNGN-C

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-----|----------------|-------|-------|--------|--------|
| RNGN090300S02015C | 9,53 | — | — | — | — | ● | — |



■ SNGN

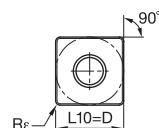
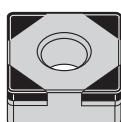
| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|----------------|-------|-------|--------|--------|
| SNGN090308T02020 | 9,53 | 9,53 | 0,8 | — | — | — | ● |
| SNGN120704T02020 | 12,70 | 12,70 | 0,4 | — | — | — | ● |
| SNGN120408T00520 | 12,70 | 12,70 | 0,8 | — | — | — | ● |
| SNGN120408T02020 | 12,70 | 12,70 | 0,8 | — | — | — | ● |
| SNGN120708T02020 | 12,70 | 12,70 | 0,8 | — | — | — | ● |
| SNGN120412T02020 | 12,70 | 12,70 | 1,2 | — | — | — | ● |
| SNGN120712T02020 | 12,70 | 12,70 | 1,2 | — | — | — | ● |
| SNGN120416T02020 | 12,70 | 12,70 | 1,6 | — | — | — | ● |
| SNGN120716T02020 | 12,70 | 12,70 | 1,6 | — | — | — | ● |
| SNGN120720T02020 | 12,70 | 12,70 | 2,0 | — | — | — | ● |
| SNGN120720T10015 | 12,70 | 12,70 | 2,0 | — | — | — | ● |
| SNGN120720T20015 | 12,70 | 12,70 | 2,0 | — | — | — | ● |
| SNGN150716T02020 | 15,88 | 15,88 | 1,6 | — | — | — | ● |



■ SNGA

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|----------------|-------|-------|--------|--------|
| SNGA120408T02020 | 12,70 | 12,70 | 0,8 | — | — | — | ● |
| SNGA120412T02020 | 12,70 | 12,70 | 1,2 | — | — | — | ● |

NOTE: For toolholders and boring bars, see pages B105–B121.



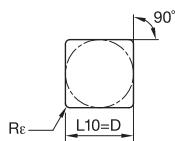
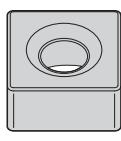
- first choice
- alternate choice

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| K | ■ | | ● | |
| N | ■ | | | |
| S | ■ | | ● | |
| H | ● | ● | ● | ● |

■ SNGA-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| SNGA120408S01015MT | 12,70 | 12,70 | 0,8 | ● | - | - | - |
| SNGA120408S01225MT | 12,70 | 12,70 | 0,8 | ● | ● | - | - |
| SNGA120412S01225MT | 12,70 | 12,70 | 1,2 | ● | ● | - | - |

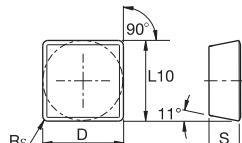
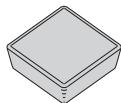
NOTE: For toolholders and boring bars, see pages B105–B121.



■ SNGX

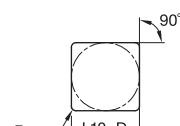
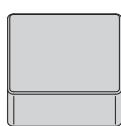
| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| SNGX120712T02020 | 12,70 | 12,70 | 1,2 | - | - | - | ● |

NOTE: For toolholders and boring bars, see pages B105–B121.



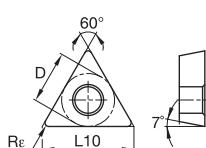
■ SPG-T

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| SPGN090308T01020 | 9,53 | 9,53 | 0,8 | - | - | - | ● |
| SPGN120308T01020 | 12,70 | 12,70 | 0,8 | - | - | - | ● |



■ SPU-T

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| SPUN120308T00520 | 12,70 | 12,70 | 0,8 | - | - | - | ● |



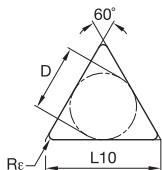
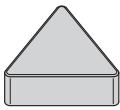
- first choice
- alternate choice

| P | | | | ● |
|---|---|---|---|---|
| M | | | | |
| K | | | | ● |
| N | | | | |
| S | | | | ● |
| H | ● | ● | ● | ● |

■ TCGW-MT

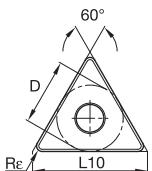
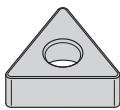
| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|----------------|-------|-------|--------|--------|
| TCGW090202S01015MT | 5,56 | 9,62 | 0,2 | - | ● | - | - |
| TCGW090204S01015 MT | 5,56 | 9,62 | 0,4 | - | ● | - | - |
| TCGW110202S01015MT | 6,35 | 11,00 | 0,2 | ● | ● | - | - |
| TCGW110204S01015MT | 6,35 | 11,00 | 0,4 | ● | ● | - | - |
| TCGW110204S01225MT | 6,35 | 11,00 | 0,4 | ● | - | - | - |
| TCGW110208S01015MT | 6,35 | 11,00 | 0,8 | ● | ● | - | - |
| TCGW110208S01225MT | 6,35 | 11,00 | 0,8 | ● | - | - | - |

NOTE: For toolholders and boring bars, see pages B247–B248.



■ TNGN

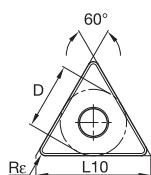
| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|----------------|-------|-------|--------|--------|
| TNGN110308T02020 | 6,35 | 11,00 | 0,8 | - | - | - | ● |
| TNGN160404T02020 | 9,53 | 16,50 | 0,4 | - | - | - | ● |
| TNGN160408T02020 | 9,53 | 16,50 | 0,8 | - | - | - | ● |
| TNGN160708T02020 | 9,53 | 16,50 | 0,8 | - | - | - | ● |
| TNGN160412T02020 | 9,53 | 16,50 | 1,2 | - | - | - | ● |
| TNGN160712T02020 | 9,53 | 16,50 | 1,2 | - | - | - | ● |
| TNGN160416T02020 | 9,53 | 16,50 | 1,6 | - | - | - | ● |
| TNGN220408T02020 | 12,70 | 22,00 | 0,8 | - | - | - | ● |



■ TNGA

| ISO catalogue number | D | L10 | R _e | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|----------------|-------|-------|--------|--------|
| TNGA160408T02020 | 9,53 | 16,50 | 0,8 | - | - | - | ● |
| TNGA160412T02020 | 9,53 | 16,50 | 1,2 | - | - | - | ● |
| TNGA220408T02020 | 12,70 | 22,00 | 0,8 | - | - | - | ● |
| TNGA220412T02020 | 12,70 | 22,00 | 1,2 | - | - | - | ● |

NOTE: For toolholders and boring bars, see pages B132–B142.



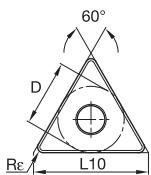
● first choice
○ alternate choice

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|---|---|---|---|---|---|---|
| P | | | ● | | | |
| M | ■ | | | | | |
| K | ■ | | | ● | | |
| N | ■ | | | | ■ | |
| S | ■ | | | | ● | |
| H | ■ | ● | ● | ● | ● | ● |

■ TNGA-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|---------------------------|-------------|--------------|------------|----------|----------|----------|----------|
| TNGA160404S01015MT | 9,53 | 16,50 | 0,4 | ● | ● | - | - |
| TNGA160404S01225MT | 9,53 | 16,50 | 0,4 | - | ● | - | - |
| TNGA160404S01735MT | 9,53 | 16,50 | 0,4 | - | ● | - | - |
| TNGA160408S01015MT | 9,53 | 16,50 | 0,8 | ● | ● | - | - |
| TNGA160408S01735MT | 9,53 | 16,50 | 0,8 | ● | ● | - | - |
| TNGA160412S01015MT | 9,53 | 16,50 | 1,2 | ● | ● | - | - |
| TNGA160412S01225MT | 9,53 | 16,50 | 1,2 | ● | ● | - | - |
| TNGA160412S01735MT | 9,53 | 16,50 | 1,2 | ● | ● | - | - |

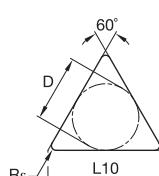
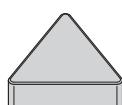
NOTE: For toolholders and boring bars, see pages B132–B142.



■ TNGM • Medium Machining

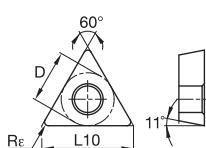
| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|------------------------------|-------------|--------------|------------|----------|----------|----------|----------|
| TNGM160408S01325MTCB1 | 9,53 | 16,50 | 0,8 | - | ● | - | - |

NOTE: For toolholders and boring bars, see pages B132–B142.



■ TPGN

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| TPGN110304T01020 | 6,35 | 11,00 | 0,4 | - | - | - | ● |
| TPGN110308T01020 | 6,35 | 11,00 | 0,8 | - | - | - | ● |
| TPGN110312T01020 | 6,35 | 11,00 | 1,2 | - | - | - | ● |
| TPGN160304T00520 | 9,53 | 16,50 | 0,4 | - | - | - | ● |
| TPGN160304T01020 | 9,53 | 16,50 | 0,4 | - | - | - | ● |
| TPGN160308T00520 | 9,53 | 16,50 | 0,8 | - | - | - | ● |
| TPGN160308T01020 | 9,53 | 16,50 | 0,8 | - | - | - | ● |
| TPGN160312T01020 | 9,53 | 16,50 | 1,2 | - | - | - | ● |



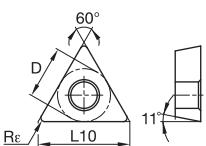
- first choice
- alternate choice

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|---|---|---|---|---|
| P | | | | ● |
| M | | | | |
| K | | | | ● |
| N | | | | |
| S | | | | ● |
| H | ● | ● | ● | ● |

■ TPGW-C

| ISO catalogue number | D | L10 | Rg | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| TPGW110208S01015C | 6,35 | 11,00 | 0,8 | - - | ● - | | |

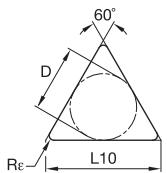
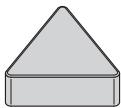
NOTE: For toolholders and boring bars, see pages B257–B263.



■ TPGW-MT

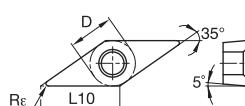
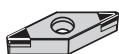
| ISO catalogue number | D | L10 | Rg | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| TPGW110308S01225MT | 6,35 | 10,96 | 0,8 | ● - | - - | - - | - - |
| TPGW110202S01015MT | 6,35 | 11,00 | 0,2 | - - | ● - | - - | - - |
| TPGW110304S01015MT | 6,35 | 11,00 | 0,4 | ● - | - - | - - | - - |
| TPGW110304S01225MT | 6,35 | 11,00 | 0,4 | ● - | - - | - - | - - |
| TPGW110204S01015MT | 6,35 | 11,00 | 0,4 | - - | ● - | - - | - - |
| TPGW110208S01015MT | 6,35 | 11,00 | 0,8 | - - | ● - | - - | - - |
| TPGW160404S01015MT | 9,53 | 16,50 | 0,4 | ● - | - - | - - | - - |
| TPGW160404S01225MT | 9,53 | 16,50 | 0,4 | ● - | - - | - - | - - |
| TPGW16T304S01015MT | 9,53 | 16,50 | 0,4 | - - | ● - | - - | - - |
| TPGW160408S01015MT | 9,53 | 16,50 | 0,8 | ● - | - - | - - | - - |
| TPGW160408S01225MT | 9,53 | 16,50 | 0,8 | ● - | - - | - - | - - |
| TPGW16T308S01015MT | 9,53 | 16,50 | 0,8 | - - | ● - | - - | - - |
| TPGW16T308S01225MT | 9,53 | 16,50 | 0,8 | - - | ● - | - - | - - |

NOTE: For toolholders and boring bars, see pages B257–B263.



■ TPU-T

| ISO catalogue number | D | L10 | Rg | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| TPUN110304T00520 | 6,35 | 11,00 | 0,4 | - - | - - | - - | ● - |
| TPUN110308T00520 | 6,35 | 11,00 | 0,8 | - - | - - | - - | ● - |
| TPUN160304T00520 | 9,53 | 16,50 | 0,4 | - - | - - | - - | ● - |
| TPUN160308T00520 | 9,53 | 16,50 | 0,8 | - - | - - | - - | ● - |
| TPUN160312T00520 | 9,53 | 16,50 | 1,2 | - - | - - | - - | ● - |



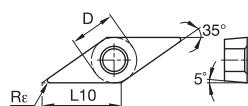
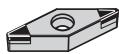
- first choice
- alternate choice

| | | | | | |
|---|---|---|---|---|---|
| P | | | | ● | |
| M | ● | | | | |
| K | ● | | | ● | |
| N | | ● | | | |
| S | | ● | | ● | |
| H | ● | ● | ● | ● | ● |

■ VBGW-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| VBGW110304S01015MT | 6,35 | 11,07 | 0,4 | ● | ● | - | - |
| VBGW110304S01225MT | 6,35 | 11,07 | 0,4 | - | ● | - | - |
| VBGW110308S01015MT | 6,35 | 11,07 | 0,8 | ● | - | - | - |
| VBGW110308S01225MT | 6,35 | 11,07 | 0,8 | - | ● | - | - |
| VBGW160404S01015MT | 9,53 | 16,61 | 0,4 | ● | - | ● | - |
| VBGW160408S01015MT | 9,53 | 16,61 | 0,8 | ● | ● | ● | - |
| VBGW160412S01015MT | 9,53 | 16,61 | 1,2 | - | ● | - | - |

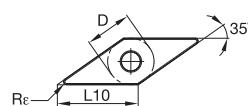
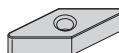
NOTE: For toolholders and boring bars, see pages B266–B269.



■ VCGW • Light Machining

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| VCGW160404S01015MT | 9,53 | 16,61 | 0,4 | - | ● | - | - |
| VCGW160404S01225MT | 9,53 | 16,61 | 0,4 | - | ● | - | - |
| VCGW160408S01015MT | 9,53 | 16,61 | 0,8 | - | ● | - | - |
| VCGW160408S01225MT | 9,53 | 16,61 | 0,8 | - | ● | - | - |

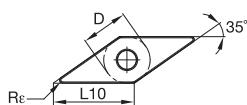
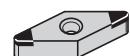
NOTE: For toolholders and boring bars, see pages B266–B269.



■ VNGA

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|
| VNGA160404T02020 | 9,53 | 16,61 | 0,4 | - | - | - | ● |
| VNGA160408T02020 | 9,53 | 16,61 | 0,8 | - | - | - | ● |
| VNGA160412T02020 | 9,53 | 16,61 | 1,2 | - | - | - | ● |
| VNGA220408T02020 | 12,70 | 22,14 | 0,8 | - | - | - | ● |

NOTE: For toolholders and boring bars, see pages B149–B153.



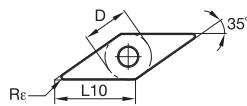
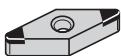
- first choice
- alternate choice

| | | | | | |
|---|---|---|---|---|---|
| P | | | | ● | |
| M | | | | | |
| K | | | | ● | |
| N | | | | | |
| S | | | | ● | |
| H | ● | ● | ● | ● | ● |

■ VNGA-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|------|-------|-----|-------|-------|--------|--------|
| VNGA160404S01015MT | 9,53 | 16,61 | 0,4 | ● | ● | - | - |
| VNGA160404S01025MT | 9,53 | 16,61 | 0,4 | - | - | ● | - |
| VNGA160404S01225MT | 9,53 | 16,61 | 0,4 | ● | ● | - | - |
| VNGA160404S01735MT | 9,53 | 16,61 | 0,4 | - | ● | - | - |
| VNGA160408S01015MT | 9,53 | 16,61 | 0,8 | ● | ● | - | - |
| VNGA160408S01025MT | 9,53 | 16,61 | 0,8 | - | - | ● | - |
| VNGA160408S01225MT | 9,53 | 16,61 | 0,8 | ● | ● | - | - |
| VNGA160408S01735MT | 9,53 | 16,61 | 0,8 | - | ● | - | - |
| VNGA160412S01225MT | 9,53 | 16,61 | 1,2 | - | ● | - | - |

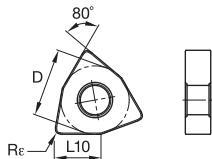
NOTE: For toolholders and boring bars, see pages B149–B153.



■ VNGM

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|-----------------------|------|-------|-----|-------|-------|--------|--------|
| VNGM160408S01325MTCB1 | 9,53 | 16,61 | 0,8 | - | ● | - | - |
| VNGM160412S01325MTCB1 | 9,53 | 16,61 | 1,2 | - | ● | - | - |

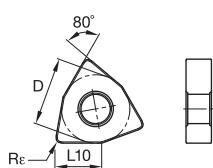
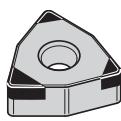
NOTE: For toolholders and boring bars, see pages B149–B153.



■ WNGA

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|------|-----|-------|-------|--------|--------|
| WNGA080408S01015FWMT | 12,70 | 8,69 | 0,8 | - | ● | - | - |

NOTE: For toolholders and boring bars, see pages B161–B165.



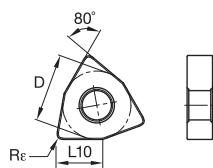
- first choice
- alternate choice

| | | | | | | | |
|---|---|---|---|---|--|---|---|
| P | | | | ● | | | |
| M | | | | | | | |
| K | | | | | | ● | |
| N | | | | | | | |
| S | | | | | | | ● |
| H | ● | ● | ● | ● | | | |

■ WNGA-FWMT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|------------------------|-------|------|-----|-------|-------|--------|--------|
| WNGA080408S01015FWHBMT | 12,70 | 8,69 | 0,8 | - | ● | - | - |

NOTE: For toolholders and boring bars, see pages B161–B165.



■ WNGA-MT

| ISO catalogue number | D | L10 | Rε | KBH10 | KBH20 | KB5630 | KY1615 |
|----------------------|-------|------|-----|-------|-------|--------|--------|
| WNGA080404S01015MT | 12,70 | 8,69 | 0,4 | - | ● | - | - |
| WNGA080408S01015MT | 12,70 | 8,69 | 0,8 | - | ● | - | - |
| WNGA080408S01225MT | 12,70 | 8,69 | 0,8 | - | ● | - | - |
| WNGA080408S01735MT | 12,70 | 8,69 | 0,8 | - | ● | - | - |
| WNGA080408S01015MT | 12,70 | 8,69 | 0,8 | ● | - | - | - |
| WNGA080408S01225MT | 12,70 | 8,69 | 0,8 | ● | - | - | - |

NOTE: For toolholders and boring bars, see pages B161–B165.

A4™ Tooling and Beyond™ Inserts

Choose A4 tooling for turning, facing, grooving, face grooving, and cut-off applications across a broad range of workpiece materials. The unique clamping system and versatile insert geometry delivers a very high metal removal rate.



FEATURES AND BENEFITS

A4 Grooving and Turning System

- One tool for turning, facing, grooving, face-grooving, and cut-off in O.D. and I.D. applications means exceptionally fast cycle times, no turret indexes!
- Extra-long clamping area, ground 120° bottom prism seating surface, and an exclusive top guide rail combine to deliver unsurpassed grooving and side-turning stability!
- Precise insert positioning is ensured for accurate cuts!
- Rigid clamping securely locks insert in place through the toughest cuts.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.

Experience the advantages at your Authorised Kennametal Distributor or at kennametal.com.



kennametal.com

► Machining High-Temp Alloys with Ceramics and PCBN

Kennametal advanced materials, utilising Beyond™ technology, offer greater wear resistance and toughness, depending on the job.

KYS ceramic inserts are the first choice for high-speed applications in high-temp alloys. The multilayer coating offers enhanced chemical wear resistance versus uncoated grades. A superior SiAlON ceramic substrate provides excellent depth of cut notching resistance versus whisker-reinforced ceramics.



Ceramic Inserts

KYS25™ Grade

- Excellent surface finish, lower cutting forces, and higher speeds.
- Advanced CVD coating provides excellent chemical and depth-of-cut notch resistance.



KYS30™ Grade

- Long, consistent tool life.
- Excellent toughness and depth-of-cut notch resistance.
- Performs in a wide variety of machining conditions, including interrupted cuts and applications involving scale.

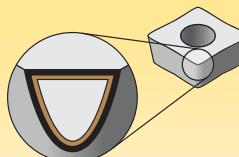


Tipped PcBN Inserts

KB1630 Grade

- Long, consistent tool life.
- Excellent toughness and depth-of-cut notch resistance.
- Performs in a wide variety of machining conditions, including interrupted cuts and applications involving scale.





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

| | | Grade Description | | | | | | | | |
|---|---------|--|----|----|----|----|----|----|----|----|
| Ceramic Grades | Coating | | | | | | | | | |
| | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| PcBN – Polycrystalline Cubic Boron Nitride Grades | KYS25 | Composition: SiAlON ceramic with a multilayered alumina-TiCN CVD coating. Application: Complements the KYS30™ grade when machining high-temp and nickel-based alloys and cast materials with high Brinell hardness. This advanced CVD coating provides excellent chemical and depth-of-cut notch resistance compared to whisker ceramics. | | | | | | | | |
| | — | | | | | | | | | |
| KBS30 | KYS30 | Composition: Latest and most advanced SiAlON material developed. Application: Combines excellent wear properties, fracture toughness, and thermal shock resistance for general-purpose to finish machining of high-temp alloys. Provides superior depth-of-cut notch resistance compared to whisker ceramics. | | | | | | | | |
| | — | | | | | | | | | |
| KB1630 | KB1630 | Composition: An uncoated high content PcbN grade. PcbN tips are brazed onto a carbide insert. Application: Designed for roughing to finishing in interrupted cuts on hardened steels (>45 HRC). It can also be applied on grey cast iron, chilled irons, high chrome alloyed steels, high temp alloys and sintered powder metals. The tipped PcbN inserts are available in a wide range of insert styles, including Top Notch™ and Screw-On geometries. | | | | | | | | |
| | — | | | | | | | | | |

← wear resistance → toughness

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:

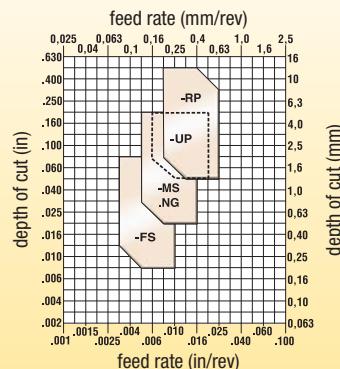
- If you know which product you are looking for, a quick search can be performed by just the catalogue number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that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

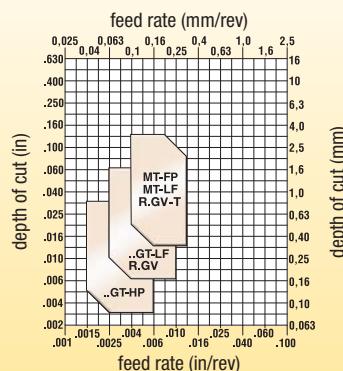
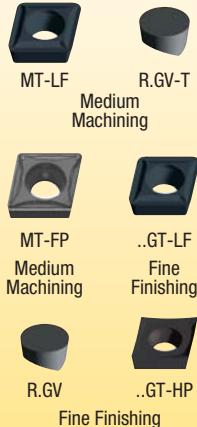
Step 1 • Select the insert geometry



Negative Inserts



Positive Inserts



Step 2 • Select the grade

cutting condition

Negative Insert Geometry

.NG

| | | |
|--|--|---------------------------|
| heavily interrupted cut | | — |
| lightly interrupted cut | | KYS30/KY1540 |
| varying depth of cut, casting, or forging skin | | KYS30/KY1540/KYS25/KY4300 |
| smooth cut, pre-turned surface | | KYS25/KY4300 |

cutting condition

Positive Insert Geometry

R.GV-T

| | | |
|--|--|---------------------------|
| heavily interrupted cut | | — |
| lightly interrupted cut | | KYS30/KY1540 |
| varying depth of cut, casting, or forging skin | | KYS30/KY1540/KYS25/KY4300 |
| smooth cut, pre-turned surface | | KYS25/KY4300 |

■ Step 3 • Select the cutting speed

 Iron-Based, Heat-Resistant Alloys (135–320 HB) (≤ 34 HRC)

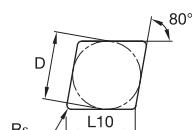
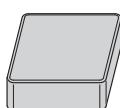
| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | | |
|----------------|--------------|---------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------------|-------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 105 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | 290 (950) | 310 (1050) | 350 (1150) | 380 (1250) | m/min | SFM |
| S1 | KB1630 | | | | | | | | | | | | | | 260 | 850 |
| | KYS25/KY4300 | | | | | | | | | | | | | | 200 | 650 |
| | KYS30/KY1540 | | | | | | | | | | | | | | 170 | 550 |

 Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤ 45 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | | |
|----------------|--------------|---------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------------|-------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 105 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | 290 (950) | 310 (1050) | 350 (1150) | 380 (1250) | m/min | SFM |
| S2 | KB1630 | | | | | | | | | | | | | | 260 | 850 |
| | KYS25/KY4300 | | | | | | | | | | | | | | 220 | 720 |
| | KYS30/KY1540 | | | | | | | | | | | | | | 185 | 600 |

 Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤ 48 HRC)

| material group | grade | speed — m/min (SFM) | | | | | | | | | | | | Starting Conditions | | |
|----------------|--------------|---------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------------|-------|-----|
| | | 15 (50) | 45 (150) | 75 (250) | 105 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | 290 (950) | 310 (1050) | 350 (1150) | 380 (1250) | m/min | SFM |
| S3 | KB1630 | | | | | | | | | | | | | | 260 | 850 |
| | KYS25/KY4300 | | | | | | | | | | | | | | 250 | 820 |
| | KYS30/KY1540 | | | | | | | | | | | | | | 215 | 700 |

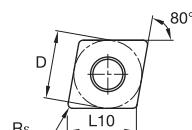
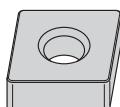


- first choice
- alternate choice

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

■ CNGN

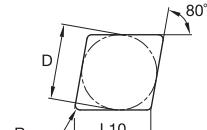
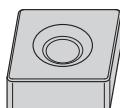
| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNGN120416T01020 | 12,70 | 12,90 | 1,6 | ● | - | - |
| CNGN120712T01020 | 12,70 | 12,90 | 1,2 | ● | ● | - |
| CNGN120716T01020 | 12,70 | 12,90 | 1,6 | - | ● | - |



■ CNGA

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNGA120408E | 12,70 | 12,90 | 0,8 | ● | ● | - |
| CNGA120408T01020 | 12,70 | 12,90 | 0,8 | ● | ● | - |
| CNGA120412T01020 | 12,70 | 12,90 | 1,2 | ● | ● | - |

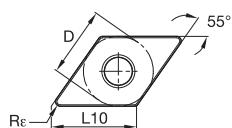
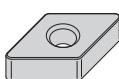
NOTE: For toolholders and boring bars, see pages B58–B73.



■ CNGX

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| CNGX120708T01020 | 12,70 | 12,90 | 0,8 | ● | ● | - |
| CNGX120712T01020 | 12,70 | 12,90 | 1,2 | ● | ● | - |
| CNGX120716E | 12,70 | 12,90 | 1,6 | - | ● | - |

NOTE: For toolholders and boring bars, see pages B58–B73.



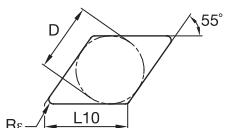
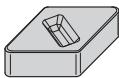
- first choice
- alternate choice

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

DNGA

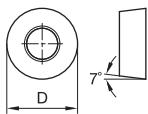
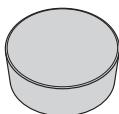
| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| DNGA150408T01020 | 12,70 | 15,50 | 0,8 | - | ● | - |
| DNGA150412T01020 | 12,70 | 15,50 | 1,2 | - | ● | - |

NOTE: For toolholders and boring bars, see pages B85–B93.



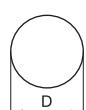
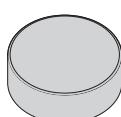
DNGX

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| DNGX150708T01020 | 12,70 | 15,50 | 0,8 | ● | - | - |
| DNGX150712T01020 | 12,70 | 15,50 | 1,2 | ● | ● | - |
| DNGX150716T01020 | 12,70 | 15,50 | 1,6 | - | ● | - |



RCGX

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-----|----|-------|-------|--------|
| RCGX060400E | 6,35 | — | — | ● | ● | - |
| RCGX090700E | 9,53 | — | — | ● | ● | - |
| RCGX090700T00525 | 9,53 | — | — | - | ● | - |
| RCGX090700T01020 | 9,53 | — | — | ● | ● | - |
| RCGX120700E | 12,70 | — | — | ● | ● | - |
| RCGX120700T01020 | 12,70 | — | — | ● | ● | - |
| RCGX120700T01025 | 12,70 | — | — | ● | ● | - |

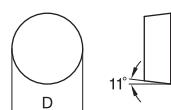
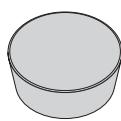


- first choice
- alternate choice

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

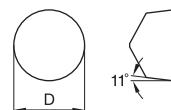
■ RNGN

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-----|----|-------|-------|--------|
| RNGN120400T01020 | 12,70 | — | — | — | ● | — |
| RNGN120700T00525 | 12,70 | — | — | — | ● | — |
| RNGN120700T01020 | 12,70 | — | — | — | ● | — |
| RNGN120700T01025 | 12,70 | — | — | ● | ● | — |
| RNGN190700T01020 | 19,05 | — | — | — | ● | — |



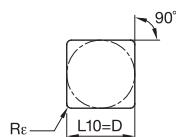
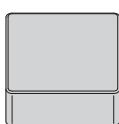
■ RPGN

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-----|----|-------|-------|--------|
| RPGN06200E | 6,35 | — | — | — | ● | — |
| RPGN090300E | 9,53 | — | — | — | ● | — |
| RPGN090300T01020 | 9,53 | — | — | — | ● | — |
| RPGN120400E | 12,70 | — | — | — | ● | — |
| RPGN120400T01020 | 12,70 | — | — | — | ● | — |



■ RPGX

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-----|----|-------|-------|--------|
| RPGX090700E | 9,53 | — | — | ● | ● | — |
| RPGX090700T01020 | 9,53 | — | — | — | ● | — |
| RPGX120700E | 12,70 | — | — | ● | ● | — |
| RPGX120700T01020 | 12,70 | — | — | — | ● | — |

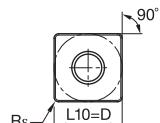
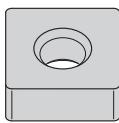


- first choice
- alternate choice

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

■ SNGN

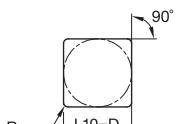
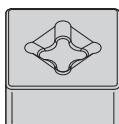
| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| SNGN120408T01020 | 12,70 | 12,70 | 0,8 | - | ● | - |
| SNGN120412T01020 | 12,70 | 12,70 | 1,2 | - | ● | - |
| SNGN120416T01020 | 12,70 | 12,70 | 1,6 | ● | ● | - |
| SNGN120716T01020 | 12,70 | 12,70 | 1,6 | - | ● | - |
| SNGN190616E | 19,05 | 19,05 | 1,6 | ● | - | - |
| SNGN190616T01020 | 19,05 | 19,05 | 1,6 | - | ● | - |
| SNGN190724E | 19,05 | 19,05 | 2,4 | - | ● | - |



■ SNGA

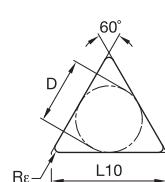
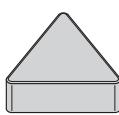
| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| SNGA120412T01020 | 12,70 | 12,70 | 1,2 | ● | ● | - |

NOTE: For toolholders and boring bars, see pages B105–B121.



■ SNGX

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| SNGX120712T01020 | 12,70 | 12,70 | 1,2 | - | ● | - |
| SNGX120716T01020 | 12,70 | 12,70 | 1,6 | - | ● | - |

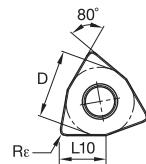
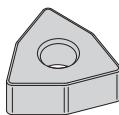


- first choice
- alternate choice

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

■ TNGN

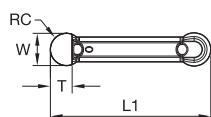
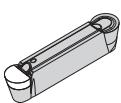
| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|-------|-----|-------|-------|--------|
| TNGN220412T01020 | 12,70 | 22,00 | 1,2 | ● - | - | - |
| TNGN220416T01020 | 12,70 | 22,00 | 1,6 | ● - | - | - |



■ WNGA

| ISO catalogue number | D | L10 | Rε | KYS25 | KYS30 | KB1630 |
|----------------------|-------|------|-----|-------|-------|--------|
| WNGA080408T01020 | 12,70 | 8,69 | 0,8 | - ● - | - | - |
| WNGA080416T01020 | 12,70 | 8,69 | 1,6 | - ● - | - | - |

NOTE: For toolholders and boring bars, see pages B161–B165.



● first choice
○ alternate choice

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

■ Flat Top Full Radius Precision Ground • PCBN

| catalogue number | seat size | W | RC | L1 | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|-------|--------|--------|-------|--------|--------|--------|
| A4R0300M03P00EST | 3 | 3,00 | 1,5 | 20 | 2,2 | - - - | - - - | - - - | - - - | - - - | - - - | - - - | - - - | ● - - | - - - | - - - | |
| A4R0400M04P00EST | 4 | 4,00 | 2,0 | 20 | 2,9 | - - - | - - - | - - - | - - - | - - - | - - - | - - - | - - - | ● - - | - - - | - - - | |
| A4R0500M05P00EST | 5 | 5,00 | 2,5 | 25 | 3,7 | - - - | - - - | - - - | - - - | - - - | - - - | - - - | - - - | ● - - | - - - | - - - | |
| A4R0600M06P00EST | 6 | 6,00 | 3,0 | 30 | 4,4 | - - - | - - - | - - - | - - - | - - - | - - - | - - - | - - - | ● - - | - - - | - - - | |

NOTE: For A4 holder, boring bars, and blades, see pages C104–C135.

➤ Polycrystalline Diamond Inserts



Polycrystalline Diamond (PCD) Inserts

- Use for machining high-temperature alloys and in targeted machining of non-ferrous materials.
- Significant hardness advantage compared to carbide inserts.
- Increased productivity through higher speeds and longer tool life.
- Best used in processing materials that cannot be machined with conventional tooling.

KD1400™ Grade

- Ideal for general-purpose turning of non-ferrous materials.
- Use on low to medium silicon-content aluminium alloys, non-metallics, copper, and brass- and zinc-based alloys.
- Excellent mechanical shock resistance.
- Use in a wide range of continuous to interrupted cuts where superior surface finished is needed.



KD1405™ Grade

- The most abrasion-resistant tool material for non-ferrous and non-metallic materials from Kennametal.
- Use when abrasion resistance is needed in the application.
- CVD diamond grade.

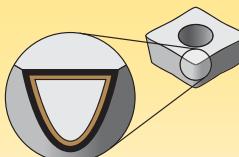


KD1425™ Grade

- Engineered for extreme abrasion resistance.
- Good edge strength in demanding applications.
- Ideal choice for high-silicon aluminium alloys, bi-metallic materials, carbon-fibre reinforced plastics, and other abrasive non-metallic materials.



PCD — Polycrystalline Diamond Grades



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

| Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------|---|----|----|----|----|----|----|----|----|----|
| KD1400 | Composition: An ultra-fine-grain, polycrystalline diamond (PCD) tip brazed onto a carbide substrate. Application: Designed for general-purpose turning of primarily non-ferrous materials. It can be applied over a wide range of continuous to interrupted cuts where superior surface finish is needed. Use on low to medium silicon-content aluminium alloys, non-metallics, copper, and brass- and zincbased alloys. The ultra-fine-grain diamond particle size enables superior surface finishes while ensuring the best mechanical shock resistance of any PCD cutting tool. | | | | | | | | | |
| KD1405 | Composition: A pure CVD-deposited diamond-sheet tool brazed directly to a carbide substrate. Application: KD1405™ is the best Kennametal abrasion-resistant tool material for non-ferrous and non-metallic materials. Best applied when abrasion resistance is the desired benefit. | | | | | | | | | |
| KD1425 | Composition: A multimodal PCD grade with a range of grain sizes brazed onto a carbide substrate. Application: Engineered for extreme abrasion resistance, combined with good edge strength for demanding applications. An ideal choice for high-silicon aluminium alloys, bi-metallic (AL/GC) materials, MMC, carbon-fibre reinforced plastics, and other abrasive non-metallic materials. | | | | | | | | | |

← wear resistance → toughness

Beyond™ PVD Grades

Beyond™ advanced PVD coatings are well suited to resist high temperatures associated with machining tough alloys. These coatings offer increased tool life and a boost in productivity to the general engineering, transportation, aerospace, energy, and earthworks markets. Use the strength of Beyond PVD coatings and the broad product offering to perform turning, grooving, and cut-off operations in a wide array of materials and applications. Beyond PVD coatings help to maintain consistent chip control and minimise insert edge wear.



KCU10™ Grade

- PVD-coated grade with excellent wear resistance. Finishing to medium applications.
- Use in all materials, especially stainless steels and high-temp alloys.

KCU25™ Grade

- PVD-coated grade with superior edge toughness and excellent wear resistance. Medium to roughing applications.
- Use in all materials.

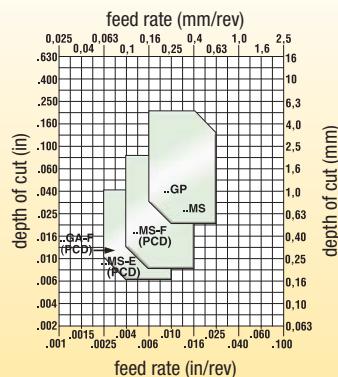
Experience the advantages at your Authorised Kennametal Distributor or at kennametal.com.



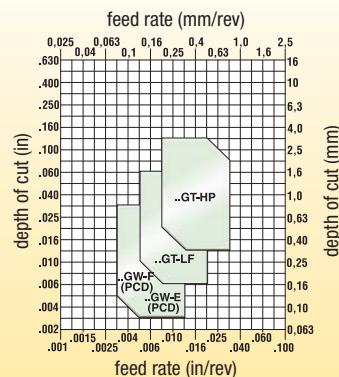
kennametal.com

■ Step 1 • Select the insert geometry

Negative Inserts



Positive Inserts



■ Step 2 • Select the grade

| cutting condition | Negative Insert Geometry | | | Positive Insert Geometry | |
|---|--------------------------|--------------|--------------|--------------------------|--------------|
| | ..GA-E (PCD) | ..MS-E (PCD) | ..GA-F (PCD) | ..GW-E (PCD) | ..GW-F (PCD) |
| heavily interrupted cut | ◆ | — | — | KD1400 | — |
| lightly interrupted cut | ○ | KD1405 | KD1405 | KD1400 | KD1405 |
| varying depth of cut, casting, or forging skin | ● | KD1405 | KD1405 | KD1425 | KD1425 |
| smooth cut, pre-turned surface | ● | KD1405 | KD1405 | KD1425 | KD1425 |

■ Step 3 • Selecting the cutting speed

Low-Silicon Aluminium Alloys (hypoeutectic <12.2% Si) and Magnesium Alloys

| material group | grade | speed — m/min (SFM) | | | | | | | | | | Starting Conditions | |
|----------------|--------|---------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|------|
| | | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | 1250 (4000) | 1500 (4800) | 1750 (5600) | 2000 (6400) | 2250 (7200) | 2500 (8000) | m/min | SFM |
| N1 | KD1400 | | | | | | | | | | | 765 | 2500 |

High-Silicon Aluminium Alloys (hypereutectic >12.2% Si) and Magnesium Alloys

| material group | grade | speed — m/min (SFM) | | | | | Starting Conditions | |
|----------------|--------|---------------------|------------|------------|-------------|-------|---------------------|--|
| | | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | m/min | SFM | |
| N3 | KD1405 | | | | | 550 | 1800 | |
| | KD1425 | | | | | 765 | 2500 | |

■ Additional cutting speed recommendations for miscellaneous workpiece materials

Copper-, Brass-, Zinc-Based on a Machinability Index Range of 70–100

| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | speed — m/min (SFM) | Starting Conditions |
|----------------|---------------|--------------|---------------|---------------|----------------|---------------------|---------------------|
| N4 | KD1400/KD1405 | | | ◇ | | 520 | 1700 |
| | KD1425 | | ◇ | | | 500 | 1600 |

Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass, and Glass

| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | speed — m/min (SFM) | Starting Conditions |
|----------------|---------------|--------------|---------------|---------------|----------------|---------------------|---------------------|
| N5 | KD1400/KD1405 | | ◇ | | | 400 | 1300 |
| | KD1425 | | ◇ | | | 365 | 1200 |

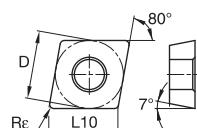
Carbon and Graphite Composites:

Brush Alloys, Kevlar, and Graphite (280–400 HB) (30–43 HRC)

| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | speed — m/min (SFM) | Starting Conditions |
|----------------|---------------|--------------|---------------|---------------|----------------|---------------------|---------------------|
| N6 | KD1400/KD1405 | | | ◇ | | 760 | 2500 |

MMCs (Aluminium-Based Metal Matrix Composites)

| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | speed — m/min (SFM) | Starting Conditions |
|----------------|--------|--------------|---------------|---------------|----------------|---------------------|---------------------|
| N7 | KD1405 | | ◇ | | | 460 | 1500 |
| | KD1400 | | ◇ | | | 365 | 1200 |



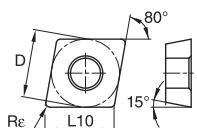
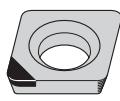
- first choice
- alternate choice

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

■ CCGW-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|------|-----|--------|--------|--------|
| CCGW060204FST | 6,35 | 6,45 | 0,4 | ● | - | ● |
| CCGW09T304FST | 9,53 | 9,67 | 0,4 | ● | - | ● |
| CCGW09T308FST | 9,53 | 9,67 | 0,8 | ● | - | ● |

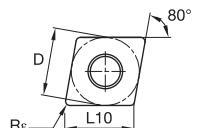
NOTE: For toolholders and boring bars, see pages B179–B183.



■ CDHB-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|------|-----|--------|--------|--------|
| CDHBS4T002FST | 3,97 | 4,03 | 0,2 | ● | - | ● |
| CDHBS4T0X0FST | 3,97 | 4,03 | 0,1 | ● | - | - |

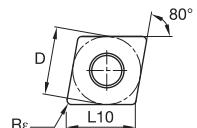
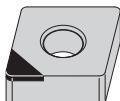
NOTE: For toolholders and boring bars, see pages B185–B187.



■ CNGA

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| CNGA120404E | 12,70 | 12,90 | 0,4 | - | ● | - |
| CNGA120408E | 12,70 | 12,90 | 0,8 | - | ● | - |

NOTE: For toolholders and boring bars, see pages B58–B73.

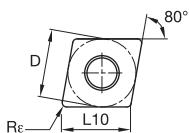


■ CNGA-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| CNGA120404FST | 12,70 | 12,90 | 0,4 | ● | - | ● |
| CNGA120408FST | 12,70 | 12,90 | 0,8 | ● | - | ● |

NOTE: For toolholders and boring bars, see pages B58–B73.

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| P | | | | |
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| K | | | | |
| N | ● | ○ | ● | |
| S | ● | ● | ● | |
| H | | | | |

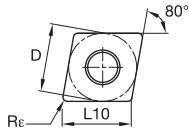
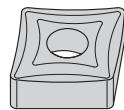


- first choice
- alternate choice

■ CNMS-E

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| CNMS120408E | 12,70 | 12,90 | 0,8 | - | ● | - |

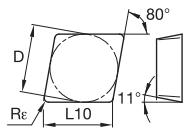
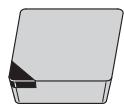
NOTE: For toolholders and boring bars, see pages B58–B73.



■ CNMS-FST

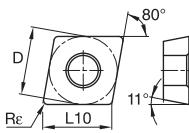
| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| CNMS120404FST | 12,70 | 12,90 | 0,4 | ● | - | - |
| CNMS120408FST | 12,70 | 12,90 | 0,8 | ● | - | ● |

NOTE: For toolholders and boring bars, see pages B58–B73.



■ CPGN

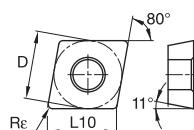
| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| CPGN120304F | 12,70 | 12,90 | 0,4 | - | - | ● |
| CPGN120308F | 12,70 | 12,90 | 0,8 | - | - | ● |



■ CPGW-E-F

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|------|-----|--------|--------|--------|
| CPGW060204E | 6,35 | 6,45 | 0,4 | - | ● | - |
| CPGW09T304E | 9,53 | 9,67 | 0,4 | - | ● | - |

NOTE: For toolholders and boring bars, see pages B192–B205.



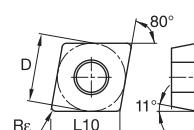
- first choice
- alternate choice

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

■ CPGW-FWST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| CPGW060204FWST | 6,35 | 6,45 | 0,4 | ● - | ● | |
| CPGW09T308FWST | 9,53 | 9,67 | 0,8 | ● - | ● | |
| CPGW120408FWST | 12,70 | 12,90 | 0,8 | ● - | ● | |

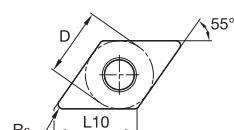
NOTE: For toolholders and boring bars, see pages B192–B205.



■ CPGW-ST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|------|-----|--------|--------|--------|
| CPGW060202FST | 6,35 | 6,45 | 0,2 | ● - | ● | |
| CPGW060204FST | 6,35 | 6,45 | 0,4 | ● - | ● | |
| CPGW060208FST | 6,35 | 6,45 | 0,8 | ● - | ● | |
| CPGW09T304FST | 9,53 | 9,67 | 0,4 | ● - | ● | |
| CPGW09T308FST | 9,53 | 9,67 | 0,8 | ● - | ● | |

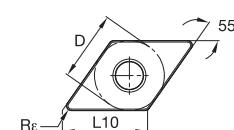
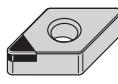
NOTE: For toolholders and boring bars, see pages B192–B205.



■ DCGW-ST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| DCGW070204FST | 6,35 | 7,75 | 0,4 | ● - | ● | |
| DCGW11T304FST | 9,53 | 11,63 | 0,4 | ● - | ● | |

NOTE: For toolholders and boring bars, see pages B209–B213.

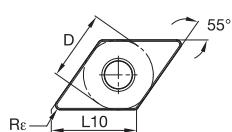
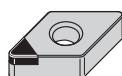


■ DNGA

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| DNGA150404E | 12,70 | 15,50 | 0,4 | - ● - | | |

NOTE: For toolholders and boring bars, see pages B85–B93.

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

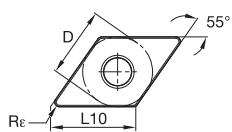


- first choice
- alternate choice

DNGA-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| DNGA150404FST | 12,70 | 15,50 | 0,4 | ● - | ● | |
| DNGA150408FST | 12,70 | 15,50 | 0,8 | ● - | ● | |

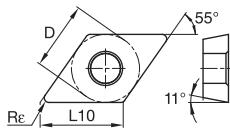
NOTE: For toolholders and boring bars, see pages B192-B205.



DNMS-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| DNMS150404FST | 12,70 | 15,50 | 0,4 | ● - | - | |
| DNMS150408FST | 12,70 | 15,50 | 0,8 | ● - | ● | |

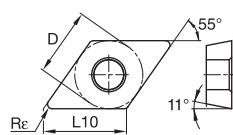
NOTE: For toolholders and boring bars, see pages B192-B205.



DPGW-E

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| DPGW11T304E | 9,53 | 11,63 | 0,4 | - ● - | | |

NOTE: For toolholders and boring bars, see pages B217-B221.



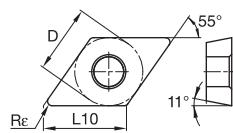
- first choice
- alternate choice

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

■ DPGW-FST

| ISO catalogue number | D | L10 | R ϵ | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|--------------|--------|--------|--------|
| DPGW070202FST | 6,35 | 7,75 | 0,2 | ● | - | ● |
| DPGW070204FST | 6,35 | 7,75 | 0,4 | ● | - | ● |
| DPGW11T304FST | 9,53 | 11,63 | 0,4 | ● | - | ● |

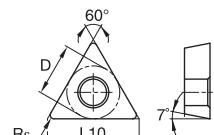
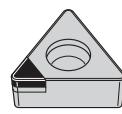
NOTE: For toolholders and boring bars, see pages B217–B221.



■ DPGW-FWST

| ISO catalogue number | D | L10 | R ϵ | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|--------------|--------|--------|--------|
| DPGW11T304FWST | 9,53 | 11,63 | 0,2 | - | - | ● |

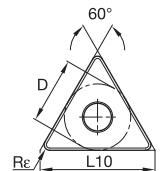
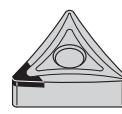
NOTE: For toolholders and boring bars, see pages B217–B221.



■ TCGW-FST

| ISO catalogue number | D | L10 | R ϵ | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|--------------|--------|--------|--------|
| TCGW110204FST | 6,35 | 11,00 | 0,4 | ● | - | ● |
| TCGW16T304FST | 9,53 | 16,50 | 0,4 | ● | - | ● |

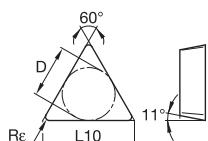
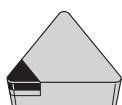
NOTE: For toolholders and boring bars, see pages B247–B248.



■ TNMS-FST

| ISO catalogue number | D | L10 | R ϵ | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|--------------|--------|--------|--------|
| TNMS160404FST | 9,53 | 16,50 | 0,4 | ● | - | ● |
| TNMS160408FST | 9,53 | 16,50 | 0,8 | ● | - | ● |

NOTE: For toolholders and boring bars, see pages B132–B142.

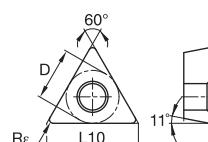


- first choice
- alternate choice

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

■ TPGN

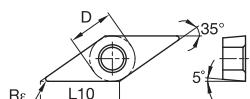
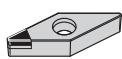
| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|-------|-------|-----|--------|--------|--------|
| TPGN110304F | 6,35 | 11,00 | 0,4 | - | - | ● |
| TPGN160304F | 9,53 | 16,50 | 0,4 | - | - | ● |
| TPGN160308F | 9,53 | 16,50 | 0,8 | - | - | ● |
| TPGN220408F | 12,70 | 22,00 | 0,8 | - | - | ● |



■ TPGW-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| TPGW110204FST | 6,35 | 11,00 | 0,4 | ● | - | ● |
| TPGW110208FST | 6,35 | 11,00 | 0,8 | ● | - | - |
| TPGW16T304FST | 9,53 | 16,50 | 0,4 | - | - | ● |
| TPGW16T308FST | 9,53 | 16,50 | 0,8 | ● | - | ● |

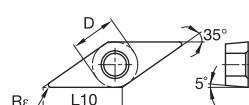
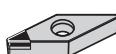
NOTE: For toolholders and boring bars, see pages B257–B263.



■ VBGW-E

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| VBGW160408E | 9,53 | 16,61 | 0,8 | - | ● | - |

NOTE: For toolholders and boring bars, see pages B266–B269.



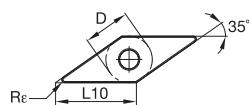
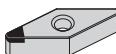
- first choice
- alternate choice

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

■ VBGW-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| VBGW110304FST | 6,35 | 11,07 | 0,4 | ● - | - | |
| VBGW160404FST | 9,53 | 16,61 | 0,4 | ● - | ● | |

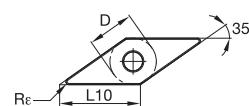
NOTE: For toolholders and boring bars, see pages B266–B269.



■ VNGA-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| VNGA160404FST | 9,53 | 16,61 | 0,4 | ● - | - | |
| VNGA160408FST | 9,53 | 16,61 | 0,8 | ● - | ● | |

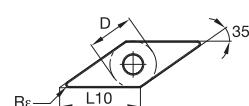
NOTE: For toolholders and boring bars, see pages B149–B153.



■ VNMS-E

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| VNMS160404E | 9,53 | 16,61 | 0,4 | - ● - | - | |
| VNMS160408E | 9,53 | 16,61 | 0,8 | - ● - | ● | |

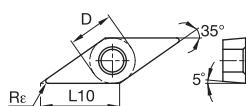
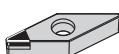
NOTE: For toolholders and boring bars, see pages B149–B153.



■ VNMS-FST

| ISO catalogue number | D | L10 | Rε | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|-----|--------|--------|--------|
| VNMS160404FST | 9,53 | 16,61 | 0,4 | ● - | - | |
| VNMS160408FST | 9,53 | 16,61 | 0,8 | ● - | ● | |

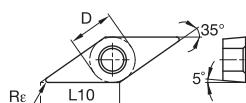
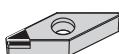
NOTE: For toolholders and boring bars, see pages B149–B153.



- first choice
- alternate choice

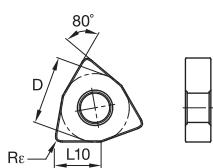
■ VPGN

| ISO catalogue number | D | L10 | R ϵ | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|--------------|--------|--------|--------|
| VCGN160404 | 9,53 | 16,61 | 0,4 | - | - | ● |
| VCGN160408 | 9,53 | 16,61 | 0,8 | - | - | ● |



■ VPGR

| ISO catalogue number | D | L10 | R ϵ | KD1400 | KD1405 | KD1425 |
|----------------------|------|-------|--------------|--------|--------|--------|
| VCGR160404 | 9,53 | 16,61 | 0,4 | - | - | ● |
| VCGR160408 | 9,52 | 16,61 | 0,8 | - | - | ● |
| VCGR160412 | 9,53 | 16,61 | 1,2 | - | - | ● |

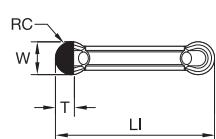
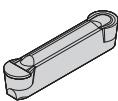


■ WNGA-FST

| ISO catalogue number | D | L10 | R ϵ | KD1400 | KD1405 | KD1425 |
|----------------------|-------|------|--------------|--------|--------|--------|
| WNGA080408FST | 12,70 | 8,69 | 0,8 | - | - | ● |

NOTE: For toolholders and boring bars, see pages B161–B165.

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



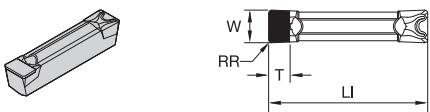
● first choice
○ alternate choice

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

■ Flat Top Full Radius Precision Ground • PCD

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCR20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R0500M05P00E | 5 | 5,00 | 2,5 | 25 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● | |

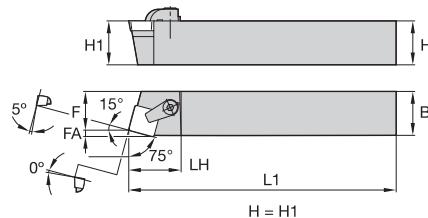
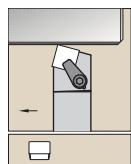
NOTE: For A4 holder, boring bars, and blades, see pages C104–C135.



■ Flat Top Precision Ground • PCD

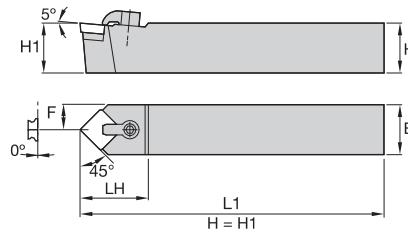
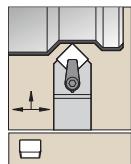
| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0300M03P04E | 3 | 3,00 | 0,4 | 20 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● | |
| A4G0400M04P04E | 4 | 4,00 | 0,4 | 20 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● | |
| A4G0500M05P08E | 5 | 5,00 | 0,8 | 25 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● | |

NOTE: For A4 holder, boring bars, and blades, see pages C104–C135.



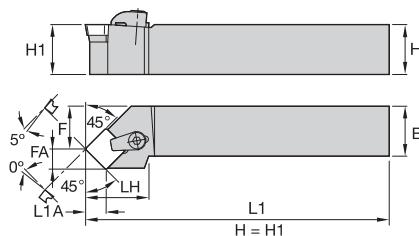
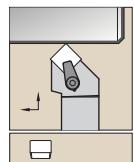
■ CSBP 75°

| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|-------|------------|------|-------|-------------|------|
| right hand 1097750 | CSBPR2020K12 | 20 | 20 | 17,0 | 125 | 30,0 | 3,1 | SP..120308 | SM840 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |



■ CSDP 45°

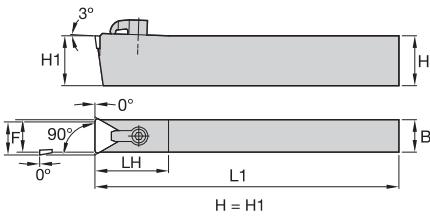
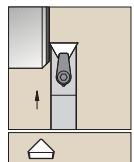
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-------------|-------|------------|------|-------|-------------|------|
| 1097754 | CSDPN2020K12 | 20 | 20 | 10,0 | 125 | 32,0 | SP..120308 | SM840 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1097755 | CSDPN2525M12 | 25 | 25 | 12,5 | 150 | 32,0 | SP..120308 | SM840 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |



■ CSSP 45°



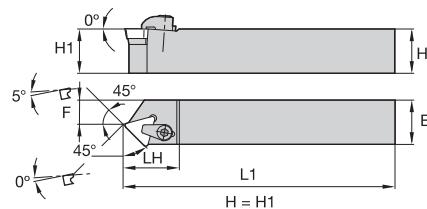
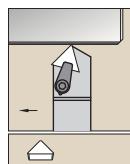
| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|------|-----|-----|-------------|-------|------------|------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | | |
| 1244605 | CSSPR2020K12 | 20 | 20 | 25,0 | 125 | 32,0 | 8,7 | 8,3 | SP..120308 | SM840 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1244606 | CSSPR2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 8,7 | 8,3 | SP..120308 | SM840 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | | | |
| 1244604 | CSSPL2525M12 | 25 | 25 | 32,0 | 150 | 32,0 | 8,7 | 8,3 | SP..120308 | SM840 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |



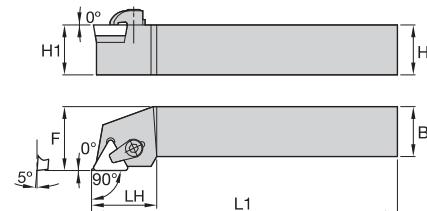
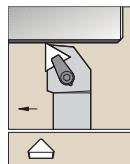
■ CTCP 90°



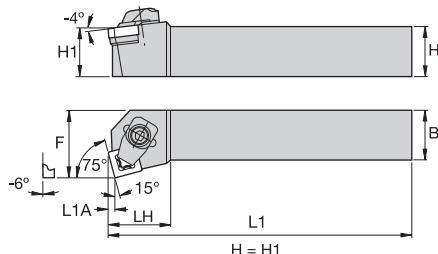
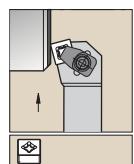
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-------------|-------|------------|--------|-------|-------------|--------|
| 1097775 | CTCPN2510M11 | 25 | 10 | 10,0 | 150 | 26,0 | TP..110304 | SM819 | MS960 | — | CKM7 | STCM5 | 2.5 mm |
| 1097776 | CTCPN2514M16 | 25 | 14 | 14,4 | 150 | 28,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM13 | STCM4 | 4 mm |
| 1097781 | CTCPN2518M22 | 25 | 18 | 19,2 | 150 | 41,0 | TP..220408 | SM837 | MS125 | 2.5 mm | CKM13 | STCM4 | 4 mm |
| 1097778 | CTCPN2520M22 | 25 | 20 | 20,2 | 150 | 41,0 | TP..220408 | SM837 | MS125 | 2.5 mm | CKM13 | STCM4 | 4 mm |


■ CTDP 45°

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | clamp | clamp screw | hex |
|--------------|------------------|----|----|-----|----|------|-------------|-------|------------|-------|-------------|--------|
| right hand | | | | | | | | | | | | |
| 1244613 | CTDPR1212F11 | 12 | 12 | 6,0 | 80 | 22,0 | TP..110304 | SM819 | MS960 | CKM19 | STCM9 | 2.5 mm |


■ CTGP 90°

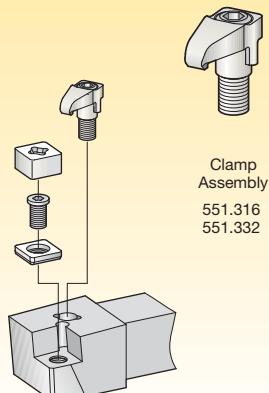
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-------------|-------|------------|------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | |
| 1097762 | CTGPR1212F11 | 12 | 12 | 16,0 | 80 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1097763 | CTGPR1616H11 | 16 | 16 | 20,0 | 100 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1244595 | CTGPR2020K11 | 20 | 20 | 25,0 | 125 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1097764 | CTGPR2020K16 | 20 | 20 | 25,0 | 125 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1097765 | CTGPR2525M16 | 25 | 25 | 32,0 | 150 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1097916 | CTGPL1212F11 | 12 | 12 | 16,0 | 80 | 20,0 | TP..110304 | SM819 | MS960 | — | CKM19 | STCM9 | 2.5 mm |
| 1097918 | CTGPL2020K16 | 20 | 20 | 25,0 | 125 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1097919 | CTGPL2525M16 | 25 | 25 | 32,0 | 150 | 26,0 | TP..160308 | SM841 | MS111 | 2 mm | CKM9 | STCM4 | 4 mm |


■ CCKN 75° • MX


| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|----------------|------|
| right hand 2891706 | CCKNR2525M12MX7 | 25 | 25 | 32,0 | 150 | 32,0 | 3,1 | CNGX120708 | 552.221 | 554.252 | 2.5 mm | 551.013 | 4 mm |
| left hand 2891727 | CCKNL2525M12MX7 | 25 | 25 | 32,0 | 150 | 32,0 | 3,1 | CNGX120708 | 552.221 | 554.252 | 2.5 mm | 551.013 | 4 mm |

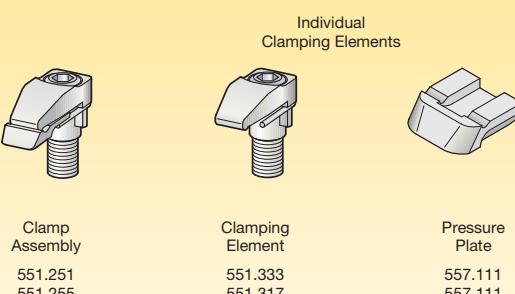
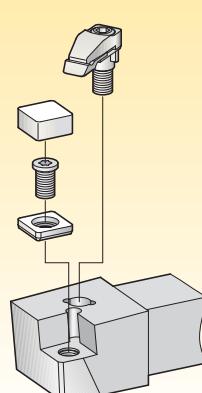
■ Spare Parts • -MX, -MN, -MF, and -MA Clamping Version

Clamping Mode
MX



Clamp Assembly
551.316
551.332

Clamping Mode
MN



Clamp Assembly
551.251
551.255

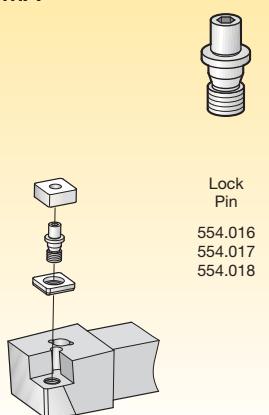


Clamping Element
551.333
551.317

Pressure Plate
557.111
557.111

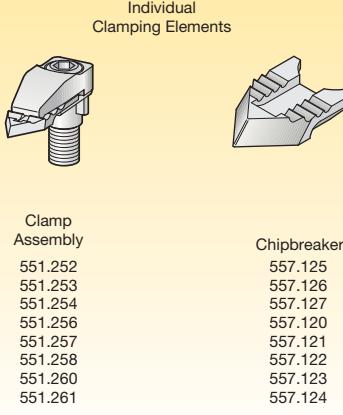
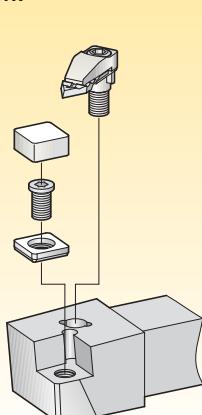
Individual Clamping Elements

Clamping Mode
MA



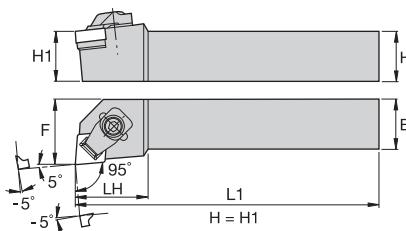
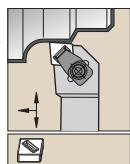
Lock Pin
554.016
554.017
554.018

Clamping Mode
MF



Clamp Assembly
551.252
551.253
551.254
551.256
551.257
551.258
551.260
551.261

Chipbreaker
557.125
557.126
557.127
557.120
557.121
557.122
557.123
557.124



■ CCLN 95° • MX

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|----------------|------|
| right hand | | | | | | | | | | | | |
| 1260025 | CCLNR2525M12-MX7 | 25 | 25 | 32,0 | 150 | 32,0 | CN.X120708 | 552.221 | 554.252 | 2.5 mm | 551.316 | 4 mm |
| 1260028 | CCLNR3225P12-MX7 | 32 | 25 | 32,0 | 170 | 32,0 | CN.X120708 | 552.221 | 554.252 | 2.5 mm | 551.316 | 4 mm |
| left hand | | | | | | | | | | | | |
| 1260017 | CCLNL2525M12-MX7 | 25 | 25 | 32,0 | 150 | 30,0 | CN.X120708 | 552.221 | 554.252 | 2.5 mm | 551.316 | 4 mm |
| 1260020 | CCLNL3225P12-MX7 | 32 | 25 | 32,0 | 170 | 32,0 | CN.X120708 | 552.221 | 554.252 | 2.5 mm | 551.316 | 4 mm |

■ CCLN 95° • MN

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|----------------|------|
| right hand | | | | | | | | | | | | | |
| 1260023 | CCLNR2525M12-MN4 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120408 | 552.220 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1260024 | CCLNR2525M12-MN7 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1504937 | CCLNR3225P12-MN4 | 32 | 25 | 32,0 | 170 | 32,0 | CN.N120408 | 552.220 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1260027 | CCLNR3225P12-MN7 | 32 | 25 | 32,0 | 170 | 32,0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1260015 | CCLNL2525M12-MN4 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120408 | 552.220 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1260016 | CCLNL2525M12-MN7 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1504931 | CCLNL3225P12-MN7 | 32 | 25 | 32,0 | 170 | 32,0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

■ CCLN 95° • MF

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | chipbreaker | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|-------------|----------------|------|
| right hand | | | | | | | | | | | | | |
| 1260022 | CCLNR2525M12-MF4 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120408 | 552.220 | 554.252 | 2.5 mm | 557.125 | 551.317 | 4 mm |
| 1503826 | CCLNR2525M12-MF7 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.125 | 551.317 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1260014 | CCLNL2525M12-MF4 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120408 | 552.220 | 554.252 | 2.5 mm | 557.125 | 551.317 | 4 mm |
| 1504935 | CCLNL2525M12-MF7 | 25 | 25 | 32,0 | 150 | 32,0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.125 | 551.317 | 4 mm |

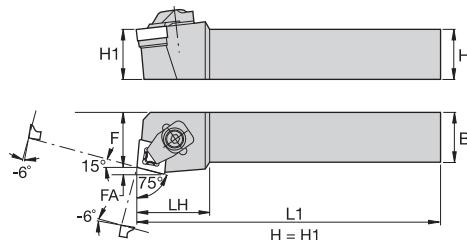
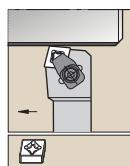
NOTE: MX – clamping version is shown.

Basic holder may be ordered separately:

V.CLN R/L 2525M12

V.CLN R/L 3225P12

V.CLN R/L 3225P16



■ CCRN 75° • MN



| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|----------------|------|
| right hand 1504885 | CCRNR3225P12-MN7 | 32 | 25 | 27,0 | 170 | 35,0 | 3,1 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand 1503827 | CCRNL2525M12-MN7 | 25 | 25 | 27,0 | 150 | 35,0 | 3,1 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

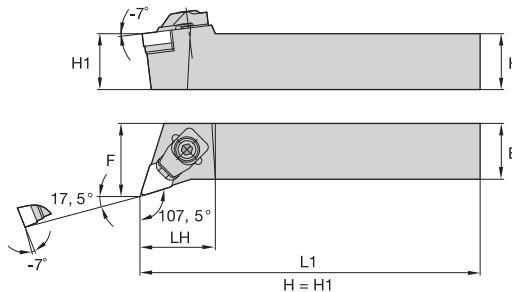
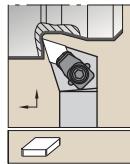
NOTE: MX — clamping version is shown.

Basic holder may be ordered separately:

V.CRN R/L 2525M12

V.CRN R/L 3225P12

V.CRN R/L 3225P16



■ CDHN 107,5° • MX



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|----------------|------|
| right hand 1505504 | CDHNR2525M12-MX7 | 25 | 25 | 32,0 | 150 | 30,0 | DN.X120708 | 552.225 | 554.254 | 2.5 mm | 551.316 | 4 mm |

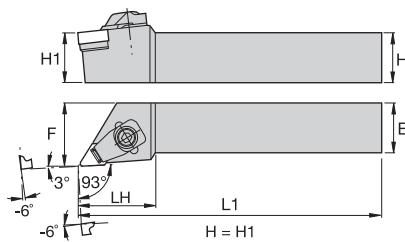
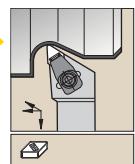
NOTE: MN — clamping version is shown.

Basic holder may be ordered separately:

V.DHN R/L 2525M12

V.DHN R/L 2525M15

V.DHN R/L 3225P15



■ CDJN 93° • MX

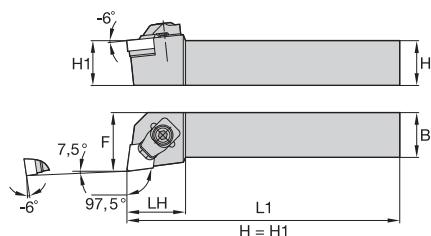
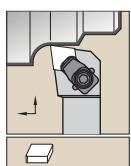


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|----------------|------|
| right hand | | | | | | | | | | | | |
| 1260177 | CDJNR2525M15-MX7 | 25 | 25 | 32,0 | 150 | 38,0 | DN.X150708 | 552.228 | 554.252 | 2.5 mm | 551.332 | 4 mm |
| left hand | | | | | | | | | | | | |
| 1260172 | CDJNL2525M12-MX7 | 25 | 25 | 32,0 | 150 | 38,0 | DN.X120708 | 552.225 | 554.254 | 2.5 mm | 551.316 | 4 mm |
| 1504968 | CDJNL2525M15MX7 | 25 | 25 | 32,0 | 150 | 38,0 | DN.X150708 | 552.228 | 554.252 | 2.5 mm | 551.332 | 4 mm |

■ CDJN 93° • MN



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|----------------|------|
| right hand | | | | | | | | | | | | | |
| 1260176 | CDJNR2525M15MN7 | 25 | 25 | 32,0 | 150 | 38,0 | DN.N150708 | 552.228 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1327362 | CDJNR3225P15MN7 | 32 | 25 | 32,0 | 170 | 38,0 | DN.N150708 | 552.228 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1504969 | CDJNL2525M15MN7 | 25 | 25 | 32,0 | 150 | 38,0 | DN.N150708 | 552.228 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1327363 | CDJNL3225P15MN7 | 32 | 25 | 32,0 | 170 | 38,0 | DN.N150708 | 552.228 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |



■ CELN 97,5° • MX

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|----------------|------|
| right hand 1505803 | CELNR2525M13-MX7 | 25 | 25 | 32,0 | 150 | 32,0 | EN.X130708 | 552.240 | 554.252 | 2.5 mm | 551.316 | 4 mm |

■ CELN 97,5° • MN

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|----------------|------|
| right hand 1501222 | CELNR2525M13MN7 | 25 | 25 | 32,0 | 150 | 32,0 | EN.N130708 | 552.240 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand 1501221 | CELNLR2525M13MN7 | 25 | 25 | 32,0 | 150 | 32,0 | EN.N130708 | 552.240 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

■ CELN 97,5° • MF

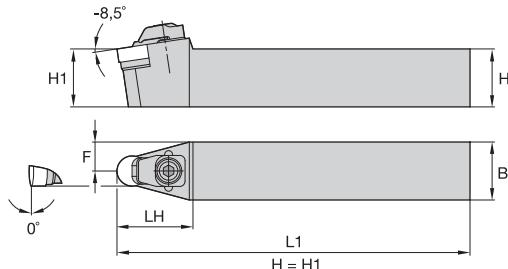
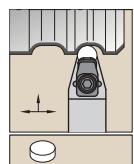
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | chipbreaker | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|-------------|----------------|------|
| right hand 1331458 | CELNR2525M13MF7 | 25 | 25 | 32,0 | 150 | 32,0 | EN.N130708 | 552.240 | 554.252 | 2.5 mm | 557.125 | 551.317 | 4 mm |

NOTE: MN — clamping version is shown.

Basic holder may be ordered separately:

V.ELN R/L 2525M13

V.ELN R/L 3225P13



■ CRDN • MN



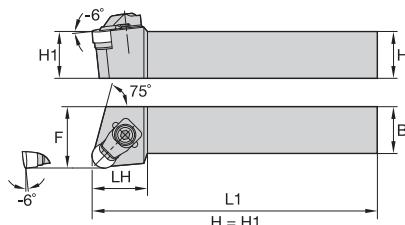
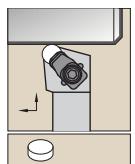
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|--------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|----------------|------|
| 1510281 | CRDNN2525M12MN4 | 25 | 25 | 12,5 | 150 | 30,0 | RN.N120400 | 552.229 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1313053 | CRDNN2525M12MN7 | 25 | 25 | 12,5 | 150 | 30,0 | RN.N120700 | 552.230 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1502204 | CRDNN3225P12MN4 | 32 | 25 | 12,5 | 170 | 30,0 | RN.N120400 | 552.229 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1320407 | CRDNN3225P12MN7 | 32 | 25 | 12,5 | 170 | 30,0 | RN.N120700 | 552.230 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |

NOTE: MN — clamping version is shown.

Basic holder may be ordered separately:

V.RDN N 2525M12

V.RDN N 3225M12



■ CRSN • MN



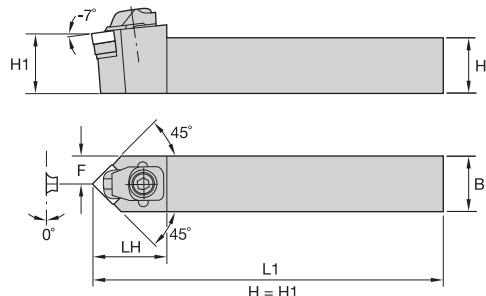
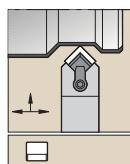
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|--------------|----------------|------|
| right hand | | | | | | | | | | | | | |
| 1510285 | CRSNR2525M12-MN4 | 25 | 25 | 32,0 | 150 | 26,0 | RN.N120400 | 552.229 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1324116 | CRSNR2525M12MN7 | 25 | 25 | 32,0 | 150 | 26,0 | RN.N120700 | 552.230 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1510286 | CRSNR3225P12MN4 | 32 | 25 | 32,0 | 170 | 26,0 | RN.N120400 | 552.229 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1261273 | CRSNR3225P12MN7 | 32 | 25 | 32,0 | 170 | 26,0 | RN.N120700 | 552.230 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| left hand | | | | | | | | | | | | | |
| 1510282 | CRSNL2525M12-MN4 | 25 | 25 | 32,0 | 150 | 26,0 | RN.N120400 | 552.229 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1510283 | CRSNL2525M12MN7 | 25 | 25 | 32,0 | 150 | 26,0 | RN.N120700 | 552.230 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1510284 | CRSNL3225P12MN4 | 32 | 25 | 32,0 | 170 | 26,0 | RN.N120400 | 552.229 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1331597 | CRSNL3225P12MN7 | 32 | 25 | 32,0 | 170 | 26,0 | RN.N120700 | 552.230 | 554.252 | 2.5 mm | 557.111 | 551.333 | 4 mm |

NOTE: MN — clamping version is shown.

Basic holder may be ordered separately:

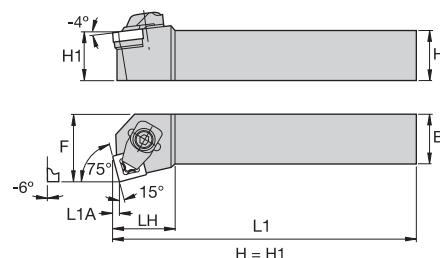
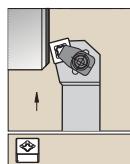
V.RSN R/L 2525M12

V.RSN R/L 3225P12



■ CSDN • MX

| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp assembly | hex |
|--------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|----------------|------|
| 2891696 | CSDNN2525M12MX7 | 25 | 25 | 12,5 | 151 | 36,0 | SNGX120708 | 552.232 | 554.252 | 2.5 mm | 551.316 | 4 mm |

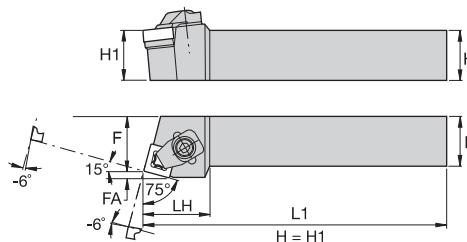
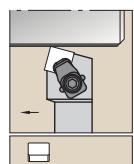


■ CSKN 75° • MN

| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|----------------|------|
| right hand 1261315 | CSKNR2525M12-MN7 | 25 | 25 | 32,0 | 150 | 27,0 | 3,0 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand 1261299 | CSKNL2525M12-MN4 | 25 | 25 | 32,0 | 150 | 27,0 | 3,0 | SN.N120408 | 552.231 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| | 1261300 | 25 | 25 | 32,0 | 150 | 27,0 | 3,0 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

NOTE: MX — clamping version is shown.

Basic holder may be ordered separately:
V.SKN R/L 2525M12



■ CSRN 75° • MX



| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | clamp assembly | hex |
|----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|------|----------------|------|
| left hand 1510300 | CSRNL3225P15-MX7 | 32 | 25 | 27,0 | 170 | 34,0 | 4,1 | SN.X150708 | 552.234 | 554.253 | 3 mm | 551.316 | 4 mm |

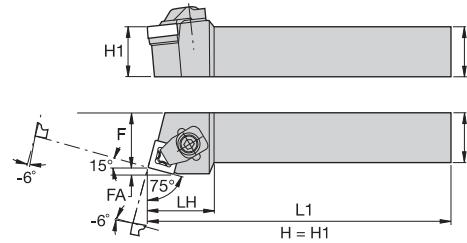
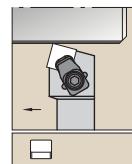
NOTE: MX — clamping version is shown.

Basic holder may be ordered separately:

V.SRN R/L 2525M12

V.SRN R/L 3225P12

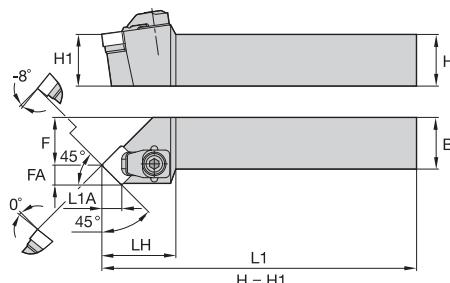
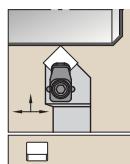
V.SRN R/L 3225P15



■ CSRN 75° • MN



| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|----------------|------|
| right hand 1510303 | CSRNR2525M12-MN4 | 25 | 25 | 27,0 | 150 | 32,0 | 3,1 | SN.N120408 | 552.231 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1261336 | CSRNR2525M12-MN7 | 25 | 25 | 27,0 | 150 | 32,0 | 3,1 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| 1510291 | CSRNL2525M12-MN4 | 25 | 25 | 27,0 | 150 | 32,0 | 3,1 | SN.N120408 | 552.231 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1510292 | CSRNL2525M12-MN7 | 25 | 25 | 27,0 | 150 | 32,0 | 3,1 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1261334 | CSRNL3225P12-MN7 | 32 | 25 | 27,0 | 170 | 32,0 | 3,1 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |



■ CSSN 45° • MX

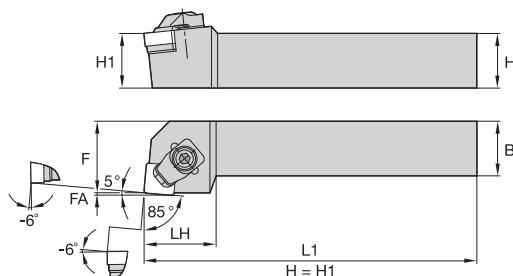
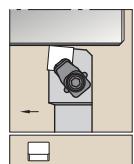


| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|------|------|-------------|---------|------------|--------|----------------|------|
| right hand | | | | | | | | | | | | | | |
| 1261367 | CSSNR2525M12-MX7 | 25 | 25 | 32,0 | 150 | 35,0 | 8,3 | 8,3 | SN.X120708 | 552.232 | 554.252 | 2.5 mm | 551.316 | 4 mm |
| 1261378 | CSSNR3225P15-MX7 | 32 | 25 | 32,0 | 159 | 37,0 | 10,6 | 10,6 | SN.X150708 | 552.234 | 554.253 | 3 mm | 551.316 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| 1261350 | CSSNL2525M12-MX7 | 25 | 25 | 23,7 | 150 | 35,0 | 8,6 | 8,3 | SN.X120708 | 552.232 | 554.252 | 2.5 mm | 551.316 | 4 mm |

■ CSSN 45° • MN



| order number | catalogue number | H | B | F | L1 | LH | FA | L1A | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-------------------|------------------|----|----|------|-----|------|-----|-----|-------------|---------|------------|--------|--------------|----------------|------|
| right hand | | | | | | | | | | | | | | | |
| 1261366 | CSSNR2525M12-MN7 | 25 | 25 | 32,0 | 142 | 35,0 | 8,3 | 8,3 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1261370 | CSSNR3225P12-MN4 | 32 | 25 | 32,0 | 162 | 35,0 | 8,3 | 8,3 | SN.N120408 | 552.231 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1261371 | CSSNR3225P12-MN7 | 32 | 25 | 32,0 | 162 | 35,0 | 8,3 | 8,3 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand | | | | | | | | | | | | | | | |
| 1261349 | CSSNL2525M12-MN7 | 25 | 25 | 32,0 | 142 | 35,0 | 8,3 | 8,3 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1261353 | CSSNL3225P12-MN4 | 32 | 25 | 32,0 | 162 | 35,0 | 8,3 | 8,3 | SN.N120408 | 552.231 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1261354 | CSSNL3225P12-MN7 | 32 | 25 | 32,0 | 162 | 35,0 | 8,3 | 8,3 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

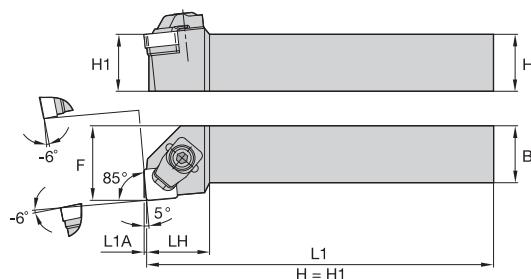
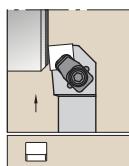


■ CSXN 85° • MX

| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|----------------|------|
| right hand 1510334 | CSXNR3225P12-MX7 | 32 | 25 | 32,0 | 170 | 30,0 | 1,1 | SN.X120708 | 552.232 | 554.252 | 2.5 mm | 551.316 | 4 mm |

■ CSXN 85° • MN

| order number | catalogue number | H | B | F | L1 | LH | FA | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|----------------|------|
| right hand 1510327 | CSXNR2525M12-MN4 | 25 | 25 | 32,0 | 150 | 30,0 | 1,1 | SN.N120408 | 552.231 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand 1510313 | CSXNL2525M12-MN4 | 25 | 25 | 32,0 | 150 | 30,0 | 1,1 | SN.N120408 | 552.231 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |


■ CSYN 85° • MX


| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim screw | hex | clamp assembly | hex |
|----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|----------------|------|
| left hand 1261414 | CSYNL3225P12-MX7 | 32 | 25 | 32,0 | 170 | 27,0 | 1,0 | SN.X120708 | 552.232 | 554.252 | 2.5 mm | 551.316 | 4 mm |

■ CSYN 85° • MN

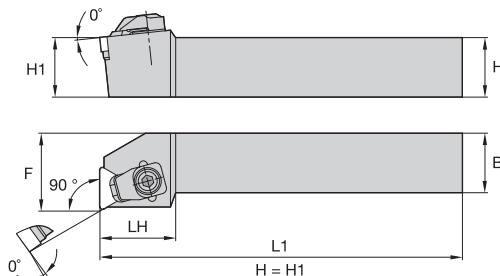
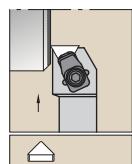

| order number | catalogue number | H | B | F | L1 | LH | L1A | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-----|-------------|---------|------------|--------|--------------|----------------|------|
| right hand 1261423 | CSYNR2525M12-MN7 | 25 | 25 | 32,0 | 150 | 27,0 | 1,1 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand 1261408 | CSYNL2525M12-MN7 | 25 | 25 | 32,0 | 150 | 27,0 | 1,1 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

NOTE: MN — clamping version is shown.

Basic holder may be ordered separately:

V.SYN R/L 2525M12

V.SYN R/L 3225P12



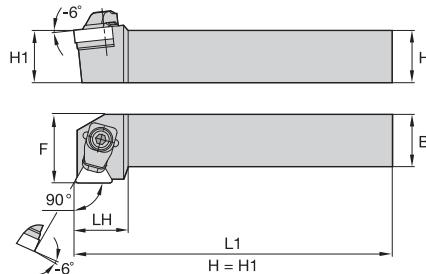
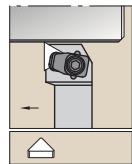
■ CTFN 90° • MN



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|-----------|------------|--------|--------------|----------------|------|
| right hand 1510344 | CTFNR2525M16-MN4 | 25 | 25 | 32,0 | 150 | 29,0 | TN.N160408 | 552.235-H | 554.254 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| left hand 1510341 | CTFNL2525M16-MN4 | 25 | 25 | 32,0 | 150 | 29,0 | TN.N160408 | 552.235-H | 554.254 | 2.5 mm | 557.111 | 551.333 | 4 mm |

NOTE: MN — clamping version is shown.

Basic holder may be ordered separately:
V.TFN R/L 2525M16



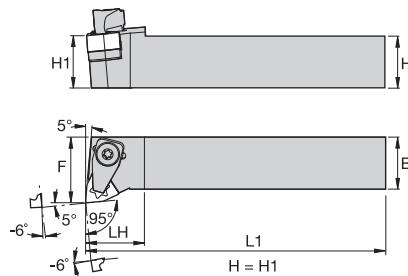
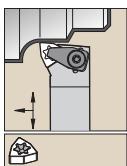
■ CTGN 90° • MN



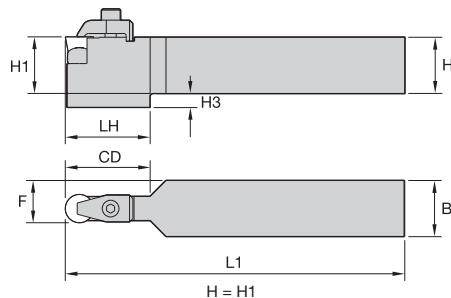
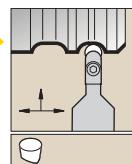
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|-----------|------------|--------|--------------|----------------|------|
| right hand 1261482 | CTGNR2525M16-MN4 | 25 | 25 | 32,0 | 150 | 20,0 | TN.N160408 | 552.235-H | 554.254 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1261483 | CTGNR2525M16-MN7 | 25 | 25 | 32,0 | 150 | 20,0 | TN.N160708 | 552.236 | 554.254 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| left hand 1261478 | CTGNL2525M16-MN4 | 25 | 25 | 32,0 | 150 | 20,0 | TN.N160408 | 552.235-H | 554.254 | 2.5 mm | 557.111 | 551.333 | 4 mm |
| 1261479 | CTGNL2525M16-MN7 | 25 | 25 | 32,0 | 150 | 20,0 | TN.N160708 | 552.236 | 554.254 | 2.5 mm | 557.111 | 551.333 | 4 mm |

NOTE: MN — clamping version is shown.

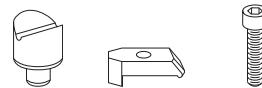
Basic holder may be ordered separately:
V.TGN R/L 2525M16


■ CWLN 95° • MX


| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-----------------------|------------------|----|----|------|-----|------|-------------|---------|------------|--------|----------------|------|
| right hand 1873227 | CWLNR3225P08-MX7 | 32 | 25 | 32,0 | 170 | 32,0 | WN.X080708 | 552.210 | 554.252 | 2.5 mm | 551.316 | 4 mm |
| left hand 1873224 | CWLNL2525M08-MX7 | 25 | 25 | 32,0 | 150 | 32,0 | WN.X080708 | 552.210 | 554.252 | 2.5 mm | 551.316 | 4 mm |

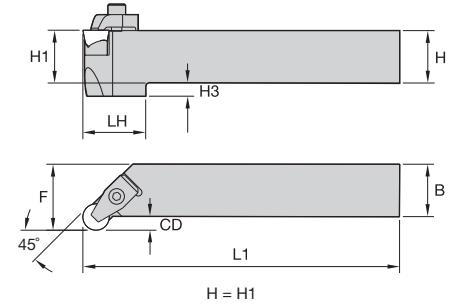
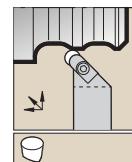


■ CRDP

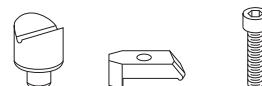


| order number | catalogue number | H | B | F | L1 | LH | H3 | CD | gage insert | nest | clamp | clamp screw | hex |
|--------------|------------------|----|----|------|-----|------|-----|------|-------------|------|-------|-------------|--------|
| 3642247 | CRDPN2525M06V | 25 | 25 | 12,5 | 151 | — | — | 19,0 | RPGX060400E | NST1 | CM214 | MS1321 | 2.5 mm |
| 3642249 | CRDPN3232P09V | 32 | 32 | 16,0 | 171 | — | — | 29,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |
| 3642248 | CRDPN2525M09V | 25 | 25 | 12,5 | 151 | — | — | 29,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |
| 3642251 | CRDPN3232P12V | 32 | 32 | 16,0 | 171 | — | — | 38,0 | RPGX120700E | NST3 | CM216 | CS412 | 3.5 mm |
| 3642252 | CRDPN3232P15V | 32 | 32 | 16,0 | 171 | 38,1 | 6,4 | 38,0 | RPGX151000 | NST4 | CM217 | MS1294 | 6 mm |

NOTE: CRDP toolholders are able to use RPGX and RCGX insert styles.

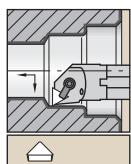
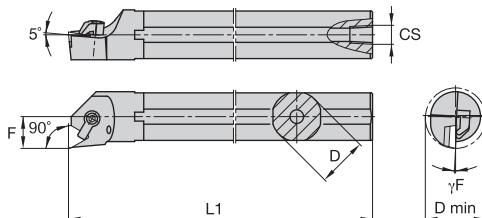


■ CRGP



| order number | catalogue number | H | B | F | L1 | CD | gage insert | nest | clamp | clamp screw | hex |
|-------------------|------------------|----|----|------|-----|-----|-------------|------|-------|-------------|--------|
| right hand | | | | | | | | | | | |
| 3642276 | CRGPR2525M06V | 25 | 25 | 32,0 | 151 | 7,0 | RPGX060400E | NST1 | CM214 | MS1321 | 2.5 mm |
| 3642280 | CRGPR3232P09V | 32 | 32 | 40,0 | 171 | 8,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |
| left hand | | | | | | | | | | | |
| 3642277 | CRGPL2525M06V | 25 | 25 | 32,0 | 151 | 7,0 | RPGX060400E | NST1 | CM214 | MS1321 | 2.5 mm |
| 3642281 | CRGPL3232P09V | 32 | 32 | 40,0 | 171 | 8,0 | RPGX090700E | NST2 | CM219 | CS412 | 3.5 mm |

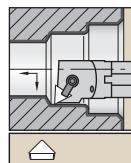
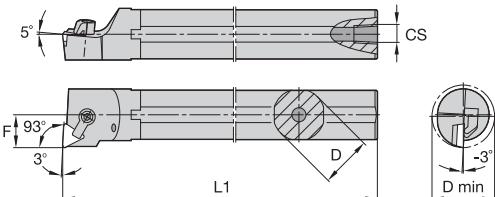
NOTE: CRGP toolholders are able to use RPGX and RCGX insert styles.


Steel shank with
through coolant.


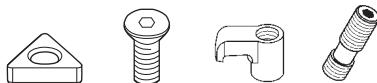
■ A-CTFP 90°



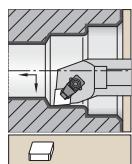
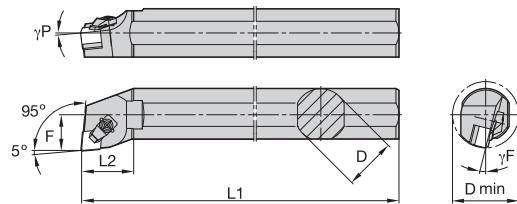
| order number | catalogue number | D | D min | F | L1 | CS | γF° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------------|------------------|-------------|-------|------------|------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | | |
| 1886492 | A16RCTFPR11 | 16 | 20,0 | 11,0 | 200 | 1/8-27 NPT | -4,0 | TP..110304 | — | — | — | CKM19 | STCM9 | 2.5 mm |
| 1098051 | A20QCTFPR11 | 20 | 25,0 | 13,0 | 180 | 1/8-27 NPT | 0,0 | TP..110304 | SM815 | MS961 | — | CKM19 | STCM9 | 2.5 mm |
| 1098053 | A25RCTFPR16 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1098055 | A32SCTFPR16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1886494 | A40VCTFPR16 | 40 | 48,0 | 27,0 | 400 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| 1098054 | A25RCTFPL16 | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |
| 1098056 | A32SCTFPL16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -3,0 | TP..160308 | SM841 | MS110 | 2 mm | CKM10 | STCM8 | 4 mm |


Steel shank with
through coolant.


■ A-CTUP 93°



| order number | catalogue number | D | D min | F | L1 | CS | gage insert | shim | shim screw | clamp | clamp screw | hex |
|-------------------|------------------|----|-------|------|-----|------------|-------------|-------|------------|-------|-------------|--------|
| right hand | | | | | | | | | | | | |
| 1098057 | A16MCTUPR11 | 16 | 20,0 | 11,0 | 150 | 1/8-27 NPT | TP..110304 | SM815 | MS961 | CKM19 | STCM9 | 2.5 mm |
| left hand | | | | | | | | | | | | |
| 1098058 | A16MCTUPL11 | 16 | 20,0 | 11,0 | 150 | 1/8-27 NPT | TP..110304 | SM815 | MS961 | CKM19 | STCM9 | 2.5 mm |

Steel shank
without through
coolant.

■ S-CCLN 95° • MX

| order number | catalogue number | D | D min | F | L1 | L2 | γF° | γP° | gage insert | shim | shim screw | hex | clamp assembly | hex |
|--------------|------------------|----|-------|------|-----|----|------------------|------------------|-------------|---------|------------|--------|----------------|------|
| right hand | | | | | | | | | | | | | | |
| 2890773 | S32SCCLNR12MX7 | 32 | 40,0 | 22,0 | 251 | 43 | -14.0 | -5.0 | CN.X120708 | — | — | — | 551.316 | 4 mm |
| 1289077 | S40T-CCLNR12-MX7 | 40 | 55,0 | 27,0 | 300 | 40 | -14.0 | -6.0 | CN.X120708 | 552.221 | 554.252 | 2.5 mm | 551.316 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| 1510401 | S40T-CCLNL12-MX7 | 40 | 55,0 | 27,0 | 300 | 40 | -14.0 | -6.0 | CN.X120708 | 552.221 | 554.252 | 2.5 mm | 551.316 | 4 mm |

NOTE: MN – clamping version is shown.

Basic holder may be ordered separately:

S40T-V.CLN R/L 12

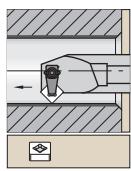
■ S-CCLN 95° • MN

| order number | catalogue number | D | D min | F | L1 | L2 | γF° | γP° | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|--------------|------------------|----|-------|------|-----|----|------------------|------------------|-------------|---------|------------|--------|--------------|----------------|------|
| right hand | | | | | | | | | | | | | | | |
| 1289075 | S40T-CCLNR12-MN4 | 40 | 55,0 | 27,0 | 300 | 40 | -14.0 | -6.0 | CN.N120408 | 552.220 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| 1289076 | S40T-CCLNR12-MN7 | 40 | 55,0 | 27,0 | 300 | 40 | -14.0 | -6.0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |
| left hand | | | | | | | | | | | | | | | |
| 1289072 | S40T-CCLNL12-MN7 | 40 | 55,0 | 27,0 | 300 | 40 | -14.0 | -6.0 | CN.N120708 | 552.221 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

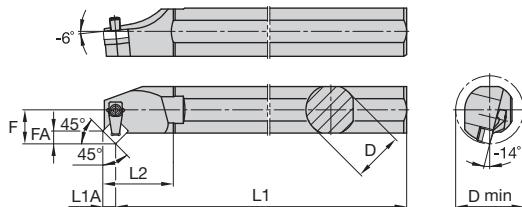
NOTE: MN – clamping version is shown.

Basic holder may be ordered separately:

S40T-V.SSN R/L 12



Steel shank
without through
coolant.



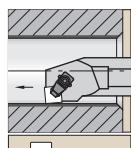
■ S-CSSN 45° • MX



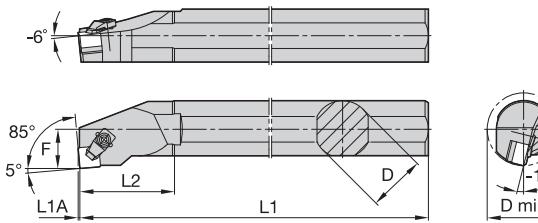
| order number | catalogue number | D | D min | F | L1 | L2 | L1A | FA | gage insert | shim | shim screw | hex | clamp assembly | hex |
|-----------------------|------------------|----|-------|------|-----|------|-----|-----|-------------|---------|------------|--------|----------------|------|
| right hand 1873498 | S40T-CSSNR12-MX7 | 40 | 55,0 | 27,0 | 300 | 67,0 | 8,3 | 8,3 | SN.X120708 | 552.232 | 554.252 | 2.5 mm | 551.316 | 4 mm |
| left hand 1873499 | S40T-CSSNL12-MX7 | 40 | 55,0 | 27,0 | 300 | 67,0 | 8,3 | 8,3 | SN.X120708 | 552.232 | 554.252 | 2.5 mm | 551.316 | 4 mm |

NOTE: MX – clamping version is shown.

Basic holder may be ordered separately:
S40T-V.SSN R/L 12



Steel shank
without through
coolant.



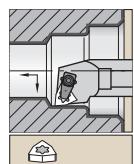
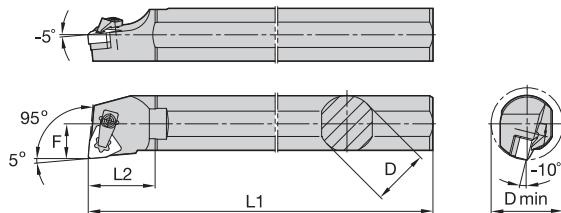
■ S-CSYN 85° • MN



| order number | catalogue number | D | D min | F | L1 | L2 | L1A | gage insert | shim | shim screw | hex | thrust plate | clamp assembly | hex |
|-----------------------|------------------|----|-------|------|-----|------|-----|-------------|---------|------------|--------|--------------|----------------|------|
| right hand 1245016 | S40T-CSYNR12-MN7 | 40 | 55,0 | 27,0 | 300 | 67,0 | 1,0 | SN.N120708 | 552.232 | 554.252 | 2.5 mm | 557.111 | 551.317 | 4 mm |

NOTE: MN – clamping version is shown.

Basic holder may be ordered separately:
S40T-V.SYN R/L 08

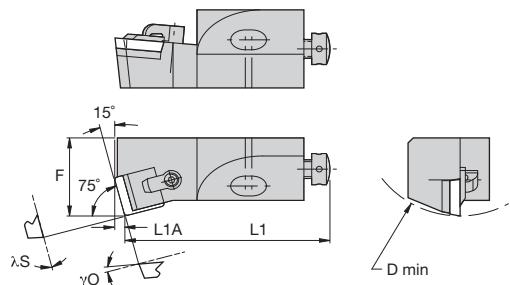
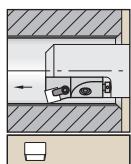
Steel shank
without through
coolant.

■ S-CWLN 95° • MX



| order number | catalogue number | D | D min | F | L1 | L2 | γF° | gage insert | shim | shim screw | hex | clamp assembly | hex |
|----------------------|------------------|----|-------|------|-----|------|------------------|-------------|---------|------------|--------|----------------|------|
| left hand 1873496 | S40T-CWLNL08-MX7 | 40 | 80,0 | 27,0 | 300 | 55,0 | -10.0 deg | WN.X080708 | 552.210 | 554.252 | 2.5 mm | 551.316 | 4 mm |

NOTE: Basic holder may be ordered separately:
S40T-V. WLN R/L 12



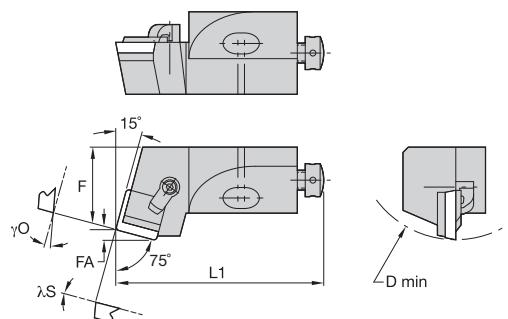
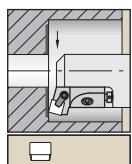
■ CSKP 75°

| order number | catalogue number | D min | F | L1 | L1A | λs° | γo° | gage insert |
|-----------------------|------------------|-------|------|----|-----|-----|-----|--------------------|
| right hand 1261328 | CSKPR12CA12 | 50 | 20,0 | 55 | 3,1 | 0,0 | 5,0 | SP..120308/SP..422 |

■ Spare Parts



| D min | shim | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|------|-------|-------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 50 | — | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | 191.406 | 4 mm | CSWM 060 050 |



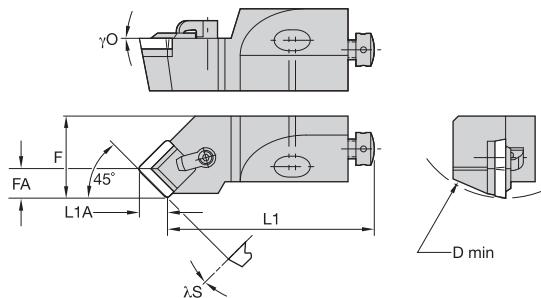
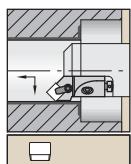
■ CSRP 75°

| order number | catalogue number | D min | F | L1 | FA | λS° | γO° | gage insert |
|-----------------------|------------------|-------|------|----|-----|-------------------|------------------|--------------------|
| right hand 3331132 | CSRPR10CA09 | 40 | 14,0 | 50 | 2,2 | 0,0 | 0,0 | SP..090308/SP..322 |

■ Spare Parts



| D min | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|-------|-------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 40 | CKM34 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



■ CSSP 45°

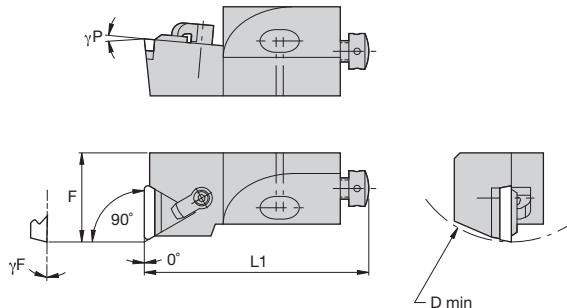
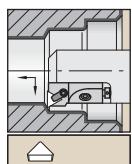
| order number | catalogue number | D min | F | L1 | FA | L1A | λS° | $\gamma 0^\circ$ | gage insert |
|-------------------|------------------|-------|------|----|-----|-----|-------------------|------------------|--------------------|
| right hand | | | | | | | | | |
| 1261379 | CSSPR10CA09 | 40 | 14,0 | 44 | 6,5 | 6,1 | 0,0 | 0,0 | SP..090308/SP..322 |
| left hand | | | | | | | | | |
| 3331143 | CSSPL10CA09 | 40 | 14,0 | 44 | 6,5 | 6,1 | 0,0 | 0,0 | SP..090308/SP..322 |

NOTE: Select spare parts based off of D min and insert size selected.

■ Spare Parts



| D min | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | hex | washer |
|-------|-------|-------------|------|------------------------|------|-----------------------|----------------|------|--------------|
| 40 | CKM34 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | 4 mm | CSWM 060 050 |



■ CTFP 90°

| order number | catalogue number | D min | F | L1 | γF° | γP° | gage insert |
|-------------------|------------------|-------|------|----|------------------|------------------|--------------------|
| right hand | | | | | | | |
| 2116588 | CTFPR10CA11 | 40 | 14,0 | 50 | 0.0 | 5.0 | TP..110304/TP..221 |
| 1746442 | CTFPR12CA16 | 50 | 20,0 | 55 | 0.0 | 5.0 | TP..160308/TP..322 |
| 2582207 | CTFPR20CA22 | 70 | 25,0 | 70 | 0.0 | 5.0 | TP..220408/TP..432 |
| left hand | | | | | | | |
| 2114034 | CTFPPL10CA11 | 40 | 14,0 | 50 | 0.0 | 5.0 | TP..110304/TP..221 |

■ Spare Parts



| D min | shim | shim screw | hex | clamp | clamp screw | hex | radial adjusting screw | hex | axial adjusting screw | mounting screw | mounting screw | hex | washer |
|-------|-------|------------|--------|-------|-------------|------|------------------------|--------|-----------------------|----------------|----------------|------|--------------|
| 40 | — | — | — | CKM34 | STCM38 | 2 mm | KUAM28 | 2 mm | KUAM30 | 191.405 | — | 4 mm | CSWM 060 050 |
| 50 | — | — | — | CKM34 | STCM38 | 2 mm | KUAM22 | 2 mm | KUAM31 | — | 191.406 | 4 mm | CSWM 060 050 |
| 70 | SM837 | MS125 | 2.5 mm | CKM35 | STCM8 | 4 mm | KUAM25 | 2.5 mm | KUAM32 | — | 191.407 | 5 mm | CSWM 080 050 |

Beyond™ Drive™ Inserts

- Designed for increased productivity.
- Post-coat treatment reduces stress, improves coating adhesion.
- Excellent toughness and wear resistance.
- Better insert wear detection.

beyond™ DRIVE™

Post-Coat Grinding — Top and Bottom

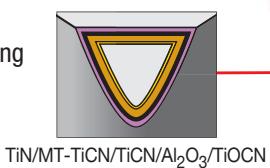
- Provides secure seating surface.

Post-Coat Treatment

- Improves edge toughness.
- Long predictable tool life.
- Reduces depth-of-cut notching.
- Wide range of applications.

Fine-Grained Alumina Layer

- Provides coating integrity at elevated speeds.
- Higher productivity and dependability at high-cutting temperatures.



Micro-Polished Edges

- Improves edge toughness.
- Provides smooth outer surface to reduce forces, friction, and workpiece sticking.

Experience the advantages at your Authorised Kennametal Distributor or at kennametal.com.

 KENNAMETAL®

kennametal.com

➤ Tunable Boring Bars

With Front End KM™ Quick-Change Adaptor

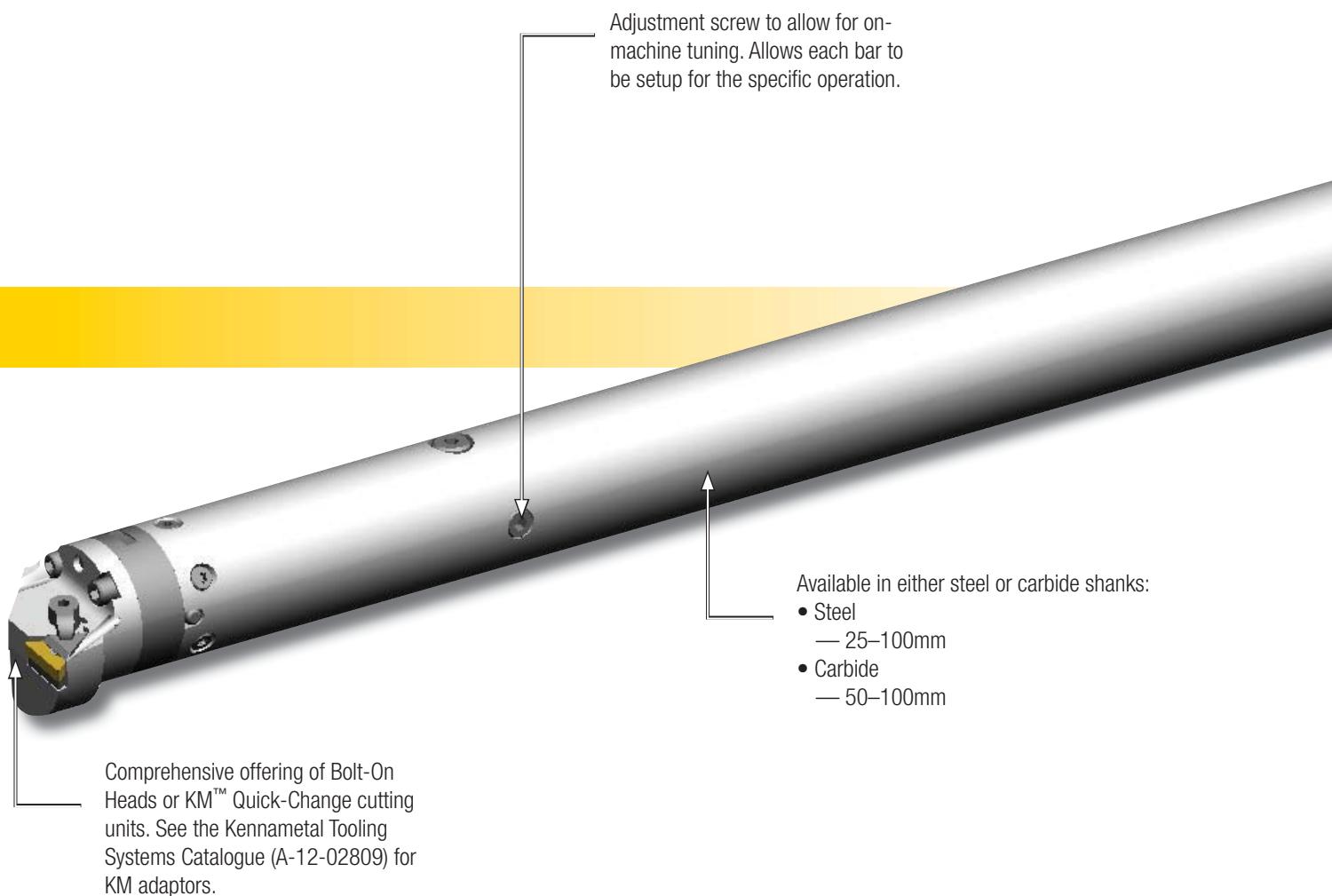
Kennametal offers a portfolio of tunable boring bars to increase productivity and solve chatter and other issues in long-boring operations.

Features, Functions, and Benefits

| Features | Functions | Benefits |
|-----------------------------------|--|---|
| Robust internal clamping package | <ul style="list-style-type: none">• Eliminates chatter and vibration.• Higher metal removal rate.• Larger depths of cut. | <ul style="list-style-type: none">• High surface quality.• Low scrap rate.• Increased productivity.• Reduced noise exposure. |
| Tunable clamping mechanism | Bar can be tuned on the machine with just the turn of a screw. | Optimised damping characteristics for all kinds of machining conditions. |
| KM Quick-Change front end adaptor | <ul style="list-style-type: none">• Ridged clamping system.• Wide selection of KM Quick-Change cutting units. | Flexible system reduces tooling inventory and setup times. |

Kennametal has made several key improvements to our current tunable boring bar portfolio:

- Enhanced standardised tuning process at the manufacturing plant ensures bars are accurately tuned at the maximum overhang.
- Nitriding of steel tunable boring bars to eliminate the effects of chip wash.
- Elimination of flats on tunable boring bars enhances stability and promotes proper toolholding.
- Addition of a small flat on the connection collar enables the use of a centre-height tool.
- Enhanced assembly process.



■ Appearance of the Tunable Boring Bars

- **NEW** All tunable boring bars are tuned at the manufacturing plant and delivered to the customer with the tune specified at the maximum overhang of the bar.
- **NEW** All steel tunable bars undergo a nitriding process to help prevent chip wash damage to the bar and extend the bar's tool life.
- The nitride process of the black oxide steel tunable boring bars gives the shanks a bluish tint. These bars are through-coolant capable and use bolt-on heads or KM™ Quick-Change cutting adaptors. There is a set screw to tune the bar.
- Tunable boring bars with carbide shanks will appear grey in colour. They are through-coolant capable and use KM Quick-Change cutting adaptors. There is a set screw to tune the bar.

■ Application Recommendations

- Choose a boring bar as big as possible, but make sure there is adequate space for the chip evacuation.
- Balance the machining settings to avoid uncontrollable vibrations.
- Keep the L/D ratio as small as possible.
- Bar comes pre-tuned, but can be adjusted by hand.

1 Holding the Bar

- Hold the bar correctly. Kennametal recommends holding the bar at $4 \times D$.



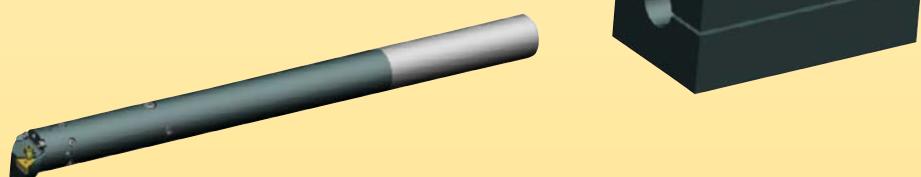
2

Kennametal recommends holding the boring bar in a split-style holder, with a split-style reducer if needed, with an ISO H7 diametral tolerance.

3

NEW: All flats have been removed from steel tunable boring bars.

- Do not clamp the bars with set screws.
- Kennametal cannot guarantee boring bar performance if proper clamping is not used.



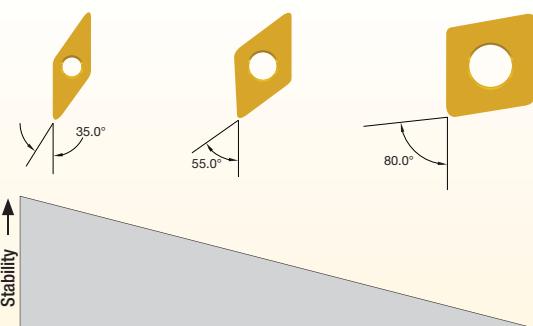
4

Tunable boring bars are designed and pre-tuned at the maximum overhang.

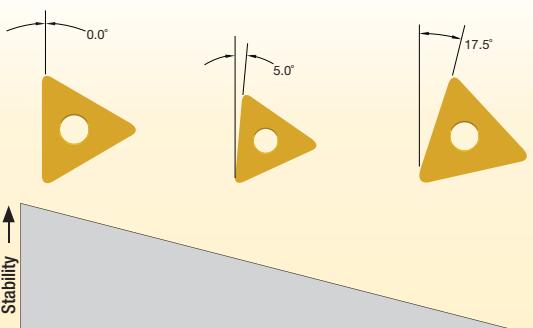
- Steel bars: pre-tuned to $10 \times D$; use as low as $6 \times D$.
- Carbide composite bars: pre-tuned to $15 \times D$; use as low as $12 \times D$.
- Re-tuning may be necessary if the boring bar is not used at its pre-tuned overhang.
- Never clamp or use the boring bar below its minimum overhang.

5 Insert Angle

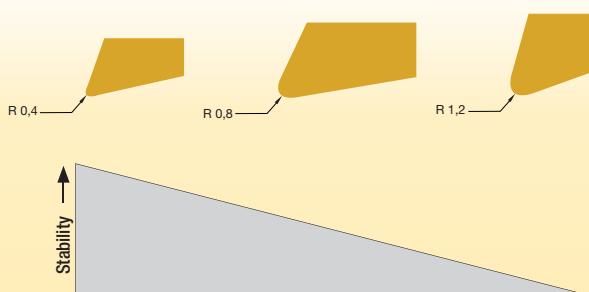
- Smaller point angles produce consistent chip sizes and increase bore clearance for better chip evacuation.
- Larger point angles may cause rubbing due to larger cutting edge, which can result in vibration.

**6 Lead Angle**

- Choose a lead angle as close to 90° as possible for increased stability.

**7 Nose Radius**

- Choose a small nose radius for better stability.
- Depth of cut should be larger than the nose radius.

**8 Insert Geometries**

- Use positive, free-flowing insert geometries and sharp edge preps to reduce cutting forces.
- Use PVD inserts as a first choice because thinner coating keeps edge prep smaller.

9 Centre Cutting Height

- Cutting height tolerances are +/- .005".
- Kennametal recommends using our new centre height alignment tool kit. The kit includes a magnet, a seat, and an angle finder that can be mounted onto a small flat located on the connection collar of the tunable boring bar.

10 Chip Evacuation

- Chip packing and re-cutting can cause unwanted vibration while boring.
- Use coolant to flush out chips and to keep the damping element cool.
- Use insert geometries and cutting parameters that produce small chips.
- The boring bar can be used upside down to improve chip evacuation.

Tuning Recommendations

- Loosen the two locking screws on the bar.
- Turn the adjusting screw clockwise until the screw stops turning freely and the mass is in the locked-down position.
- You are now ready to tune the bar.
- Turn the adjusting screw in the anti-clockwise direction in quarter turn increments to adjust.
- After the adjustment has been completed, tighten the locking screws.

■ Kennametal Tunable Boring Bar Centre Height Alignment Procedure

The following procedure will walk the user through setting up a tunable boring bar on centre without the use of flats on the shank.

Equipment

- Digital angle finder
- Angle finder seat
- Boring bar to be used



Figure 1: Angle finder seat (left) and digital angle finder (right)

Assembly

- Clean any dirt, chips, debris, etc. from the mounting surfaces of the digital angle finder and the corresponding surfaces of the angle finder seat.
- Assemble the digital angle finder onto the angle finder seat, making sure it is flush against the back of the angle finder seat.

Calibration

- Clean an area on the X-axis of the lathe to create a reference surface for calibration.
- Clean any dirt, chips, debris, etc. from the magnet on the bottom of the angle finder seat.
- Place the angle finder assembly onto the X-axis of the lathe.
 - Keep the angle finder assembly parallel to the axis.
 - It is helpful to butt the assembly up against the turret housing to keep it parallel to the X-axis.
- Turn the digital angle finder on by pressing the on/off button.
- Zero the digital angle finder by pressing the zero button.

NOTE: The angle finder is now calibrated to the X-axis of the lathe and will measure angles corresponding to this axis.



Figure 2: X-axis calibration

Boring Bar Alignment

- With the boring bar already placed in the holder and set to the correct overhang, clean any dirt, chips, debris, etc. from the small flat on the collar of the boring bar.
- Place the angle finder assembly onto the boring bar by aligning the small magnet on the bottom of the assembly with the small flat on the collar of the boring bar.
 - Be sure the angle finder assembly is perpendicular to the axis of the boring bar.
 - Be sure the angle finder assembly is oriented in the same direction it was when it was calibrated to the X-axis of the lathe.



Figure 3: Boring bar collar flat

- Rotate the boring bar until the digital angle finder reads zero degrees.



Figure 4: Aligning the boring bar

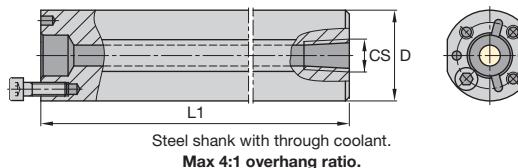
- Tighten the boring bar holder to lock the boring bar position.
 - Be sure the digital angle finder still reads zero after clamping the bar.
- The boring bar should now be on centre.



Figure 5: Boring bar centre height

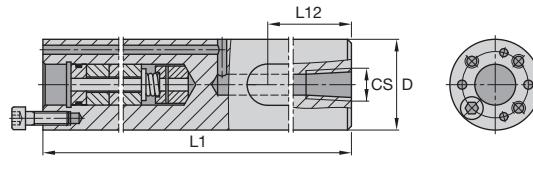
Order the Kennametal Centre Height Alignment Tool Kit

The centre height alignment tool kit is available to order. Use order number 6141867, or catalogue number KIT-BB-AF.



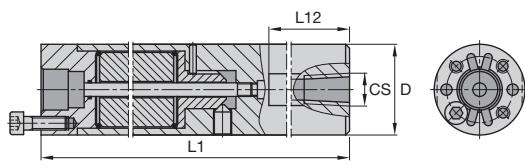
■ BS

| order number | catalogue number | D | L1 | CS | screw 3 required | screw | hex |
|--------------|------------------|----|-----|-------|------------------|-------|------|
| 1098078 | BS32S | 32 | 210 | RP3/8 | MS412 | MS330 | 4 mm |
| 1098079 | BS40T | 40 | 260 | RP3/8 | MS412 | MS330 | 4 mm |
| 1098080 | BS50U | 50 | 310 | RP3/8 | MS337 | MS339 | 5 mm |



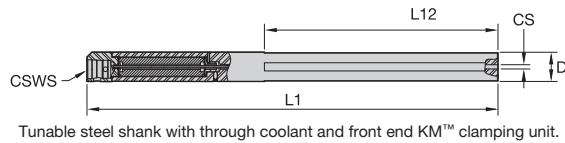
■ BSD

| order number | catalogue number | D | L1 | CS | L12 | L1 min | screw 3 required | screw | hex |
|--------------|------------------|----|-----|-------|-----|--------|------------------|-------|------|
| 1098150 | BSD32U | 32 | 310 | RP3/8 | 200 | 200 | MS330 | MS412 | 4 mm |
| 1098151 | BSD40V | 40 | 360 | RP3/8 | 248 | 228 | MS330 | MS412 | 4 mm |
| 1098152 | BSD50W | 50 | 410 | RP3/8 | 280 | 276 | MS339 | MS337 | 5 mm |



■ D...TTB

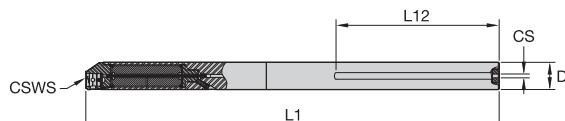
| order number | catalogue number | D | L1 | CS | L12 | L1 min | screw 3 required | screw | hex |
|--------------|------------------|----|-----|-------|-----|--------|------------------|--------|------|
| 1772222 | D25MTTB400 | 25 | 381 | RP1/4 | 203 | 227 | MS1499 | MS319 | 3 mm |
| 1772223 | D32MTTB447 | 32 | 422 | RP3/8 | 267 | 332 | MS325 | MS1130 | 4 mm |
| 1772224 | D40MTTB530 | 40 | 492 | RP3/8 | 305 | 300 | MS326 | MS330 | 4 mm |
| 1772230 | D50MTTB700 | 50 | 670 | RP3/8 | 470 | 309 | MS337 | MS337 | 5 mm |



ISO Turning

■ D...TTB-KM • Metric

| order number | catalogue number | D | L1 | CS | L12 | L1 min | CSWS system size |
|--------------|------------------|-----|------|-----------|-----|--------|------------------|
| 3637636 | D40MTTB560KM40 | 40 | 520 | RP 3/8-19 | 305 | 330 | KM40 |
| 3637637 | D50MTTB737KM40 | 50 | 697 | RP 3/8-19 | 470 | 337 | KM40 |
| 3637638 | D60MTTB1000KM40 | 60 | 976 | RP 3/8-19 | 686 | 396 | KM40 |
| 3642134 | D80MTTB1120KM63 | 80 | 1060 | RP 3/8-19 | 610 | 560 | KM63 |
| 3642135 | D100MTTB1330KM63 | 100 | 1384 | RP 3/8-19 | 622 | 695 | KM63 |



Carbide tunable boring bar with KM™ Quick-Change connection.

■ G-TTB-KM • Metric

| order number | catalogue number | D | L1 | CS | L12 | CSWS system size |
|--------------|------------------|----|------|-----------|-----|------------------|
| 3954298 | G50MTTB1026KM40 | 50 | 986 | RP 3/8-19 | 300 | KM40 |
| 3954300 | G80MTTB1564KM63 | 80 | 1504 | RP 3/8-19 | 480 | KM63 |



Grooving and Cut-Off

Beyond Evolution • Grooving, Turning, and Cut-Off C2–C77

Application Guidelines C76–C77

A4 Groove and Turn C78–C135

Top Notch • Shallow Grooving C136–C179

Application Guidelines C172–C179

➤ Getting started made EASY

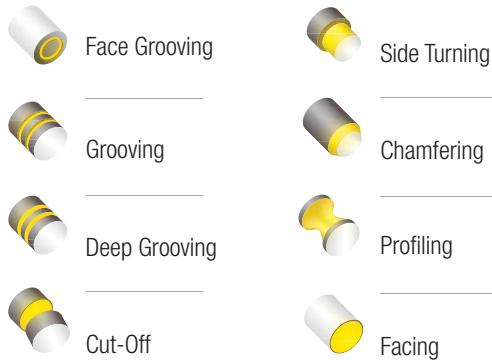
beyond™ EVOLUTION™

Your day made EASY

Choosing the right tooling can be complicated and time-consuming. Built on simplicity, we have engineered a new tool that makes every machine operator's life EASY.

Unwilling to sacrifice performance or applications, Kennametal introduces Beyond™ Evolution™.

Beyond™ Evolution™ is the new single-side grooving and cut-off tool that also performs multi-directional turning.

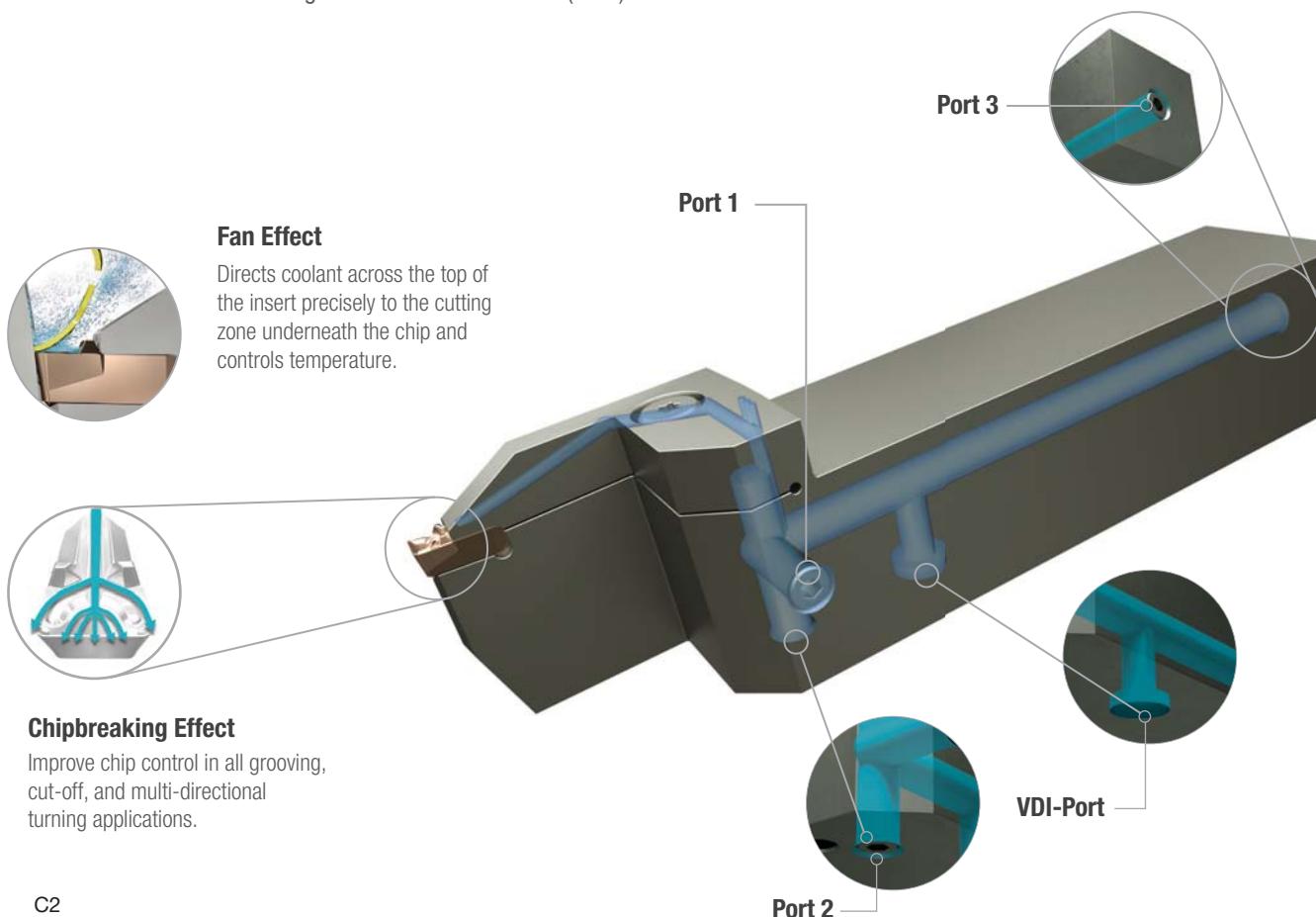


Productivity made EASY

Active Coolant Control

If your coolant delivery is typical to the market, you may be applying more heat to the cutting edge than you think. This reduces tool life and increases cycle time.

With Beyond™ Evolution™, you won't have to change your existing equipment. Whether you are using a high-pressure or low-pressure coolant supply, Beyond™ Evolution™, featuring Active Coolant Control, delivers more tool life and higher Metal Removal Rates (MRR).



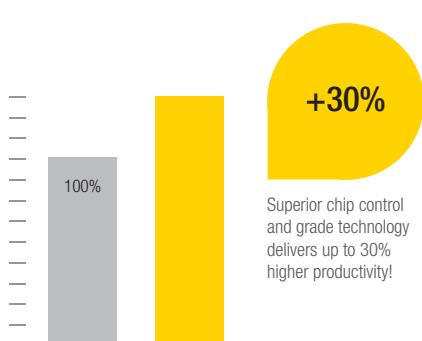
Smooth surface finish made EASY Triple-V Seating

Problem: Traditional single-sided grooving and cut-off systems cannot deliver smooth surface finish due to lack of stability.

Solution: The Beyond™ Evolution™ proprietary new Triple-V Seating feature provides functional stability and minimises vibration.

Three contact surfaces provide unmatched stability:

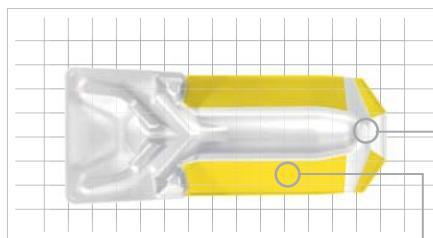
When combined with GUP and CF chipbreakers, Triple-V Seating provides excellent surface finish.



Superior chip control and grade technology delivers up to 30% higher productivity!

Saving money made EASY

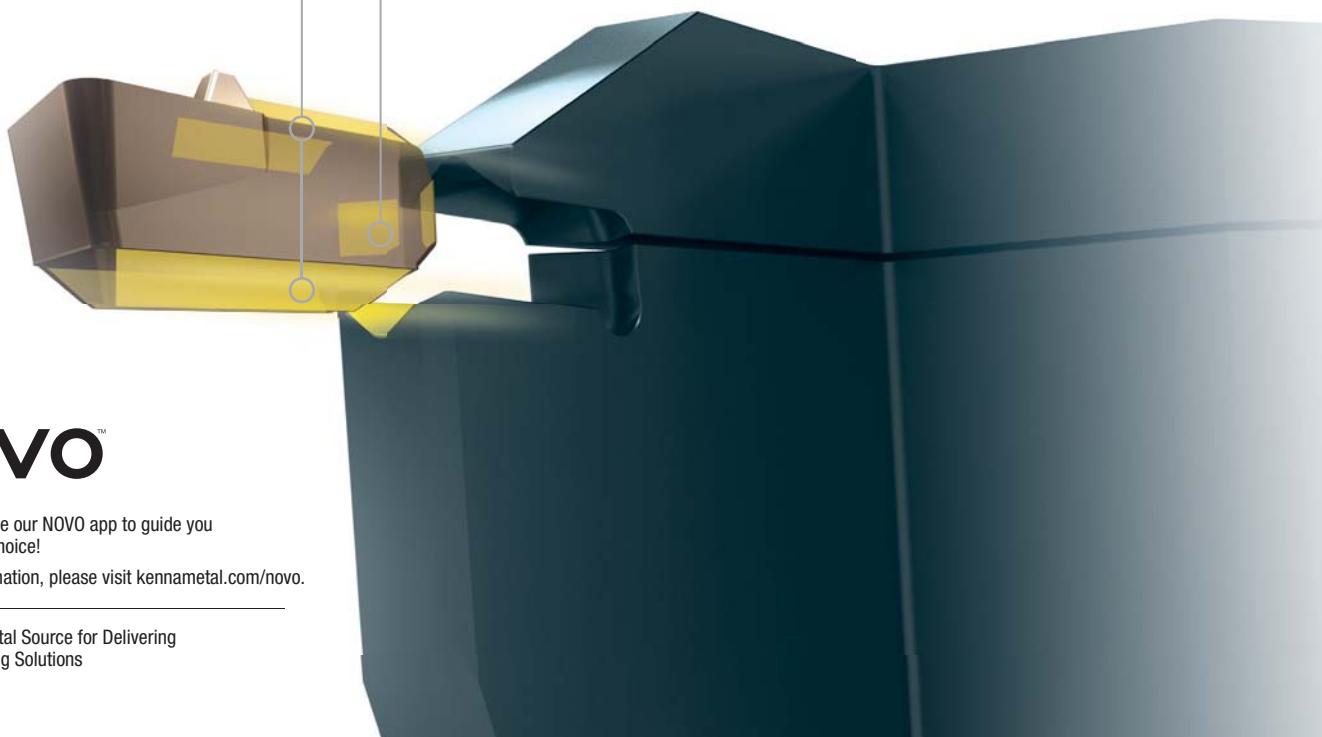
Beyond™ Evolution™, featuring Active Coolant Control, Triple-V Seating, and Beyond™ Drive™ grades with Wear Detection Technology, provides longer tool life, maximum stability, and higher Metal Removal Rates (MRR), resulting in up to 30% higher productivity.



Top and Bottom-V
Precise and secure insert positioning for increased rigidity and dimensional accuracy

V-Back Design

Unsurpassed grooving, cut-off, and multi-directional turning load stability.



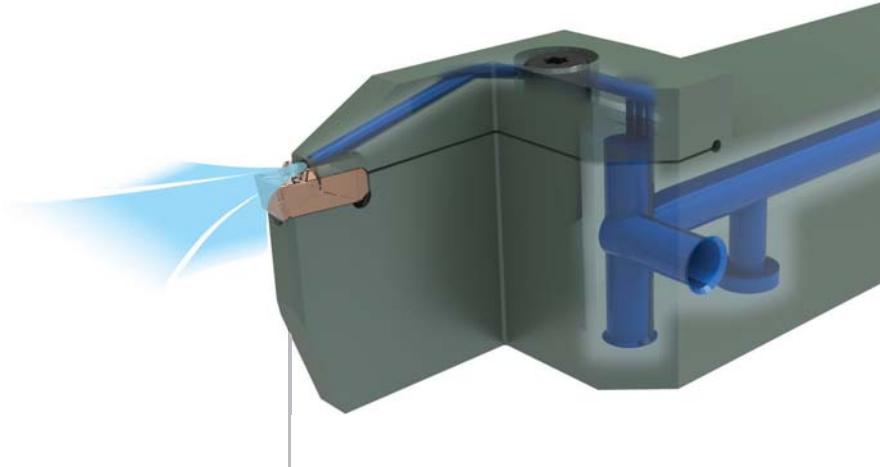
You can also use our NOVO app to guide you to the correct choice!
For more information, please visit kennametal.com/novo.

NOVO: The Digital Source for Delivering Smart Machining Solutions

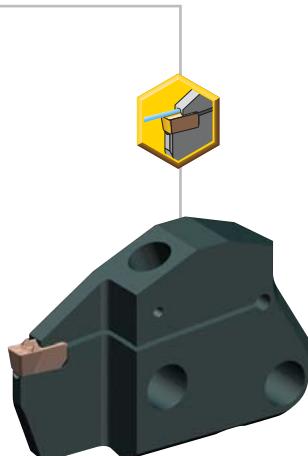
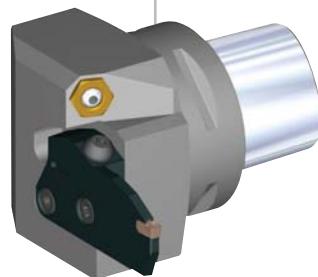
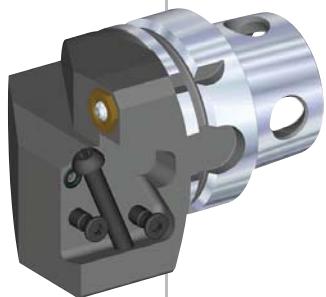
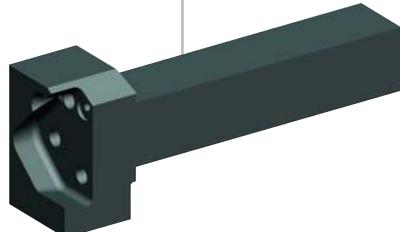
Your day made **EASY** —



Efficient coolant delivery.
Available in seat sizes
3 and higher.

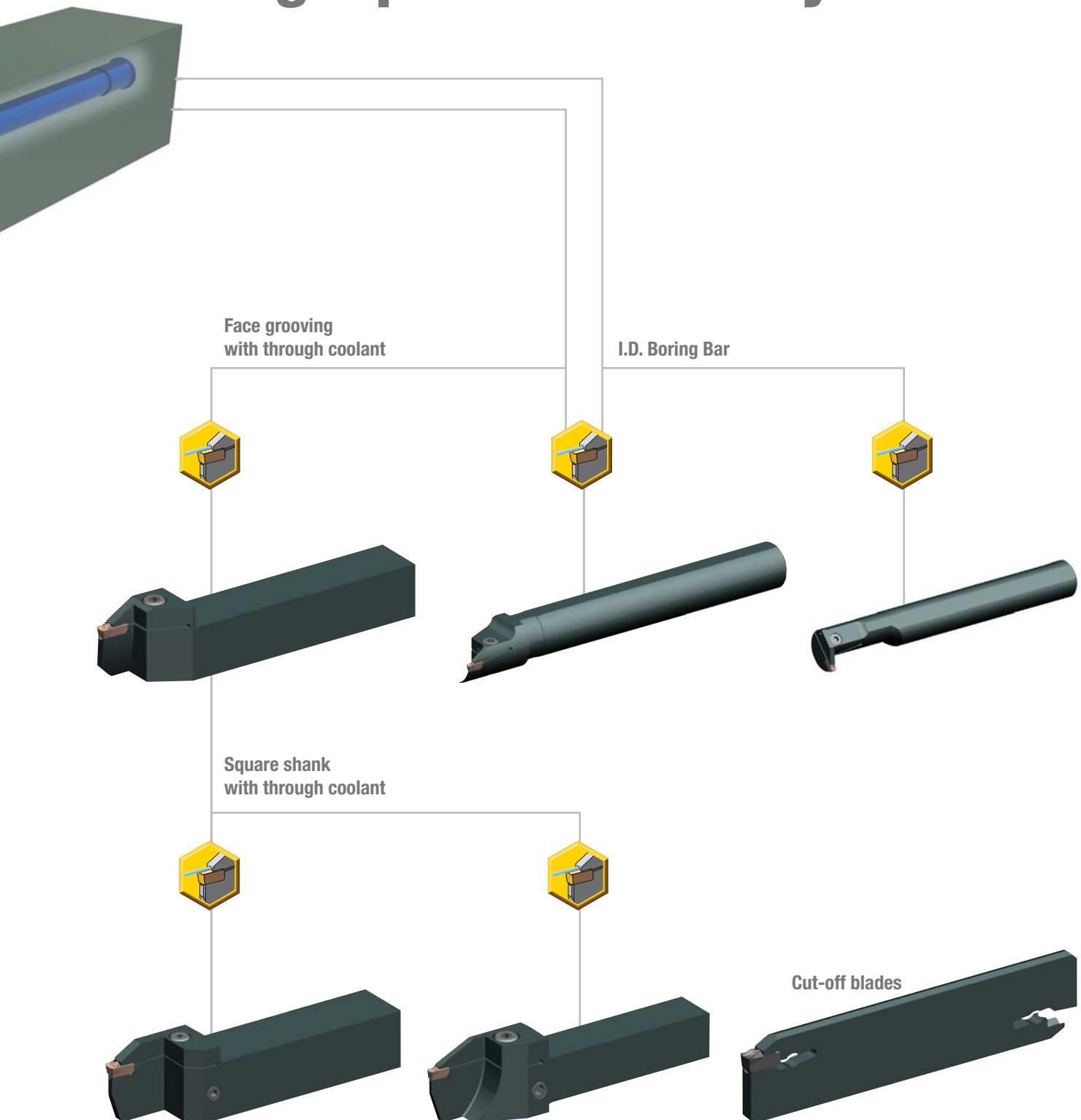


Modular with
through coolant



beyond™ **EVOLUTION™**

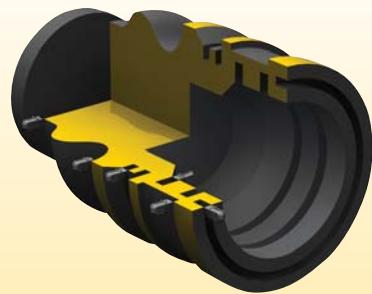
high-performance system.



■ Step 1 • Identify your grooving or cut-off application

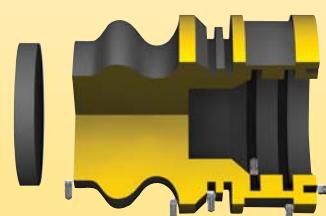
What you need to know:

- Groove depth, width, and profile.
- Material being machined.
- Application to be performed (O.D. and I.D. grooving, turning, face grooving, and cut-off).
- Shank size requirements of the machine.



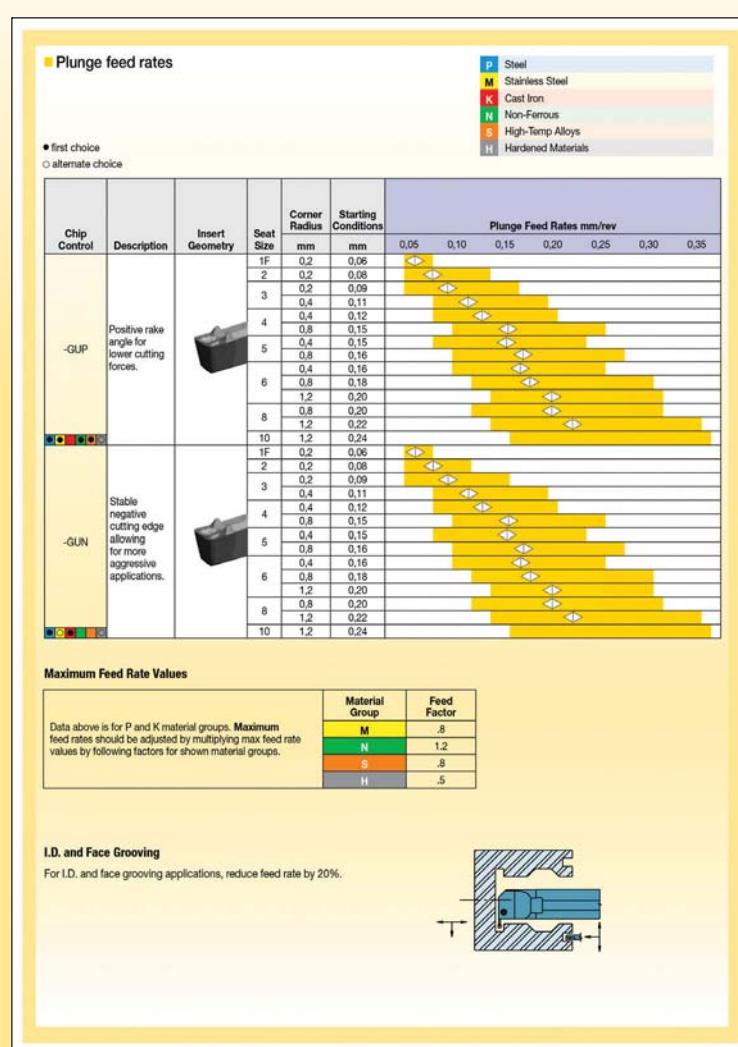
General Recommendation to Select the Insert Size

| for workpiece diameters | insert seat size |
|-------------------------|------------------|
| <25mm | 3 |
| 25–50mm | 4 |
| >50mm | 5–10 |



■ Step 2 • Select chipbreaker style and feed rate

Based on the application and seat size, determine the recommended geometry and starting feed rate.



■ Step 3 • Select the starting speed

Based on material and grade, identify starting speed (vc). First choice is in **bold** type.

- A** Based on material group and grade, identify starting speed (vc).
B First choice starting speed is in **bold**.

| Recommended Starting Speeds [m/min] | | | | | | | | | | | | | | | | |
|-------------------------------------|------|-----|------------|-------|------------|------------|-------|------------|------------|--------|------------|------------|--------|------------|------------|-----------------|
| Material Group | K313 | | | KCU10 | | | KCU25 | | | KCM35B | | | KCP10B | | KCP25B A | |
| P | 0-1 | - | - | 140 | 280 | 350 | 110 | 225 | 270 | 90 | 180 | 213 | 185 | 400 | 450 | 145 290 365 |
| | 2 | - | - | 140 | 200 | 300 | 110 | 160 | 260 | 90 | 130 | 155 | 185 | 270 | 350 | 145 200 305 |
| | 3 | - | - | 140 | 155 | 245 | 110 | 125 | 235 | 90 | 100 | 155 | 170 | 190 | 260 | 140 155 245 |
| | 4 | - | - | 75 | 110 | 170 | 60 | 90 | 160 | 50 | 70 | 110 | 90 | 145 | 200 | 75 110 180 |
| | 5 | - | - | 120 | 200 | 260 | 100 | 160 | 210 | 80 | 130 | 165 | 150 | 220 | 305 | 120 200 270 |
| | 6 | - | - | 110 | 150 | 230 | 85 | 120 | 185 | 70 | 100 | 145 | 120 | 180 | 275 | 110 150 230 |
| M | 1 | 60 | 90 | 120 | 140 | 210 | 280 | 90 | 170 | 245 | 75 | 120 | 135 | - | - | - |
| | 2 | 45 | 75 | 110 | 120 | 200 | 245 | 90 | 150 | 245 | 75 | 110 | 135 | - | B | - |
| | 3 | 35 | 65 | 100 | 120 | 180 | 245 | 90 | 140 | 210 | 75 | 90 | 135 | - | - | - |
| K | 1 | 30 | 75 | 120 | 120 | 180 | 245 | 100 | 145 | 225 | - | - | - | 170 | 245 | 440 140 200 360 |
| | 2 | 25 | 70 | 110 | 90 | 150 | 240 | 70 | 120 | 170 | - | - | - | 120 | 195 | 340 100 160 280 |
| | 3 | 20 | 60 | 90 | 60 | 110 | 150 | 50 | 85 | 120 | - | - | - | 120 | 170 | 270 100 140 220 |
| 1-2 | | 150 | 370 | 610 | 150 | 550 | 975 | 120 | 440 | 780 | - | - | - | - | - | - |

■ Step 4 • Select toolholder based on application

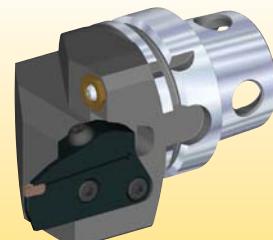
Choose the high-performance holder based on your specific grooving or cut-off application, with the corresponding seat size.

| Style | Application |
|-------|---|
| | <p>Boring Bar</p> <ul style="list-style-type: none"> • For use in I.D. grooving applications. |
| | <p>Cut-Off Blade</p> <ul style="list-style-type: none"> • Allows user to vary the depth of cut. |
| | <p>Toolholder – Integral</p> <ul style="list-style-type: none"> • Offers the most stability over other styles. |
| | <p>Toolholder – Modular</p> <ul style="list-style-type: none"> • Interchangeable blades for versatility. |
| | <p>KM™ – Modular KM4X™ – Modular</p> <ul style="list-style-type: none"> • Best-in-class KM™ Quick-Change platform. |
| | <p>PSC – Modular</p> <ul style="list-style-type: none"> • The modular system in the PSC Quick-Change platform. |

■ Step 5 • Select the insert and holder from catalogue page

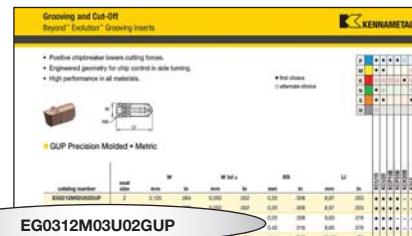
Congratulations!

You have successfully maximised your productivity by selecting the best insert geometry, grade, and cutting specifications for your application!



How Do Catalogue Numbers Work?

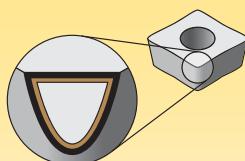
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



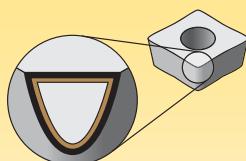
| E | C | 030 | M | 03 | N | 00 | CF | 02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|--------------------|---|--|-----------|---|---|---|---------------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|--|-----------|----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|--|---------------|----|------|----|-----|------|----|-----|------|----|-----|------|
| Family Name | Insert Type | Cutting Edge Width | Unit | Seat Size | Hand of Insert | Approach Angle | Chipbreaker | Corner Radius | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Beyond™ Evolution™ | C = Cut-Off | | M = Metric I = Inch | | N = Neutral L = Left hand R = Right hand | 00 = Neutral 06 = 6° | CL = Cut-Off Low Feed CF = Cut-Off Fine CM = Cut-Off Medium CR = Cut-Off Rough | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>Cutting Edge Width</th><th>mm</th><th>inch</th></tr> </thead> <tbody> <tr><td>014</td><td>1,4</td><td>.055</td></tr> <tr><td>020</td><td>2,0</td><td>.079</td></tr> <tr><td>030</td><td>3,0</td><td>.118</td></tr> <tr><td>040</td><td>4,0</td><td>.157</td></tr> <tr><td>050</td><td>5,0</td><td>.197</td></tr> <tr><td>060</td><td>6,0</td><td>.236</td></tr> <tr><td>070</td><td>7,0</td><td>.279</td></tr> <tr><td>080</td><td>8,0</td><td>.315</td></tr> </tbody> </table> | Cutting Edge Width | mm | inch | 014 | 1,4 | .055 | 020 | 2,0 | .079 | 030 | 3,0 | .118 | 040 | 4,0 | .157 | 050 | 5,0 | .197 | 060 | 6,0 | .236 | 070 | 7,0 | .279 | 080 | 8,0 | .315 | <table border="1"> <thead> <tr> <th>Seat Size</th><th>mm</th><th>inch</th></tr> </thead> <tbody> <tr><td>1B</td><td>1,4</td><td>.055</td></tr> <tr><td>1F</td><td>2,0</td><td>.079</td></tr> <tr><td>02</td><td>3,0</td><td>.118</td></tr> <tr><td>03</td><td>4,0</td><td>.157</td></tr> <tr><td>04</td><td>5,0</td><td>.197</td></tr> <tr><td>05</td><td>6,0</td><td>.236</td></tr> <tr><td>06</td><td>7,0</td><td>.279</td></tr> <tr><td>08</td><td>8,0</td><td>.315</td></tr> </tbody> </table> | Seat Size | mm | inch | 1B | 1,4 | .055 | 1F | 2,0 | .079 | 02 | 3,0 | .118 | 03 | 4,0 | .157 | 04 | 5,0 | .197 | 05 | 6,0 | .236 | 06 | 7,0 | .279 | 08 | 8,0 | .315 | <table border="1"> <thead> <tr> <th>Corner Radius</th><th>mm</th><th>inch</th></tr> </thead> <tbody> <tr><td>01</td><td>0,1</td><td>.004</td></tr> <tr><td>02</td><td>0,2</td><td>.008</td></tr> <tr><td>04</td><td>0,4</td><td>.016</td></tr> </tbody> </table> | Corner Radius | mm | inch | 01 | 0,1 | .004 | 02 | 0,2 | .008 | 04 | 0,4 | .016 |
| Cutting Edge Width | mm | inch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 014 | 1,4 | .055 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 020 | 2,0 | .079 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 030 | 3,0 | .118 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 040 | 4,0 | .157 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 050 | 5,0 | .197 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 060 | 6,0 | .236 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 070 | 7,0 | .279 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 080 | 8,0 | .315 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seat Size | mm | inch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1B | 1,4 | .055 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1F | 2,0 | .079 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | 3,0 | .118 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | 4,0 | .157 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | 5,0 | .197 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | 6,0 | .236 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | 7,0 | .279 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08 | 8,0 | .315 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Corner Radius | mm | inch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01 | 0,1 | .004 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | 0,2 | .008 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | 0,4 | .016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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 |

| Coating | Grade Description | wear resistance → toughness | | | | | | | | | |
|---------|---|-----------------------------|----|----|----|----|----|----|----|----|--|
| | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | |
| K313 | Composition: A hard, low binder content, unalloyed WC/Co fine-grain grade. Application: Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temp alloys. Superior thermal deformation and depth-of-cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service. | | | | | | | | | | |
| KCU10 | Composition: An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. Application: The KCU10™ grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys with improved edge toughness and higher cutting speed/feed capability. | | | | | | | | | | |
| KCU25 | Composition: An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. Application: The KCU25™ grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cuts and high feed rates. | | | | | | | | | | |



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

| Coating | Grade Description | Wear Resistance vs. Toughness Grid | | | | | | | | |
|---------|---|------------------------------------|----|----|----|----|----|----|----|----|
| | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| KCP10B | Composition: A specially engineered wear-resistant carbide grade with a newly designed multilayer MTCVD-TiCN-Al ₂ O ₃ -TiOCN coating with superior interlayer adhesion. Application: An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes. | P | | | | | | | | |
| | | | | | | | | | | |
| KCP25B | Composition: A tough cobalt-enriched carbide grade with a newly designed multilayer MTCVD-TiCN-Al ₂ O ₃ -TiOCN coating with superior interlayer adhesion. Application: Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimises microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes. | P | | | | | | | | |
| | | | | | | | | | | |
| KCK20B | Composition: A multilayered coating with thick MTCVD TiCN-Al ₂ O ₃ -TiOCN layers applied over a carbide substrate specifically engineered for cast irons. Application: Delivers consistent performance in high-speed machining of grey and ductile irons. The substrate design permits the insert to stay in the cut for a long time at high speeds with minimum deformation. The thick CVD coating and post-coat treatment provide superior wear resistance ensuring long and consistent tool life. Can be applied both in straight and lightly interrupted cuts. | P | | | | | | | | |
| | | | | | | | | | | |
| KCM35B | Composition: A multilayer TiN-MT-TiCN-Al ₂ O ₃ -TiOCN CVD coating over a super-tough substrate. Application: KCM35B is an excellent general purpose to roughing grade for machining stainless steels and roughing steels in turning and cut-off applications. The substrate provides improved toughness while the coating layers offer improved abrasion resistance and dependability at high cutting temperatures, along with wear identification. The polished surface improves edge toughness and provides a smooth outer surface to reduce forces and resist workpiece build-up on the cutting edge even at low cutting speeds. The grade is available in multiple sizes and geometries appropriate for increased feeds and large depths of cut. | P | | | | | | | | |
| | | | | | | | | | | |

CVD-Coated Carbide Grades

Select the geometry

- first choice
- alternate choice

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

| Chip Control | Description | Insert Geometry | Seat Size | Corner Radius | Starting Conditions | Plunge Feed Rates inch/rev (mm/rev) | | | | | |
|--------------|---|---|-----------|---------------|---------------------|-------------------------------------|-----------------|-----------------|-------------------|-----------------|-----------------|
| | | | | | | .0020 in (mm) | .0040 (0,10) | .0060 (0,15) | .0080 (0,20) ← | .0100 (0,25) | .0120 (0,30) |
| -GUP | Positive rake angle for lower cutting forces. |  | 1F | .008 (0,2) | .0024 (0,06) | | | | | | |
| | | | 2 | .008 (0,2) | .0031 (0,08) | | | | | | |
| | | | 3 | .008 (0,2) | .0035 (0,09) | | | | | | |
| | | | 4 | .016 (0,4) | .0043 (0,11) | | | | | | |
| | | | 4 | .016 (0,4) | .0047 (0,12) | | | | | | |
| | | | | .031 (0,8) | .0059 (0,15) | | | | | | |

Pictorial View of Insert

Recommended Starting Feed Rate

Corner Radius

Plunge Feed Rates

Recommended Feed Rate Range

Seat Size

Primary Workpiece Material Group

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

- first choice
- alternate choice

Chip Control Geometry Designation

Maximum Feed Rate Values

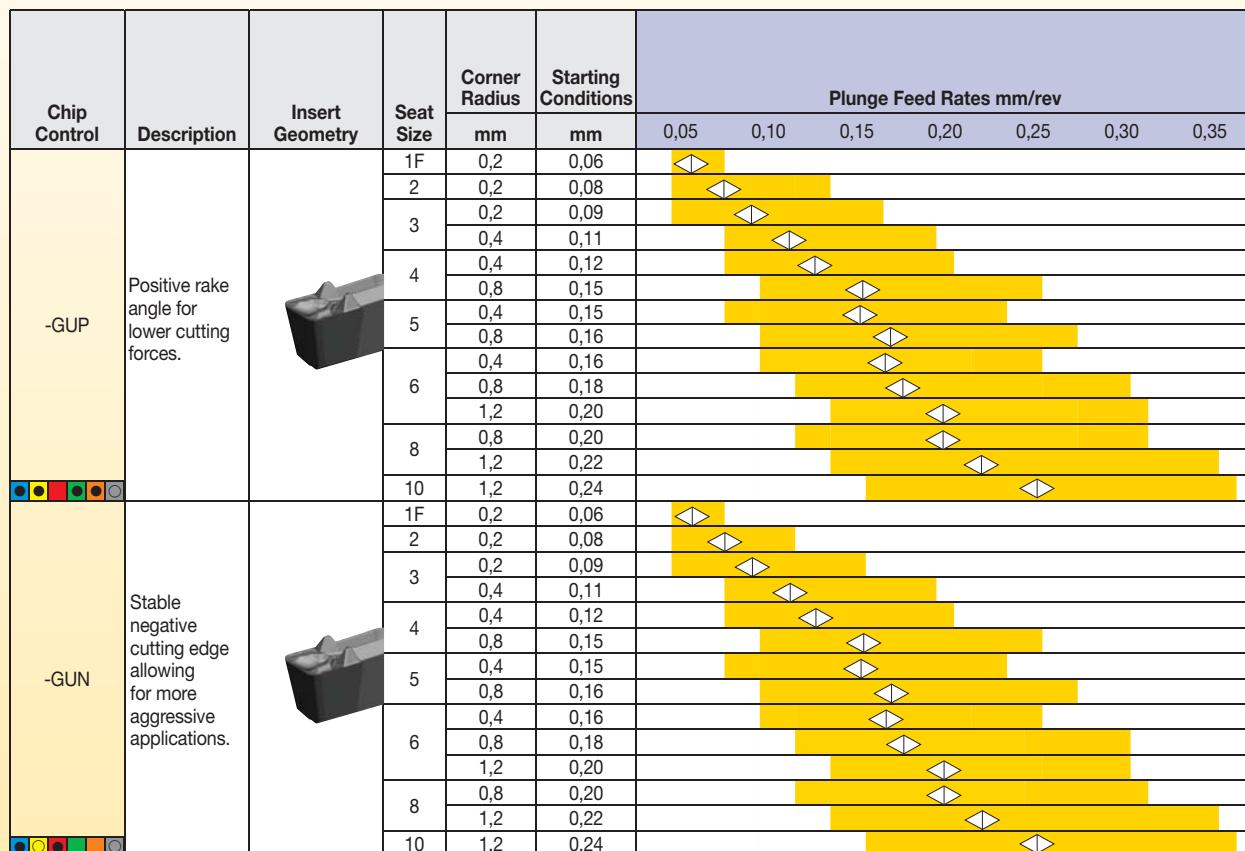
Data above is for P and K material groups. Maximum feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

| Material Group | Feed Factor |
|----------------|-------------|
| M | .8 |
| N | 1.2 |
| S | .8 |
| H | .5 |

Plunge feed rates

- first choice
- alternate choice

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



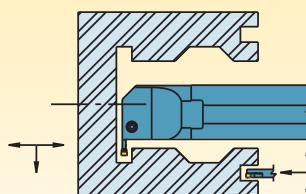
Maximum Feed Rate Values

Data above is for P and K material groups. Maximum feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

| Material Group | Feed Factor |
|----------------|-------------|
| M | .8 |
| N | 1.2 |
| S | .8 |
| H | .5 |

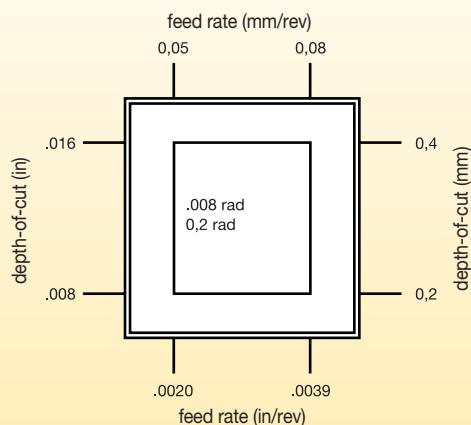
I.D. and Face Grooving

For I.D. and face grooving applications, reduce feed rate by 20%.

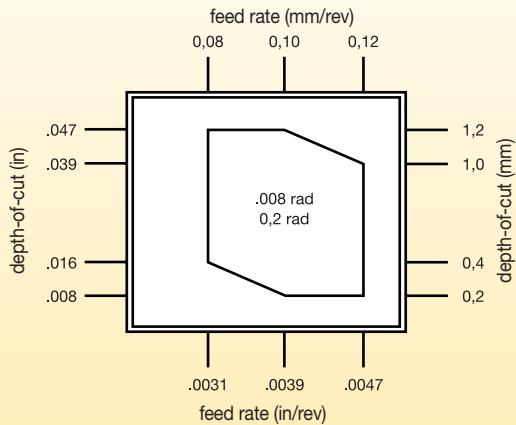


■ Turn and profile feed rates

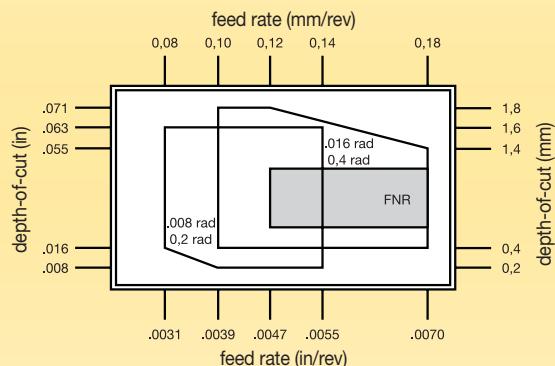
Seat Size 1F



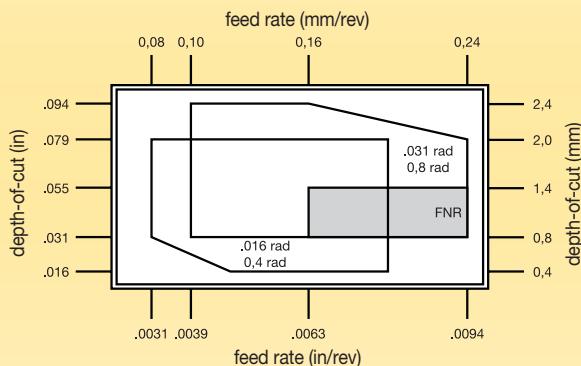
Seat Size 2



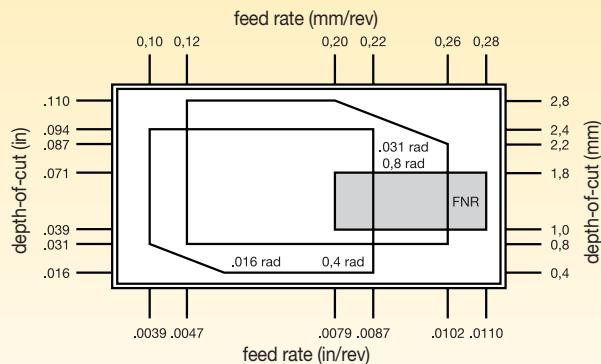
Seat Size 3



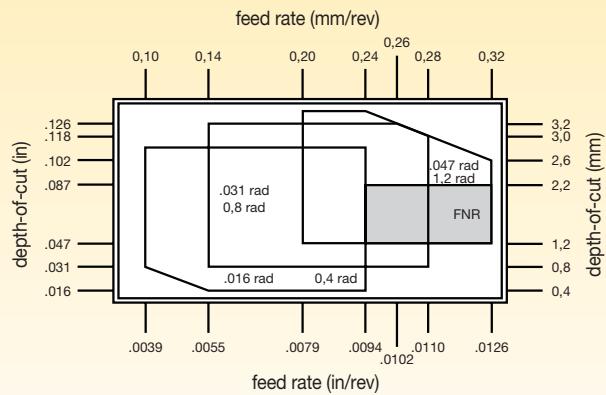
Seat Size 4



Seat Size 5



Seat Size 6

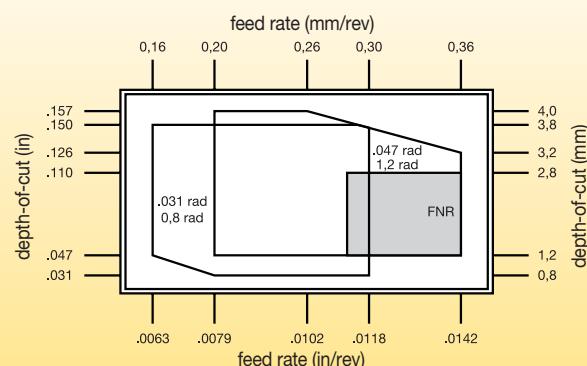


* FNR = Full Nose Radius

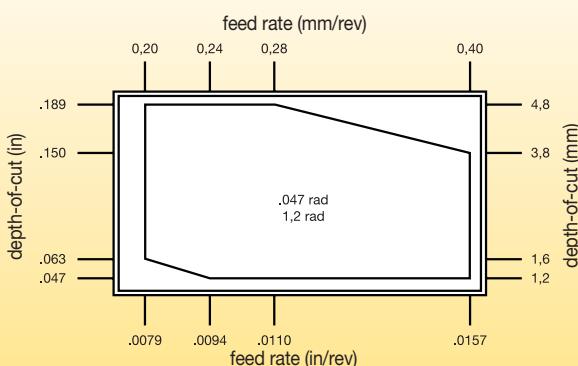
(continued)

(Turn and profile feed rates – continued)

Seat Size 8



Seat Size 10



Cut-Off Feed Rates

Plunge feed rates

- first choice
- alternate choice

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

| Geometry | Description | Insert Geometry | Starting Conditions | Cut-Off Feed Rates mm/rev | | | | | | | | |
|----------|--|-----------------|---------------------|---------------------------|----|------|------|------|------|------|------|------|
| | | | | Seat Size | mm | 0,05 | 0,10 | 0,15 | 0,20 | 0,25 | 0,30 | 0,35 | 0,40 |
| -CL | Aggressive geometry for hard to break chips. | | 1B | 0,06 | | | | | | | | |
| | | | 2 | 0,07 | | | | | | | | |
| | | | 3 | 0,08 | | | | | | | | |
| | | | 4 | 0,09 | | | | | | | | |
| -CF | Positive geometry for reduced cutting forces. | | 1B | 0,06 | | | | | | | | |
| | | | 2 | 0,07 | | | | | | | | |
| | | | 3 | 0,09 | | | | | | | | |
| | | | 4 | 0,11 | | | | | | | | |
| | | | 5 | 0,13 | | | | | | | | |
| -CM | Stable cutting edge for aggressive feed rates. Primarily in cast iron. | | 1B | 0,06 | | | | | | | | |
| | | | 2 | 0,07 | | | | | | | | |
| | | | 3 | 0,09 | | | | | | | | |
| | | | 4 | 0,11 | | | | | | | | |
| | | | 5 | 0,14 | | | | | | | | |
| | | | 6 | 0,16 | | | | | | | | |
| | | | 8 | 0,14 | | | | | | | | |
| | | | | | | | | | | | | |
| -CR | Most stable cutting edge for steel. | | 2 | 0,10 | | | | | | | | |
| | | | 3 | 0,14 | | | | | | | | |
| | | | 4 | 0,16 | | | | | | | | |
| | | | 5 | 0,19 | | | | | | | | |
| | | | 6 | 0,21 | | | | | | | | |
| | | | 8 | 0,23 | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

NOTE: For cut-off inserts with a lead angle, maximum feed rate should be reduced by up to 40%.

Maximum Feed Rate Values

| Data above is for P and K material groups. Maximum feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups. | Material Group | Feed Factor |
|--|----------------|-------------|
| | M | .8 |
| | N | 1.2 |
| | S | .8 |
| | H | .5 |

■ Recommended Starting Speeds [m/min]

| Material Group | | K313 | | | KCU10 | | | KCU25 | | | KCM35B | | | KCP10B | | | KCP25B | | | KCK20B | | | |
|----------------|-----|------|------------|-----|-------|------------|-----|-------|------------|-----|--------|------------|-----|--------|------------|-----|--------|------------|-----|--------|------------|-----|---|
| P | 0-1 | - | - | - | 140 | 280 | 350 | 110 | 225 | 270 | 90 | 180 | 213 | 185 | 400 | 450 | 145 | 290 | 365 | 200 | 440 | 490 | |
| | 2 | - | - | - | 140 | 200 | 300 | 110 | 160 | 260 | 90 | 130 | 155 | 185 | 270 | 350 | 145 | 200 | 305 | 200 | 300 | 380 | |
| | 3 | - | - | - | 140 | 155 | 245 | 110 | 125 | 235 | 90 | 100 | 155 | 170 | 190 | 260 | 140 | 155 | 245 | 600 | 200 | 280 | |
| | 4 | - | - | - | 75 | 110 | 170 | 60 | 90 | 160 | 50 | 70 | 110 | 90 | 145 | 200 | 75 | 110 | 180 | 100 | 160 | 220 | |
| | 5 | - | - | - | 120 | 200 | 260 | 100 | 160 | 210 | 80 | 130 | 165 | 150 | 220 | 305 | 120 | 200 | 270 | 165 | 240 | 330 | |
| | 6 | - | - | - | 110 | 150 | 230 | 85 | 120 | 185 | 70 | 100 | 145 | 120 | 180 | 275 | 110 | 150 | 230 | 130 | 190 | 300 | |
| M | 1 | 60 | 90 | 120 | 140 | 210 | 280 | 90 | 170 | 245 | 75 | 120 | 135 | - | - | - | - | - | - | - | - | - | |
| | 2 | 45 | 75 | 110 | 120 | 200 | 245 | 90 | 150 | 245 | 75 | 110 | 135 | - | - | - | - | - | - | - | - | - | |
| | 3 | 35 | 65 | 100 | 120 | 180 | 245 | 90 | 140 | 210 | 75 | 90 | 135 | - | - | - | - | - | - | - | - | - | |
| K | 1 | 30 | 75 | 120 | 120 | 180 | 245 | 100 | 145 | 225 | - | - | - | 170 | 245 | 440 | 140 | 200 | 360 | 210 | 305 | 550 | |
| | 2 | 25 | 70 | 110 | 90 | 150 | 240 | 70 | 120 | 170 | - | - | - | 120 | 195 | 340 | 100 | 160 | 280 | 150 | 245 | 430 | |
| | 3 | 20 | 60 | 90 | 60 | 110 | 150 | 50 | 85 | 120 | - | - | - | 120 | 170 | 270 | 100 | 140 | 220 | 150 | 210 | 335 | |
| N | 1-2 | 150 | 370 | 610 | 150 | 550 | 975 | 120 | 440 | 780 | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 4 | 120 | 275 | 430 | 120 | 365 | 700 | 100 | 290 | 490 | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 5 | 45 | 90 | 150 | 90 | 170 | 245 | 70 | 135 | 195 | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 6 | 40 | 75 | 150 | 120 | 210 | 305 | 100 | 170 | 245 | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 7 | 8 | 30 | 75 | 15 | 55 | 135 | 8 | 40 | 60 | 8 | 35 | 60 | - | - | - | - | - | - | - | - | - | - |
| S | 2 | 8 | 35 | 75 | 15 | 60 | 135 | 8 | 30 | 75 | 8 | 30 | 60 | - | - | - | - | - | - | - | - | - | - |
| | 3 | 8 | 40 | 75 | 15 | 70 | 150 | 15 | 40 | 75 | 15 | 35 | 60 | - | - | - | - | - | - | - | - | - | - |
| | 4 | 8 | 45 | 75 | 15 | 70 | 170 | 8 | 50 | 110 | 15 | 45 | 90 | - | - | - | - | - | - | - | - | - | - |
| | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| H | 1 | - | - | - | 30 | 45 | 60 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 2 | - | - | - | 15 | 30 | 45 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

NOTE: FIRST choice starting speeds are in **bold** type.

As the average chip thickness increases, the speed should be decreased.

Mobile Apps

The Kennametal mobile app provides easy access to product information and calculators on both iPhone® and Android™ devices. We've highlighted a few of the key features...

There's an app for that.

SPEEDS & FEEDS

View speeds and feeds information for metalworking products.

PRODUCT AVAILABILITY

Check global availability of products. View available quantities by providing your Konnect login credentials.

CALCULATORS

Utilise our machining calculators for milling and drilling applications.



➤ By just scanning the bar code on the insert packet, you can find the most productive cutting conditions for tool life, process time, and chip control.

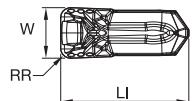
NOTE: The app is currently only available in the English-language version. We have plans to translate the app in different languages with future releases.



- Positive chipbreaker lowers cutting forces.
- Engineered geometry for chip control in side turning.
- High performance in all materials.

● first choice
 ○ alternate choice

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



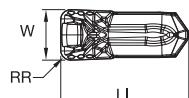
■ GUP Precision Moulded • Metric

| catalogue number | seat size | W | W tol ± | RR | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|--------|---------|------|-------|-------|-------|--------|--------|--------|--------|------|
| EG0212M02U02GUP | 2 | 2,125 | 0,050 | 0,20 | 8,97 | ● | ● | ● | ● | ● | ● | ● |
| EG0251M02U02GUP | 2 | 2,511 | 0,050 | 0,20 | 8,97 | ● | ● | ● | ● | ● | ● | ● |
| EG0312M03U02GUP | 3 | 3,125 | 0,075 | 0,20 | 9,60 | ● | ● | ● | - | - | - | - |
| EG0312M03U04GUP | 3 | 3,125 | 0,075 | 0,40 | 9,60 | ● | ● | ● | ● | ● | ● | ● |
| EG0412M04U04GUP | 4 | 4,125 | 0,075 | 0,40 | 10,19 | ● | ● | ● | ● | ● | ● | ● |
| EG0412M04U08GUP | 4 | 4,125 | 0,075 | 0,80 | 10,19 | ● | ● | ● | ● | ● | ● | ● |
| EG0512M05U04GUP | 5 | 5,125 | 0,075 | 0,40 | 12,25 | ● | ● | ● | ● | ● | ● | ● |
| EG0512M05U08GUP | 5 | 5,125 | 0,075 | 0,80 | 12,25 | ● | ● | ● | ● | ● | ● | ● |
| EG0612M06U04GUP | 6 | 6,125 | 0,075 | 0,40 | 14,60 | ● | ● | ● | ● | ● | ● | ● |
| EG0612M06U08GUP | 6 | 6,125 | 0,075 | 0,80 | 14,60 | ● | ● | ● | ● | ● | ● | ● |
| EG0712M06U08GUP | 6 | 7,125 | 0,075 | 0,80 | 14,60 | ● | ● | ● | ● | ● | ● | ● |
| EG0812M08U08GUP | 8 | 8,125 | 0,075 | 0,80 | 17,47 | ● | ● | ● | ● | ● | ● | ● |
| EG0812M08U12GUP | 8 | 8,125 | 0,075 | 1,18 | 17,45 | ● | ● | ● | ● | ● | ● | ● |
| EG1012M10U12GUP | 10 | 10,125 | 0,075 | 1,20 | 20,80 | ● | ● | ● | ● | ● | ● | ● |

- Positive chipbreaker lowers cutting forces.
- Engineered geometry for chip control in side turning.
- High performance in all materials.
- More precise widths and better repeatability.

● first choice
○ alternate choice

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



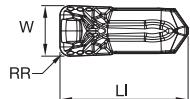
■ GUP Precision Ground • Metric

| catalogue number | seat size | W | W tol ± | RR | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|--------|---------|------|-------|-------|-------|--------|--------|--------|--------|------|
| EG0200M02P02GUP | 2 | 2,000 | 0,025 | 0,20 | 8,80 | ● | ● | - | - | - | - | ● |
| EG0300M03P02GUP | 3 | 3,000 | 0,025 | 0,20 | 9,40 | ● | ● | - | - | - | - | ● |
| EG0300M03P04GUP | 3 | 3,000 | 0,025 | 0,40 | 9,60 | ● | ● | - | - | - | - | ● |
| EG0400M04P04GUP | 4 | 4,000 | 0,025 | 0,40 | 10,10 | ● | ● | - | - | - | - | ● |
| EG0400M04P08GUP | 4 | 4,000 | 0,025 | 0,80 | 10,10 | ● | ● | - | - | - | - | ● |
| EG0500M05P04GUP | 5 | 5,000 | 0,025 | 0,40 | 12,20 | ● | ● | - | - | - | - | ● |
| EG0500M05P08GUP | 5 | 5,000 | 0,025 | 0,80 | 12,20 | ● | ● | - | - | - | - | ● |
| EG0600M06P04GUP | 6 | 6,000 | 0,025 | 0,40 | 14,50 | ● | ● | - | - | - | - | ● |
| EG0600M06P08GUP | 6 | 6,000 | 0,025 | 0,80 | 14,50 | ● | ● | - | - | - | - | ● |
| EG0700M06P08GUP | 6 | 7,000 | 0,025 | 0,80 | 14,50 | ● | ● | - | - | - | - | ● |
| EG0800M08P08GUP | 8 | 8,000 | 0,025 | 0,80 | 17,40 | ● | ● | - | - | - | - | ● |
| EG0800M08P12GUP | 8 | 8,000 | 0,025 | 1,20 | 17,40 | ● | ● | - | - | - | - | ● |
| EG1000M10P12GUP | 10 | 10,000 | 0,025 | 1,20 | 20,70 | ● | ● | - | - | - | - | ● |

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- Engineered geometry for chip control in side turning.
- High performance in all materials.

● first choice
○ alternate choice

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



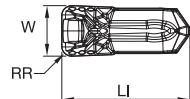
■ GUP Precision Moulded • Inch

| catalogue number | seat size | W | W tol ± | RR | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|------|-------|-------|-------|--------|--------|--------|--------|------|
| EG130I03U05GUP | 3 | 3,301 | 0,075 | 0,20 | 9,60 | ● | ● | ● | ● | - | - | - |
| EG130I03U1GUP | 3 | 3,301 | 0,075 | 0,40 | 9,60 | ● | ● | ● | ● | - | - | - |
| EG192I04U1GUP | 4 | 4,877 | 0,075 | 0,40 | 10,19 | ● | ● | ● | ● | - | - | - |
| EG192I04U2GUP | 4 | 4,877 | 0,075 | 0,79 | 10,19 | ● | ● | ● | ● | - | - | - |
| EG255I06U1GUP | 6 | 6,478 | 0,075 | 0,40 | 14,58 | ● | ● | ● | ● | - | - | - |
| EG255I06U2GUP | 6 | 6,478 | 0,075 | 0,80 | 14,58 | ● | ● | ● | ● | - | - | - |
| EG317I08U3GUP | 8 | 8,051 | 0,075 | 1,19 | 17,46 | ● | ● | ● | ● | - | - | - |
| EG380I10U3GUP | 10 | 9,651 | 0,075 | 1,19 | 20,80 | ● | ● | ● | ● | - | - | - |

- Positive chipbreaker lowers cutting forces.
- Engineered geometry for chip control in side turning.
- High performance in all materials.
- More precise widths and better repeatability.

● first choice
○ alternate choice

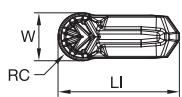
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|--|--|--|--|---|---|---|
| P | ● | ● | ● | ● | ○ | | | | | | | | |
| M | ● | ● | | | | | | | | | ● | ○ | |
| K | ○ | ○ | ○ | ○ | ○ | ● | | | | | ○ | | |
| N | ● | ○ | | | | | | | | | | ● | |
| S | ● | ● | | | | | | | | | | | ● |
| H | ○ | | |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



■ GUP Precision Ground • Inch

| catalogue number | seat size | W | W tol ± | RR | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|------|-------|-------|-------|--------|--------|--------|--------|------|
| EG063I1FP05GUP | 1F | 1,600 | 0,025 | 0,20 | 9,00 | ● | ● | - | - | - | - | ● |
| EG094I02P05GUP | 2 | 2,388 | 0,025 | 0,20 | 8,88 | ● | ● | - | - | - | - | ● |
| EG125I03P05GUP | 3 | 3,175 | 0,025 | 0,20 | 9,40 | ● | ● | - | - | - | - | ● |
| EG125I03P1GUP | 3 | 3,175 | 0,025 | 0,40 | 9,40 | ● | ● | - | - | - | - | ● |
| EG187I04P1GUP | 4 | 4,760 | 0,025 | 0,40 | 10,10 | ● | ● | - | - | - | - | ● |
| EG187I04P2GUP | 4 | 4,762 | 0,025 | 0,79 | 10,10 | ● | ● | - | - | - | - | ● |
| EG250I06P1GUP | 6 | 6,350 | 0,025 | 0,40 | 14,50 | ● | ● | - | - | - | - | ● |
| EG250I06P2GUP | 6 | 6,350 | 0,025 | 0,80 | 14,50 | ● | ● | - | - | - | - | ● |
| EG312I08P3GUP | 8 | 7,920 | 0,025 | 1,20 | 17,40 | ● | ● | - | - | - | - | ● |
| EG375I10P3GUP | 10 | 9,525 | 0,025 | 1,20 | 20,70 | ● | ● | - | - | - | - | ● |

- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.



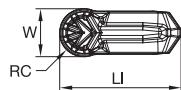
■ GUP Full Radius Precision Molded • Metric

| catalogue number | seat size | W | W tol ± | RC | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|-------|-------|-------|--------|--------|--------|--------|------|
| ER0312M03U00GUP | 3 | 3,125 | 0,075 | 1,560 | 9,60 | ● | ● | ● | ● | - | - | - |
| ER0412M04U00GUP | 4 | 4,125 | 0,075 | 2,060 | 10,20 | ● | ● | ● | ● | - | - | - |
| ER0512M05U00GUP | 5 | 5,125 | 0,075 | 2,560 | 12,20 | ● | ● | ● | ● | - | - | - |
| ER0612M06U00GUP | 6 | 6,125 | 0,075 | 3,060 | 14,60 | ● | ● | ● | ● | - | - | - |
| ER0812M08U00GUP | 8 | 8,125 | 0,075 | 4,060 | 17,50 | ● | ● | ● | ● | - | - | - |

- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.
- More precise widths and better repeatability.

● first choice
 ○ alternate choice

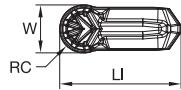
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ○ | ● | ● |
| M | ● | ● | ● | ● | ● | ● | ● | ○ |
| K | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ |
| N | ● | ○ | ● | ● | ● | ● | ● | ● |
| S | ● | ● | ● | ● | ● | ● | ● | ● |
| H | ○ | ● | ● | ● | ● | ● | ● | ● |



■ GUP Full Radius Precision Ground • Metric

| catalogue number | seat size | W | W tol ± | RC | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|-------|-------|-------|--------|--------|--------|--------|------|
| ER0300M03P00GUP | 3 | 3,000 | 0,025 | 1,500 | 9,50 | ● | ● | - | - | - | - | ● |
| ER0400M04P00GUP | 4 | 4,000 | 0,025 | 2,000 | 10,10 | ● | ● | - | - | - | - | ● |
| ER0500M05P00GUP | 5 | 5,000 | 0,025 | 2,500 | 12,20 | ● | ● | - | - | - | - | ● |
| ER0600M06P00GUP | 6 | 6,000 | 0,025 | 3,000 | 14,50 | ● | ● | - | - | - | - | ● |
| ER0800M08P00GUP | 8 | 8,000 | 0,025 | 4,000 | 17,40 | ● | ● | - | - | - | - | ● |

- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.



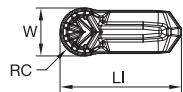
■ GUP Full Radius Precision Moulded • Inch

| catalogue number | seat size | W | W tol ± | RC | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|-------|-------|-------|--------|--------|--------|--------|------|
| ER130I03U00GUP | 3 | 3,302 | 0,075 | 1,650 | 9,60 | ● | ● | ● | ● | - | - | - |
| ER192I04U00GUP | 4 | 4,878 | 0,075 | 2,440 | 10,20 | ● | ● | ● | ● | - | - | - |
| ER255I06U00GUP | 6 | 6,478 | 0,075 | 3,240 | 14,60 | ● | ● | ● | ● | - | - | - |
| ER317I08U00GUP | 8 | 8,052 | 0,075 | 4,030 | 17,50 | ● | ● | ● | ● | - | - | - |

- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.
- More precise widths and better repeatability.

● first choice
○ alternate choice

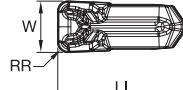
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● |
| M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| K | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● |
| N | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| S | ● | ● | ● | ● | ● |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



■ GUP Full Radius Precision Ground • Inch

| catalogue number | seat size | W | W tol ± | RC | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|-------|-------|-------|--------|--------|--------|--------|------|
| ER125I03P00GUP | 3 | 3,175 | 0,025 | 1,590 | 9,50 | ● | ● | - | - | - | - | ● |
| ER187I04P00GUP | 4 | 4,762 | 0,025 | 2,380 | 10,10 | ● | ● | - | - | - | - | ● |
| ER250I06P00GUP | 6 | 6,350 | 0,025 | 3,170 | 14,50 | ● | ● | - | - | - | - | ● |
| ER312I08P00GUP | 8 | 7,920 | 0,025 | 3,960 | 17,40 | ● | ● | - | - | - | - | ● |

- Negative rake face for strongest cutting edge.
- More aggressive applications.
- Advantages in low-feed and depth-of-cut applications.



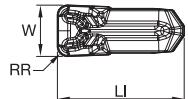
■ GUN Precision Moulded • Metric

| catalogue number | seat size | W | W tol ± | RR | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|--------|---------|------|-------|-------|-------|--------|--------|--------|--------|------|
| EG0212M02U02GUN | 2 | 2,125 | 0,050 | 0,20 | 8,97 | ● | ● | ● | ● | ● | - | - |
| EG0251M02U02GUN | 2 | 2,510 | 0,050 | 0,20 | 8,97 | ● | ● | ● | ● | ● | - | - |
| EG0312M03U02GUN | 3 | 3,125 | 0,075 | 0,20 | 9,60 | ● | ● | ● | ● | ● | - | - |
| EG0312M03U04GUN | 3 | 3,125 | 0,075 | 0,40 | 9,60 | ● | ● | ● | ● | ● | - | - |
| EG0412M04U04GUN | 4 | 4,125 | 0,075 | 0,40 | 10,19 | ● | ● | ● | ● | ● | - | - |
| EG0412M04U08GUN | 4 | 4,125 | 0,075 | 0,80 | 10,19 | ● | ● | ● | ● | ● | - | - |
| EG0512M05U04GUN | 5 | 5,125 | 0,075 | 0,40 | 12,20 | ● | ● | ● | ● | ● | - | - |
| EG0512M05U08GUN | 5 | 5,125 | 0,075 | 0,80 | 12,20 | ● | ● | ● | ● | ● | - | - |
| EG0612M06U04GUN | 6 | 6,125 | 0,075 | 0,40 | 14,60 | ● | ● | ● | - | ● | - | - |
| EG0612M06U08GUN | 6 | 6,125 | 0,075 | 0,80 | 14,60 | ● | ● | - | ● | ● | - | - |
| EG0812M08U08GUN | 8 | 8,125 | 0,075 | 0,80 | 17,50 | ● | ● | ● | ● | ● | - | - |
| EG0812M08U12GUN | 8 | 8,125 | 0,075 | 1,20 | 17,50 | ● | ● | ● | ● | ● | - | - |
| EG1012M10U12GUN | 10 | 10,125 | 0,075 | 1,20 | 20,80 | ● | ● | ● | ● | ● | - | - |

- Negative rake face for strongest cutting edge.
- More aggressive applications.
- Advantages in low-feed and depth-of-cut applications.

● first choice
○ alternate choice

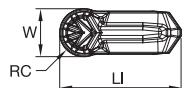
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | ○ | ● | |
| M | ● | ● | ● | ● | ● | ● | ● | ○ |
| K | ● | ○ | ○ | ○ | ○ | ● | ● | ○ |
| N | ● | ○ | ● | ● | ● | ● | ● | ● |
| S | ● | ● | ● | ● | ● | ● | ● | ● |
| H | ○ | ● | ● | ● | ● | ● | ● | ● |



■ GUN Precision Moulded • Inch

| catalogue number | seat size | W | W tol ± | RR | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|------|-------|-------|-------|--------|--------|--------|--------|------|
| EG063I1FU05GUN | 1F | 1,600 | 0,050 | 0,20 | 9,00 | ● | ● | ● | ● | ● | - | - |
| EG130I03U05GUN | 3 | 3,302 | 0,075 | 0,20 | 9,60 | ● | ● | ● | ● | ● | - | - |
| EG130I03U1GUN | 3 | 3,302 | 0,075 | 0,40 | 9,60 | ● | ● | ● | ● | ● | - | - |
| EG192I04U1GUN | 4 | 4,877 | 0,075 | 0,40 | 10,19 | ● | ● | ● | ● | ● | - | - |
| EG192I04U2GUN | 4 | 4,878 | 0,075 | 0,79 | 10,19 | ● | ● | ● | ● | ● | - | - |
| EG255I06U1GUN | 6 | 6,477 | 0,075 | 0,40 | 14,58 | ● | ● | ● | ● | ● | - | - |
| EG255I06U2GUN | 6 | 6,477 | 0,075 | 0,80 | 14,58 | ● | ● | ● | ● | ● | - | - |
| EG317I08U3GUN | 8 | 8,052 | 0,075 | 1,19 | 17,46 | ● | ● | ● | ● | ● | - | - |
| EG380I10U3GUN | 10 | 9,651 | 0,075 | 1,20 | 20,80 | ● | ● | ● | ● | ● | - | - |

- Negative rake face for strongest cutting edge.
- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.



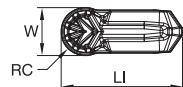
■ GUN Full Radius Precision Moulded • Metric

| catalogue number | seat size | W | W tol ± | RC | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|-------|-------|-------|--------|--------|--------|--------|------|
| ER0312M03U00GUN | 3 | 3,125 | 0,075 | 1,560 | 9,60 | ● | ● | ● | ● | ● | - | - |
| ER0412M04U00GUN | 4 | 4,125 | 0,075 | 2,060 | 10,20 | ● | ● | ● | ● | ● | - | - |
| ER0512M05U00GUN | 5 | 5,125 | 0,075 | 2,560 | 12,20 | ● | ● | ● | ● | ● | - | - |
| ER0612M06U00GUN | 6 | 6,125 | 0,075 | 3,060 | 14,60 | ● | ● | ● | ● | ● | - | - |
| ER0812M08U00GUN | 8 | 8,125 | 0,075 | 4,060 | 17,47 | ● | ● | ● | ● | ● | - | - |

- Negative rake face for strongest cutting edge.
- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.

● first choice
○ alternate choice

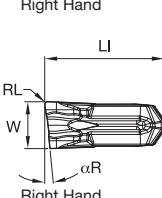
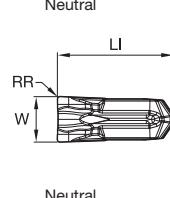
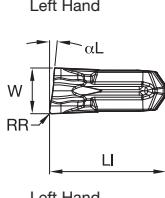
| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|--|--|--|--|---|---|--|--|
| P | ● | ● | ● | ● | ● | ○ | | | | | | | | |
| M | ■ | ● | ● | | | | | | | | ● | ○ | | |
| K | ■ | ○ | ○ | ○ | ○ | ● | | | | | ○ | | | |
| N | ■ | ● | ○ | | | | | | | | | ● | | |
| S | ■ | ● | ● | | | | | | | | | ● | | |
| H | ○ | | | | | | | | | | | | | |



■ GUN Full Radius Precision Moulded • Inch

| catalogue number | seat size | W | W tol ± | RC | LI | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|-------|-------|-------|--------|--------|--------|--------|------|
| ER094I02U00GUN | 2 | 2,387 | 0,050 | 1,190 | 8,97 | ● | ● | ● | ● | ● | - | - |
| ER125I03U00GUN | 3 | 3,177 | 0,075 | 1,590 | 9,60 | ● | ● | ● | ● | ● | - | - |
| ER130I03U00GUN | 3 | 3,300 | 0,075 | 1,650 | 9,60 | ● | ● | ● | ● | ● | - | - |
| ER187I04U00GUN | 4 | 4,750 | 0,075 | 2,370 | 10,20 | ● | ● | ● | ● | ● | - | - |
| ER192I04U00GUN | 4 | 4,873 | 0,075 | 2,440 | 10,20 | ● | ● | ● | ● | ● | - | - |
| ER250I06U00GUN | 6 | 6,346 | 0,075 | 3,170 | 14,60 | ● | ● | ● | ● | ● | - | - |
| ER255I06U00GUN | 6 | 6,473 | 0,075 | 3,240 | 14,60 | ● | ● | ● | ● | ● | - | - |
| ER312I08U00GUN | 8 | 7,925 | 0,075 | 3,960 | 17,50 | ● | ● | ● | ● | ● | - | - |
| ER317I08U00GUN | 8 | 8,052 | 0,075 | 4,030 | 17,50 | ● | ● | ● | ● | ● | - | - |

- Positive chipbreaker lowers cutting forces.
- First choice for steel and stainless steel.
- Excellent surface finish.



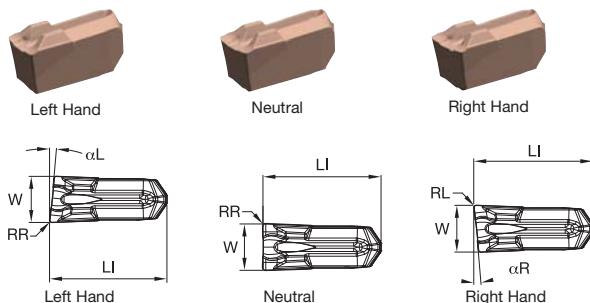
■ CF Precision Moulded • Metric

| catalogue number | seat size | W | W tol ± | LI | αR | αL | RR | RL | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|----|----|------|------|-------|-------|--------|--------|--------|--------|------|
| EC014M1BL06CF01 | 1B | 1,404 | 0,050 | 9,00 | - | 6 | 0,15 | - | - | ● | - | - | - | - | - |
| EC014M1BN00CF01 | 1B | 1,400 | 0,050 | 9,00 | - | - | 0,15 | 0,15 | - | ● | - | - | - | ● | - |
| EC014M1BR06CF01 | 1B | 1,404 | 0,050 | 9,00 | 6 | - | - | 0,15 | - | ● | - | - | - | ● | - |
| EC020M02L06CF02 | 2 | 2,000 | 0,050 | 8,97 | - | 6 | 0,20 | - | - | ● | - | - | - | ● | - |
| EC020M02N00CF02 | 2 | 2,000 | 0,050 | 8,97 | - | - | 0,20 | 0,20 | - | ● | - | - | - | ● | - |
| EC020M02R06CF02 | 2 | 2,000 | 0,050 | 8,97 | 6 | - | - | 0,20 | - | ● | - | - | - | ● | - |
| EC030M03L06CF02 | 3 | 3,000 | 0,075 | 9,60 | - | 6 | 0,20 | - | - | ● | - | - | - | ● | - |
| EC030M03N00CF02 | 3 | 3,000 | 0,075 | 9,60 | - | - | 0,20 | 0,20 | - | ● | - | - | - | ● | - |
| EC030M03R06CF02 | 3 | 3,000 | 0,075 | 9,60 | 6 | - | - | 0,20 | - | ● | - | - | - | ● | - |
| EC040M04L06CF02 | 4 | 4,000 | 0,075 | 10,19 | - | 6 | 0,20 | - | - | ● | - | - | - | ● | - |
| EC040M04N00CF02 | 4 | 4,000 | 0,075 | 10,19 | - | - | 0,20 | 0,20 | - | ● | - | - | - | ● | - |
| EC040M04R06CF02 | 4 | 4,000 | 0,075 | 10,19 | 6 | - | - | 0,20 | - | ● | - | - | - | ● | - |
| EC050M05N00CF03 | 5 | 5,000 | 0,075 | 12,20 | - | - | 0,30 | 0,30 | - | ● | - | - | - | ● | - |

- Most aggressive chipbreaker.
- For use in long chipping materials.
- Problem solver.

● first choice
 ○ alternate choice

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



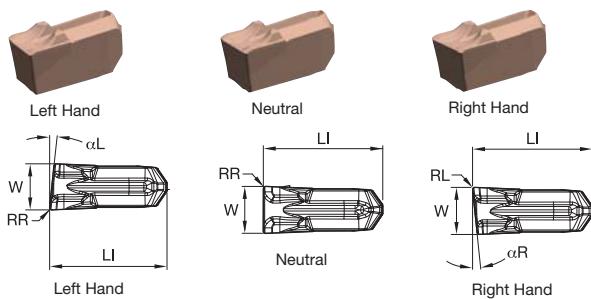
■ CL Precision Moulded • Metric

| catalogue number | seat size | W | W tol ± | LI | αR | αL | RR | RL | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|----|----|------|------|-------|-------|--------|--------|--------|--------|------|
| EC014M1BL06CL01 | 1B | 1,400 | 0,050 | 9,00 | — | 6 | 0,15 | — | — | ● | — | — | — | ● | — |
| EC014M1BN00CL01 | 1B | 1,400 | 0,050 | 9,00 | — | — | 0,15 | 0,15 | — | ● | — | — | — | ● | — |
| EC014M1BR06CL01 | 1B | 1,400 | 0,050 | 9,00 | 6 | — | — | 0,15 | — | ● | — | — | — | ● | — |
| EC020M02L06CL02 | 2 | 2,000 | 0,050 | 8,96 | — | 6 | 0,20 | — | — | ● | — | — | — | ● | — |
| EC020M02N00CL02 | 2 | 2,000 | 0,050 | 8,97 | — | — | 0,20 | 0,20 | — | ● | — | — | — | ● | — |
| EC020M02R06CL02 | 2 | 2,000 | 0,050 | 8,96 | 6 | — | — | 0,20 | — | ● | — | — | — | ● | — |
| EC030M03L06CL02 | 3 | 3,000 | 0,075 | 9,59 | — | 6 | 0,20 | — | — | ● | — | — | — | ● | — |
| EC030M03N00CL02 | 3 | 3,000 | 0,075 | 9,60 | — | — | 0,20 | 0,20 | — | ● | — | — | — | ● | — |
| EC030M03R06CL02 | 3 | 3,000 | 0,075 | 9,59 | 6 | — | — | 0,20 | — | ● | — | — | — | ● | — |
| EC040M04L06CL02 | 4 | 4,000 | 0,075 | 10,19 | — | 6 | 0,20 | — | — | ● | — | — | — | ● | — |
| EC040M04N00CL02 | 4 | 4,000 | 0,075 | 10,20 | — | — | 0,20 | 0,20 | — | ● | — | — | — | ● | — |
| EC040M04R06CL02 | 4 | 4,000 | 0,075 | 10,19 | 6 | — | — | 0,20 | — | ● | — | — | — | ● | — |

- Ultimate solution in edge stability.
- Leverage for interrupted cuts or hardened skin.
- First choice for cast iron.

● first choice
○ alternate choice

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



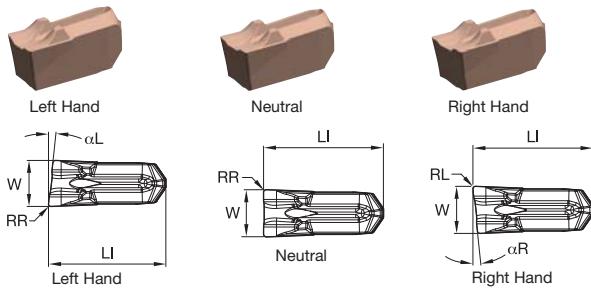
■ CM Precision Moulded • Metric

| catalogue number | seat size | W | W tol ± | LI | αR | αL | RR | RL | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|----|----|------|------|-------|-------|--------|--------|--------|--------|------|
| EC014M1BL06CM01 | 1B | 1,400 | 0,050 | 9,00 | — | 6 | 0,20 | — | - | ● | — | — | — | — | — |
| EC014M1BN00CM01 | 1B | 1,400 | 0,050 | 9,00 | — | — | 0,15 | 0,15 | — | ● | — | — | — | — | — |
| EC014M1BR06CM01 | 1B | 1,400 | 0,050 | 9,00 | 6 | — | — | 0,20 | — | ● | — | — | — | — | — |
| EC020M02L06CM02 | 2 | 2,000 | 0,050 | 9,00 | — | 6 | 0,20 | — | — | ● | — | — | — | — | — |
| EC020M02N00CM02 | 2 | 2,000 | 0,050 | 8,98 | — | — | 0,20 | 0,20 | — | ● | — | — | — | — | — |
| EC020M02R06CM02 | 2 | 2,000 | 0,050 | 9,00 | 6 | — | — | 0,20 | — | ● | — | — | — | — | — |
| EC030M03L06CM02 | 3 | 3,000 | 0,075 | 9,60 | — | 6 | 0,20 | — | — | ● | — | — | — | — | — |
| EC030M03N00CM02 | 3 | 3,000 | 0,075 | 9,60 | — | — | 0,20 | 0,20 | — | ● | — | — | — | — | — |
| EC030M03R06CM02 | 3 | 3,000 | 0,075 | 9,60 | 6 | — | — | 0,20 | — | ● | — | — | — | — | — |
| EC040M04L06CM02 | 4 | 4,000 | 0,075 | 10,20 | — | 6 | 0,20 | — | — | ● | — | — | — | — | — |
| EC040M04N00CM02 | 4 | 4,000 | 0,075 | 10,20 | — | — | 0,20 | 0,20 | — | ● | — | — | — | — | — |
| EC040M04R06CM02 | 4 | 4,000 | 0,075 | 10,20 | 6 | — | — | 0,20 | — | ● | — | — | — | — | — |
| EC050M05N00CM03 | 5 | 5,000 | 0,075 | 12,20 | — | — | 0,30 | 0,30 | — | ● | — | — | — | — | — |
| EC060M06N00CM03 | 6 | 6,000 | 0,075 | 14,59 | — | — | 0,30 | 0,30 | — | ● | — | — | — | — | — |
| EC070M06N00CM04 | 6 | 7,000 | 0,075 | 14,60 | — | — | 0,40 | 0,40 | — | ● | — | — | — | — | — |
| EC080M08N00CM04 | 8 | 8,000 | 0,075 | 17,50 | — | — | 0,40 | 0,40 | — | ● | — | — | — | — | — |

- Strong chip control due to concave edge.
- First choice in steel when additional stability is required.
- Can apply most aggressive speed rates.

● first choice
○ alternate choice

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



■ CR Precision Moulded • Metric

| catalogue number | seat size | W | W tol ± | LI | αR | αL | RR | RL | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | KCM35B | K313 |
|------------------|-----------|-------|---------|-------|----|----|------|------|-------|-------|--------|--------|--------|--------|------|
| EC020M02L06CR02 | 2 | 2,000 | 0,050 | 9,00 | — | 6 | 0,20 | — | - | ● | - | - | - | - | - |
| EC020M02N00CR02 | 2 | 2,000 | 0,050 | 8,98 | — | — | 0,20 | 0,20 | - | ● | - | - | - | - | - |
| EC020M02R06CR02 | 2 | 2,000 | 0,050 | 9,00 | 6 | — | — | 0,20 | - | ● | - | - | - | - | - |
| EC030M03L06CR02 | 3 | 3,000 | 0,075 | 9,60 | — | 6 | 0,20 | — | - | ● | - | - | - | - | - |
| EC030M03N00CR02 | 3 | 3,000 | 0,075 | 9,60 | — | — | 0,20 | 0,20 | - | ● | - | - | - | - | - |
| EC030M03R06CR02 | 3 | 3,000 | 0,075 | 9,60 | 6 | — | — | 0,20 | - | ● | - | - | - | - | - |
| EC040M04L06CR02 | 4 | 4,000 | 0,075 | 10,20 | — | 6 | 0,20 | — | - | ● | - | - | - | - | - |
| EC040M04N00CR02 | 4 | 4,000 | 0,075 | 10,20 | — | — | 0,20 | 0,20 | - | ● | - | - | - | - | - |
| EC040M04R06CR02 | 4 | 4,000 | 0,075 | 10,20 | 6 | — | — | 0,20 | - | ● | - | - | - | - | - |
| EC050M05N00CR03 | 5 | 5,000 | 0,075 | 12,25 | — | — | 0,30 | 0,30 | - | ● | - | - | - | - | - |
| EC060M06L06CR04 | 6 | 6,000 | 0,075 | 14,59 | — | 6 | 0,40 | — | - | ● | - | - | - | - | - |
| EC060M06N00CR03 | 6 | 6,000 | 0,075 | 14,59 | — | — | 0,30 | 0,30 | - | ● | - | - | - | - | - |
| EC060M06R06CR04 | 6 | 6,000 | 0,075 | 14,59 | 6 | — | — | 0,40 | - | ● | - | - | - | - | - |
| EC070M06N00CR04 | 6 | 7,000 | 0,075 | 14,60 | — | — | 0,40 | 0,40 | - | ● | - | - | - | - | - |
| EC080M08L06CR04 | 8 | 8,000 | 0,075 | 17,50 | — | 6 | 0,40 | — | - | ● | - | - | - | - | - |
| EC080M08N00CR04 | 8 | 8,000 | 0,075 | 17,50 | — | — | 0,40 | 0,40 | - | ● | - | - | - | - | - |
| EC080M08R06CR04 | 8 | 8,000 | 0,075 | 17,50 | 6 | — | — | 0,40 | - | ● | - | - | - | - | - |

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.



| | | | | | | | | |
|--------------------|---------------------------|--------------|---|--------------|---|------------------|--|---|
| EV | S | M | L | 2525M | 03 | 16 | 030035 | C |
| Family Name | Tool Style | Support Type | Hand | Shank Size | Seat Size | Max Groove Depth | Face Grooving Diameters | Coolant |
| Beyond™ Evolution™ | S = Straight mount | | L = Left hand R = Right hand | | 1B 1F 02 03 04 05 06 08 10 | in millimetres | 030 = Minimum diameter in mm 035 = Maximum diameter in mm | C = Through the pocket coolant capable |

M = Maximum support for specific groove width and straight clearance for unlimited workpiece diameter

A = Face grooving – inboard sweep

B = Face grooving – outboard sweep

Metric = Height x Width in mm letter indicates tool length according to ISO

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



C = Reinforced support

Metric = Height x Width in mm letter indicates tool length according to ISO

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.



| A | 16 | R | EV | E | M | R | 03 | 10 | M | 030035 | | | | | | | | | | | | | | | | | | | | | |
|--|--------------|------------|--------------------|---|--|---|--|-------------------|--------------------------------------|--|--------|----|------|---|-----|---|---|-----|---|---|-----|---|---|-----|---|---|-----|----|---|-----|----|
| Steel Bar with Coolant | Bar Diameter | Bar Length | Platform | Tool Type | Support Type | Hand of Tool | Insert Seat Size | Max Cutting Depth | Tool Units | Face Grooving Diameters | | | | | | | | | | | | | | | | | | | | | |
| Steel boring bar with through coolant capability. | | | Beyond™ Evolution™ | E = End mount (90°) S = Straight Mount | M = Maximum support A = Face Grooving-inboard sweep | R = Right hand L = Left hand | 1F 02 03 04 05 06 08 10 | in millimetres | M = Metric I = Inch | 030 = Minimum diameter in mm 035 = Maximum diameter in mm | | | | | | | | | | | | | | | | | | | | | |
| Metric = Diameter in mm Inch = Diameter in 1/16" increments | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>symbol</th> <th>mm</th> <th>inch</th> </tr> </thead> <tbody> <tr> <td>K</td> <td>125</td> <td>5</td> </tr> <tr> <td>M</td> <td>150</td> <td>6</td> </tr> <tr> <td>Q</td> <td>180</td> <td>7</td> </tr> <tr> <td>R</td> <td>200</td> <td>8</td> </tr> <tr> <td>S</td> <td>250</td> <td>10</td> </tr> <tr> <td>T</td> <td>300</td> <td>12</td> </tr> </tbody> </table> | | | | | | | | | | | symbol | mm | inch | K | 125 | 5 | M | 150 | 6 | Q | 180 | 7 | R | 200 | 8 | S | 250 | 10 | T | 300 | 12 |
| symbol | mm | inch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| K | 125 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M | 150 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q | 180 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R | 200 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | 250 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | 300 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

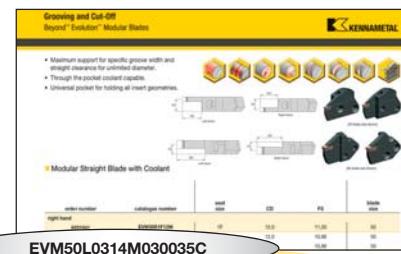


| | | | | | | | |
|--------------------|---------------------------|--|---|----------------|---|---|-------------------|
| EV | B | S | L | 32 | J | 03 | 20 |
| Family Name | Tool Style | Support Type | Hand | Blade Height | Overall Length | Seat Size | Max Cutting Depth |
| Beyond™ Evolution™ | B = 2 pocket blade | S = Standard C = Reinforced | N = Neutral L = Left hand R = Right hand | in millimetres | According to ISO G = 90mm J = 110mm M = 150mm X = Special | 1B 1F 02 03 04 05 06 08 10 | in millimetres |

By referencing this easy-to-use guide, you can identify the correct product to meet your needs



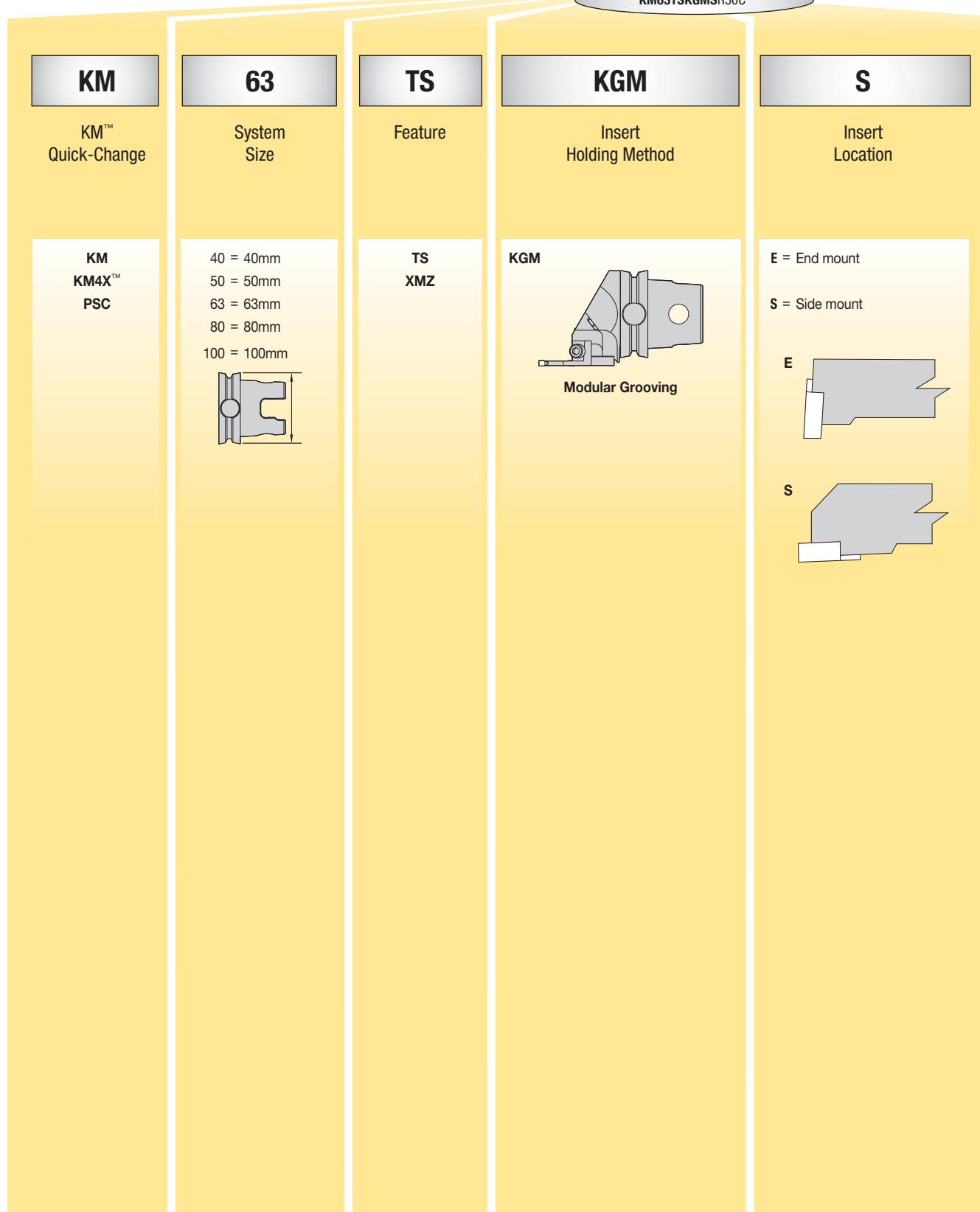
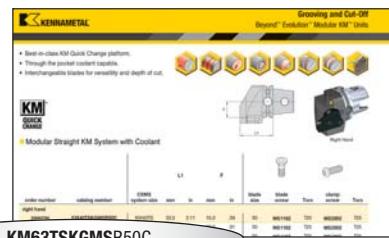
| KGM | S | L | 2525M | 50 | C |
|--|---|---|---|--------------------------------------|---|
| Family Name Grooving Modular System | Tool Style S = Straight mount E = End mount (90°) | Hand L = Left hand R = Right hand | Shank Size Metric = Height x Width in mm letter indicates tool length according to ISO | Blade Size 50 65 | Coolant C = Through coolant capable |
| | | | | | |



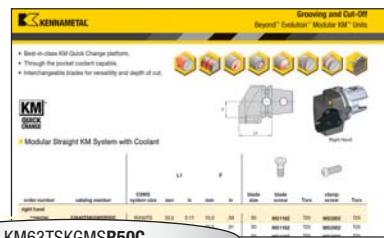
| EVM | 50 | L | 03 | 14 | M | 030035 | C |
|---|--------------------------------------|---|---|---|---|---|--|
| Family Name Beyond™ Evolution™ Modular Blade | Blade Size 50 65 | Hand L = Left hand R = Right hand | Seat Size 03 04 05 06 08 10 | Max Groove Depth 1B 1F 02 03 04 05 06 08 10 | Support Type M = Maximum support for specific groove width and straight clearance for unlimited diameter A = Face grooving-inboard sweep B = Face grooving-outboard sweep | Face Grooving Diameters 030 = Minimum diameter in mm 035 = Maximum diameter in mm | Coolant C = Through the pocket coolant capable |
| | | | | | | | |

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.



By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



KM63TSKGMSR50C

| R | 50 | C | |
|-----------------------|------------|---|-----------------------------|
| Hand of Tool | Blade Size | Coolant | Special Features |
| R = Right hand | 50 | C = Through the pocket coolant capable | Y = Mazak® INTEGREX® |
| L = Left hand | 60 | | |
| End Mount | | | |
| R | | | |
| L | | | |
| Side Mount | | | |
| R | | | |
| L | | | |

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.



| VDI | B2 | M | 40 | 25 | 44 | C |
|------------|-----------|----------|--------------------|-----------------------|-------------------|------------------|
| Connection | Style | Metric | VDI Shank Diameter | Toolholder Shank Size | Projection Length | Internal Coolant |

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

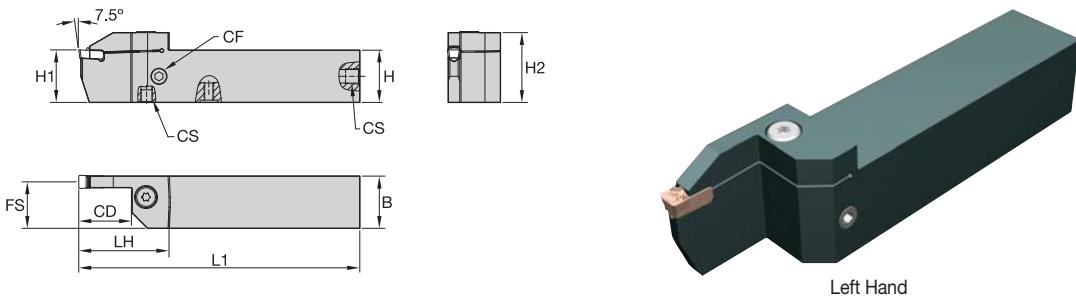
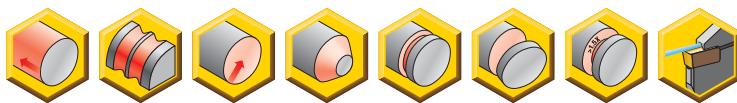
SELECT

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

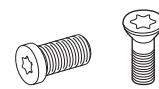
- Offers the greatest stability.
- Straight clearance for unlimited workpiece diameters.
- Through the pocket coolant capable.



■ Integral Straight • Metric

| order number | catalogue number | seat size | | | | | | | | | | | Torx clamp screw | Torx clamp screw | Torx |
|-------------------|------------------|-----------|----|----|----|----|----|-----|----|----|----------------|----------------|------------------|------------------|-------|
| | | | CD | H1 | H | B | H2 | L1 | FS | LH | CF | CS | | | |
| right hand | | | | | | | | | | | | | | | |
| 5953960 | EVSMR2020K0216 | 2 | 16 | 20 | 20 | 20 | 27 | 125 | 19 | 31 | — | — | — | MS1160 | T20 |
| 5953958 | EVSMR2525M0216 | 2 | 16 | 25 | 25 | 25 | 32 | 150 | 24 | 31 | — | — | — | MS1160 | T20 |
| 6401854 | EVSMR2020K0216C | 2 | 16 | 20 | 20 | 20 | 28 | 125 | 19 | 35 | M8X1 | M8X1 | MS2091 | — | 25 IP |
| 6401855 | EVSMR2525M0216C | 2 | 16 | 25 | 25 | 25 | 33 | 150 | 24 | 35 | G1/8 - 28 | G1/8 - 28 | MS2091 | — | 25 IP |
| 5953959 | EVSMR2020K0222 | 2 | 22 | 20 | 20 | 20 | 29 | 125 | 19 | 38 | — | — | MS2091 | — | 25 IP |
| 6401857 | EVSMR2020K0222C | 2 | 22 | 20 | 20 | 20 | 29 | 125 | 19 | 41 | M8X1 | M8X1 | MS2091 | — | 25 IP |
| 5953957 | EVSMR2525M0226 | 2 | 26 | 25 | 25 | 25 | 34 | 150 | 24 | 42 | — | — | MS2091 | — | 25 IP |
| 6401856 | EVSMR2525M0226C | 2 | 26 | 25 | 25 | 25 | 34 | 150 | 24 | 45 | G1/8 - 28 | G1/8 - 28 | MS2091 | — | 25 IP |
| 5939452 | EVSMR2020K0316C | 3 | 16 | 20 | 20 | 20 | 29 | 125 | 19 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939448 | EVSMR2525M0316C | 3 | 16 | 25 | 25 | 25 | 34 | 150 | 24 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939451 | EVSMR2020K0322C | 3 | 22 | 20 | 20 | 20 | 29 | 125 | 19 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939447 | EVSMR2525M0326C | 3 | 26 | 25 | 25 | 25 | 34 | 150 | 24 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939450 | EVSMR2020K0416C | 4 | 16 | 20 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939446 | EVSMR2525M0416C | 4 | 16 | 25 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939449 | EVSMR2020K0422C | 4 | 22 | 20 | 20 | 20 | 29 | 125 | 18 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939445 | EVSMR2525M0426C | 4 | 26 | 25 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939444 | EVSMR3232P0426C | 4 | 26 | 32 | 32 | 32 | 42 | 170 | 30 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5939443 | EVSMR3232P0432C | 4 | 32 | 32 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954258 | EVSMR2020K0516C | 5 | 16 | 20 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954254 | EVSMR2525M0516C | 5 | 16 | 25 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954257 | EVSMR2020K0522C | 5 | 22 | 20 | 20 | 20 | 29 | 125 | 18 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954253 | EVSMR2525M0526C | 5 | 26 | 25 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954249 | EVSMR3232P0526C | 5 | 26 | 32 | 32 | 32 | 42 | 170 | 30 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |

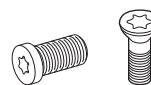
(continued)

(Integral Straight • Metric — continued)


| order number | catalogue number | seat size | CD | H1 | H | B | H2 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx clamp screw | Torx |
|--------------|------------------|-----------|----|----|----|----|----|-----|----|----|----------------|----------------|------------------|------------------|-------|
| 5954248 | EVSMR3232P0532C | 5 | 32 | 32 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954256 | EVSMR2020K0616C | 6 | 16 | 20 | 20 | 20 | 29 | 125 | 20 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954252 | EVSMR2525M0616C | 6 | 16 | 25 | 25 | 25 | 34 | 150 | 25 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954255 | EVSMR2020K0622C | 6 | 22 | 20 | 20 | 20 | 29 | 125 | 20 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954251 | EVSMR2525M0626C | 6 | 26 | 25 | 25 | 25 | 34 | 150 | 25 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954247 | EVSMR3232P0626C | 6 | 26 | 32 | 32 | 32 | 42 | 170 | 32 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954246 | EVSMR3232P0632C | 6 | 32 | 32 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954242 | EVSMR4040R0640C | 6 | 40 | 40 | 40 | 40 | 51 | 200 | 37 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954250 | EVSMR2525M0826C | 8 | 26 | 25 | 25 | 25 | 35 | 150 | 21 | 49 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954245 | EVSMR3232P0826C | 8 | 26 | 32 | 32 | 32 | 43 | 170 | 28 | 49 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954244 | EVSMR3232P0832C | 8 | 32 | 32 | 32 | 32 | 43 | 170 | 28 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954241 | EVSMR4040R0840C | 8 | 40 | 40 | 40 | 40 | 51 | 200 | 36 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954243 | EVSMR3232P1032C | 10 | 32 | 32 | 32 | 32 | 43 | 170 | 28 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954240 | EVSMR4040R1040C | 10 | 40 | 40 | 40 | 40 | 51 | 200 | 36 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| left hand | | | | | | | | | | | | | | | |
| 5953956 | EVSML2020K0216 | 2 | 16 | 20 | 20 | 20 | 27 | 125 | 19 | 31 | — | — | — | MS1160 | T20 |
| 5953954 | EVSML2525M0216 | 2 | 16 | 25 | 25 | 25 | 32 | 150 | 24 | 31 | — | — | — | MS1160 | T20 |
| 6401881 | EVSML2525M0216C | 2 | 16 | 25 | 25 | 25 | 33 | 150 | 24 | 35 | G1/8 - 28 | G1/8 - 28 | MS2091 | — | 25 IP |
| 5953955 | EVSML2020K0222 | 2 | 22 | 20 | 20 | 20 | 29 | 125 | 19 | 38 | — | — | MS2091 | — | 25 IP |
| 5953953 | EVSML2525M0226 | 2 | 26 | 25 | 25 | 25 | 34 | 150 | 24 | 42 | — | — | MS2091 | — | 25 IP |
| 5939442 | EVSML2020K0316C | 3 | 16 | 20 | 20 | 20 | 29 | 125 | 19 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939438 | EVSML2525M0316C | 3 | 16 | 25 | 25 | 25 | 34 | 150 | 24 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939441 | EVSML2020K0322C | 3 | 22 | 20 | 20 | 20 | 29 | 125 | 19 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939437 | EVSML2525M0326C | 3 | 26 | 25 | 25 | 25 | 34 | 150 | 24 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939440 | EVSML2020K0416C | 4 | 16 | 20 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939436 | EVSML2525M0416C | 4 | 16 | 25 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939439 | EVSML2020K0422C | 4 | 22 | 20 | 20 | 20 | 29 | 125 | 18 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5939435 | EVSML2525M0426C | 4 | 26 | 25 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5939433 | EVSML3232P0426C | 4 | 26 | 32 | 32 | 32 | 42 | 170 | 30 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5939432 | EVSML3232P0432C | 4 | 32 | 32 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954239 | EVSML2020K0516C | 5 | 16 | 20 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954235 | EVSML2525M0516C | 5 | 16 | 25 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954238 | EVSML2020K0522C | 5 | 22 | 20 | 20 | 20 | 29 | 125 | 18 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954234 | EVSML2525M0526C | 5 | 26 | 25 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954220 | EVSML3232P0526C | 5 | 26 | 32 | 32 | 32 | 42 | 170 | 30 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954219 | EVSML3232P0532C | 5 | 32 | 32 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954237 | EVSML2020K0616C | 6 | 16 | 20 | 20 | 20 | 29 | 125 | 17 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954233 | EVSML2525M0616C | 6 | 16 | 25 | 25 | 25 | 34 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954236 | EVSML2020K0622C | 6 | 22 | 20 | 20 | 20 | 29 | 125 | 17 | 43 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5954232 | EVSML2525M0626C | 6 | 26 | 25 | 25 | 25 | 34 | 150 | 22 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |

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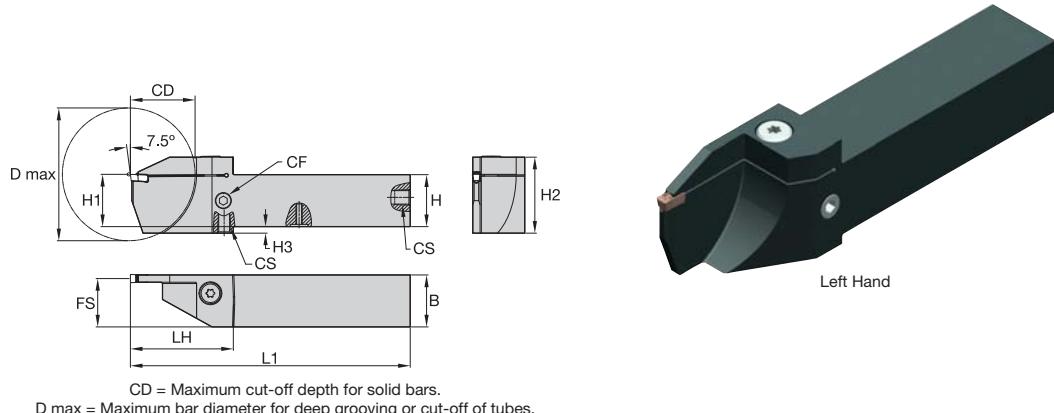
(Integral Straight • Metric — continued)



| order number | catalogue number | seat size | CD | H1 | H | B | H2 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx clamp screw | Torx |
|--------------|------------------|-----------|----|----|----|----|----|-----|----|----|---------------|---------------|------------------|------------------|------|
| 5954218 | EVSML3232P0626C | 6 | 26 | 32 | 32 | 32 | 42 | 170 | 29 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5954217 | EVSML3232P0632C | 6 | 32 | 32 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954213 | EVSML4040R0640C | 6 | 40 | 40 | 40 | 40 | 51 | 200 | 37 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954231 | EVSML2525M0826C | 8 | 26 | 25 | 25 | 25 | 35 | 150 | 21 | 49 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954216 | EVSML3232P0826C | 8 | 26 | 32 | 32 | 32 | 43 | 170 | 28 | 49 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954215 | EVSML3232P0832C | 8 | 32 | 32 | 32 | 32 | 43 | 170 | 28 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954212 | EVSML4040R0840C | 8 | 40 | 40 | 40 | 40 | 51 | 200 | 36 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954214 | EVSML3232P1032C | 10 | 32 | 32 | 32 | 32 | 43 | 170 | 28 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |
| 5954211 | EVSML4040R1040C | 10 | 40 | 40 | 40 | 40 | 51 | 200 | 36 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |

| screw catalogue number | screw order number | torque | | thread | socket | wrench catalogue number | wrench order number |
|------------------------|--------------------|--------|----------|--------|--------|-------------------------|---------------------|
| | | Nm | in. lbs. | | | | |
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 |

- Through the pocket coolant capable.
- Reinforced for added support in specific workpiece diameters.

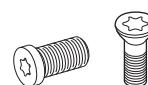


■ Integral Straight Top Clamp • Metric

| order number | catalogue number | seat size | CD | D max | H1 | H | B | H2 | H3 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx clamp screw | Torx |
|-------------------|------------------|-----------|----|-------|----|----|----|----|----|-----|----|----|----------------|----------------|------------------|------------------|-------|
| | | | | | | | | | | | | | | | | | |
| right hand | | | | | | | | | | | | | | | | | |
| 6179757 | EVSCTR1212K1B16 | 1B | 16 | 42 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 31 | — | — | — | MS1160 | T20 |
| 6179758 | EVSCTR1212K1F16 | 1F | 16 | 42 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 31 | — | — | — | MS1160 | T20 |
| 6179759 | EVSCTR1212K0216 | 2 | 16 | 42 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 31 | — | — | — | MS1160 | T20 |
| 5980139 | EVSCTR1616K0216 | 2 | 16 | 42 | 16 | 16 | 16 | 23 | — | 125 | 15 | 31 | — | — | — | MS1160 | T20 |
| 5980762 | EVSCTR2020K0216 | 2 | 16 | 42 | 20 | 20 | 20 | 27 | — | 125 | 19 | 31 | — | — | — | MS1160 | T20 |
| 5980767 | EVSCTR2525M0216 | 2 | 16 | 42 | 25 | 25 | 25 | 32 | — | 150 | 24 | 31 | — | — | — | MS1160 | T20 |
| 5980768 | EVSCTR2525M0226 | 2 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 24 | 42 | — | — | MS2091 | — | 25 IP |
| 6179755 | EVSCTR1212K0316C | 3 | 16 | 52 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 34 | M8X1.25 | M8X1.25 | MS1944 | — | T25 |
| 5980140 | EVSCTR1616K0316C | 3 | 16 | 52 | 16 | 16 | 16 | 24 | — | 125 | 15 | 36 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS2091 | — | 25 IP |
| 5980763 | EVSCTR2020K0316C | 3 | 16 | 52 | 20 | 20 | 20 | 29 | — | 125 | 19 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980138 | EVSCTR2525M0316C | 3 | 16 | 62 | 25 | 25 | 25 | 34 | — | 150 | 24 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980764 | EVSCTR2020K0326C | 3 | 26 | 62 | 20 | 20 | 20 | 33 | 4 | 125 | 19 | 47 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980769 | EVSCTR2525M0326C | 3 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 24 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980761 | EVSCTR1616K0416C | 4 | 16 | 52 | 16 | 16 | 16 | 24 | — | 125 | 14 | 36 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS2091 | — | 25 IP |
| 5980765 | EVSCTR2020K0416C | 4 | 16 | 52 | 20 | 20 | 20 | 29 | — | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980766 | EVSCTR2020K0426C | 4 | 26 | 62 | 20 | 20 | 20 | 33 | — | 125 | 18 | 47 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980770 | EVSCTR2525M0426C | 4 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980771 | EVSCTR2525M0432C | 4 | 32 | 64 | 25 | 25 | 25 | 38 | 4 | 150 | 23 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980774 | EVSCTR3232P0432C | 4 | 32 | 64 | 32 | 32 | 32 | 42 | — | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5980772 | EVSCTR2525M0526C | 5 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5980773 | EVSCTR2525M0532C | 5 | 32 | 64 | 25 | 25 | 25 | 39 | 4 | 150 | 23 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5980775 | EVSCTR3232P0540C | 5 | 40 | 82 | 32 | 32 | 32 | 47 | 4 | 170 | 30 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |

(continued)

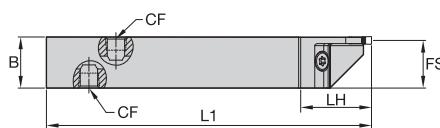
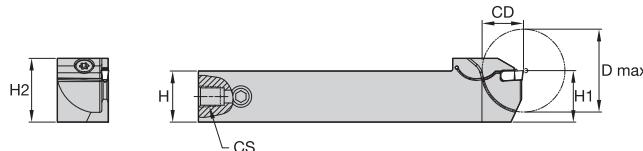
(Integral Straight Top Clamp • Metric – continued)



| order number | catalogue number | seat size | CD | D max | H1 | H | B | H2 | H3 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx clamp screw | Torx |
|------------------|------------------|-----------|----|-------|----|----|----|----|----|-----|----|----|----------------|----------------|------------------|------------------|-------|
| left hand | | | | | | | | | | | | | | | | | |
| 6179760 | EVSCTL1212K1B16 | 1B | 16 | 42 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 31 | — | — | — | MS1160 | T20 |
| 6179761 | EVSCTL1212K1F16 | 1F | 16 | 42 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 31 | — | — | — | MS1160 | T20 |
| 6179762 | EVSCTL1212K0216 | 2 | 16 | 42 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 31 | — | — | — | MS1160 | T20 |
| 5980777 | EVSCTL1616K0216 | 2 | 16 | 42 | 16 | 16 | 16 | 23 | — | 125 | 15 | 31 | — | — | — | MS1160 | T20 |
| 5980780 | EVSCTL2020K0216 | 2 | 16 | 42 | 20 | 20 | 20 | 27 | — | 125 | 19 | 31 | — | — | — | MS1160 | T20 |
| 5980805 | EVSCTL2525M0216 | 2 | 16 | 42 | 25 | 25 | 25 | 32 | — | 150 | 24 | 31 | — | — | — | MS1160 | T20 |
| 5980806 | EVSCTL2525M0226 | 2 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 24 | 42 | — | — | MS2091 | — | 25 IP |
| 6179756 | EVSCTL1212K0316C | 3 | 16 | 52 | 12 | 12 | 12 | 23 | 4 | 125 | 11 | 34 | M8X1.25 | M8X1.25 | MS1944 | — | T25 |
| 5980778 | EVSCTL1616K0316C | 3 | 16 | 52 | 16 | 16 | 16 | 24 | — | 125 | 15 | 36 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS2091 | — | 25 IP |
| 5980801 | EVSCTL2020K0316C | 3 | 16 | 52 | 20 | 20 | 20 | 29 | — | 125 | 19 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980776 | EVSCTL2525M0316C | 3 | 16 | 62 | 25 | 25 | 25 | 34 | — | 150 | 24 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980802 | EVSCTL2020K0326C | 3 | 26 | 62 | 20 | 20 | 20 | 33 | 4 | 125 | 19 | 47 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980807 | EVSCTL2525M0326C | 3 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 24 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980779 | EVSCTL1616K0416C | 4 | 16 | 52 | 16 | 16 | 16 | 24 | — | 125 | 14 | 36 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS2091 | — | 25 IP |
| 5980803 | EVSCTL2020K0416C | 4 | 16 | 52 | 20 | 20 | 20 | 29 | — | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980804 | EVSCTL2020K0426C | 4 | 26 | 62 | 20 | 20 | 20 | 33 | — | 125 | 18 | 47 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | — | T30 |
| 5980808 | EVSCTL2525M0426C | 4 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980809 | EVSCTL2525M0432C | 4 | 32 | 64 | 25 | 25 | 25 | 38 | 4 | 150 | 23 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1595 | — | T30 |
| 5980812 | EVSCTL3232P0432C | 4 | 32 | 64 | 32 | 32 | 32 | 42 | — | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5980810 | EVSCTL2525M0526C | 5 | 26 | 62 | 25 | 25 | 25 | 34 | — | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5980811 | EVSCTL2525M0532C | 5 | 32 | 64 | 25 | 25 | 25 | 39 | 4 | 150 | 23 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | — | T30 |
| 5980813 | EVSCTL3232P0540C | 5 | 40 | 82 | 32 | 32 | 32 | 47 | 4 | 170 | 30 | 63 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | — | T45 |

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

| screw catalogue number | screw order number | torque Nm | in. lbs. | thread | socket | wrench catalogue number | wrench order number |
|------------------------|--------------------|-----------|----------|--------|--------|-------------------------|---------------------|
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 |



CD = Maximum cut-off depth for solid bars.
D max = Maximum bar diameter for deep grooving or cut-off of tubes.



■ Integral Reinforced Front Clamp • Metric



| order number | catalogue number | seat size | CD | D max | H1 | H | B | H2 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx |
|-------------------|------------------|-----------|----|-------|----|----|----|----|-----|----|----|---------|---------|------------------|------|
| right hand | | | | | | | | | | | | | | | |
| 6179763 | EVSCFR1010K1B10 | 1B | 10 | 20 | 10 | 10 | 10 | 14 | 125 | 9 | 21 | — | — | 191.916 | T15 |
| 6179766 | EVSCFR1212K1B10 | 1B | 10 | 20 | 12 | 12 | 12 | 16 | 125 | 11 | 21 | — | — | 191.916 | T15 |
| 6179767 | EVSCFR1212K1B13 | 1B | 13 | 26 | 12 | 12 | 12 | 16 | 125 | 11 | 24 | — | — | 191.916 | T15 |
| 6179774 | EVSCFR1616K1B16 | 1B | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 27 | — | — | MS1160 | T20 |
| 6179778 | EVSCFR2020K1B16 | 1B | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 27 | — | — | MS1160 | T20 |
| 6179764 | EVSCFR1010K1F10 | 1F | 10 | 20 | 10 | 10 | 10 | 14 | 125 | 9 | 21 | — | — | 191.916 | T15 |
| 6179768 | EVSCFR1212K1F10 | 1F | 10 | 20 | 12 | 12 | 12 | 16 | 125 | 11 | 21 | — | — | 191.916 | T15 |
| 6179769 | EVSCFR1212K1F13 | 1F | 13 | 26 | 12 | 12 | 12 | 16 | 125 | 11 | 24 | — | — | 191.916 | T15 |
| 6179775 | EVSCFR1616K1F16 | 1F | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 27 | — | — | MS1160 | T20 |
| 6179779 | EVSCFR2020K1F16 | 1F | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 27 | — | — | MS1160 | T20 |
| 6179765 | EVSCFR1010K0210 | 2 | 10 | 20 | 10 | 10 | 10 | 14 | 125 | 9 | 21 | — | — | 191.916 | T15 |
| 6179770 | EVSCFR1212K0210 | 2 | 10 | 20 | 12 | 12 | 12 | 16 | 125 | 11 | 21 | — | — | 191.916 | T15 |
| 6179771 | EVSCFR1212K0216 | 2 | 16 | 32 | 12 | 12 | 12 | 16 | 125 | 11 | 27 | — | — | 191.916 | T15 |
| 6179776 | EVSCFR1616K0216 | 2 | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 27 | — | — | MS1160 | T20 |
| 6179780 | EVSCFR2020K0216 | 2 | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 27 | — | — | MS1160 | T20 |
| 6179772 | EVSCFR1212K0310C | 3 | 10 | 20 | 12 | 12 | 12 | 17 | 125 | 11 | 22 | M8X1.25 | M8X1.25 | 191.916 | T15 |
| 6179773 | EVSCFR1212K0316C | 3 | 16 | 32 | 12 | 12 | 12 | 17 | 125 | 11 | 28 | M8X1.25 | M8X1.25 | 191.916 | T15 |
| 6179777 | EVSCFR1616K0316C | 3 | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 28 | M8X1.25 | M8X1.25 | MS1160 | T20 |
| 6179781 | EVSCFR2020K0316C | 3 | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 28 | M8X1.25 | M8X1.25 | MS1160 | T20 |

(continued)

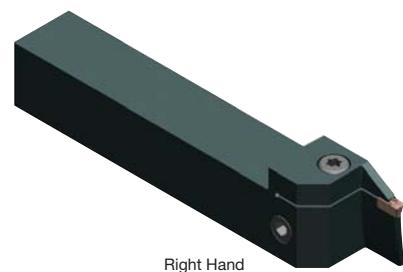
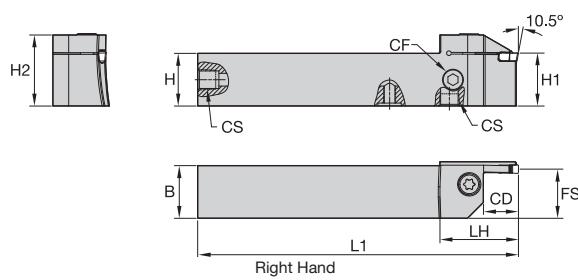
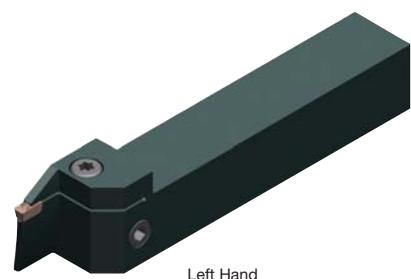
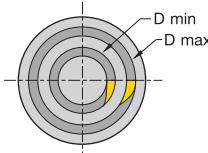
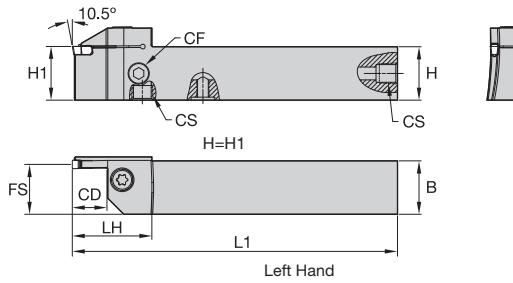
(Integral Reinforced Front Clamp • Metric — continued)



| order number | catalogue number | seat size | CD | D max | H1 | H | B | H2 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx |
|------------------|------------------|-----------|----|-------|----|----|----|----|-----|----|----|---------|---------|------------------|------|
| left hand | | | | | | | | | | | | | | | |
| 6179709 | EVSCFL1010K1B10 | 1B | 10 | 20 | 10 | 10 | 10 | 14 | 125 | 9 | 21 | — | — | 191.916 | T15 |
| 6179922 | EVSCFL1212K1B10 | 1B | 10 | 20 | 12 | 12 | 12 | 16 | 125 | 11 | 21 | — | — | 191.916 | T15 |
| 6179923 | EVSCFL1212K1B13 | 1B | 13 | 26 | 12 | 12 | 12 | 16 | 125 | 11 | 24 | — | — | 191.916 | T15 |
| 6179930 | EVSCFL1616K1B16 | 1B | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 27 | — | — | MS1160 | T20 |
| 6179934 | EVSCFL2020K1B16 | 1B | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 27 | — | — | MS1160 | T20 |
| 6179710 | EVSCFL1010K1F10 | 1F | 10 | 20 | 10 | 10 | 10 | 14 | 125 | 9 | 21 | — | — | 191.916 | T15 |
| 6179924 | EVSCFL1212K1F10 | 1F | 10 | 20 | 12 | 12 | 12 | 16 | 125 | 11 | 21 | — | — | 191.916 | T15 |
| 6179925 | EVSCFL1212K1F13 | 1F | 13 | 26 | 12 | 12 | 12 | 16 | 125 | 11 | 24 | — | — | 191.916 | T15 |
| 6179931 | EVSCFL1616K1F16 | 1F | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 27 | — | — | MS1160 | T20 |
| 6179935 | EVSCFL2020K1F16 | 1F | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 27 | — | — | MS1160 | T20 |
| 6179921 | EVSCFL1010K0210 | 2 | 10 | 20 | 10 | 10 | 10 | 14 | 125 | 9 | 21 | — | — | 191.916 | T15 |
| 6179926 | EVSCFL1212K0210 | 2 | 10 | 20 | 12 | 12 | 12 | 16 | 125 | 11 | 21 | — | — | 191.916 | T15 |
| 6179927 | EVSCFL1212K0216 | 2 | 16 | 32 | 12 | 12 | 12 | 16 | 125 | 11 | 27 | — | — | 191.916 | T15 |
| 6179932 | EVSCFL1616K0216 | 2 | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 27 | — | — | MS1160 | T20 |
| 6179936 | EVSCFL2020K0216 | 2 | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 27 | — | — | MS1160 | T20 |
| 6179928 | EVSCFL1212K0310C | 3 | 10 | 20 | 12 | 12 | 12 | 17 | 125 | 11 | 22 | M8X1.25 | M8X1.25 | 191.916 | T15 |
| 6179929 | EVSCFL1212K0316C | 3 | 16 | 32 | 12 | 12 | 12 | 17 | 125 | 11 | 28 | M8X1.25 | M8X1.25 | 191.916 | T15 |
| 6179933 | EVSCFL1616K0316C | 3 | 16 | 32 | 16 | 16 | 16 | 21 | 125 | 15 | 28 | M8X1.25 | M8X1.25 | MS1160 | T20 |
| 6179937 | EVSCFL2020K0316C | 3 | 16 | 32 | 20 | 20 | 20 | 25 | 125 | 19 | 28 | M8X1.25 | M8X1.25 | MS1160 | T20 |

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

| screw catalogue number | screw order number | torque Nm | in. lbs. | thread | socket | wrench catalogue number | wrench order number |
|------------------------|--------------------|-----------|----------|--------|--------|-------------------------|---------------------|
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 |



■ Integral Face Grooving Straight Outboard • Metric

| order number | catalogue number | seat size | | | | | | | | | | | Torx clamp screw | Torx | |
|-------------------|-----------------------|-----------|----------|-------|-------|----|----|----|-----|----|----|----------------|------------------|---------------|-----|
| | | | D CD max | D min | W min | B | H2 | L1 | FS | LH | CF | CS | | | |
| right hand | | | | | | | | | | | | | | | |
| 6080031 | EVSBR2020K0312035040C | 3 | 12 | 40 | 35 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116561 | EVSBR2020K0312040050C | 3 | 12 | 50 | 40 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T20 |
| 6116563 | EVSBR2020K0312050060C | 3 | 12 | 60 | 50 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116567 | EVSBR2020K0312060075C | 3 | 12 | 75 | 60 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116569 | EVSBR2020K0312075100C | 3 | 12 | 100 | 75 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6080067 | EVSBR2525M0312100180C | 3 | 12 | 180 | 100 | 25 | 25 | 34 | 150 | 24 | 33 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080069 | EVSBR2525M0312180250C | 3 | 12 | 250 | 180 | 25 | 25 | 34 | 150 | 24 | 33 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080053 | EVSBR2525M0320060075C | 3 | 20 | 75 | 60 | 25 | 25 | 34 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080055 | EVSBR2525M0320075100C | 3 | 20 | 100 | 75 | 25 | 25 | 34 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080057 | EVSBR2525M0320100180C | 3 | 20 | 180 | 100 | 25 | 25 | 34 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080060 | EVSBR2525M0320180250C | 3 | 20 | 250 | 180 | 25 | 25 | 35 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080033 | EVSBR2020K0416040050C | 4 | 16 | 50 | 40 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6080040 | EVSBR2020K0416050060C | 4 | 16 | 60 | 50 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116571 | EVSBR2020K0416060075C | 4 | 16 | 75 | 60 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116573 | EVSBR2020K0416075100C | 4 | 16 | 100 | 75 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116587 | EVSBR2525M0416100180C | 4 | 16 | 180 | 100 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116589 | EVSBR2525M0416180250C | 4 | 16 | 250 | 180 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116575 | EVSBR2525M0426060075C | 4 | 26 | 75 | 60 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116577 | EVSBR2525M0426075100C | 4 | 26 | 100 | 75 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116579 | EVSBR2525M0426100180C | 4 | 26 | 180 | 100 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116581 | EVSBR2525M0426180250C | 4 | 26 | 250 | 180 | 25 | 25 | 34 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080035 | EVSBR2525M0516050060C | 5 | 16 | 60 | 50 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124200 | EVSBR2525M0516060075C | 5 | 16 | 60 | 60 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |

(continued)

(Integral Face Grooving Straight Outboard • Metric – continued)



| order number | catalogue number | seat size | CD | D max | D min | W min | B | H2 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx |
|------------------|-----------------------|-----------|----|-------|-------|-------|----|----|-----|----|----|----------------|----------------|------------------|------|
| 6124214 | EVSBR2525M0516075100C | 5 | 16 | 100 | 75 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124218 | EVSBR2525M0516100180C | 5 | 16 | 180 | 100 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124222 | EVSBR2525M0516180250C | 5 | 16 | 250 | 180 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124226 | EVSBR2525M0516250350C | 5 | 16 | 350 | 250 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124230 | EVSBR2525M0516350999C | 5 | 16 | 999 | 350 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124198 | EVSBR2525M0526050060C | 5 | 26 | 60 | 50 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124212 | EVSBR2525M0526060075C | 5 | 26 | 60 | 60 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124216 | EVSBR2525M0526075100C | 5 | 26 | 100 | 75 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124235 | EVSBR3232P0532100180C | 5 | 32 | 180 | 100 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124237 | EVSBR3232P0532180250C | 5 | 32 | 250 | 180 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124239 | EVSBR3232P0532250350C | 5 | 32 | 350 | 250 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124241 | EVSBR3232P0532350999C | 5 | 32 | 999 | 350 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124605 | EVSBR2525M0616060075C | 6 | 16 | 75 | 60 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124609 | EVSBR2525M0616075100C | 6 | 16 | 100 | 75 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124673 | EVSBR2525M0616100180C | 6 | 16 | 180 | 100 | 25 | 25 | 31 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124677 | EVSBR2525M0616180250C | 6 | 16 | 250 | 180 | 25 | 25 | 34 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124681 | EVSBR2525M0616250350C | 6 | 16 | 350 | 250 | 25 | 25 | 34 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124685 | EVSBR2525M0616350999C | 6 | 16 | 999 | 350 | 25 | 25 | 34 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124607 | EVSBR2525M0626060075C | 6 | 26 | 75 | 60 | 25 | 25 | 35 | 150 | 22 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124671 | EVSBR2525M0626075100C | 6 | 26 | 100 | 75 | 25 | 25 | 35 | 150 | 22 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6124689 | EVSBR3232P0632100180C | 6 | 32 | 180 | 100 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | T45 |
| 6124691 | EVSBR3232P0632180250C | 6 | 32 | 250 | 180 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | T45 |
| 6124693 | EVSBR3232P0632250350C | 6 | 32 | 350 | 250 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | T45 |
| 6124695 | EVSBR3232P0632350999C | 6 | 32 | 999 | 350 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 | T45 |
| left hand | | | | | | | | | | | | | | | |
| 6080037 | EVSBL2020K0312035040C | 3 | 12 | 40 | 35 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116562 | EVSBL2020K0312040050C | 3 | 12 | 50 | 40 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116564 | EVSBL2020K0312050060C | 3 | 12 | 60 | 50 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116568 | EVSBL2020K0312060075C | 3 | 12 | 75 | 60 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116570 | EVSBL2020K0312075100C | 3 | 12 | 100 | 75 | 20 | 20 | 29 | 125 | 19 | 33 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6080068 | EVSBL2525M0312100180C | 3 | 12 | 180 | 100 | 25 | 25 | 34 | 150 | 24 | 33 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080070 | EVSBL2525M0312180250C | 3 | 12 | 250 | 180 | 25 | 25 | 34 | 150 | 24 | 33 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080054 | EVSBL2525M0320060075C | 3 | 20 | 75 | 60 | 25 | 25 | 35 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080056 | EVSBL2525M0320075100C | 3 | 20 | 100 | 75 | 25 | 25 | 35 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080059 | EVSBL2525M0320100180C | 3 | 20 | 180 | 100 | 25 | 25 | 35 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080061 | EVSBL2525M0320180250C | 3 | 20 | 250 | 180 | 25 | 25 | 35 | 150 | 24 | 41 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6080038 | EVSBL2020K0416040050C | 4 | 16 | 50 | 40 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6080051 | EVSBL2020K0416050060C | 4 | 16 | 60 | 50 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116572 | EVSBL2020K0416060075C | 4 | 16 | 75 | 60 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116574 | EVSBL2020K0416075100C | 4 | 16 | 100 | 75 | 20 | 20 | 29 | 125 | 18 | 37 | 1/16 - 27 NPTF | 1/16 - 27 NPTF | MS1595 | T30 |
| 6116588 | EVSBL2525M0416100180C | 4 | 16 | 180 | 100 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116590 | EVSBL2525M0416180250C | 4 | 16 | 250 | 180 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116576 | EVSBL2525M0426060075C | 4 | 26 | 75 | 60 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |
| 6116578 | EVSBL2525M0426075100C | 4 | 26 | 100 | 75 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 | T30 |

(continued)

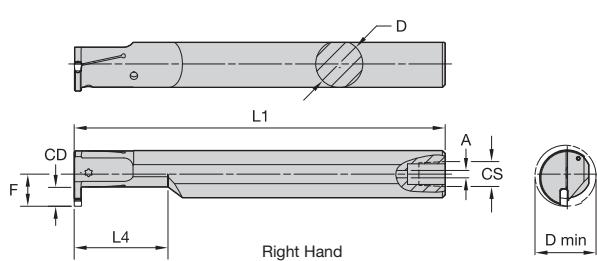
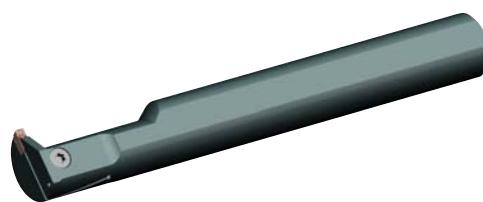
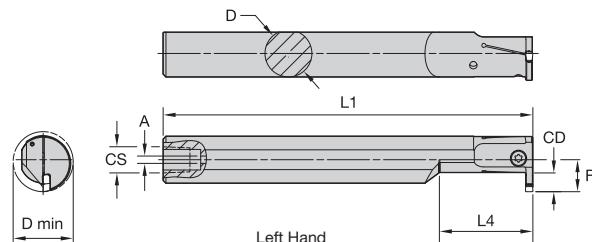
(Integral Face Grooving Straight Outboard • Metric – continued)


| order number | catalogue number | seat size | D CD max | D min | W min | B | H2 | L1 | FS | LH | CF | CS | Torx clamp screw | Torx |
|--------------|-----------------------|-----------|----------|-------|-------|----|----|----|-----|----|----|---------------|------------------|------------|
| 6116580 | EVSBL2525M0426100180C | 4 | 26 | 180 | 100 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6116582 | EVSBL2525M0426180250C | 4 | 26 | 250 | 180 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6080039 | EVSBL2525M0516050060C | 5 | 16 | 60 | 50 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124211 | EVSBL2525M0516060075C | 5 | 16 | 60 | 60 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124215 | EVSBL2525M0516075100C | 5 | 16 | 100 | 75 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124219 | EVSBL2525M0516100180C | 5 | 16 | 180 | 100 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124223 | EVSBL2525M0516180250C | 5 | 16 | 250 | 180 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124227 | EVSBL2525M0516250350C | 5 | 16 | 350 | 250 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124232 | EVSBL2525M0516350999C | 5 | 16 | 999 | 350 | 25 | 25 | 34 | 150 | 23 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124199 | EVSBL2525M0526050060C | 5 | 26 | 60 | 50 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124213 | EVSBL2525M0526060075C | 5 | 26 | 60 | 60 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124217 | EVSBL2525M0526075100C | 5 | 26 | 100 | 75 | 25 | 25 | 35 | 150 | 23 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124236 | EVSBL3232P0532100180C | 5 | 32 | 180 | 100 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124238 | EVSBL3232P0532180250C | 5 | 32 | 250 | 180 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124240 | EVSBL3232P0532250350C | 5 | 32 | 350 | 250 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124242 | EVSBL3232P0532350999C | 5 | 32 | 999 | 350 | 32 | 32 | 42 | 170 | 30 | 53 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124606 | EVSBL2525M0616060075C | 6 | 16 | 75 | 60 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124610 | EVSBL2525M0616075100C | 6 | 16 | 100 | 75 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124674 | EVSBL2525M0616100180C | 6 | 16 | 180 | 100 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124678 | EVSBL2525M0616180250C | 6 | 16 | 250 | 180 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124682 | EVSBL2525M0616250350C | 6 | 16 | 350 | 250 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124686 | EVSBL2525M0616350999C | 6 | 16 | 999 | 350 | 25 | 25 | 35 | 150 | 22 | 37 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124608 | EVSBL2525M0626060075C | 6 | 26 | 75 | 60 | 25 | 25 | 35 | 150 | 22 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124672 | EVSBL2525M0626075100C | 6 | 26 | 100 | 75 | 25 | 25 | 35 | 150 | 22 | 47 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1970 T30 |
| 6124690 | EVSBL3232P0632100180C | 6 | 32 | 180 | 100 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 T45 |
| 6124692 | EVSBL3232P0632180250C | 6 | 32 | 250 | 180 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 T45 |
| 6124694 | EVSBL3232P0632250350C | 6 | 32 | 350 | 250 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 T45 |
| 6124696 | EVSBL3232P0632350999C | 6 | 32 | 999 | 350 | 32 | 32 | 43 | 170 | 29 | 55 | 1/8 - 27 NPTF | 1/8 - 27 NPTF | MS1490 T45 |

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

| screw catalogue number | screw order number | torque | | thread | socket | wrench catalogue number | wrench order number |
|------------------------|--------------------|--------|----------|--------|--------|-------------------------|---------------------|
| | | Nm | in. lbs. | | | | |
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 |

- For use in I.D. grooving applications.
- Maximum support.
- Steel boring bar with through coolant capability.

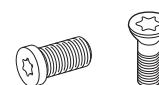


Steel Boring Bar • Metric

| order number | catalogue number | seat size | CD | D | D min | L1 | F | L4 | A | CS | Torx clamp screw | Torx clamp screw | Torx |
|-------------------|------------------|-----------|-------|----|-------|-----|----|------|------|----------------|------------------|------------------|------|
| right hand | | | | | | | | | | | | | |
| 5980518 | A12KEVEMR1F05M | 1F | 5,00 | 12 | 16 | 125 | 9 | 24,0 | 4,00 | 1/16 - 27 NPT | — | MS1285 | T15 |
| 5980520 | A16MEVEMR1F07M | 1F | 7,00 | 16 | 20 | 150 | 11 | 32,0 | 4,00 | 1/8 - 27 NPT | — | MS1273 | T15 |
| 5980622 | A20QEVEVEMR1F07M | 1F | 7,00 | 20 | 25 | 180 | 13 | 40,0 | 4,00 | 1/8 - 27 NPTF | — | MS1160 | T20 |
| 5980519 | A12KEVEMR0205M | 2 | 5,00 | 12 | 16 | 125 | 9 | 24,0 | 4,00 | 1/16 - 27 NPTF | — | MS1285 | T15 |
| 5980621 | A16MEVEMR0207M | 2 | 7,00 | 16 | 20 | 150 | 11 | 32,0 | 4,00 | 1/8 - 27 NPTF | — | MS1273 | T15 |
| 5980623 | A20QEVEVEMR0207M | 2 | 7,00 | 20 | 25 | 180 | 13 | 40,0 | 4,00 | 1/8 - 27 NPTF | — | MS1160 | T20 |
| 5980624 | A25REVEMR0210M | 2 | 10,00 | 25 | 32 | 200 | 18 | 50,0 | 6,40 | 1/4 - 18 NPT | — | MS1162 | T25 |
| 5954259 | A16MEVEMR0307M | 3 | 7,00 | 16 | 20 | 150 | 11 | 40,3 | 4,00 | 1/8 - 27 NPT | — | MS1273 | T15 |
| 5954260 | A20QEVEVEMR0307M | 3 | 7,00 | 20 | 25 | 180 | 13 | 40,3 | 4,00 | 1/8 - 27 NPT | — | MS1160 | T20 |
| 5954281 | A25REVEMR0310M | 3 | 10,00 | 25 | 32 | 200 | 17 | 50,3 | 6,40 | 1/4 - 18 NPT | — | MS1162 | T25 |
| 5954283 | A32SEVEMR0312M | 3 | 12,00 | 32 | 40 | 250 | 22 | 64,0 | 6,40 | 1/4 - 18 NPT | MS1595 | — | T30 |
| 5954282 | A25REVEMR0410M | 4 | 10,00 | 25 | 32 | 200 | 17 | 50,3 | 6,40 | 1/4 - 18 NPT | — | MS1162 | T25 |
| 5954284 | A32SEVEMR0412M | 4 | 12,00 | 32 | 40 | 250 | 22 | 64,0 | 6,40 | 1/4 - 18 NPT | MS1595 | — | T30 |

(continued)

(Steel Boring Bar • Metric – continued)



| order number | catalogue number | seat size | CD | D | D min | L1 | F | L4 | A | CS | Torx clamp screw | Torx clamp screw | Torx |
|------------------|------------------|-----------|-------|----|-------|-----|----|------|------|----------------|------------------|------------------|------|
| left hand | | | | | | | | | | | | | |
| 5980625 | A12KEVEML1F05M | 1F | 5,00 | 12 | 16 | 125 | 9 | 24,0 | 4,00 | 1/16 - 27 NPTF | — | MS1285 | T15 |
| 5980627 | A16MEVEML1F07M | 1F | 7,00 | 16 | 20 | 150 | 11 | 32,0 | 4,00 | 1/8 - 27 NPTF | — | MS1273 | T15 |
| 5980629 | A20QEVEML1F07M | 1F | 7,00 | 20 | 25 | 180 | 13 | 40,0 | 4,00 | 1/8 - 27 NPTF | — | MS1160 | T20 |
| 5980626 | A12KEVEML0205M | 2 | 5,00 | 12 | 16 | 125 | 9 | 24,0 | 4,00 | 1/16 - 27 NPTF | — | MS1285 | T15 |
| 5980628 | A16MEVEML0207M | 2 | 7,00 | 16 | 20 | 150 | 11 | 32,0 | 4,00 | 1/8 - 27 NPTF | — | MS1273 | T15 |
| 5980630 | A20QEVEML0207M | 2 | 7,00 | 20 | 25 | 180 | 13 | 40,0 | 4,00 | 1/8 - 27 NPTF | — | MS1160 | T20 |
| 5980631 | A25REVEML0210M | 2 | 10,00 | 25 | 32 | 200 | 18 | 50,0 | 6,40 | 1/4 - 18 NPT | — | MS1162 | T25 |
| 5954285 | A16MEVEML0307M | 3 | 7,00 | 16 | 20 | 150 | 11 | 40,3 | 4,00 | 1/8 - 27 NPT | — | MS1273 | T15 |
| 5954286 | A20QEVEML0307M | 3 | 7,00 | 20 | 25 | 180 | 13 | 40,3 | 4,00 | 1/8 - 27 NPT | — | MS1160 | T20 |
| 5954287 | A25REVEML0310M | 3 | 10,00 | 25 | 32 | 200 | 17 | 50,3 | 6,40 | 1/4 - 27 NPT | — | MS1162 | T25 |
| 5954289 | A32SEVEML0312M | 3 | 12,00 | 32 | 40 | 250 | 22 | 64,0 | 6,40 | 1/4 - 27 NPT | MS1595 | — | T30 |
| 5954288 | A25REVEML0410M | 4 | 10,00 | 25 | 32 | 200 | 17 | 50,3 | 6,40 | 1/4 - 18 NPT | — | MS1162 | T25 |
| 5954290 | A32SEVEML0412M | 4 | 12,00 | 32 | 40 | 250 | 22 | 64,0 | 6,40 | 1/4 - 18 NPT | MS1595 | — | T30 |

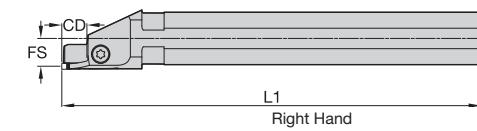
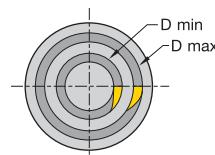
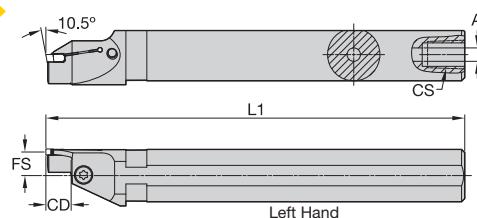
| screw catalogue number | screw order number | torque | | thread | socket | wrench catalogue number | wrench order number |
|------------------------|--------------------|--------|----------|--------|--------|-------------------------|---------------------|
| | | Nm | in. lbs. | | | | |
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 |

Grooving and Cut-Off

Beyond™ Evolution™ Integral Face Grooving Boring Bars



Grooving and Cut-Off

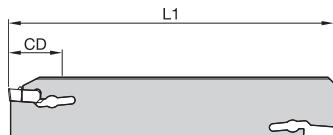


Steel Face Grooving Boring Bar • Metric

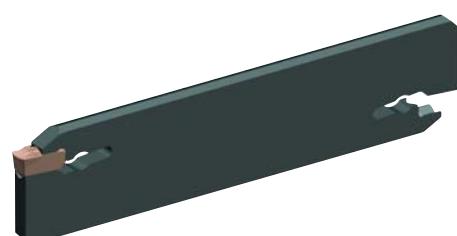
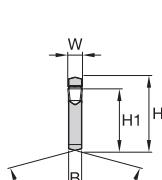
| order number | catalogue number | seat size | | | | | | | | Torx clamp screw | Torx |
|-------------------|----------------------|-----------|-------|----|-------|-------|-----|----|------------|------------------|------|
| | | | CD | D | D min | D max | L1 | F | CS | | |
| right hand | | | | | | | | | | | |
| 6116521 | A25REVSAR0212M026030 | 2 | 12,00 | 25 | 26 | 30 | 200 | 13 | 1/4-18 NPT | MS1160 | T20 |
| 6116522 | A25REVSAR0312M030035 | 3 | 12,00 | 25 | 30 | 35 | 200 | 13 | — | MS1162 | T25 |
| 6116297 | A32SEVSAR0312M033042 | 3 | 12,00 | 32 | 33 | 42 | 250 | 16 | 1/4-18 NPT | MS1162 | T25 |
| 6116299 | A40TEVSAR0312M041050 | 3 | 12,00 | 40 | 41 | 50 | 300 | 20 | 1/4-18 NPT | MS1162 | T25 |
| left hand | | | | | | | | | | | |
| 6116527 | A25REVSAL0212M026030 | 2 | 12,00 | 25 | 26 | 30 | 200 | 13 | 1/4-18 NPT | MS1160 | T20 |
| 6116528 | A25REVSAL0312M030035 | 3 | 12,00 | 25 | 30 | 35 | 200 | 13 | 1/4-18 NPT | MS1162 | T25 |
| 6116298 | A32SEVSAL0312M033042 | 3 | 12,00 | 32 | 33 | 42 | 250 | 16 | 1/4-18 NPT | — | T25 |
| 6116300 | A40TEVSAL0312M041050 | 3 | 12,00 | 40 | 41 | 50 | 300 | 20 | 1/4-18 NPT | MS1162 | T25 |

| screw catalogue number | screw order number | torque Nm | in. lbs. | thread | socket | wrench catalogue number | wrench order number |
|------------------------|--------------------|-----------|----------|--------|--------|-------------------------|---------------------|
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 |

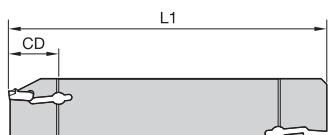
- For deep groove and cut-off applications.
- Universal pocket for holding all insert geometries.



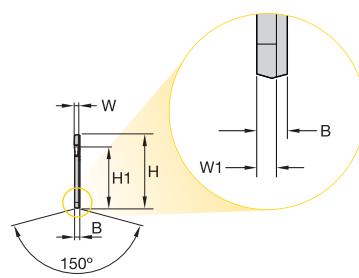
Straight



Straight



Reinforced



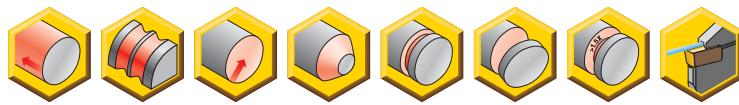
Reinforced

■ Double-Ended Cut-Off Blade

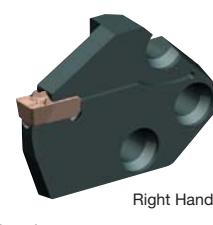
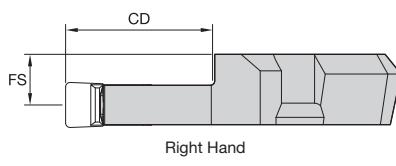
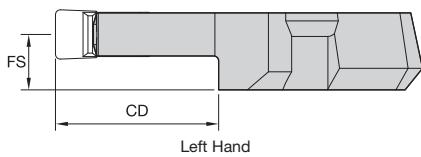
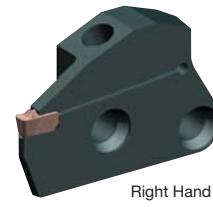
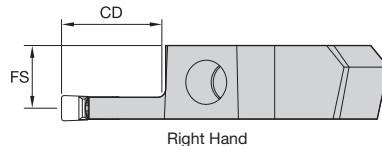
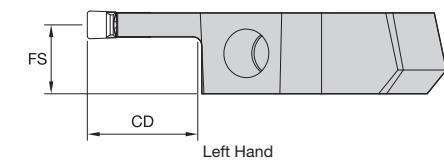
| order number | catalogue number | seat size | H | W | W1 | H1 | L1 | B | CD | assembly wrench |
|------------------|------------------|-----------|----|-----|------|------|-----|------|----|-----------------|
| left hand | | | | | | | | | | |
| 5941706 | EVBSN19G1B14 | 1B | 19 | 1,4 | 1,15 | 15,5 | 90 | 1,80 | 14 | SCW5E |
| 5941708 | EVBSN26J1B15 | 1B | 26 | 1,4 | 1,15 | 21,5 | 110 | 1,80 | 15 | SCW5E |
| 5955391 | EVBSN19Q1F16 | 1F | 19 | 1,6 | 1,30 | 15,5 | 90 | 1,80 | 16 | SCW5E |
| 5955392 | EVBSN26J1F17 | 1F | 26 | 1,6 | 1,30 | 21,5 | 110 | 1,80 | 17 | SCW5E |
| 5941707 | EVBSN19G0220 | 2 | 19 | 2,0 | — | 15,5 | 90 | 1,65 | — | SCW5E |
| 5941709 | EVBSN26J0230 | 2 | 26 | 2,0 | — | 21,5 | 110 | 1,65 | — | SCW5E |
| 5941710 | EVBSN26M0230 | 2 | 26 | 2,0 | — | 21,5 | 150 | 1,65 | — | SCW5E |
| 5941724 | EVBSN32M0250 | 2 | 32 | 2,0 | — | 25,1 | 150 | 1,65 | — | SCW5E |
| 5941721 | EVBSN26J0340 | 3 | 26 | 3,0 | — | 21,5 | 110 | 2,40 | — | SCW5E |
| 5941722 | EVBSN26M0340 | 3 | 26 | 3,0 | — | 21,5 | 150 | 2,40 | — | SCW5E |
| 5941725 | EVBSN32M0350 | 3 | 32 | 3,0 | — | 25,1 | 150 | 2,40 | — | SCW5E |
| 5941723 | EVBSN26J0440 | 4 | 26 | 4,0 | — | 21,5 | 110 | 3,40 | — | SCW5E |
| 5941726 | EVBSN32M0450 | 4 | 32 | 4,0 | — | 25,1 | 150 | 3,40 | — | SCW5E |
| 5977635 | EVBSN26J0540 | 5 | 26 | 5,0 | — | 21,5 | 110 | 4,40 | — | SCW5E |
| 5977637 | EVBSN32M0560 | 5 | 32 | 5,0 | — | 25,1 | 150 | 4,40 | — | SCW5E |
| 5977636 | EVBSN26J0640 | 6 | 26 | 6,0 | — | 21,5 | 110 | 5,40 | — | SCW8E |
| 5977638 | EVBSN32M0660 | 6 | 32 | 6,0 | — | 25,1 | 150 | 5,40 | — | SCW8E |
| 5977640 | EVBSN52X06120 | 6 | 53 | 6,0 | — | 45,3 | 260 | 5,40 | — | SCW8E |
| 5977639 | EVBSN32M0860 | 8 | 32 | 8,0 | — | 25,1 | 150 | 7,00 | — | SCW8E |
| 5977721 | EVBSN52X08120 | 8 | 53 | 8,0 | — | 45,3 | 260 | 7,00 | — | SCW8E |

NOTE: Assembly wrench supplied with blade.

- Maximum support for specific groove width and straight clearance for unlimited diameter.
- Through the pocket coolant capable.
- Universal pocket for holding all insert geometries.



Grooving and Cut-Off



■ Modular Straight Blade with Coolant

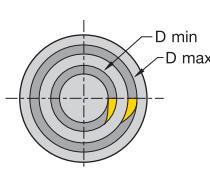
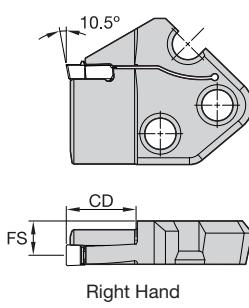
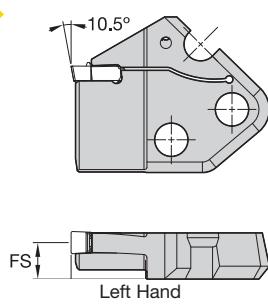
| order number | catalogue number | seat size | CD | FS | blade size |
|-------------------|------------------|-----------|------|-------|------------|
| right hand | | | | | |
| 6031041 | EVM50R1F12M | 1F | 12,0 | 11,00 | 50 |
| 6030969 | EVM50R0212M | 2 | 12,0 | 10,88 | 50 |
| 5955423 | EVM50R0216M | 2 | 16,0 | 10,88 | 50 |
| 5979200 | EVM50R0312MC | 3 | 12,0 | 10,43 | 50 |
| 5979010 | EVM50R0316MC | 3 | 16,0 | 10,43 | 50 |
| 5979181 | EVM50R0322MC | 3 | 22,0 | 10,43 | 50 |
| 5979201 | EVM50R0412MC | 4 | 12,0 | 9,93 | 50 |
| 5979182 | EVM50R0416MC | 4 | 16,0 | 9,93 | 50 |
| 5979183 | EVM50R0422MC | 4 | 22,0 | 9,93 | 50 |
| 5979198 | EVM50R0426MC | 4 | 26,0 | 9,93 | 50 |
| 5979184 | EVM50R0432MC | 4 | 32,0 | 9,93 | 50 |
| 6031031 | EVM50R0512MC | 5 | 12,0 | 9,43 | 50 |
| 6031033 | EVM50R0516MC | 5 | 16,0 | 9,43 | 50 |
| 5955415 | EVM50R0526MC | 5 | 26,0 | 9,43 | 50 |
| 5955416 | EVM50R0532MC | 5 | 32,0 | 9,43 | 50 |
| 6031035 | EVM65R0616MC | 6 | 16,0 | 9,88 | 65 |
| 5955417 | EVM65R0626MC | 6 | 26,0 | 9,88 | 65 |
| 6031037 | EVM65R0632MC | 6 | 32,0 | 9,88 | 65 |
| 6031039 | EVM65R0816MC | 8 | 16,0 | 9,00 | 65 |
| 5955418 | EVM65R0826MC | 8 | 26,0 | 9,00 | 65 |

(continued)

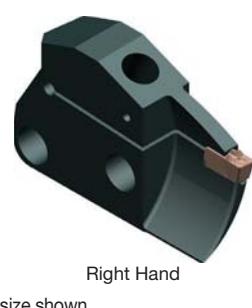
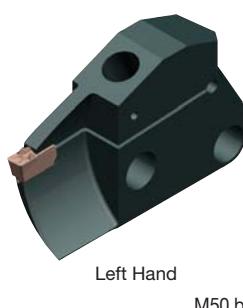
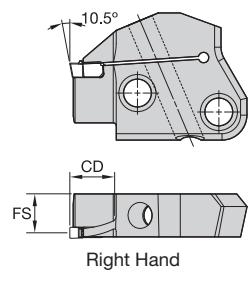
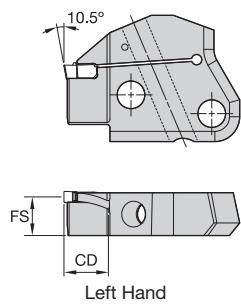
(Modular Straight Blade with Coolant – continued)

| order number | catalogue number | seat size | CD | FS | blade size |
|------------------|------------------|-----------|------|-------|------------|
| left hand | | | | | |
| 6031042 | EVM50L1F12M | 1F | 12,0 | 11,00 | 50 |
| 6030970 | EVM50L0212M | 2 | 12,0 | 10,88 | 50 |
| 5955424 | EVM50L0216M | 2 | 16,0 | 10,88 | 50 |
| 5979202 | EVM50L0312MC | 3 | 12,0 | 10,43 | 50 |
| 5979185 | EVM50L0316MC | 3 | 16,0 | 10,43 | 50 |
| 5979186 | EVM50L0322MC | 3 | 22,0 | 10,43 | 50 |
| 5979203 | EVM50L0412MC | 4 | 12,0 | 9,93 | 50 |
| 5979187 | EVM50L0416MC | 4 | 16,0 | 9,93 | 50 |
| 5979188 | EVM50L0422MC | 4 | 22,0 | 9,93 | 50 |
| 5979199 | EVM50L0426MC | 4 | 26,0 | 9,93 | 50 |
| 5979189 | EVM50L0432MC | 4 | 32,0 | 9,93 | 50 |
| 6031032 | EVM50L0512MC | 5 | 12,0 | 9,93 | 50 |
| 6031034 | EVM50L0516MC | 5 | 16,0 | 9,43 | 50 |
| 5955419 | EVM50L0526MC | 5 | 26,0 | 9,43 | 50 |
| 5955420 | EVM50L0532MC | 5 | 32,0 | 9,43 | 50 |
| 6031036 | EVM65L0616MC | 6 | 16,0 | 9,88 | 65 |
| 5955421 | EVM65L0626MC | 6 | 26,0 | 9,88 | 65 |
| 6031038 | EVM65L0632MC | 6 | 32,0 | 9,88 | 65 |
| 6031040 | EVM65L0816MC | 8 | 16,0 | 9,00 | 65 |
| 5955422 | EVM65L0826MC | 8 | 26,0 | 9,00 | 65 |

NOTE: Through the pocket coolant available in seat sizes 3 and higher.



M65 blade size shown



M50 blade size shown

■ Modular Inboard Face Grooving Blade with Coolant

| order number | catalogue number | seat size | D min | D max | CD | FS | blade size |
|-------------------|--------------------|-----------|-------|-------|------|-------|------------|
| right hand | | | | | | | |
| 6097181 | EVM50R0312A035040C | 3 | 35 | 40 | 12,0 | 10,50 | 50 |
| 6097182 | EVM50R0312A040050C | 3 | 40 | 50 | 12,0 | 10,50 | 50 |
| 6097183 | EVM50R0312A050060C | 3 | 50 | 60 | 12,0 | 10,50 | 50 |
| 6097184 | EVM50R0312A060075C | 3 | 60 | 75 | 12,0 | 10,50 | 50 |
| 6116789 | EVM50R0312A075100C | 3 | 75 | 100 | 12,0 | 10,50 | 50 |
| 6117063 | EVM50R0312A100180C | 3 | 100 | 180 | 12,0 | 10,50 | 50 |
| 6117067 | EVM50R0312A180250C | 3 | 180 | 250 | 12,0 | 10,50 | 50 |
| 6117071 | EVM50R0312A250350C | 3 | 250 | 350 | 12,0 | 10,50 | 50 |
| 6117075 | EVM50R0312A350999C | 3 | 350 | 999 | 12,0 | 10,50 | 50 |
| 6097185 | EVM50R0320A075100C | 3 | 75 | 100 | 20,0 | 10,50 | 50 |
| 6097186 | EVM50R0320A100180C | 3 | 100 | 180 | 20,0 | 10,50 | 50 |
| 6097187 | EVM50R0320A180250C | 3 | 180 | 250 | 20,0 | 10,50 | 50 |
| 6097188 | EVM50R0320A250350C | 3 | 250 | 350 | 20,0 | 10,50 | 50 |
| 6097189 | EVM50R0320A350999C | 3 | 350 | 999 | 20,0 | 10,50 | 50 |
| 6079480 | EVM50R0416A040050C | 4 | 40 | 50 | 16,0 | 10,00 | 50 |
| 6079481 | EVM50R0416A050060C | 4 | 50 | 60 | 16,0 | 10,00 | 50 |
| 6079482 | EVM50R0416A060075C | 4 | 60 | 75 | 16,0 | 10,00 | 50 |
| 6079483 | EVM50R0416A075100C | 4 | 75 | 100 | 16,0 | 10,00 | 50 |
| 6117079 | EVM50R0416A100180C | 4 | 100 | 180 | 16,0 | 10,00 | 50 |
| 6117093 | EVM50R0416A180250C | 4 | 180 | 250 | 16,0 | 10,00 | 50 |
| 6117097 | EVM50R0416A250350C | 4 | 250 | 350 | 16,0 | 10,00 | 50 |
| 6117101 | EVM50R0416A350999C | 4 | 350 | 999 | 16,0 | 10,00 | 50 |
| 6079484 | EVM50R0426A100180C | 4 | 100 | 180 | 26,0 | 10,00 | 50 |

(continued)

(Modular Inboard Face Grooving Blade with Coolant – continued)

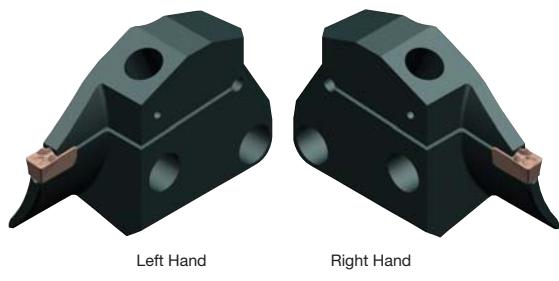
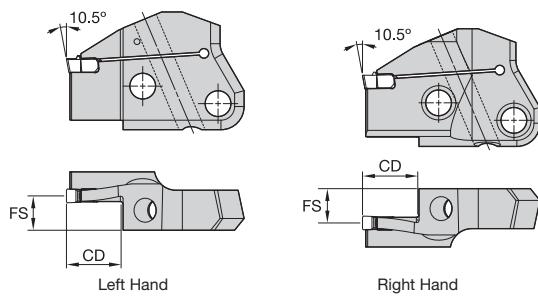
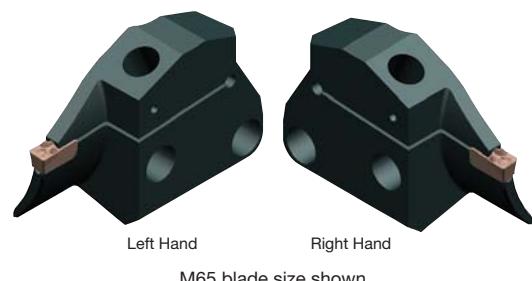
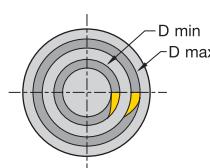
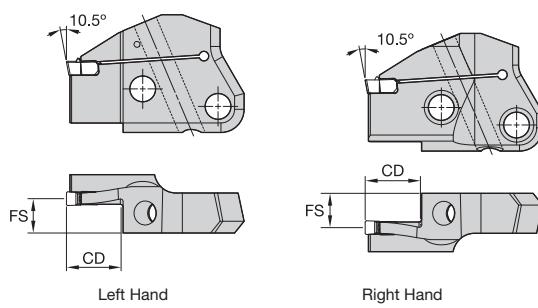
| order number | catalogue number | seat size | D min | D max | CD | FS | blade size |
|------------------|--------------------|-----------|-------|-------|------|-------|------------|
| 6079485 | EVM50R0426A180250C | 4 | 180 | 250 | 26,0 | 10,00 | 50 |
| 6079486 | EVM50R0426A250350C | 4 | 250 | 350 | 26,0 | 10,00 | 50 |
| 6079487 | EVM50R0426A350999C | 4 | 350 | 999 | 26,0 | 10,00 | 50 |
| 6079488 | EVM50R0520A050060C | 5 | 50 | 60 | 20,0 | 9,50 | 50 |
| 6079489 | EVM50R0520A060075C | 5 | 60 | 75 | 20,0 | 9,50 | 50 |
| 6079490 | EVM50R0520A075100C | 5 | 75 | 100 | 20,0 | 9,50 | 50 |
| 6079491 | EVM50R0520A100180C | 5 | 100 | 180 | 20,0 | 9,50 | 50 |
| 6079492 | EVM50R0520A180250C | 5 | 180 | 250 | 20,0 | 9,50 | 50 |
| 6079493 | EVM50R0520A250350C | 5 | 250 | 350 | 20,0 | 9,50 | 50 |
| 6079494 | EVM50R0520A350999C | 5 | 350 | 999 | 20,0 | 9,50 | 50 |
| 6079223 | EVM65R0620A060075C | 6 | 60 | 75 | 20,0 | 9,88 | 65 |
| 6079224 | EVM65R0620A075100C | 6 | 75 | 100 | 20,0 | 9,88 | 65 |
| 6079225 | EVM65R0620A100180C | 6 | 100 | 180 | 20,0 | 9,88 | 65 |
| 6079226 | EVM65R0620A180250C | 6 | 180 | 250 | 20,0 | 9,88 | 65 |
| 6079227 | EVM65R0620A250350C | 6 | 250 | 350 | 20,0 | 9,88 | 65 |
| 6079228 | EVM65R0620A350999C | 6 | 350 | 999 | 20,0 | 9,88 | 65 |
| 6079229 | EVM65R0820A080180C | 8 | 80 | 180 | 20,0 | 9,00 | 65 |
| 6079230 | EVM65R0820A180999C | 8 | 180 | 999 | 20,0 | 9,00 | 65 |
| left hand | | | | | | | |
| 6097190 | EVM50L0312A035040C | 3 | 35 | 40 | 12,0 | 10,50 | 50 |
| 6097191 | EVM50L0312A040050C | 3 | 40 | 50 | 12,0 | 10,50 | 50 |
| 6097192 | EVM50L0312A050060C | 3 | 50 | 60 | 12,0 | 10,50 | 50 |
| 6097193 | EVM50L0312A060075C | 3 | 60 | 75 | 12,0 | 10,50 | 50 |
| 6116790 | EVM50L0312A075100C | 3 | 75 | 100 | 12,0 | 10,50 | 50 |
| 6117064 | EVM50L0312A100180C | 3 | 100 | 180 | 12,0 | 10,50 | 50 |
| 6117068 | EVM50L0312A180250C | 3 | 180 | 250 | 12,0 | 10,50 | 50 |
| 6117072 | EVM50L0312A250350C | 3 | 250 | 350 | 12,0 | 10,50 | 50 |
| 6117076 | EVM50L0312A350999C | 3 | 350 | 999 | 12,0 | 10,50 | 50 |
| 6097194 | EVM50L0320A075100C | 3 | 75 | 100 | 20,0 | 10,50 | 50 |
| 6097195 | EVM50L0320A100180C | 3 | 100 | 180 | 20,0 | 10,50 | 50 |
| 6097196 | EVM50L0320A180250C | 3 | 180 | 250 | 20,0 | 10,50 | 50 |
| 6097197 | EVM50L0320A250350C | 3 | 250 | 350 | 20,0 | 10,50 | 50 |
| 6097198 | EVM50L0320A350999C | 3 | 350 | 999 | 20,0 | 10,50 | 50 |
| 6079495 | EVM50L0416A040050C | 4 | 40 | 50 | 16,0 | 10,00 | 50 |
| 6079496 | EVM50L0416A050060C | 4 | 50 | 60 | 16,0 | 10,00 | 50 |
| 6079497 | EVM50L0416A060075C | 4 | 60 | 75 | 16,0 | 10,00 | 50 |
| 6079498 | EVM50L0416A075100C | 4 | 75 | 100 | 16,0 | 10,00 | 50 |
| 6117080 | EVM50L0416A100180C | 4 | 100 | 180 | 16,0 | 10,00 | 50 |
| 6117094 | EVM50L0416A180250C | 4 | 180 | 250 | 16,0 | 10,00 | 50 |
| 6117098 | EVM50L0416A250350C | 4 | 250 | 350 | 16,0 | 10,00 | 50 |
| 6117102 | EVM50L0416A350999C | 4 | 350 | 999 | 16,0 | 10,00 | 50 |
| 6079499 | EVM50L0426A100180C | 4 | 100 | 180 | 26,0 | 10,00 | 50 |
| 6079500 | EVM50L0426A180250C | 4 | 180 | 250 | 26,0 | 10,00 | 50 |
| 6079501 | EVM50L0426A250350C | 4 | 250 | 350 | 26,0 | 10,00 | 50 |

(continued)

(Modular Inboard Face Grooving Blade with Coolant – continued)

| order number | catalogue number | seat size | D min | D max | CD | FS | blade size |
|--------------|--------------------|-----------|-------|-------|------|-------|------------|
| 6079502 | EVM50L0426A350999C | 4 | 350 | 999 | 26,0 | 10,00 | 50 |
| 6079503 | EVM50L0520A050060C | 5 | 50 | 60 | 20,0 | 9,50 | 50 |
| 6079504 | EVM50L0520A060075C | 5 | 60 | 75 | 20,0 | 9,50 | 50 |
| 6079505 | EVM50L0520A075100C | 5 | 75 | 100 | 20,0 | 9,50 | 50 |
| 6079506 | EVM50L0520A100180C | 5 | 100 | 180 | 20,0 | 9,50 | 50 |
| 6079507 | EVM50L0520A180250C | 5 | 180 | 250 | 20,0 | 9,50 | 50 |
| 6079508 | EVM50L0520A250350C | 5 | 250 | 350 | 20,0 | 9,50 | 50 |
| 6079509 | EVM50L0520A350999C | 5 | 350 | 999 | 20,0 | 9,50 | 50 |
| 6079234 | EVM65L0620A060075C | 6 | 60 | 75 | 20,0 | 9,88 | 65 |
| 6079235 | EVM65L0620A075100C | 6 | 75 | 100 | 20,0 | 9,88 | 65 |
| 6079236 | EVM65L0620A100180C | 6 | 100 | 180 | 20,0 | 9,88 | 65 |
| 6079237 | EVM65L0620A180250C | 6 | 180 | 250 | 20,0 | 9,88 | 65 |
| 6079238 | EVM65L0620A250350C | 6 | 250 | 350 | 20,0 | 9,88 | 65 |
| 6079239 | EVM65L0620A350999C | 6 | 350 | 999 | 20,0 | 9,88 | 65 |
| 6079240 | EVM65L0820A080180C | 8 | 80 | 180 | 20,0 | 9,00 | 65 |
| 6079241 | EVM65L0820A180999C | 8 | 180 | 999 | 20,0 | 9,00 | 65 |

NOTE: Through the pocket coolant available in seat sizes 3 and higher.



■ Modular Outboard Face Grooving Blade with Coolant

| order number | catalogue number | seat size | D min | D max | CD | FS | blade size |
|-------------------|--------------------|-----------|-------|-------|------|-------|------------|
| right hand | | | | | | | |
| 6079340 | EVM50R0312B035040C | 3 | 35 | 40 | 12,0 | 10,50 | 50 |
| 6079411 | EVM50R0312B040050C | 3 | 40 | 50 | 12,0 | 10,50 | 50 |
| 6079412 | EVM50R0312B050060C | 3 | 50 | 60 | 12,0 | 10,50 | 50 |
| 6079413 | EVM50R0312B060075C | 3 | 60 | 75 | 12,0 | 10,50 | 50 |
| 6117061 | EVM50R0312B075100C | 3 | 75 | 100 | 12,0 | 10,50 | 50 |
| 6117065 | EVM50R0312B100180C | 3 | 100 | 180 | 12,0 | 10,50 | 50 |
| 6117069 | EVM50R0312B180250C | 3 | 180 | 250 | 12,0 | 10,50 | 50 |
| 6117073 | EVM50R0312B250350C | 3 | 250 | 350 | 12,0 | 10,50 | 50 |
| 6117077 | EVM50R0312B350999C | 3 | 350 | 999 | 12,0 | 10,50 | 50 |
| 6079414 | EVM50R0320B075100C | 3 | 75 | 100 | 20,0 | 10,50 | 50 |
| 6079415 | EVM50R0320B100180C | 3 | 100 | 180 | 20,0 | 10,50 | 50 |
| 6079416 | EVM50R0320B180250C | 3 | 180 | 250 | 20,0 | 10,50 | 50 |
| 6079417 | EVM50R0320B250350C | 3 | 250 | 350 | 20,0 | 10,50 | 50 |
| 6079418 | EVM50R0320B350999C | 3 | 350 | 999 | 20,0 | 10,50 | 50 |
| 6079429 | EVM50R0416B040050C | 4 | 40 | 50 | 16,0 | 10,00 | 50 |
| 6079430 | EVM50R0416B050060C | 4 | 50 | 60 | 16,0 | 10,00 | 50 |
| 6079451 | EVM50R0416B060075C | 4 | 60 | 75 | 16,0 | 10,00 | 50 |
| 6079452 | EVM50R0416B075100C | 4 | 75 | 100 | 16,0 | 10,00 | 50 |
| 6117091 | EVM50R0416B100180C | 4 | 100 | 180 | 16,0 | 10,00 | 50 |
| 6117095 | EVM50R0416B180250C | 4 | 180 | 250 | 16,0 | 10,00 | 50 |
| 6117099 | EVM50R0416B250350C | 4 | 250 | 350 | 16,0 | 10,00 | 50 |
| 6117103 | EVM50R0416B350999C | 4 | 350 | 999 | 16,0 | 10,00 | 50 |
| 6079453 | EVM50R0426B100180C | 4 | 100 | 180 | 26,0 | 10,00 | 50 |

(continued)

(Modular Outboard Face Grooving Blade with Coolant — continued)

| order number | catalogue number | seat size | D min | D max | CD | FS | blade size |
|------------------|--------------------|-----------|-------|-------|------|-------|------------|
| 6079454 | EVM50R0426B180250C | 4 | 180 | 250 | 26,0 | 10,00 | 50 |
| 6079455 | EVM50R0426B250350C | 4 | 250 | 350 | 26,0 | 10,00 | 50 |
| 6079456 | EVM50R0426B350999C | 4 | 350 | 999 | 26,0 | 10,00 | 50 |
| 6079457 | EVM50R0520B050060C | 5 | 50 | 60 | 20,0 | 9,50 | 50 |
| 6079458 | EVM50R0520B060075C | 5 | 60 | 75 | 20,0 | 9,50 | 50 |
| 6079459 | EVM50R0520B075100C | 5 | 75 | 100 | 20,0 | 9,50 | 50 |
| 6079460 | EVM50R0520B100180C | 5 | 100 | 180 | 20,0 | 9,50 | 50 |
| 6079461 | EVM50R0520B180250C | 5 | 180 | 250 | 20,0 | 9,50 | 50 |
| 6079462 | EVM50R0520B250350C | 5 | 250 | 350 | 20,0 | 9,50 | 50 |
| 6079463 | EVM50R0520B350999C | 5 | 350 | 999 | 20,0 | 9,50 | 50 |
| 6079246 | EVM65R0620B060075C | 6 | 60 | 75 | 20,0 | 9,88 | 65 |
| 6079247 | EVM65R0620B075100C | 6 | 75 | 100 | 20,0 | 9,88 | 65 |
| 6079248 | EVM65R0620B100180C | 6 | 100 | 180 | 20,0 | 9,88 | 65 |
| 6079249 | EVM65R0620B180250C | 6 | 180 | 250 | 20,0 | 9,88 | 65 |
| 6079250 | EVM65R0620B250350C | 6 | 250 | 350 | 20,0 | 9,88 | 65 |
| 6079261 | EVM65R0620B350999C | 6 | 350 | 999 | 20,0 | 9,88 | 65 |
| 6079262 | EVM65R0820B080180C | 8 | 80 | 180 | 20,0 | 9,00 | 65 |
| 6079263 | EVM65R0820B180999C | 8 | 180 | 999 | 20,0 | 9,00 | 65 |
| left hand | | | | | | | |
| 6079420 | EVM50L0312B035040C | 3 | 35 | 40 | 12,0 | 10,50 | 50 |
| 6079421 | EVM50L0312B040050C | 3 | 40 | 50 | 12,0 | 10,50 | 50 |
| 6079422 | EVM50L0312B050060C | 3 | 50 | 60 | 12,0 | 10,50 | 50 |
| 6079423 | EVM50L0312B060075C | 3 | 60 | 75 | 12,0 | 10,50 | 50 |
| 6117062 | EVM50L0312B075100C | 3 | 75 | 100 | 12,0 | 10,50 | 50 |
| 6117066 | EVM50L0312B100180C | 3 | 100 | 180 | 12,0 | 10,50 | 50 |
| 6117070 | EVM50L0312B180250C | 3 | 180 | 250 | 12,0 | 10,50 | 50 |
| 6117074 | EVM50L0312B250350C | 3 | 250 | 350 | 12,0 | 10,50 | 50 |
| 6117078 | EVM50L0312B350999C | 3 | 350 | 999 | 12,0 | 10,50 | 50 |
| 6079424 | EVM50L0320B075100C | 3 | 75 | 100 | 20,0 | 10,50 | 50 |
| 6079425 | EVM50L0320B100180C | 3 | 100 | 180 | 20,0 | 10,50 | 50 |
| 6079426 | EVM50L0320B180250C | 3 | 180 | 250 | 20,0 | 10,50 | 50 |
| 6079427 | EVM50L0320B250350C | 3 | 250 | 350 | 20,0 | 10,50 | 50 |
| 6079428 | EVM50L0320B350999C | 3 | 350 | 999 | 20,0 | 10,50 | 50 |
| 6079464 | EVM50L0416B040050C | 4 | 40 | 50 | 16,0 | 10,00 | 50 |
| 6079465 | EVM50L0416B050060C | 4 | 50 | 60 | 16,0 | 10,00 | 50 |
| 6079466 | EVM50L0416B060075C | 4 | 60 | 75 | 16,0 | 10,00 | 50 |
| 6079467 | EVM50L0416B075100C | 4 | 75 | 100 | 16,0 | 10,00 | 50 |
| 6117092 | EVM50L0416B100180C | 4 | 100 | 180 | 16,0 | 10,00 | 50 |
| 6117096 | EVM50L0416B180250C | 4 | 180 | 250 | 16,0 | 10,00 | 50 |
| 6117100 | EVM50L0416B250350C | 4 | 250 | 350 | 16,0 | 10,00 | 50 |
| 6117104 | EVM50L0416B350999C | 4 | 350 | 999 | 16,0 | 10,00 | 50 |
| 6079468 | EVM50L0426B100180C | 4 | 100 | 180 | 26,0 | 10,00 | 50 |
| 6079469 | EVM50L0426B180250C | 4 | 180 | 250 | 26,0 | 10,00 | 50 |
| 6079470 | EVM50L0426B250350C | 4 | 250 | 350 | 26,0 | 10,00 | 50 |

(continued)

(Modular Outboard Face Grooving Blade with Coolant – continued)

| order number | catalogue number | seat size | D min | D max | CD | FS | blade size |
|--------------|--------------------|-----------|-------|-------|------|-------|------------|
| 6079471 | EVM50L0426B350999C | 4 | 350 | 999 | 26,0 | 10,00 | 50 |
| 6079472 | EVM50L0520B050060C | 5 | 50 | 60 | 20,0 | 9,50 | 50 |
| 6079473 | EVM50L0520B060075C | 5 | 60 | 75 | 20,0 | 9,50 | 50 |
| 6079474 | EVM50L0520B075100C | 5 | 75 | 100 | 20,0 | 9,50 | 50 |
| 6079475 | EVM50L0520B100180C | 5 | 100 | 180 | 20,0 | 9,50 | 50 |
| 6079476 | EVM50L0520B180250C | 5 | 180 | 250 | 20,0 | 9,50 | 50 |
| 6079477 | EVM50L0520B250350C | 5 | 250 | 350 | 20,0 | 9,50 | 50 |
| 6079478 | EVM50L0520B350999C | 5 | 350 | 999 | 20,0 | 9,50 | 50 |
| 6079266 | EVM65L0620B060075C | 6 | 60 | 75 | 20,0 | 9,88 | 65 |
| 6079267 | EVM65L0620B075100C | 6 | 75 | 100 | 20,0 | 9,88 | 65 |
| 6079268 | EVM65L0620B100180C | 6 | 100 | 180 | 20,0 | 9,88 | 65 |
| 6079269 | EVM65L0620B180250C | 6 | 180 | 250 | 20,0 | 9,88 | 65 |
| 6079270 | EVM65L0620B250350C | 6 | 250 | 350 | 20,0 | 9,87 | 65 |
| 6079271 | EVM65L0620B350999C | 6 | 350 | 999 | 20,0 | 9,88 | 65 |
| 6079272 | EVM65L0820B080180C | 8 | 80 | 180 | 20,0 | 9,00 | 65 |
| 6079273 | EVM65L0820B180999C | 8 | 180 | 999 | 20,0 | 9,00 | 65 |

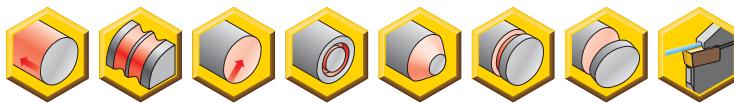
NOTE: Through the pocket coolant available in seat sizes 3 and higher.

Grooving and Cut-Off

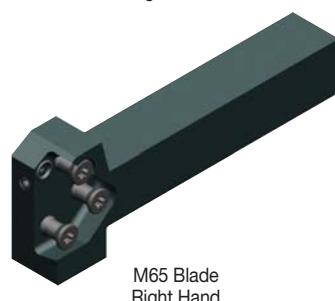
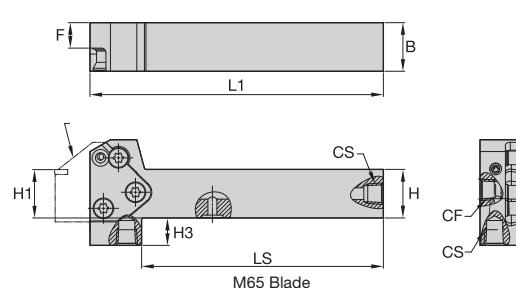
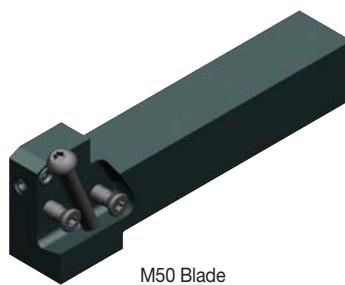
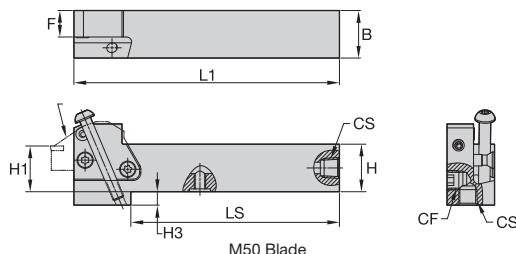
Beyond™ Evolution™ Modular Toolholder



- Interchangeable blades for versatility and depth of cut.
- Through the pocket coolant capable.



Grooving and Cut-Off



■ Modular Straight Toolholder with Coolant • Metric



| order number | catalogue number | B | H | H1 | L1 | F | CS | CF | LS | H3 | blade size | blade screw | Torx | clamping screw | Torx |
|-------------------|------------------|----|----|----|--------|-------|-------|-------|--------|-------|------------|-------------|------|----------------|------|
| right hand | | | | | | | | | | | | | | | |
| 5979190 | KGMSR2525M50C | 25 | 25 | 25 | 138,75 | 13,84 | G 1/8 | G 1/8 | 109,00 | 7,00 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5979745 | KGMSR2525M65C | 25 | 25 | 25 | 150,00 | 13,00 | G 1/8 | G 1/8 | 122,00 | 14,00 | 65 | MS1163 | T30 | — | — |
| 5979746 | KGMSR3232P50C | 32 | 32 | 32 | 158,75 | 20,81 | G 1/8 | G 1/8 | 133,62 | — | 50 | MS1162 | T25 | MS2002 | T25 |
| 5979747 | KGMSR3232P65C | 32 | 32 | 32 | 170,00 | 20,00 | G 1/8 | G 1/8 | 138,50 | 7,00 | 65 | MS1163 | T30 | — | — |
| left hand | | | | | | | | | | | | | | | |
| 5979191 | KGMSL2525M50C | 25 | 25 | 25 | 138,75 | 13,84 | G 1/8 | G 1/8 | 109,00 | 7,00 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5979748 | KGMSL2525M65C | 25 | 25 | 25 | 150,00 | 13,00 | G 1/8 | G 1/8 | 122,00 | 14,00 | 65 | MS1163 | T30 | — | — |
| 5979749 | KGMSL3232P50C | 32 | 32 | 32 | 158,75 | 20,80 | G 1/8 | G 1/8 | 133,62 | — | 50 | MS1162 | T25 | MS2002 | T25 |
| 5979750 | KGMSL3232P65C | 32 | 32 | 32 | 170,00 | 20,00 | G 1/8 | G 1/8 | 142,00 | 7,00 | 65 | MS1163 | T30 | — | — |

NOTE: KGMS..: Right-hand holder uses right-hand blades.

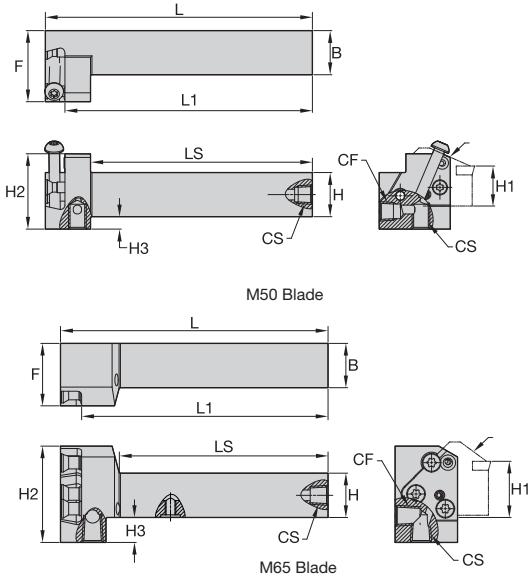
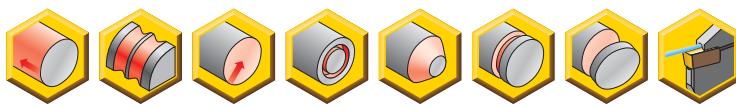
KGME..: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

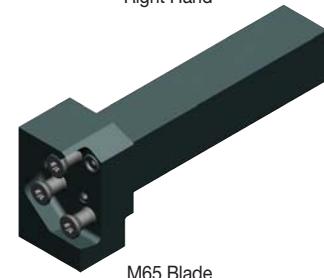
M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).

| screw | screw | torque | | | | socket | wrench | wrench |
|------------------|--------------|--------|----------|--------|------|------------------|--------------|--------|
| catalogue number | order number | Nm | in. lbs. | thread | | catalogue number | order number | |
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 | |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 | |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 | |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 | |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 | |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 | |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 | |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 | |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 | |

- Interchangeable blades for versatility and depth of cut.
- Through the pocket coolant capable.



M50 Blade
Right Hand



M65 Blade
Right Hand

■ Modular End Mount Toolholder with Coolant • Metric

| order number | catalogue number | | | | | | | | | | | blade size | blade screw | Torx | clamping screw | Torx |
|-------------------|------------------|----|----|----|--------|-------|-------|-------|--------|-------|----|------------|-------------|--------|----------------|------|
| | | B | H | H1 | L1 | F | CS | CF | LS | H3 | | | | | | |
| right hand | | | | | | | | | | | | | | | | |
| 5979765 | KGMER2525M65C | 25 | 25 | 25 | 138,15 | 35,00 | G 1/8 | G 1/8 | 117,00 | 14,00 | 65 | MS1163 | T30 | — | — | — |
| 5979192 | KGMER2525M50C | 25 | 25 | 25 | 139,25 | 40,00 | G 1/8 | G 1/8 | 124,85 | 7,00 | 50 | MS1162 | T25 | MS2002 | T25 | |
| 5979767 | KGMER3232P65C | 32 | 32 | 32 | 158,15 | 35,00 | G 1/8 | G 1/8 | 137,00 | 7,00 | 65 | MS1163 | T30 | — | — | |
| 5979766 | KGMER3232P50C | 32 | 32 | 32 | 159,25 | 40,00 | G 1/8 | G 1/8 | 145,25 | — | 50 | MS1162 | T25 | MS2002 | T25 | |
| left hand | | | | | | | | | | | | | | | | |
| 5979768 | KGMEL2525M65C | 25 | 25 | 25 | 138,15 | 35,00 | G 1/8 | G 1/8 | 117,00 | 14,00 | 65 | MS1163 | T30 | — | — | — |
| 5979193 | KGMEL2525M50C | 25 | 25 | 25 | 139,25 | 40,00 | G 1/8 | G 1/8 | 124,85 | 7,00 | 50 | MS1162 | T25 | MS2002 | T25 | |
| 5979770 | KGMEL3232P65C | 32 | 32 | 32 | 158,15 | 35,00 | G 1/8 | G 1/8 | 137,00 | 7,00 | 65 | MS1163 | T30 | — | — | |
| 5979769 | KGMEL3232P50C | 32 | 32 | 32 | 159,25 | 40,00 | G 1/8 | G 1/8 | 145,25 | — | 50 | MS1162 | T25 | MS2002 | T25 | |

NOTE: KGMS..: Right-hand holder uses right-hand blades.

KGME..: Right-hand holder uses left-hand blades.

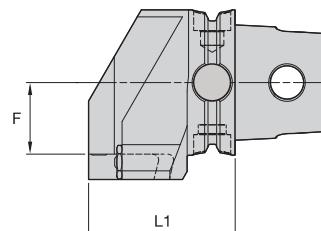
M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).



| screw | screw | torque | | thread | socket | wrench | wrench |
|------------------|--------------|--------|----------|--------|--------|--------|---------|
| catalogue number | order number | Nm | in. lbs. | | | | |
| MS1160 | 1099645 | 7 | 62 | M5 | T20 | KT20 | 1022703 |
| MS1162 | 1127019 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS1163 | 1124104 | 18 | 159 | M8 | T30 | KT30L | 1099676 |
| MS1273 | 1020977 | 4 | 35.4 | M4 | T15 | KT15 | 1022701 |
| MS1490 | 2263299 | 17 | 151 | M8 | T45 | KT45 | 1018227 |
| MS1595 | 1094300 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS1970 | 1106668 | 12 | 106 | M6 | T30 | KT30 | 1099676 |
| MS2002 | 1621087 | 9 | 80 | M6 | T25 | KT25 | 1022725 |
| MS2091 | 1931147 | 9 | 80 | M5 | 25IP | K25IP | 2050113 |

- Best-in-class KM Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand



■ Modular Straight KM System with Coolant



| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 5999790 | KM40TSKGM50C | KM40TS | 53,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000422 | KM50TSKGM65C | KM50TS | 53,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 5999864 | KM50TSKGM50C | KM50TS | 58,5 | 23,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000431 | KM63TSKGM65C | KM63TS | 58,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 5999948 | KM63TSKGM50C | KM63TS | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999972 | KM63XMZKGM50CY | KM63XMZ | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017695 | KM80TSKGM65C | KM80TS | 63,5 | 40,0 | 65 | MS1163 | T30 | — | — |
| 6000018 | KM80ATCKGM50C | KM80ATC | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000014 | KM80TSKGM50C | KM80TS | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 5999861 | KM40TSKGM50C | KM40TS | 53,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000424 | KM50TSKGM65C | KM50TS | 53,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 5999865 | KM50TSKGM50C | KM50TS | 58,5 | 23,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000433 | KM63TSKGM65C | KM63TS | 58,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 5999949 | KM63TSKGM50C | KM63TS | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999973 | KM63XMZKGM65CY | KM63XMZ | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017696 | KM80TSKGM65C | KM80TS | 63,5 | 40,0 | 65 | MS1163 | T30 | — | — |
| 6000019 | KM80ATCKGM50C | KM80ATC | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000015 | KM80TSKGM50C | KM80TS | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |

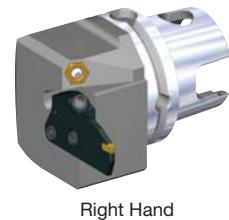
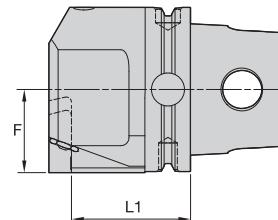
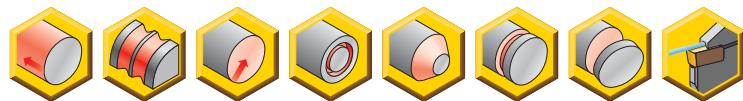
NOTE: KGMS..: Right-hand holder uses right-hand blades.

KGME..: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).

- Best-in-class KM Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



■ Modular End Mount KM System with Coolant • Metric

| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|-------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 5999788 | KM40TSKGMER50C | KM40TS | 28,0 | 20,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999862 | KM50TSKGMER50C | KM50TS | 38,0 | 25,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000410 | KM50TSKGMER65C | KM50TS | 47,0 | 25,50 | 65 | MS1163 | T30 | — | — |
| 6000425 | KM63TSKGMER65C | KM63TS | 47,0 | 32,52 | 65 | MS1163 | T30 | — | — |
| 5999946 | KM63TSKGMER50C | KM63TS | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000434 | KM63XMZKGMER65CY | KM63XMZ | 47,0 | 32,50 | 65 | MS1163 | T30 | — | — |
| 5999950 | KM63XMZKGMER50CY | KM63XMZ | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017697 | KM80ATCKGMER65C | KM80ATC | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000016 | KM80ATCKGMER50C | KM80ATC | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017693 | KM80TSKGMER65C | KM80TS | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000012 | KM80TSKGMER50C | KM80TS | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 5999789 | KM40TSKGME50C | KM40TS | 28,0 | 20,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999863 | KM50TSKGME50C | KM50TS | 38,0 | 25,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000421 | KM50TSKGME65C | KM50TS | 47,0 | 25,50 | 65 | MS1163 | T30 | — | — |
| 6000430 | KM63TSKGME65C | KM63TS | 47,0 | 32,52 | 65 | MS1163 | T30 | — | — |
| 5999947 | KM63TSKGME50C | KM63TS | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000436 | KM63XMZKGME65CY | KM63XMZ | 47,0 | 32,50 | 65 | MS1163 | T30 | — | — |
| 5999971 | KM63XMZKGME50CY | KM63XMZ | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017698 | KM80ATCKGME65C | KM80ATC | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000017 | KM80ATCKGME50C | KM80ATC | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017694 | KM80TSKGME65C | KM80TS | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000013 | KM80TSKGME50C | KM80TS | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |

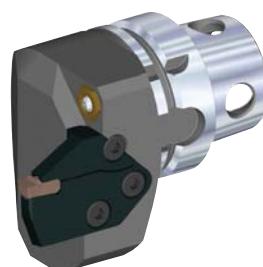
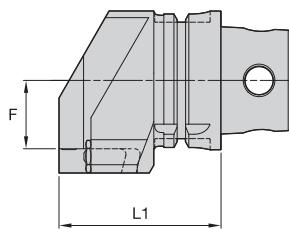
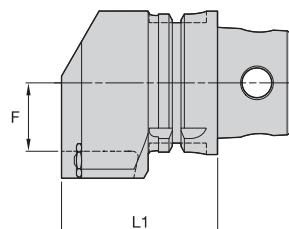
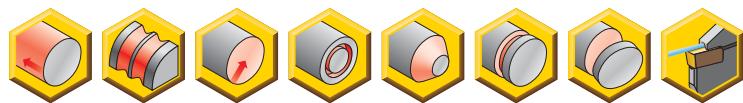
NOTE: KGMS..: Right-hand holder uses right-hand blades.

KGME..: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).

- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand

■ Modular Straight KM4X™ System with Coolant



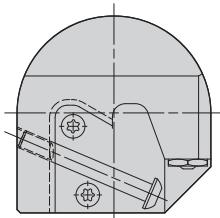
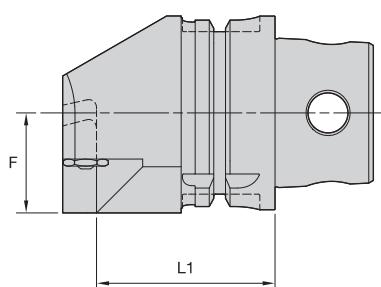
| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 5543560 | KM4X63KGMSR65C | KM4X63 | 68,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 6000407 | KM4X63KGMSR50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 5543558 | KM4X63KGMSL65C | KM4X63 | 68,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 6000408 | KM4X63KGMSL50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |

NOTE: KGMS..: Right-hand holder uses right-hand blades.

KGME..: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).



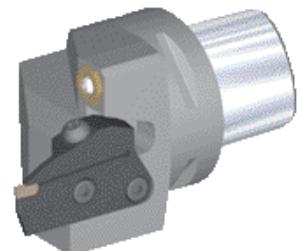
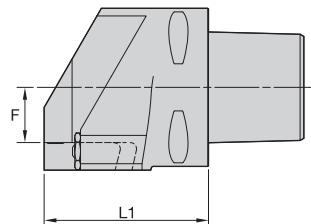
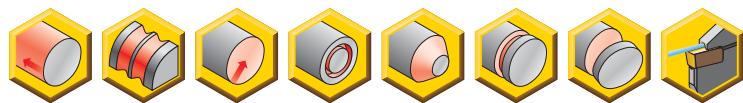
Grooving and Cut-Off

■ Modular End Mount KM4X™ System with Coolant



| order number | catalogue number | CSMS system size | L1 | F | cartridge size | blade screw | nozzle | clamp screw | kg | lbs |
|-------------------|------------------|------------------|------|------|----------------|-------------|----------|-------------|------|------|
| right hand | | | | | | | | | | |
| 5543555 | KM4X63KGMER65C | KM4X63 | 57,0 | 32,5 | 65 | MS1163 | PMT04525 | — | 1,87 | 4.13 |
| 6000404 | KM4X63KGMER50C | KM4X63 | 58,0 | 32,5 | 50 | MS1162 | PMT04525 | MS2002 | 1,85 | 4.08 |
| 6000407 | KM4X63KGMSR50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | PMT04525 | MS2002 | 1,86 | 4.11 |
| left hand | | | | | | | | | | |
| 5543553 | KM4X63KGTEL65C | KM4X63 | 57,0 | 32,5 | 65 | MS1163 | PMT04525 | — | 1,87 | 4.13 |
| 6000405 | KM4X63KGTEL50C | KM4X63 | 58,0 | 32,5 | 50 | MS1162 | PMT04525 | MS2002 | 1,85 | 4.08 |
| 6000408 | KM4X63KGMSL50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | PMT04525 | MS2002 | 1,86 | 4.11 |

- Standard PSC Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



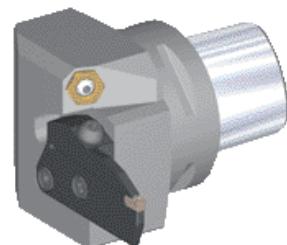
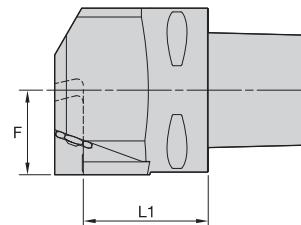
Right Hand

■ Modular Straight PSC System with Coolant



| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 6000028 | PSC40KGMSR50C | PSC40 | 63,5 | 10,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405654 | PSC50KGMSR65C | PSC50 | 49,0 | 25,5 | 65 | MS1163 | T30 | — | — |
| 6000152 | PSC50KGMSR50C | PSC50 | 63,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000464 | PSC63KGMSR65C | PSC63 | 60,5 | 21,0 | 65 | MS1163 | T30 | — | — |
| 6000211 | PSC63KGMSR50C | PSC63 | 65,5 | 22,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000468 | PSC80KGMSR65C | PSC80 | 68,5 | 29,0 | 65 | MS1163 | T30 | — | — |
| 6000216 | PSC80KGMSR50C | PSC80 | 73,5 | 30,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 6000029 | PSC40KGMSL50C | PSC40 | 63,5 | 10,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405655 | PSC50KGMSL65C | PSC50 | 49,0 | 25,5 | 65 | MS1163 | T30 | — | — |
| 6000153 | PSC50KGMSL50C | PSC50 | 63,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000465 | PSC63KGMSL65C | PSC63 | 60,5 | 21,0 | 65 | MS1163 | T30 | — | — |
| 6000213 | PSC63KGMSL50C | PSC63 | 65,5 | 22,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000469 | PSC80KGMSL65C | PSC80 | 68,5 | 29,0 | 65 | MS1163 | T30 | — | — |
| 6000217 | PSC80KGMSL50C | PSC80 | 73,5 | 30,0 | 50 | MS1162 | T25 | MS2002 | T25 |

- Standard PSC Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.

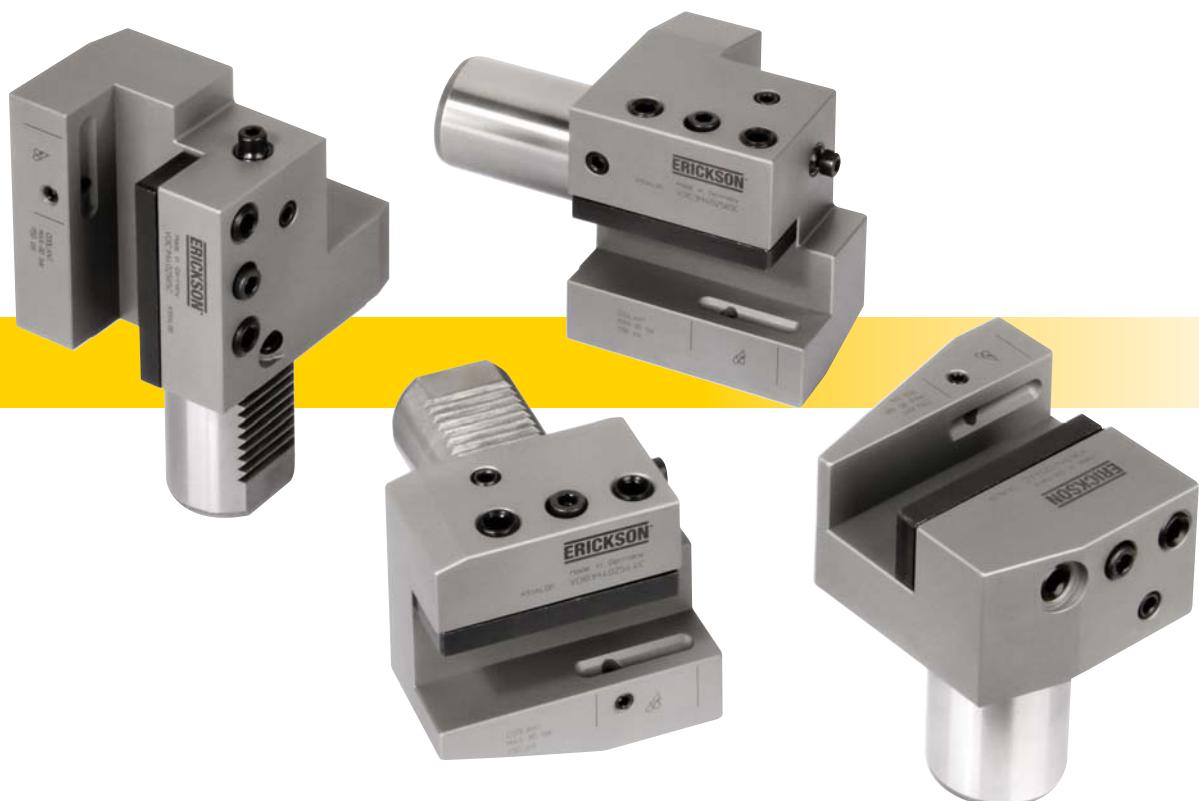


Grooving and Cut-Off

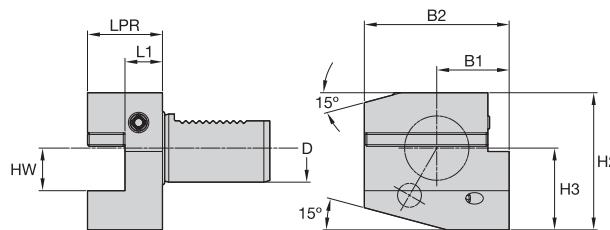
■ Modular End Mount PSC System with Coolant

| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 6000026 | PSC40KGMER50C | PSC40 | 33,0 | 20,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000030 | PSC50KGMER50C | PSC50 | 43,0 | 25,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405652 | PSC50KGMER65C | PSC50 | 55,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 6000159 | PSC63KGMER50C | PSC63 | 48,0 | 32,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000462 | PSC63KGMER65C | PSC63 | 49,0 | 32,5 | 65 | MS1163 | T30 | — | — |
| 6000466 | PSC80KGMER65C | PSC80 | 57,0 | 40,5 | 65 | MS1163 | T30 | — | — |
| 6000214 | PSC80KGMER50C | PSC80 | 58,0 | 40,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 6000027 | PSC40KGTEL50C | PSC40 | 33,0 | 20,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000151 | PSC50KGTEL50C | PSC50 | 43,0 | 25,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405653 | PSC50KGTEL65C | PSC50 | 55,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 6000160 | PSC63KGTEL50C | PSC63 | 48,0 | 32,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000463 | PSC63KGTEL65C | PSC63 | 49,0 | 32,5 | 65 | MS1163 | T30 | — | — |
| 6000467 | PSC80KGTEL65C | PSC80 | 57,0 | 40,5 | 65 | MS1163 | T30 | — | — |
| 6000215 | PSC80KGTEL50C | PSC80 | 58,0 | 40,5 | 50 | MS1162 | T25 | MS2002 | T25 |

➤ VDI Toolholders



- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

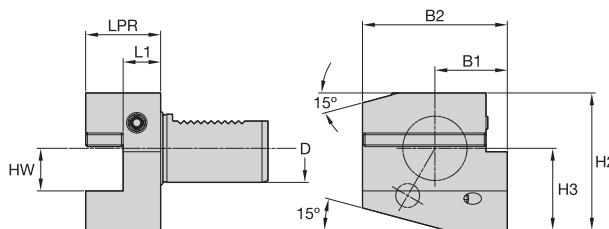


■ VDI Form B1 • HPC • Right Hand Short • Metric

| order number | catalogue number | D | B2 | B1 | HW | H2 | H3 | L1 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151491 | VDIB1M302040C | 30,00 | 70,00 | 35,00 | 20,00 | 66,00 | 38,00 | 22,00 | 40,00 |
| 6151492 | VDIB1M402544C | 40,00 | 85,00 | 42,50 | 25,00 | 80,50 | 48,00 | 22,00 | 44,00 |

VDI Form B2 • Left Hand Short

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

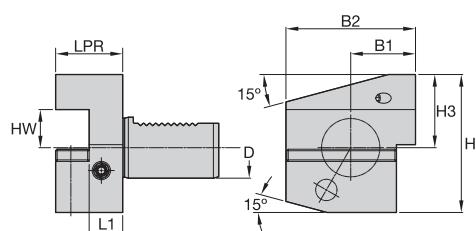


Artwork shows right hand tool.
Left hand tool mirror inverted.

■ VDI Form B2 • HPC • Left Hand Short • Metric

| order number | catalogue number | D | B2 | B1 | HW | H2 | H3 | L1 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151493 | VDIB2M302040C | 30,00 | 70,00 | 35,00 | 20,00 | 66,00 | 38,00 | 22,00 | 40,00 |
| 6151494 | VDIB2M402544C | 40,00 | 85,00 | 42,50 | 25,00 | 80,50 | 48,00 | 22,00 | 44,00 |

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

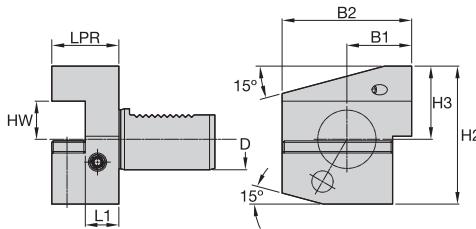


■ VDI Form B3 • HPC • Right Hand Short Inverted • Metric

| order number | catalogue number | D | B2 | B1 | HW | H2 | H3 | L1 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151495 | VDIB3M302040C | 30,00 | 70,00 | 35,00 | 20,00 | 73,00 | 38,00 | 22,00 | 40,00 |
| 6151497 | VDIB3M402544C | 40,00 | 85,00 | 42,50 | 25,00 | 90,50 | 48,00 | 22,00 | 44,00 |

VDI Form B4 • Left Hand Short Inverted

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

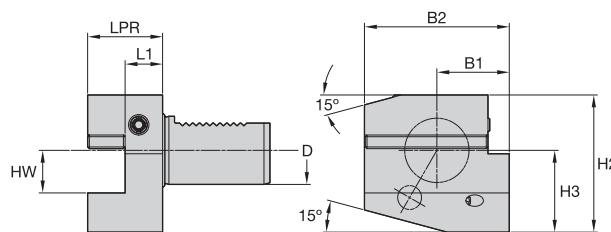


Artwork shows right hand tool.
Left hand tool mirror inverted.

■ VDI Form B4 • HPC • Left Hand Short Inverted • Metric

| order number | catalogue number | D | B2 | B1 | HW | H2 | H3 | L1 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151498 | VDIB4M302040C | 30,00 | 70,00 | 35,00 | 20,00 | 73,00 | 38,00 | 22,00 | 40,00 |
| 6151499 | VDIB4M402544C | 40,00 | 85,00 | 42,50 | 25,00 | 90,50 | 48,00 | 22,00 | 44,00 |

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

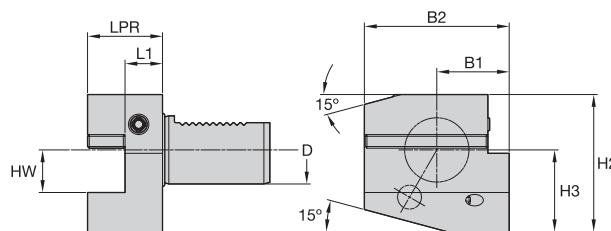


■ VDI Form B5 • HPC • Right Hand Long • Metric

| order number | catalogue number | D | B2 | B1 | HW | H2 | H3 | L1 | LPR |
|--------------|------------------|-------|--------|-------|-------|-------|-------|-------|-------|
| 6151500 | VDIB5M302040C | 30,00 | 100,00 | 65,00 | 20,00 | 66,00 | 38,00 | 22,00 | 40,00 |
| 6151511 | VDIB5M402544C | 40,00 | 118,00 | 75,50 | 25,00 | 80,50 | 48,00 | 22,00 | 44,00 |

VDI Form B6 • Left Hand Long

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

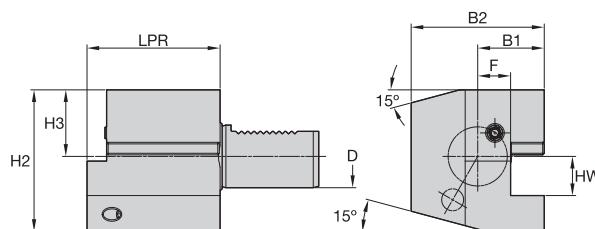


Artwork shows right hand tool.
Left hand tool mirror inverted.

■ VDI Form B6 • HPC • Left Hand Long • Metric

| order number | catalogue number | D | B2 | B1 | HW | H2 | H3 | L1 | LPR |
|--------------|------------------|-------|--------|-------|-------|-------|-------|-------|-------|
| 6151512 | VDIB6M302040C | 30,00 | 100,00 | 65,00 | 20,00 | 66,00 | 38,00 | 22,00 | 40,00 |
| 6151513 | VDIB6M402544C | 40,00 | 118,00 | 75,50 | 25,00 | 80,50 | 48,00 | 22,00 | 44,00 |

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

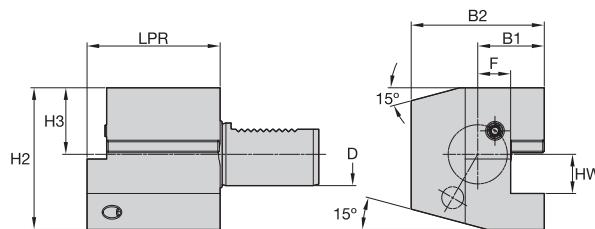


■ VDI Form C1 • HPC • Right Hand • Metric

| order number | catalogue number | D | B2 | B1 | F | HW | H2 | H3 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151514 | VDIC1M302070C | 30,00 | 70,00 | 35,00 | 17,00 | 20,00 | 66,00 | 38,00 | 70,00 |
| 6151515 | VDIC1M402585C | 40,00 | 85,00 | 42,50 | 21,00 | 25,00 | 80,50 | 48,00 | 85,00 |

VDI Form C2 • Left Hand

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

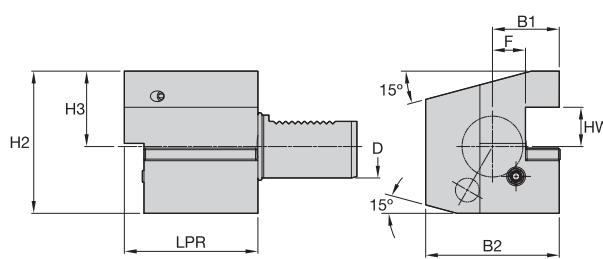


■ VDI Form C2 • HPC • Left Hand • Metric

Artwork shows right hand tool.
Left hand tool mirror inverted.

| order number | catalogue number | D | B2 | B1 | F | HW | H2 | H3 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151516 | VDIC2M302070C | 30,00 | 76,00 | 41,00 | 23,00 | 20,00 | 66,00 | 38,00 | 70,00 |
| 6151517 | VDIC2M402585C | 40,00 | 90,00 | 47,50 | 25,50 | 25,00 | 80,50 | 48,00 | 85,00 |

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

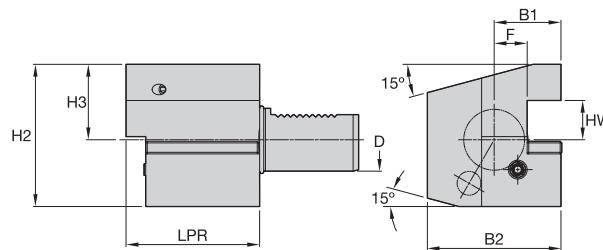


■ VDI Form C3 • HPC • Right Hand Inverted • Metric

| order number | catalogue number | D | B2 | B1 | F | HW | H2 | H3 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151518 | VDIC3M302070C | 30,00 | 70,00 | 35,00 | 17,00 | 20,00 | 73,00 | 38,00 | 70,00 |
| 6151519 | VDIC3M402585C | 40,00 | 85,00 | 42,50 | 21,00 | 25,00 | 90,50 | 48,00 | 85,00 |

VDI Form C4 • Left Hand Inverted

- VDI adaptor with coolant support for square shank toolholder.
- ISO 10889.

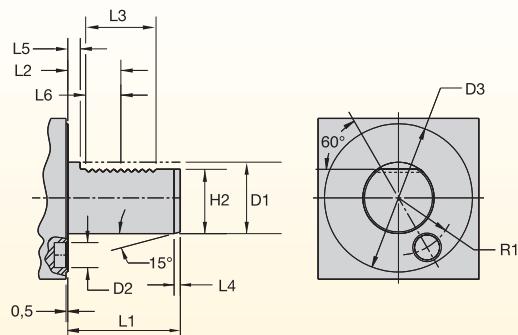


■ VDI Form C4 • HPC • Left Hand Inverted • Metric

Artwork shows right hand tool.
Left hand tool mirror inverted.

| order number | catalogue number | D | B2 | B1 | F | HW | H2 | H3 | LPR |
|--------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 6151520 | VDIC4M302070C | 30,00 | 70,00 | 35,00 | 17,00 | 20,00 | 73,00 | 38,00 | 70,00 |
| 6151521 | VDIC4M402585C | 40,00 | 85,00 | 42,50 | 21,00 | 25,00 | 90,50 | 48,00 | 85,00 |

■ Shank Specifications



ISO
10889

|  | D1 | D2 | D3 | L1 | L2 | L3 | L4 | L5 | L6 | H2 | R1 |
|---|----------------|----------------|-----------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|
| 30 | 30,00 1.181 | 14,00 0.551 | 68,00 2.677 | 55,00 2.165 | 29,70 1.169 | 40,00 1.575 | 2,00 0.079 | 7,00 0.276 | 20,00 0.787 | 27,00 1.063 | 25,00 0.984 |
| 40 | 40,00 1.575 | 14,00 0.551 | 83,00 3.268 | 63,00 2.480 | 29,70 1.169 | 40,00 1.575 | 3,00 0.118 | 7,00 0.276 | 20,00 0.787 | 36,00 1.417 | 32,00 1.260 |
| 50 | 50,00 1.969 | 16,00 0.630 | 98,00 3.858 | 78,00 3.071 | 35,70 1.406 | 48,00 1.890 | 3,00 0.118 | 8,00 0.315 | 24,00 0.945 | 45,00 1.772 | 37,00 1.457 |
| 60 | 60,00 2.362 | 16,00 0.630 | 123,00 4.843 | 94,00 3.701 | 43,70 1.720 | 56,00 2.205 | 4,00 0.157 | 10,00 0.394 | 28,00 1.102 | 55,00 2.165 | 48,00 1.890 |

A4™ Tooling and Beyond™ Inserts

Choose A4 tooling for turning, facing, grooving, face grooving, and cut-off applications across a broad range of workpiece materials. The unique clamping system and versatile insert geometry delivers a very high metal removal rate.



FEATURES AND BENEFITS

A4 Grooving and Turning System

- One tool for turning, facing, grooving, face-grooving, and cut-off in O.D. and I.D. applications means exceptionally fast cycle times, no turret indexes!
- Extra-long clamping area, ground 120° bottom prism seating surface, and an exclusive top guide rail combine to deliver unsurpassed grooving and side-turning stability!
- Precise insert positioning is ensured for accurate cuts!
- Rigid clamping securely locks insert in place through the toughest cuts.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.

Experience the advantages at your Authorised Kennametal Distributor or at kennametal.com.



kennametal.com



beyond™ EVOLUTION™

Connecting the tool to your machine is easy. Just select one of the two available hose packages, and Active Coolant Control will be keeping you cool in no time!

➤ Don't know exactly what you need?

To connect Beyond™ Evolution™ tooling to the industry's most common machines. The Kennametal universal coolant packs are ideal! Each pack contains the most common thread sizes with a variety of fitting styles for maximum flexibility.

■ Universal 200mm Coolant Pack

| order number | catalogue number | quantity | description |
|--------------|------------------|----------|---|
| 6145372 | COOL-KIT-101 | 1 | 1/16 NPTF male to 7/16 JIC male fitting |
| | | 1 | 1/8 NPTF male to 7/16 JIC male fitting |
| | | 1 | G1/8 male to 7/16 JIC male fitting |
| | | 1 | M10 x 1,5 male to 7/16 JIC male fitting |
| | | 2 | Male JIC to Swivel Female JIC Elbow |
| | | 1 | 200mm Hose Female JIC to Female JIC |

■ Universal 300mm Coolant Pack

| order number | catalogue number | quantity | description |
|--------------|------------------|----------|---|
| 6145373 | COOL-KIT-201 | 1 | 1/16 NPTF male to 7/16 JIC male fitting |
| | | 1 | 1/8 NPTF male to 7/16 JIC male fitting |
| | | 1 | G1/8 male to 7/16 JIC male fitting |
| | | 1 | M10 x 1,5 male to 7/16 JIC male fitting |
| | | 2 | Male JIC to Swivel Female JIC Elbow |
| | | 1 | 300mm Hose Female JIC to Female JIC |

➤ Know what you need?

Every component is individually available, including less common fittings.
 Knowing the precise components required will allow you to choose only the fittings you need!

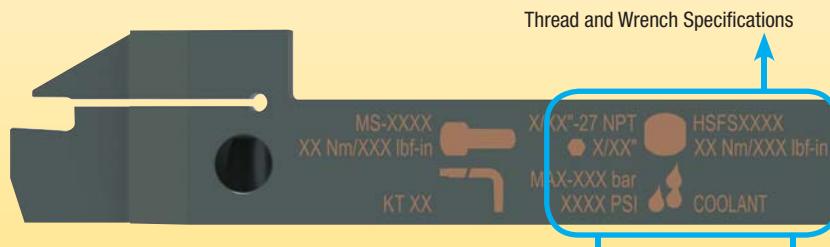
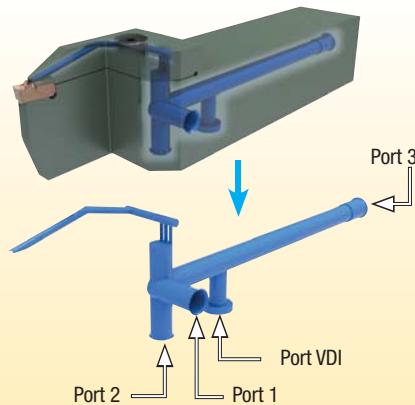
■ Coolant Hose Accessories

| order number | catalogue number | description |
|--------------|--------------------|---|
| 6145374 | 1-16NPTF-JIC | 1/16 NPTF male to 7/16 JIC male fitting |
| 6145375 | 1-8NPTF-JIC | 1/8 NPTF male to 7/16 JIC male fitting |
| 6145376 | G18-JIC | G1/8 male to 7/16 JIC male fitting |
| 6145377 | M10-JIC | M10 x 1,5 male to 7/16 JIC male fitting |
| 6145379 | JICM-JICF-ELB | Male JIC to Swivel Female JIC Elbow |
| 6145380 | COOL-HOSE-200 | 200mm Female JIC to Female JIC |
| 6145381 | COOL-HOSE-300 | 300mm Female JIC to Female JIC |
| 6145382 | M6-JIC | M6 x 1,0 male to 7/16 JIC male fitting |
| 6145378 | M8-JIC | M8 x 1,25 male to 7/16 JIC male fitting |
| 6145383 | JICM-JICM-STR | 7/16 JIC male to 7/16 JIC male adaptor |
| 6145386 | G14-G18-RED | Male G1/4 to Female G1/8 reducer |
| 6432549 | COOL-HOSE-200-FLEX | Universal 200mm Flex Coolant Hose |
| 6432550 | COOL-HOSE-300-FLEX | Universal 300mm Flex Coolant Hose |



Active Coolant Control Guidelines

1. Beyond™ Evolution™ system capable of 350 bar (5076 psi).
2. Toolholder delivered with four entry holes.
3. A quality filtration system is necessary to prevent blockages in the toolholder that will effect coolant flow and performance.
4. Machines without a proper filtering system may require modification or an inline filter.
 - For pressure >70 bar [1015 psi], use 10–20 µm filter.
 - For pressure <70 bar [1015 psi], 50–100 µm.
 - Using fine filters in low-pressure applications may affect flow rate.



Maximum Coolant Pressure

Recommended Torque Value

Thread and Wrench Specifications

General Safety Guidelines

1. All safety doors and mechanisms must be in place before trying out the internal coolant to avoid any danger to the operator in the event of a failure.
2. Use the correct pipe fittings to connect the holders to the system. Ensure the maximum pressure recommended for the fittings are not exceeded.
3. While implementing pressure >80 bar [1160 psi], increase the pressure in steps to ensure proper functioning of insert clamping and leak-free joints.
4. While indexing inserts, ensure the pocket is free from chips and/or dirt. Also, inspect the insert and make sure there are no blockages in the coolant canal.
5. Periodically check all hoses and fittings for damage and wear for proper functioning of the system. This check should also include filters.

Active Coolant Control Performance

Internal coolant offers a clear advantage in tool life and chip forming/evacuation vs. external coolant in difficult conditions and in high-pressure coolant.

Example: Chipbreaking in plugging of steel.

Flood Coolant



Internal Coolant



75 bar
(1,087 psi)

200 bar
(2,900 psi)

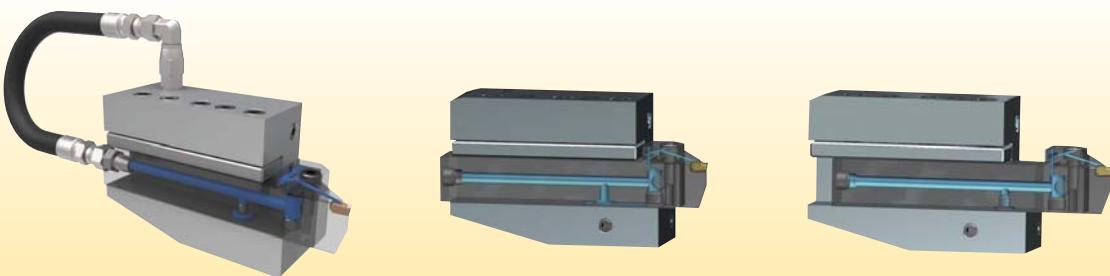
Material steel ST52;
Insert size 6mm; f = 0,25 mm/U

Low Pressure — If performance is at risk due to low coolant pressure, apply internal coolant in combination with external coolant to increase volume.

Recommendation to improve tool life and/or productivity: Apply high pressure coolant: 80–350 bar recommended.

VDI Assemblies

The Beyond™ Evolution™ Active Coolant Control can be leveraged with VDI holding systems with both traditional or Quick-Change coolant connections.



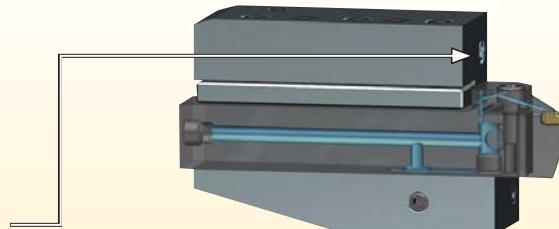
Coolant flow transfer from VDI adaptor to toolholder

A marker on the toolholder must remain within the coolant range indicated on the VDI system for uninterrupted coolant transfer.

■ Technical Details

Pressure limit 80 bar.

Nozzle set comes pre-assembled.
For the holder application with internal coolant only nozzle can be plugged by M5 screw (delivered). Use Loc Tite light, medium strength, or thread sealant.



| Holder | Slide Area | Max. Pressure | Torque (Pressure Screws) |
|--------|------------|---------------|-----------------------------|
| VDI 30 | 22mm | 80 bar | 20 Nm |
| VDI 40 | 30mm | 80 bar | 35 Nm |

| Spare sets | |
|--|-------------------------------------|
| Nozzle | PKGNIAL 1205M |
| Set Pressure Screw, Pressure Plate, Spring | See separately for each type in BOM |

➤ A4™ Tooling and Beyond™ Inserts

For All Your O.D. and I.D. Applications

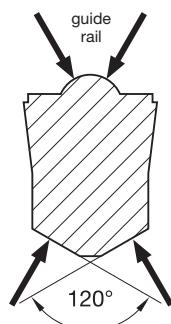
Primary Application

Choose A4 tooling for turning, facing, grooving, face grooving, and cut-off applications across a broad range of workpiece materials. The unique clamping system and versatile insert geometry delivers a very high metal removal rate.

Features and Benefits

A4 Grooving and Turning System

- One tool for turning, facing, grooving, face-grooving, and cut-off in O.D. and I.D. applications means exceptionally fast cycle times, no turret indexes!
- Extra-long clamping area, ground 120° bottom prism seating surface, and an exclusive top guide rail combine to deliver unsurpassed grooving and side-turning stability!
- Precise insert positioning is ensured for accurate cuts!
- Rigid clamping securely locks insert in place through the toughest cuts.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.



A4 Chipbreakers



GMN Chipbreaker



GMP Chipbreaker



GMN Chipbreaker



GMP Chipbreaker



GUP Chipbreaker



The A4™ System Increases Productivity

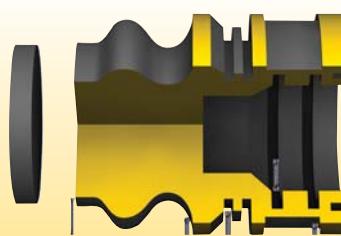
- Covers multiple applications.
- Reduces tool cost.
- Minimises machining time.



■ Step 1 • Select A4 size for grooving and turning application

What you need to know:

- Groove depth, width, and profile.
- Material being machined.
- Application to be performed (O.D. and I.D. grooving, turning, face grooving, and cut-off).

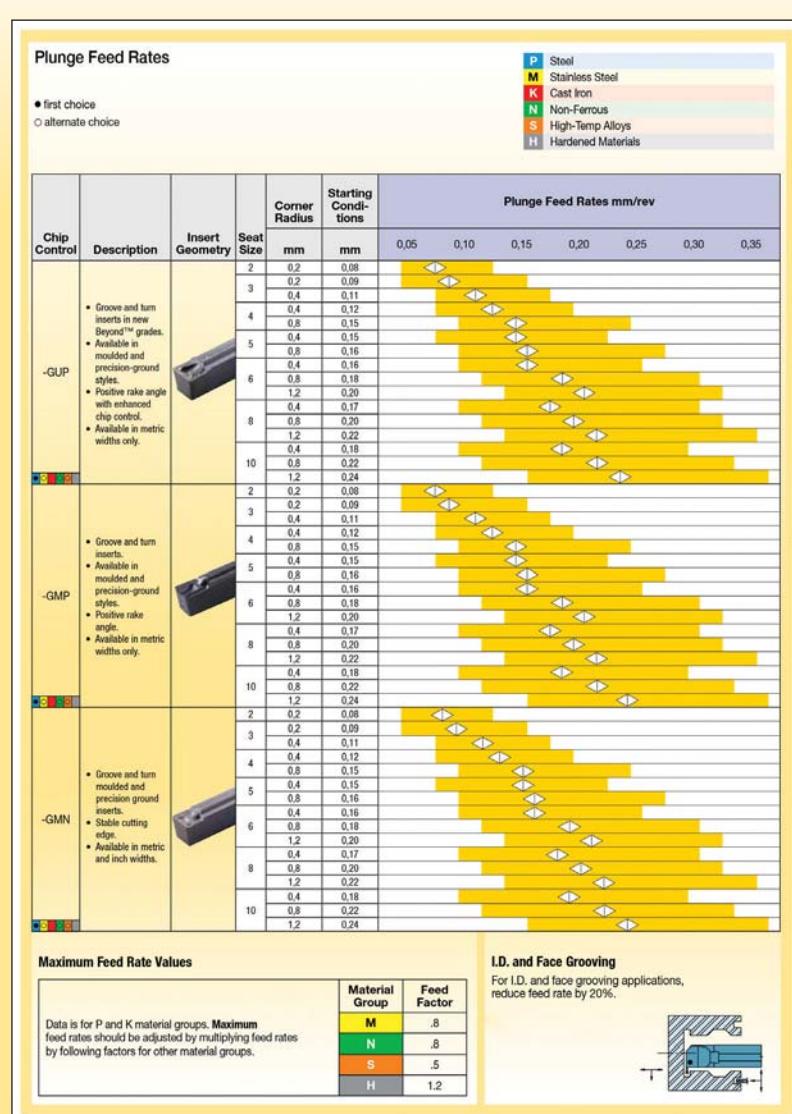


General Recommendation to Select the Insert Size

| for workpiece diameters | insert seat size |
|-------------------------|------------------|
| <25mm | 3 |
| 25–50mm | 4 |
| >50mm | 5–10 |

■ Step 2 • Select chipbreaker style and feed rate

Based on the application and seat size, determine the recommended geometry and starting feed rate.



■ Step 3 • Select the starting speed

Based on material and grade,
identify starting speed (vc).
First choice is in **bold** type.

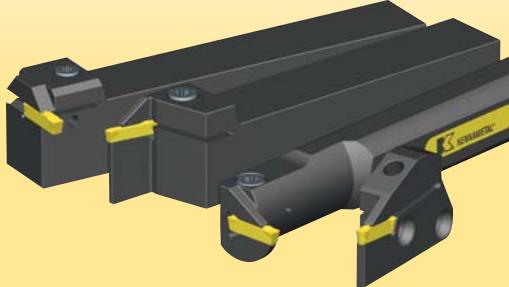
- A** Based on material group and grade,
identify starting speed (vc).
B First choice starting speed is in **bold**.

| Recommended Starting Speeds [m/min] | | | | | | | | | |
|-------------------------------------|------|--------------|--------------------|-------------|-------------|-------------------|-------------|--------------|-------|
| Material Group | K313 | KCU10/KC5010 | KCU25/KC5025 | KCP10 | KCP25 | KCK20B | KY3500 | | |
| P | 0-1 | - - - | 140 260 335 | 110 225 270 | 185 400 450 | 145 290 365 | 200 440 490 | - - - | - - - |
| | 2 | - - - | 140 200 245 | 110 160 195 | 185 270 350 | 145 200 305 | 200 300 380 | - - - | - - - |
| | 3 | - - - | 140 155 245 | 110 125 195 | 170 190 260 | 140 155 245 | 600 200 280 | - - - | - - - |
| | 4 | - - - | 75 110 170 | 60 90 135 | 90 145 200 | 75 110 160 | 100 160 220 | - - - | - - - |
| | 5 | - - - | 120 200 260 | 100 160 210 | 150 220 305 | 120 200 270 | 165 240 330 | - - - | - - - |
| | 6 | - - - | 110 150 230 | 85 120 185 | 120 180 275 | 110 150 230 | 130 190 300 | - - - | - - - |
| M | 1 | 60 90 120 | 140 210 260 | 90 170 245 | - - - | - - - | - - - | - - - | - - - |
| | 2 | 45 75 110 | 120 200 245 | 90 150 245 | - - - | - - - | - - - | - - - | - - - |
| | 3 | 35 65 100 | 120 180 245 | 90 140 210 | - - - | - - - | - - - | - - - | A - |
| | 1 | 30 75 120 | 120 180 245 | 100 145 195 | 170 245 440 | 140 200 360 | 210 305 550 | 180 760 1040 | |
| K | 2 | 25 70 110 | 90 150 210 | 70 120 170 | 120 195 340 | 100 160 280 | 150 245 430 | 275 365 500 | |
| | 3 | 20 60 90 | 60 110 150 | 50 85 120 | 120 170 270 | 100 140 220 | 150 210 335 | - - - | |
| | 1-2 | 150 370 610 | 150 550 975 | 120 440 780 | - - - | - - - | - - - | - - - | |
| N | 3 | - - - | - - - | - - - | - - - | - - - | - - - | - - - | |
| | 4 | 120 275 430 | 120 365 610 | 100 290 490 | - - - | - - - | - - - | - - - | |
| | 5 | 45 90 150 | 90 170 245 | 70 135 195 | - - - | - - - | - - - | - - - | |
| | 6 | 40 75 150 | 120 210 305 | 100 170 245 | - - - | - - - | - - - | - - - | |
| | 1 | 8 30 75 | 15 55 135 | 8 40 60 | - - - | - - - | - - - | - - - | |
| S | 2 | 8 35 75 | 15 60 135 | 8 30 75 | - - - | - - - | - - - | - - - | |
| | 3 | 8 40 75 | 15 70 135 | 15 40 75 | - - - | - - - | - - - | - - - | |
| | 4 | 8 45 75 | 15 70 170 | 8 50 110 | - - - | - - - | - - - | - - - | |
| | 1 | - - - | 30 45 60 | - - - | - - - | - - - | - - - | - - - | |
| H | 2 | - - - | 15 20 45 | - - - | - - - | - - - | - - - | - - - | |
| | 3 | - - - | - - - | - - - | - - - | - - - | - - - | - - - | |
| | 4 | - - - | - - - | - - - | - - - | - - - | - - - | - - - | |

■ Step 4 • Select toolholder based on application

Choose the high-performance holder based on
your specific grooving or cut-off application,
with the corresponding seat size.

| | conventional toolholders | modular blades |
|--|-----------------------------|-------------------|
| O.D. Grooving, Cut-Off, and Turning | 1st Choice | 2nd Choice |
| Face Grooving | 1st Choice | 2nd Choice |
| I.D. Grooving, Cut-Off, and Turning | 1st Choice | — |



NOTE: Insert seat size must match the seat size of the toolholder.

■ Step 5 • Select the insert and holder from catalogue page

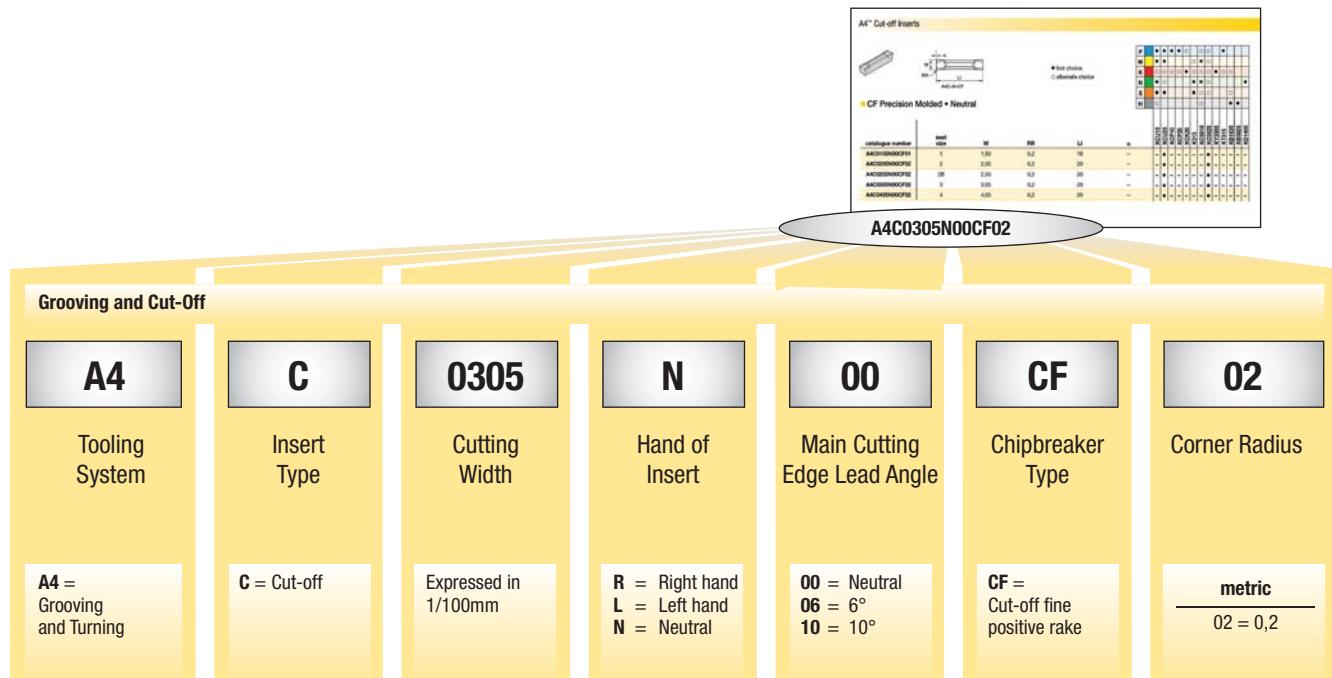
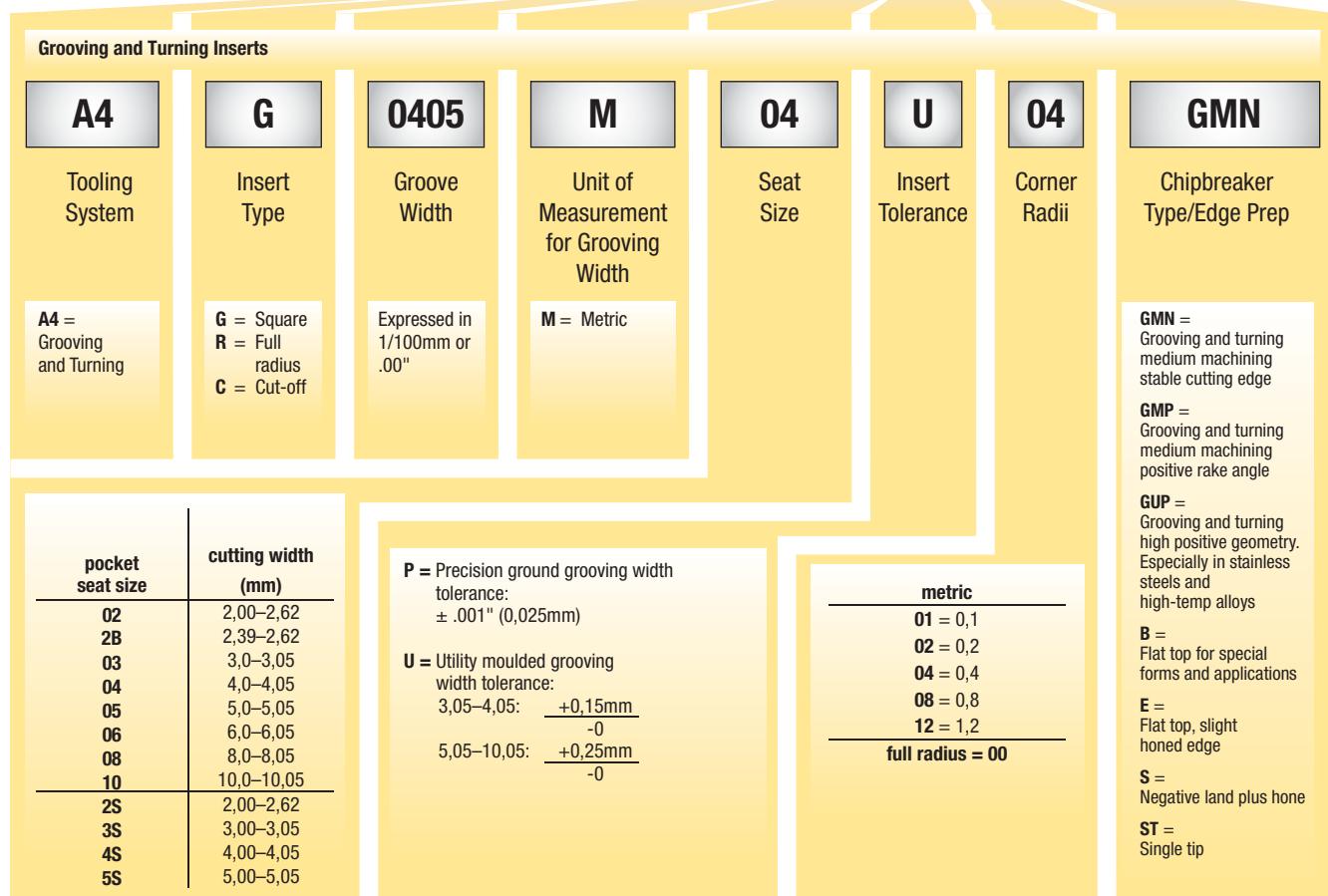
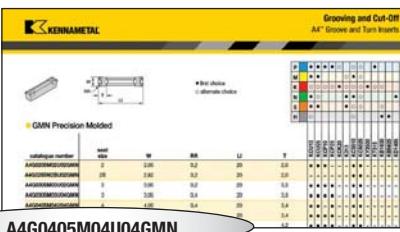
Congratulations!

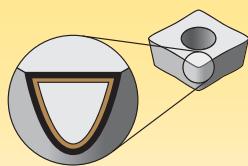
You have successfully maximised your productivity by selecting the best insert geometry,
grade, and cutting specifications for your application!



How Do Catalogue Numbers Work?

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.





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

| Coating | Grade Description | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------|--|--|----|----|----|----|----|----|----|----|----|
| | | | P | M | K | N | S | H | | | |
| KCU10 | Composition: An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. Application: The KCU10™ grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and high-temp alloys with improved edge toughness, notch resistance, and higher cutting speed/feed capability. | | P | | | | | | | | |
| KCU25 | Composition: An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. Application: The KCU25™ grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cut and high feed rates. | | P | | | | | | | | |
| KCP10 | Composition: A specially engineered cobalt-enriched carbide grade with thick MTCVD TiCN-Al ₂ O ₃ coating for maximum wear resistance. Application: An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes. | | P | | | | | | | | |
| KCP25 | Composition: A tough cobalt-enriched carbide grade with a multilayer MTCVD TiCN-Al ₂ O ₃ coating with superior interlayer adhesion. Application: Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimises microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes. | | P | | | | | | | | |
| KCK20 | Composition: A specially toughened MTCVD TiCN-Al ₂ O ₃ coating over a wear-resistant substrate. Application: Specifically engineered to maximise coating adhesion and edge strength making this grade ideal in wet interrupted cutting of grey and ductile irons. It can be used in a wide range of applications from finishing to roughing to maximise productivity wherever strength and reliability are needed. | | P | | | | | | | | |

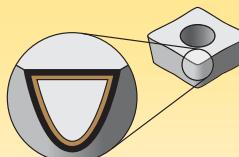
beyond

beyond

beyond

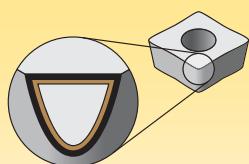
beyond

beyond



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

| | | wear resistance ← → toughness | | | | | | | | |
|--------|--------|--|----|----|----|----|----|----|----|----|
| | | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| Grades | K313 | Composition: A hard, low binder content, unalloyed WC/Co fine-grain grade. Application: Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temp alloys. Superior thermal deformation and depth-of-cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service. | | | | | | | | |
| | KC5010 | Composition: An advanced PVD AlTiN coating over a very deformation-resistant unalloyed carbide substrate. Application: The KC5010™ grade is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and high-temp alloys under stable conditions. It also performs well machining hardened and short chipping materials. | | | | | | | | |
| | KC5025 | Composition: An advanced PVD-AlTiN-coated grade with a tough, ultra-fine-grain unalloyed substrate. Application: For general-purpose machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates. | | | | | | | | |



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

| | Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|--------|---------|--|----|----|----|----|----|----|----|----|----|
| Grades | KY3500 | Composition: Pure silicon nitride grade. Application: Maximum toughness. Used at high feed rates for rough machining of grey cast iron, including machining through interruptions. | | | | | | | | | |
| | KT315 | Composition: A multilayer PVD TiN/TiCN/TiN-coated cermet turning grade. Application: Ideal for high-speed finishing to medium machining of most carbon and alloy steels and stainless steels. Performs very well in cast and ductile iron applications, too. Provides long and consistent tool life and will produce excellent workpiece finishes. | P | | | | | | | | |
| | KB1630 | Composition: An uncoated high content PCBN grade. PCBN tips are brazed onto a carbide insert. Application: Designed for roughing to finishing in interrupted cuts on hardened steels (>45 HRC). It can also be applied on grey cast iron, chilled irons, high chrome alloyed steels, high temp alloys and sintered powder metals. The tipped PCBN inserts are available in a wide range of insert styles, including Top Notch™ and Screw-On geometries. | K | | | | | | | | |
| | KB5625 | Composition: A medium content PCBN with a PVD-TiN/AlTiN coating for added wear resistance. Application: Designed for roughing to finishing of hardened steels (>45 HRC). Use on bearing steels, hot and cold work steels, die steels, case hardened steels, carburised and nitrided irons, and some hard coatings. | S | | | | | | | | |
| | KD1405 | Composition: A pure CVD-deposited diamond-sheet tool brazed directly to a carbide substrate. Application: KD1405™ is the best Kennametal abrasion-resistant tool material for non-ferrous and non-metallic materials. Best applied when abrasion resistance is the desired benefit. | N | | | | | | | | |

Select the geometry

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

- first choice
- alternate choice

| Chip Control | Description | Insert Geometry | Seat Size | Corner Radius mm | Starting Conditions mm | Plunge Feed Rates mm/rev | | | | | | |
|--------------|--|---|-------------|------------------|------------------------|--------------------------|------|------|------|------|------|------|
| | | | | | | 0,05 | 0,10 | 0,15 | 0,20 | 0,25 | 0,30 | 0,35 |
| -GUP | Groove and turn inserts in new Beyond™ grades. |  | 2 3 4 | 0,2 | 0,08 | | | | | | | |
| | | | | 0,2 | 0,09 | | | | | | | |
| | | | | 0,4 | 0,11 | | | | | | | |
| | | | | 0,4 | 0,12 | | | | | | | |
| | | | | 0,8 | 0,15 | | | | | | | |

Pictorial View of Insert

Seat Size

Recommended Starting Feed Rate

Recommended Feed Rate Range

Plunge Feed Rates

Primary Workpiece Material Group

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

- first choice

- alternate choice

Chip Control Geometry Designation

Maximum Feed Rate Values

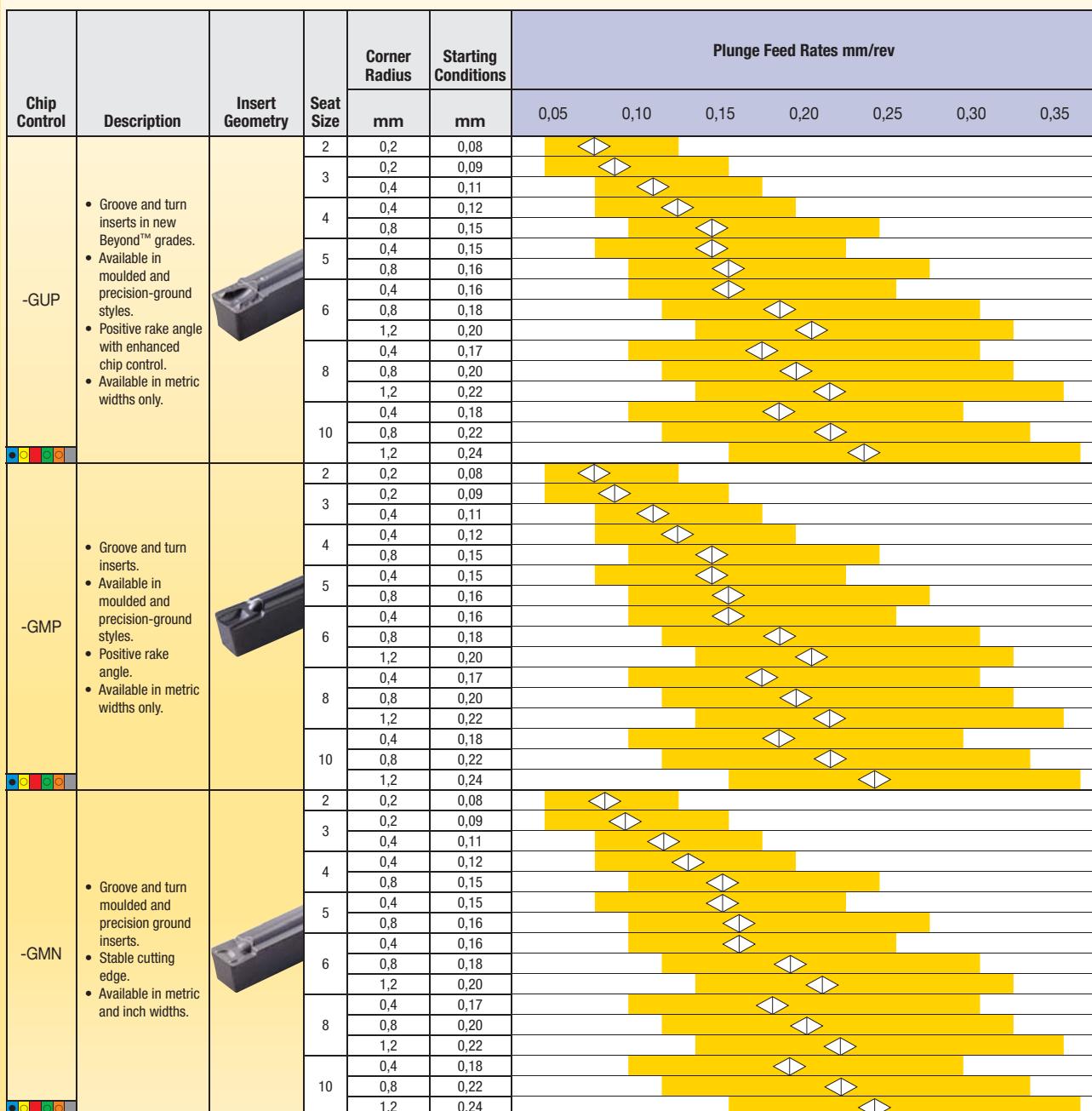
Data above is for P and K material groups. Maximum feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

| Material Group | Feed Factor |
|----------------|-------------|
| M | .8 |
| N | 1.2 |
| S | .8 |
| H | .5 |

Plunge Feed Rates

- first choice
- alternate choice

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



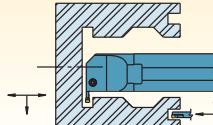
Maximum Feed Rate Values

Data above is for P and K material groups. **Maximum** feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

| Material Group | Feed Factor |
|----------------|-------------|
| M | .8 |
| N | .8 |
| S | .5 |
| H | 1.2 |

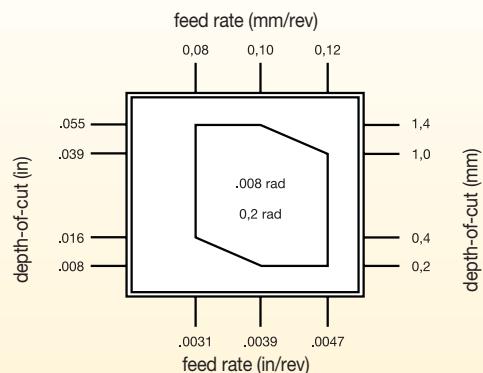
I.D. and Face Grooving

For I.D. and face grooving applications, reduce feed rate by 20%.

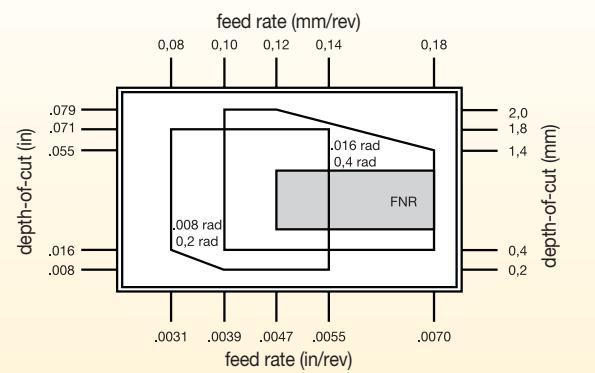


■ Turn and profile feed rates • GUP/GMP Geometries

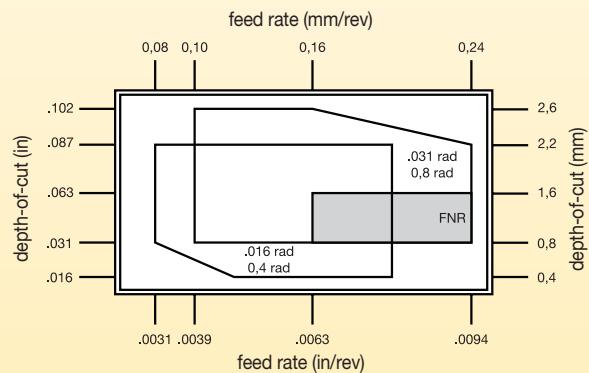
Seat Size 2



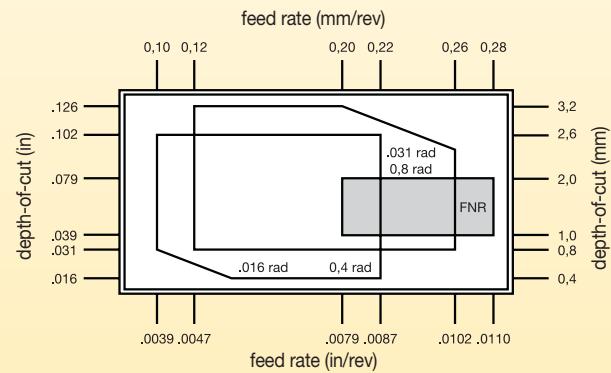
Seat Size 3



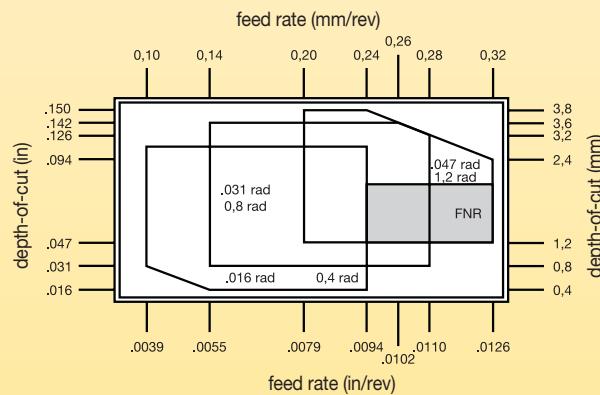
Seat Size 4



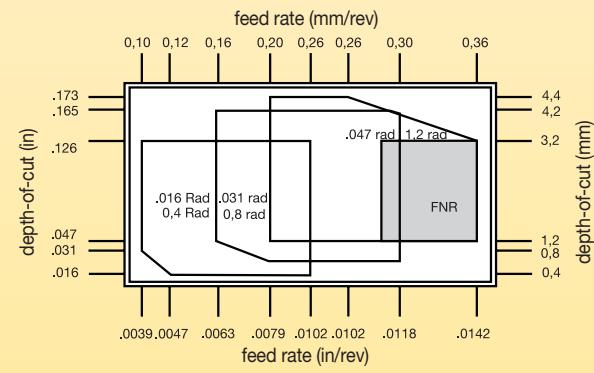
Seat Size 5



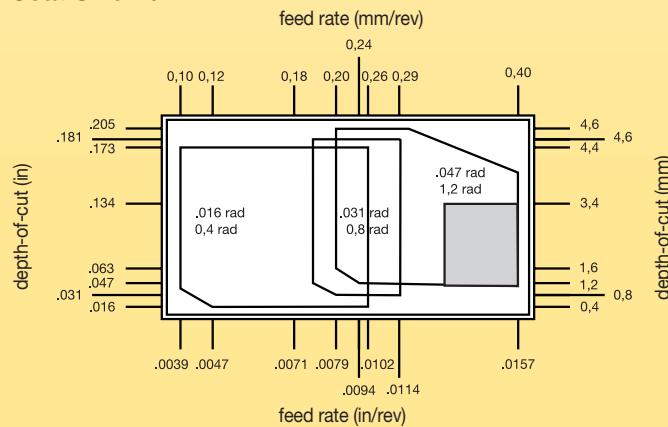
Seat Size 6

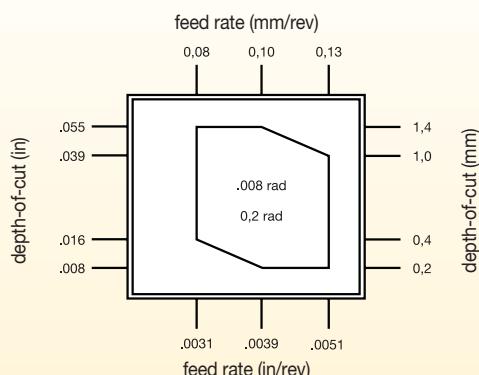
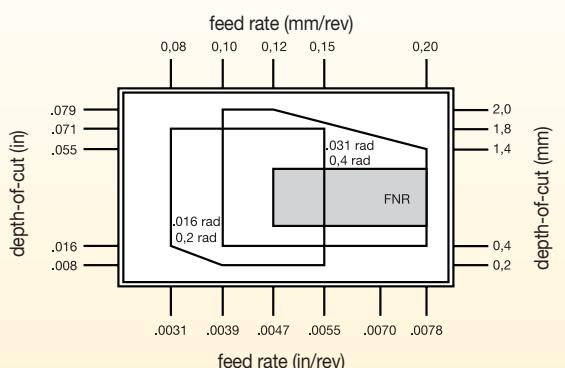
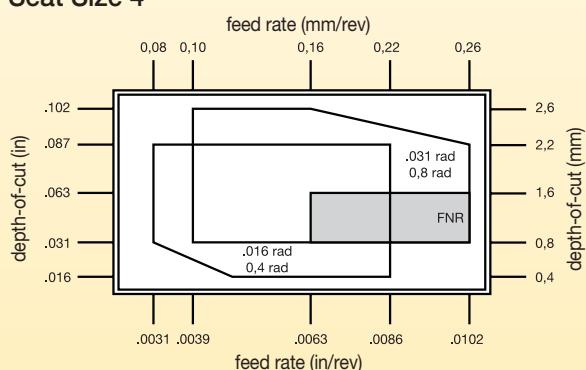
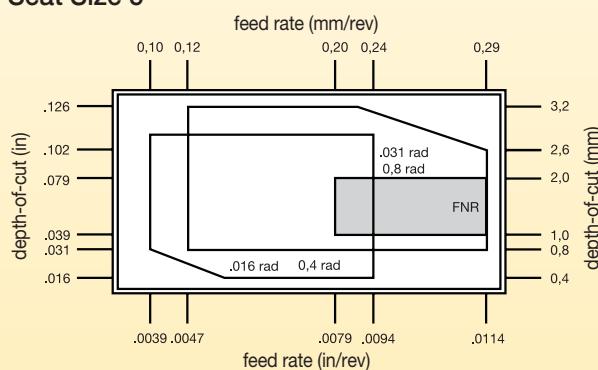
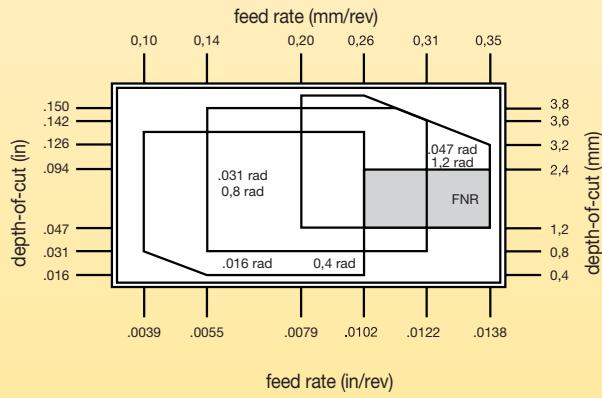
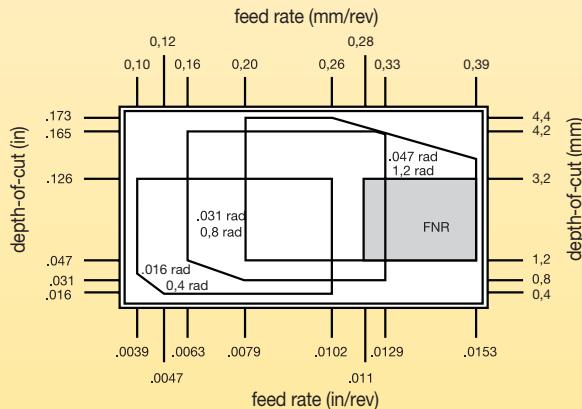
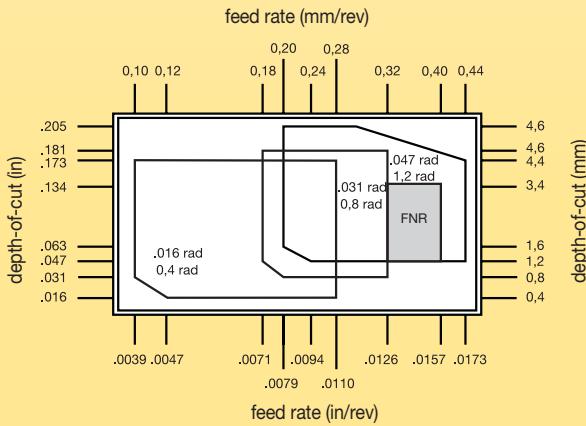


Seat Size 8



Seat Size 10



Turn and profile feed rates • GMN Geometries
Seat Size 2

Seat Size 3

Seat Size 4

Seat Size 5

Seat Size 6

Seat Size 8

Seat Size 10


Cut-Off Feed Rates

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

- first choice
- alternate choice

| Chip Control | Description | Insert Geometry | Seat Size | Starting Conditions | Cut-Off Feed Rates mm/rev | | | |
|--|--|---|-----------|---------------------|---|---|---|---|
| | | | | | mm | 0,05 | 0,10 | 0,15 |
| -A4C-CF  | <ul style="list-style-type: none"> • High positive rake angle. • Sharp cutting edge. • Available in neutral lead angle in 6° and 10° right- and left-hand styles. |  | 1 | 0,06 |  |  |  |  |
| | | | 2/2B | 0,07 |  |  |  |  |
| | | | 3 | 0,09 |  |  |  |  |
| | | | 4 | 0,11 |  |  |  |  |

Maximum Feed Rate Values

| Data above is for P and K material groups. Maximum feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups. | Material Group | Feed Factor |
|--|----------------|-------------|
| | M | .8 |
| | N | .8 |
| | S | .5 |
| | H | 1.2 |

Mobile Apps

The Kennametal mobile app provides easy access to product information and calculators on both iPhone® and Android™ devices. We've highlighted a few of the key features...

There's an app for that.

SPEEDS & FEEDS

View speeds and feeds information for metalworking products.

PRODUCT AVAILABILITY

Check global availability of products. View available quantities by providing your Konnect login credentials.

CALCULATORS

Utilise our machining calculators for milling and drilling applications.



➤ By just scanning the bar code on the insert packet, you can find the most productive cutting conditions for tool life, process time, and chip control.

NOTE: The app is currently only available in the English-language version. We have plans to translate the app in different languages with future releases.



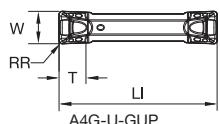
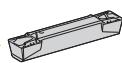
■ Recommended Starting Speeds [m/min]

| Material Group | | K313 | | | KCU10/KC5010 | | | KCU25/KC5025 | | | KCP10 | | | KCP25 | | | KCK20B | | | KY3500 | | |
|----------------|-----|------|------------|-----|--------------|------------|-----|--------------|------------|-----|-------|------------|-----|-------|------------|-----|--------|------------|-----|--------|------------|------|
| P | 0-1 | - | - | - | 140 | 280 | 335 | 110 | 225 | 270 | 185 | 400 | 450 | 145 | 290 | 365 | 200 | 440 | 490 | - | - | - |
| | 2 | - | - | - | 140 | 200 | 245 | 110 | 160 | 195 | 185 | 270 | 350 | 145 | 200 | 305 | 200 | 300 | 380 | - | - | - |
| | 3 | - | - | - | 140 | 155 | 245 | 110 | 125 | 195 | 170 | 190 | 260 | 140 | 155 | 245 | 600 | 200 | 280 | - | - | - |
| | 4 | - | - | - | 75 | 110 | 170 | 60 | 90 | 135 | 90 | 145 | 200 | 75 | 110 | 180 | 100 | 160 | 220 | - | - | - |
| | 5 | - | - | - | 120 | 200 | 260 | 100 | 160 | 210 | 150 | 220 | 305 | 120 | 200 | 270 | 165 | 240 | 330 | - | - | - |
| | 6 | - | - | - | 110 | 150 | 230 | 85 | 120 | 185 | 120 | 180 | 275 | 110 | 150 | 230 | 130 | 190 | 300 | - | - | - |
| M | 1 | 60 | 90 | 120 | 140 | 210 | 260 | 90 | 170 | 245 | - | - | - | - | - | - | - | - | - | - | - | |
| | 2 | 45 | 75 | 110 | 120 | 200 | 245 | 90 | 150 | 245 | - | - | - | - | - | - | - | - | - | - | - | |
| | 3 | 35 | 65 | 100 | 120 | 180 | 245 | 90 | 140 | 210 | - | - | - | - | - | - | - | - | - | - | - | |
| K | 1 | 30 | 75 | 120 | 120 | 180 | 245 | 100 | 145 | 195 | 170 | 245 | 440 | 140 | 200 | 360 | 210 | 305 | 550 | 180 | 760 | 1040 |
| | 2 | 25 | 70 | 110 | 90 | 150 | 210 | 70 | 120 | 170 | 120 | 195 | 340 | 100 | 160 | 280 | 150 | 245 | 430 | 275 | 365 | 500 |
| | 3 | 20 | 60 | 90 | 60 | 110 | 150 | 50 | 85 | 120 | 120 | 170 | 270 | 100 | 140 | 220 | 150 | 210 | 335 | - | - | - |
| N | 1-2 | 150 | 370 | 610 | 150 | 550 | 975 | 120 | 440 | 780 | - | - | - | - | - | - | - | - | - | - | - | |
| | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 4 | 120 | 275 | 430 | 120 | 365 | 610 | 100 | 290 | 490 | - | - | - | - | - | - | - | - | - | - | - | |
| | 5 | 45 | 90 | 150 | 90 | 170 | 245 | 70 | 135 | 195 | - | - | - | - | - | - | - | - | - | - | - | |
| | 6 | 40 | 75 | 150 | 120 | 210 | 305 | 100 | 170 | 245 | - | - | - | - | - | - | - | - | - | - | - | |
| | 7 | 8 | 30 | 75 | 15 | 55 | 135 | 8 | 40 | 60 | - | - | - | - | - | - | - | - | - | - | - | |
| S | 2 | 8 | 35 | 75 | 15 | 60 | 135 | 8 | 30 | 75 | - | - | - | - | - | - | - | - | - | - | - | |
| | 3 | 8 | 40 | 75 | 15 | 70 | 135 | 15 | 40 | 75 | - | - | - | - | - | - | - | - | - | - | - | |
| | 4 | 8 | 45 | 75 | 15 | 70 | 170 | 8 | 50 | 110 | - | - | - | - | - | - | - | - | - | - | - | |
| | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| H | 1 | - | - | - | 30 | 45 | 60 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 2 | - | - | - | 15 | 30 | 45 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

| Material Group | | KT315 | | | KB5625 | | | KB1630 | | | KD1405 | | |
|----------------|-----|-------|------------|-----|--------|------------|-----|--------|------------|------|--------|------------|------|
| P | 0-1 | 180 | 440 | 475 | - | - | - | - | - | - | - | - | - |
| | 2 | 195 | 270 | 400 | - | - | - | - | - | - | - | - | - |
| | 3 | 180 | 210 | 275 | - | - | - | - | - | - | - | - | - |
| | 4 | 75 | 160 | 210 | - | - | - | - | - | - | - | - | - |
| | 5 | 150 | 250 | 310 | - | - | - | - | - | - | - | - | - |
| | 6 | 140 | 200 | 300 | - | - | - | - | - | - | - | - | - |
| M | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| K | 1 | 60 | 275 | 550 | - | - | - | 180 | 760 | 1040 | - | - | - |
| | 2 | 135 | 275 | 360 | - | - | - | - | - | - | - | - | - |
| | 3 | 180 | 230 | 360 | - | - | - | - | - | - | - | - | - |
| N | 1-2 | - | - | - | - | - | - | - | - | - | 365 | 610 | 1040 |
| | 3 | - | - | - | - | - | - | - | - | - | 275 | 480 | 800 |
| | 4 | - | - | - | - | - | - | - | - | - | 300 | 550 | 920 |
| | 5 | - | - | - | - | - | - | - | - | - | 275 | 610 | 1070 |
| | 6 | - | - | - | - | - | - | - | - | - | 150 | 460 | 760 |
| | 7 | - | - | - | - | - | - | - | - | - | - | - | - |
| S | 1 | - | - | - | - | - | - | 120 | 200 | 275 | - | - | - |
| | 2 | - | - | - | - | - | - | 120 | 215 | 275 | - | - | - |
| | 3 | - | - | - | - | - | - | 120 | 250 | 275 | - | - | - |
| | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| H | 1 | - | - | - | 45 | 150 | 230 | 45 | 120 | 170 | - | - | - |
| | 2 | - | - | - | 45 | 140 | 230 | 45 | 110 | 170 | - | - | - |
| | 3 | - | - | - | 45 | 130 | 230 | 45 | 100 | 170 | - | - | - |
| | 4 | - | - | - | 45 | 120 | 230 | 45 | 90 | 170 | - | - | - |

 NOTE: FIRST choice starting speeds are in **bold** type.

As the average chip thickness increases, the speed should be decreased.

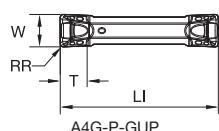
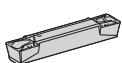


● first choice
○ alternate choice

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

■ GUP Precision Molded

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|-------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0205M02U02GUP | 2 | 2,05 | 0,2 | 20 | 2,0 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0305M03U02GUP | 3 | 3,05 | 0,2 | 20 | 3,0 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0305M03U04GUP | 3 | 3,05 | 0,4 | 20 | 3,0 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0405M04U04GUP | 4 | 4,05 | 0,4 | 20 | 3,4 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0405M04U08GUP | 4 | 4,05 | 0,8 | 20 | 3,4 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4R0405M04U00GUP | 4 | 4,05 | - | 20 | - | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0505M05U04GUP | 5 | 5,05 | 0,4 | 25 | 4,2 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0505M05U08GUP | 5 | 5,05 | 0,8 | 25 | 4,2 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0605M06U04GUP | 6 | 6,05 | 0,4 | 30 | 4,5 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0605M06U08GUP | 6 | 6,05 | 0,8 | 30 | 4,5 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0605M06U12GUP | 6 | 6,05 | 1,2 | 30 | 4,5 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4R0605M06U00GUP | 6 | 6,05 | - | 30 | 4,9 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0805M08U08GUP | 8 | 8,05 | 0,8 | 30 | 6,0 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0805M08U12GUP | 8 | 8,05 | 1,2 | 30 | 6,0 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4R0805M08U00GUP | 8 | 8,05 | - | 30 | 6,5 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G1005M10U08GUP | 10 | 10,05 | 0,8 | 30 | 6,0 | ● | ● | ● | - | - | - | - | - | - | - | - | - | |
| A4G1005M10U12GUP | 10 | 10,05 | 1,2 | 30 | 6,1 | - | ● | - | ● | - | - | - | - | - | - | - | - | |

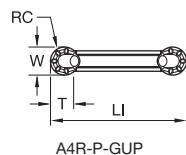
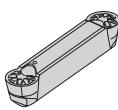


● first choice
○ alternate choice

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

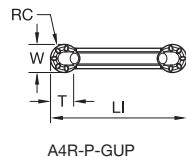
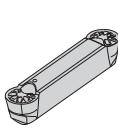
■ GUP Precision Ground

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|-------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0200M02P02GUP | 2 | 2,00 | 0,2 | 20 | 1,9 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G094I2BP05GUP | 2B | 2,38 | 0,2 | 20 | 1,9 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0300M03P02GUP | 3 | 3,00 | 0,2 | 20 | 2,9 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0300M03P04GUP | 3 | 3,00 | 0,4 | 20 | 2,9 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G125I03P05GUP | 3 | 3,18 | 0,2 | 20 | 2,9 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G125I03P1GUP | 3 | 3,18 | 0,4 | 20 | 2,9 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0400M04P02GUP | 4 | 4,00 | 0,2 | 20 | 3,3 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0400M04P04GUP | 4 | 4,00 | 0,4 | 20 | 3,3 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0400M04P08GUP | 4 | 4,00 | 0,8 | 20 | 3,3 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G187I04P1GUP | 4 | 4,76 | 0,4 | 20 | 3,3 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0500M05P04GUP | 5 | 5,00 | 0,4 | 25 | 4,1 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0500M05P08GUP | 5 | 5,00 | 0,8 | 25 | 4,1 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0600M06P04GUP | 6 | 6,00 | 0,4 | 30 | 4,5 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0600M06P08GUP | 6 | 6,00 | 0,8 | 30 | 4,5 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G250I06P1GUP | 6 | 6,35 | 0,4 | 30 | 4,4 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G250I06P2GUP | 6 | 6,35 | 0,8 | 30 | 4,4 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G312I08P1GUP | 8 | 7,94 | 0,4 | 30 | 5,9 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0800M08P08GUP | 8 | 8,00 | 0,8 | 30 | 6,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G0800M08P12GUP | 8 | 8,00 | 1,2 | 30 | 6,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G375I10P1GUP | 10 | 9,53 | 0,4 | 30 | 5,9 | - | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G1000M10P08GUP | 10 | 10,00 | 0,8 | 30 | 6,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | |
| A4G1000M10P12GUP | 10 | 10,00 | 1,2 | 30 | 6,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | |



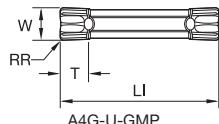
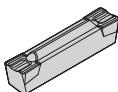
■ GUP Full Radius Precision Molded

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCZ20 | K313 | KC5010 | KC5025 | KV3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|-------|-----|----|---|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R0305M03U00GUP | 3 | 3,05 | 1,5 | 20 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R0505M05U00GUP | 5 | 5,05 | 2,5 | 25 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R1005M10U00GUP | 10 | 10,05 | 5,0 | 30 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |



■ GUP Full Radius Precision Ground

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCZ20 | K313 | KC5010 | KC5025 | KV3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|-------|-----|----|---|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R0300M03P00GUP | 3 | 3,00 | 1,5 | 20 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R125I03P00GUP | 3 | 3,18 | 1,6 | 20 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R0400M04P00GUP | 4 | 4,00 | 2,0 | 20 | — | — | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R187I04P00GUP | 4 | 4,76 | 2,4 | 20 | — | — | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R0500M05P00GUP | 5 | 5,00 | 2,5 | 25 | — | — | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R0600M06P00GUP | 6 | 6,00 | 3,0 | 30 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R250I06P00GUP | 6 | 6,35 | 3,2 | 30 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R312I08P00GUP | 8 | 7,94 | 4,0 | 30 | — | ● | — | — | — | — | — | — | — | — | — | — | — | |
| A4R0800M08P00GUP | 8 | 8,00 | 4,0 | 30 | — | — | ● | — | — | — | — | — | — | — | — | — | — | |
| A4R1000M10P00GUP | 10 | 10,00 | 5,0 | 30 | — | ● | ● | — | — | — | — | — | — | — | — | — | — | |

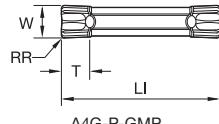
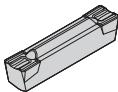


● first choice
○ alternate choice

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

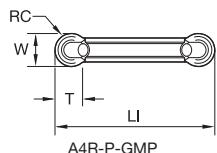
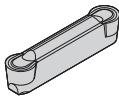
■ GMP Precision Molded

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|-------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0205M02U02GMP | 2 | 2,05 | 0,2 | 20 | 2,0 | - | ● | - | - | - | - | ● | ● | - | - | - | - | |
| A4G0255M2BU02GMP | 2B | 2,62 | 0,2 | 20 | 2,0 | - | ● | - | - | - | - | ● | ● | - | - | - | - | |
| A4G0305M03U02GMP | 3 | 3,05 | 0,2 | 20 | 3,5 | ● | ● | - | - | - | - | ● | ● | - | ● | - | - | |
| A4G0305M03U04GMP | 3 | 3,05 | 0,4 | 20 | 3,5 | ● | ● | - | - | - | - | ● | ● | - | ● | - | - | |
| A4G0405M04U04GMP | 4 | 4,05 | 0,4 | 20 | 3,4 | ● | ● | ● | ● | - | - | ● | ● | - | ● | - | - | |
| A4G0405M04U08GMP | 4 | 4,05 | 0,8 | 20 | 3,4 | - | ● | - | - | - | - | ● | ● | - | ● | - | - | |
| A4G0505M05U04GMP | 5 | 5,05 | 0,4 | 25 | 4,2 | ● | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| A4G0505M05U08GMP | 5 | 5,05 | 0,8 | 25 | 4,2 | - | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| A4G0605M06U04GMP | 6 | 6,05 | 0,4 | 30 | 4,9 | - | - | ● | - | - | - | ● | ● | - | - | - | - | |
| A4G0605M06U08GMP | 6 | 6,05 | 0,8 | 30 | 4,9 | - | - | - | - | - | - | ● | ● | - | - | - | - | |
| A4G0805M08U08GMP | 8 | 8,05 | 0,8 | 30 | 6,1 | - | ● | - | - | - | - | ● | ● | - | - | - | - | |
| A4G1005M10U08GMP | 10 | 10,05 | 0,8 | 30 | 8,1 | ● | ● | - | - | - | - | - | - | - | - | - | - | |



■ GMP Precision Ground

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0200M02P02GMP | 2 | 2,00 | 0,2 | 20 | 2,0 | ● | ● | - | - | - | - | ● | ● | - | - | - | - | - |
| A4G0250M2BP02GMP | 2B | 2,50 | 0,2 | 20 | 2,0 | ● | - | - | - | - | - | ● | ● | - | - | - | - | - |
| A4G0300M03P02GMP | 3 | 3,00 | 0,2 | 20 | 3,5 | ● | ● | - | - | - | - | ● | ● | ● | - | - | - | - |
| A4G0300M03P04GMP | 3 | 3,00 | 0,4 | 20 | 3,5 | ● | ● | - | - | - | - | ● | ● | ● | - | - | - | - |
| A4G0400M04P02GMP | 4 | 4,00 | 0,2 | 20 | - | ● | ● | - | - | - | - | ● | ● | ● | - | - | - | - |
| A4G0400M04P04GMP | 4 | 4,00 | 0,4 | 20 | 3,5 | ● | ● | - | - | - | - | ● | ● | ● | - | - | - | - |
| A4G0400M04P08GMP | 4 | 4,00 | 0,8 | 20 | 3,5 | ● | ● | - | - | - | - | ● | ● | - | - | - | - | - |
| A4G0500M05P04GMP | 5 | 5,00 | 0,4 | 25 | - | ● | ● | - | - | - | - | ● | ● | ● | - | - | - | - |
| A4G0500M05P08GMP | 5 | 5,00 | 0,8 | 25 | - | ● | - | - | - | - | - | ● | ● | ● | - | - | - | - |
| A4G0600M06P04GMP | 6 | 6,00 | 0,4 | 30 | 4,9 | ● | ● | - | - | - | - | ● | ● | - | - | - | - | - |
| A4G0600M06P08GMP | 6 | 6,00 | 0,8 | 30 | 4,9 | ● | ● | - | - | - | - | ● | ● | - | - | - | - | - |
| A4G0800M08P08GMP | 8 | 8,00 | 0,8 | 30 | 6,4 | - | ● | - | - | - | - | ● | ● | - | - | - | - | - |
| A4G0800M08P12GMP | 8 | 8,00 | 1,2 | 30 | 6,4 | ● | - | - | - | - | - | - | - | - | - | - | - | - |

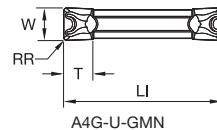
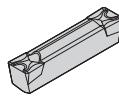


● first choice
○ alternate choice

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

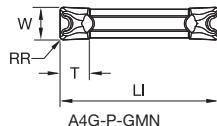
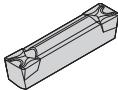
■ GMP Full Radius Precision Ground

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R0200M02P00GMP | 2 | 2,00 | 1,0 | 20 | 1,7 | ● | ● | - | - | - | - | ● | ● | - | - | - | - | |
| A4R0300M03P00GMP | 3 | 3,00 | 1,5 | 20 | 2,5 | ● | ● | - | - | - | ● | ● | ● | - | - | - | - | |
| A4R0400M04P00GMP | 4 | 4,00 | 2,0 | 20 | - | ● | ● | - | - | - | ● | ● | ● | - | - | - | - | |
| A4R0500M05P00GMP | 5 | 5,00 | 2,5 | 25 | 4,1 | ● | ● | - | - | ● | ● | ● | - | - | - | - | - | |
| A4R0600M06P00GMP | 6 | 6,00 | 3,0 | 30 | 4,8 | ● | ● | - | - | ● | ● | ● | - | - | - | - | - | |
| A4R0800M08P00GMP | 8 | 8,00 | 4,0 | 30 | 6,4 | ● | ● | - | - | ● | ● | ● | - | - | - | - | - | |



■ GMN Precision Moulded

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|-------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0205M02U02GMN | 2 | 2,05 | 0,2 | 20 | 2,0 | ● | - | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0255M2BU02GMN | 2B | 2,62 | 0,2 | 20 | 2,0 | - | - | - | - | - | - | - | - | - | - | - | - | |
| A4G0305M03U02GMN | 3 | 3,05 | 0,2 | 20 | 3,5 | ● | ● | ● | ● | - | - | - | - | - | - | - | - | |
| A4G0305M03U04GMN | 3 | 3,05 | 0,4 | 20 | 3,5 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G0405M04U04GMN | 4 | 4,05 | 0,4 | 20 | 3,4 | ● | ● | - | ● | - | - | ● | ● | - | - | - | - | |
| A4G0405M04U08GMN | 4 | 4,05 | 0,8 | 20 | 3,4 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G0505M05U04GMN | 5 | 5,05 | 0,4 | 25 | 4,2 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G0505M05U08GMN | 5 | 5,05 | 0,8 | 25 | 4,2 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G0605M06U04GMN | 6 | 6,05 | 0,4 | 30 | 4,9 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G0605M06U08GMN | 6 | 6,05 | 0,8 | 30 | 4,9 | ● | ● | ● | ● | - | - | ● | ● | - | ● | - | - | |
| A4G0605M06U12GMN | 6 | 6,05 | 1,2 | 30 | 4,9 | - | - | - | ● | - | - | ● | ● | - | - | - | - | |
| A4G0805M08U08GMN | 8 | 8,05 | 0,8 | 30 | 6,4 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G0805M08U12GMN | 8 | 8,05 | 1,2 | 30 | 6,4 | - | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G1005M10U08GMN | 10 | 10,05 | 0,8 | 30 | 8,1 | - | ● | ● | ● | - | - | ● | ● | - | - | - | - | |
| A4G1005M10U12GMN | 10 | 10,05 | 1,2 | 30 | 8,1 | - | - | - | ● | - | - | ● | ● | - | - | - | - | |

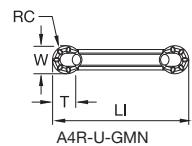
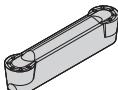


- first choice
- alternate choice

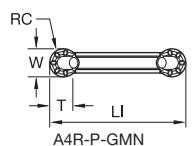
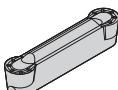
| | | | | | | | | | | | |
|---|--------|---|---|---|---|---|---|---|---|---|---|
| P | Blue | ● | ● | ● | ● | ○ | ○ | ○ | ● | ○ | |
| M | Yellow | | ● | ● | ○ | ○ | ● | ○ | | | |
| K | Red | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● | ○ | ○ |
| N | Green | ● | ○ | | | ● | ● | ○ | | | |
| S | Orange | ● | ● | | | ● | ○ | ○ | | ○ | |
| H | Grey | ○ | | | | ○ | | | ● | ● | |

■ GMN Precision Ground

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G094I2BP05GMN | 2B | 2,39 | 0,2 | 20 | 1,9 | ● - | - | - | - | - | ● - | - | - | - | - | - | - | |
| A4G125I03P05GMN | 3 | 3,18 | 0,2 | 20 | 3,4 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4G125I03P1GMN | 3 | 3,18 | 0,4 | 20 | 3,4 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4G187I04P1GMN | 4 | 4,76 | 0,4 | 20 | 3,5 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4G187I04P2GMN | 4 | 4,76 | 0,8 | 20 | 3,5 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4G250I06P1GMN | 6 | 6,35 | 0,4 | 30 | 4,7 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4G250I06P2GMN | 6 | 6,35 | 0,8 | 30 | 4,7 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4G312I08P1GMN | 8 | 7,94 | 0,4 | 30 | 6,2 | - | ● ● | - | - | - | - | ● ● | - | - | - | - | - | |
| A4G375I10P1GMN | 10 | 9,53 | 0,4 | 30 | 7,9 | - | - | - | - | - | ● - | - | - | - | - | - | - | |
| A4G375I10P2GMN | 10 | 9,53 | 0,8 | 30 | 7,9 | ● - | - | - | - | - | ● - | - | - | - | - | - | - | |



■ GMN Full Radius Precision Moulded

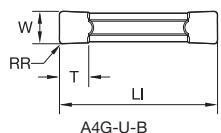


■ GMN Full Radius Precision Ground

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R125103P00GMN | 3 | 3,18 | 1,6 | 20 | 2,7 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4R187104P00GMN | 4 | 4,76 | 2,4 | 20 | 3,8 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4R250106P00GMN | 6 | 6,35 | 3,2 | 30 | 5,3 | ● ● | - | - | - | - | ● ● | - | - | - | - | - | - | |
| A4R312108P00GMN | 8 | 7,94 | 4,0 | 30 | 6,4 | ● | - | - | - | - | - | - | - | - | - | - | - | |
| A4R375110P00GMN | 10 | 9,53 | 4,8 | 30 | 7,3 | - | - | - | - | - | - | ● | - | - | - | - | - | |



A small, rectangular component with a ribbed surface, likely a metal part.



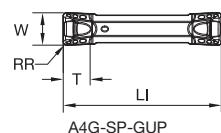
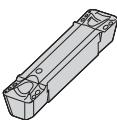
- first choice
- alternate choice

| | | | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ○ | ○ | ○ | ● | |
| M | ■ | ● | ● | | | ○ | ● | ○ | | |
| K | ■■ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● | ○ |
| N | ■■■ | ● | ○ | | | ● | ● | ○ | | |
| S | ■■ | ● | ● | | | ● | ○ | ○ | | ○ |
| H | ■■■■ | ○ | | | | ○ | | | ● | ● |

■ Flat Top Precision Moulded

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KY315 | KB1630 | KB1625 | KD1405 |
|------------------|-----------|-------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0305M03U02B | 3 | 3,05 | 0,2 | 20 | 3,5 | - | ● | - | - | ● | - | - | ● | - | - | - | - | |
| A4G0405M04U04B | 4 | 4,05 | 0,4 | 20 | 3,4 | - | - | - | - | ● | - | - | ● | - | - | - | - | |
| A4G0505M05U04B | 5 | 5,05 | 0,4 | 25 | 4,2 | - | ● | - | - | ● | - | - | - | - | - | - | - | |
| A4G0605M06U04B | 6 | 6,05 | 0,4 | 30 | 4,9 | - | ● | - | - | ● | - | - | - | - | - | - | - | |
| A4G0805M08U08B | 8 | 8,05 | 0,8 | 30 | 6,4 | - | - | - | - | ● | - | - | - | - | - | - | - | |
| A4G1005M10U08B | 10 | 10,05 | 0,8 | 30 | 8,1 | - | - | - | - | ● | - | - | - | - | - | - | - | |

A4™ Groove and Turn Inserts • Small Diameter Face Grooving

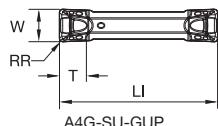
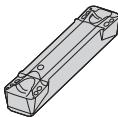


- first choice
- alternate choice

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ○ | ○ | ○ | ● | |
| M | ■ | ● | ● | | ○ | ● | ○ | | |
| K | ■ | ○ | ○ | ○ | ● | ○ | ○ | ● | ○ |
| N | ■ | ● | ○ | | ● | ● | ○ | | |
| S | ■ | ● | ● | | ● | ○ | ○ | | ● |
| H | ■ | ○ | | | ○ | | | ● | ● |

■ GUP Precision Moulded • Small Diameter Face Grooving

NOTE: A4-S inserts are reduced-height A4 inserts. For example, a 2S seat size holder will not accept a seat size 2 insert.



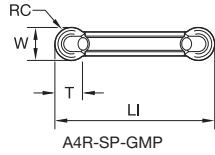
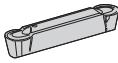
● first choice
○ alternate choice

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

■ GUP Precision Ground • Small Diameter Face Grooving

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0205M2SU02GUP | 2S | 2,05 | 0,2 | 20 | 2,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0305M3SU02GUP | 3S | 3,05 | 0,2 | 20 | 3,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0305M3SU04GUP | 3S | 3,05 | 0,4 | 20 | 3,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0405M4SU04GUP | 4S | 4,05 | 0,4 | 20 | 3,4 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0505M5SU04GUP | 5S | 5,05 | 0,4 | 25 | 4,2 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0505M5SU08GUP | 5S | 5,05 | 0,8 | 25 | 4,2 | - | ● | - | - | - | - | - | - | - | - | - | - | - |

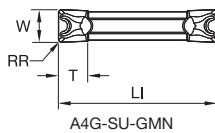
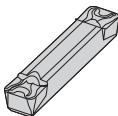
NOTE: A4-S inserts are reduced-height A4 inserts. For example, a 2S seat size holder will not accept a seat size 2 insert.



■ GMP Full Radius Precision Ground • Small Diameter Face Grooving

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R0200M2SP00GMP | 2S | 2,00 | 1,0 | 20 | 1,6 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4R0300M3SP00GMP | 3S | 3,00 | 1,5 | 20 | 2,5 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4R0500M5SP00GMP | 5S | 5,00 | 2,5 | 25 | 4,1 | - | ● | - | - | - | - | - | - | - | - | - | - | - |

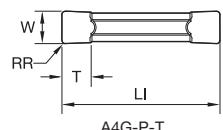
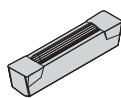
NOTE: A4-S inserts are reduced-height A4 inserts. For example, a 2S seat size holder will not accept a seat size 2 insert.



■ GMN Precision Moulded • Small Diameter Face Grooving

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0205M2SU02GMN | 2S | 2,05 | 0,2 | 20 | 2,0 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0305M3SU02GMN | 3S | 3,05 | 0,2 | 20 | 3,5 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0305M3SU04GMN | 3S | 3,05 | 0,4 | 20 | 3,5 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0405M4SU04GMN | 4S | 4,05 | 0,4 | 20 | 3,6 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0405M4SU08GMN | 4S | 4,05 | 0,8 | 20 | 3,6 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4G0505M5SU04GMN | 5S | 5,05 | 0,4 | 25 | 4,2 | ● | ● | - | - | - | - | - | - | - | - | - | - | - |

NOTE: A4-S inserts are reduced-height A4 inserts. For example, a 2S seat size holder will not accept a seat size 2 insert.

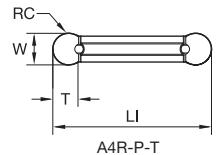
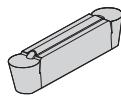


● first choice
○ alternate choice

| | |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ● |

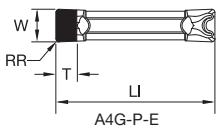
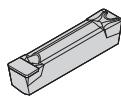
■ Flat Top Precision Ground • Ceramic

| ISO catalogue number | seat size | W | RR | LI | T | KY3500 |
|----------------------|-----------|------|-----|----|-----|--------|
| A4G0300M03P04T01025 | 3 | 3,00 | 0,4 | 20 | 3,4 | ● |
| A4G125I03P1T0425 | 3 | 3,18 | 0,4 | 20 | 3,4 | ● |
| A4G0400M04P04T01025 | 4 | 4,00 | 0,4 | 20 | 3,4 | ● |
| A4G0500M05P08T01025 | 5 | 5,00 | 0,8 | 25 | 4,2 | ● |
| A4G0600M06P08T01025 | 6 | 6,00 | 0,8 | 30 | 4,8 | ● |
| A4G250I06P2T0425 | 6 | 6,35 | 0,8 | 30 | 4,9 | ● |
| A4G0800M08P08T01025 | 8 | 8,00 | 0,8 | 30 | 6,4 | ● |



■ Flat Top Full Radius Precision Ground • Ceramic

| ISO catalogue number | seat size | W | RC | LI | T | KY3500 |
|----------------------|-----------|------|-----|----|-----|--------|
| A4R0300M03P00T01025 | 3 | 3,00 | 1,5 | 20 | 2,4 | ● |
| A4R0500M05P00T01025 | 5 | 5,00 | 2,5 | 25 | 4,1 | ● |
| A4R0600M06P00T01025 | 6 | 6,00 | 3,0 | 30 | 4,3 | ● |
| A4R250I06P00T0425 | 6 | 6,35 | 3,2 | 30 | 4,8 | ● |
| A4R0800M08P00T01025 | 8 | 8,00 | 4,0 | 30 | 6,4 | ● |

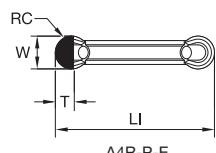
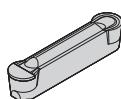


● first choice
○ alternate choice

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

■ Flat Top Precision Ground • PCD

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|--------|--------|--------|-------|--------|--------|--------|
| A4G0300M03P04E | 3 | 3,00 | 0,4 | 20 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● |
| A4G0400M04P04E | 4 | 4,00 | 0,4 | 20 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● |
| A4G0500M05P08E | 5 | 5,00 | 0,8 | 25 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● |

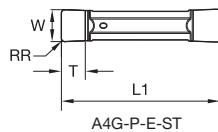
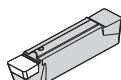


● first choice
○ alternate choice

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

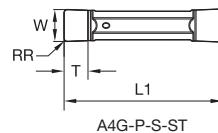
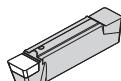
■ Flat Top Full Radius Precision Ground • PCD

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R0500M05P00E | 5 | 5,00 | 2,5 | 25 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | ● | |



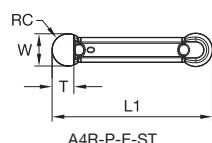
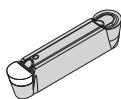
■ Flat Top Precision Ground • PcBN

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0300M03P04EST | 3 | 3,00 | 0,4 | 20 | 3,0 | - | - | - | - | - | - | - | - | - | - | - | - | |
| A4G0500M05P08EST | 5 | 5,00 | 0,8 | 25 | 3,5 | - | - | - | - | - | - | - | - | - | - | ● | - | |
| A4G0600M06P08EST | 6 | 6,00 | 0,8 | 30 | 4,0 | - | - | - | - | - | - | - | - | - | ● | - | - | |



■ Flat Top Precision Ground • T Land • PcBN

| catalogue number | seat size | W | RR | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|-----------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4G0300M03P04S02025ST | 3 | 3,00 | 0,4 | 20 | 3,0 | - | - | - | - | - | - | - | - | - | ● | ● | - | |
| A4G0400M04P04S02025ST | 4 | 4,00 | 0,4 | 20 | 3,3 | - | - | - | - | - | - | - | - | - | ● | ● | - | |
| A4G0500M05P08S02025ST | 5 | 5,00 | 0,8 | 25 | 3,5 | - | - | - | - | - | - | - | - | - | ● | ● | - | |
| A4G0600M06P08S02025ST | 6 | 6,00 | 0,8 | 30 | 4,0 | - | - | - | - | - | - | - | - | - | ● | ● | - | |



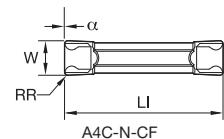
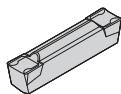
- first choice
- alternate choice

| | | | | | | | | | | |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| P | Blue | Black | Black | Black | Black | White | White | White | Black | White |
| M | Yellow | Black | Black | White | White | White | Black | White | White | White |
| K | Red | White | White | White | White | Black | White | White | Black | White |
| N | Green | Black | White | White | White | White | Black | White | White | White |
| S | Orange | Black | Black | White | White | Black | White | White | White | White |
| H | Grey | White | White | White | White | White | White | White | Black | Black |

■ Flat Top Full Radius Precision Ground • PcbN

| catalogue number | seat size | W | RC | LI | T | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|-----|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4R0300M03P00EST | 3 | 3,00 | 1,5 | 20 | 2,2 | - | - | - | - | - | - | - | - | - | ● | - | - | |
| A4R0400M04P00EST | 4 | 4,00 | 2,0 | 20 | 2,9 | - | - | - | - | - | - | - | - | - | ● | - | - | |
| A4R0500M05P00EST | 5 | 5,00 | 2,5 | 25 | 3,7 | - | - | - | - | - | - | - | - | - | ● | - | - | |
| A4R0600M06P00EST | 6 | 6,00 | 3,0 | 30 | 4,4 | - | - | - | - | - | - | - | - | - | ● | - | - | |

A4™ Cut-off Inserts



- first choice
- alternate choice

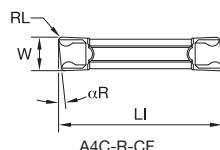
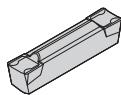
| | | | | | | | | | | |
|---|-----|---|---|---|---|---|---|---|---|----|
| P | | ● | ● | ● | ● | ○ | ○ | ○ | ● | |
| M | ■ | | ● | ● | ○ | | ○ | ● | ○ | |
| K | ■■ | | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ |
| N | ■■■ | | ● | ○ | | | ● | ● | ○ | |
| S | ■■ | | ● | ● | | | ● | ○ | ○ | |
| H | ■■■ | | ○ | | | | ○ | | | ●● |

■ CF Precision Moulded • Neutral

| catalogue number | seat size | W | RR | LI | α | KCU10 | KCU25 | KCP10 | KCP25 | KCR20 | K313 | KCS010 | KCS025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|----------|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4C0155N00CF01 | 1 | 1,50 | 0,2 | 16 | — | - | ● | - | - | - | - | - | ● | - | - | - | - | |
| A4C0205N00CF02 | 2 | 2,05 | 0,2 | 20 | — | - | ● | - | - | - | - | - | ● | - | - | - | - | |
| A4C0255N00CF02 | 2B | 2,50 | 0,2 | 20 | — | - | ● | - | - | - | - | - | ● | - | - | - | - | |
| A4C0305N00CF02 | 3 | 3,05 | 0,2 | 20 | — | - | ● | - | - | - | - | - | ● | - | - | - | - | |
| A4C0405N00CF02 | 4 | 4,05 | 0,2 | 20 | — | - | ● | - | - | - | - | - | ● | - | - | - | - | |

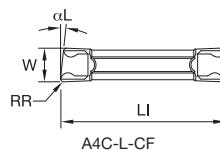
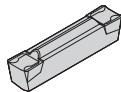
| P | ● | ● | ● | ● | ○ | ○ | ○ | ● | ● | ● | ● |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M | ● | ● | | | ○ | ● | ○ | | | | |
| K | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● | ○ | ○ | ● |
| N | ● | ○ | | | ● | ● | ● | ● | ● | | |
| S | ● | ● | | | ● | ○ | ○ | | ○ | | |
| H | ○ | | | | ○ | | ○ | | ● |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

● first choice
○ alternate choice



■ CF Precision Moulded • Right Hand

| catalogue number | seat size | W | RL | LI | αR | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|------|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4C0155R06CF01 | 1 | 1,50 | 0,2 | 16 | 6.0 | - | - | - | - | - | - | - | - | ● | - | - | - | - |
| A4C0155R10CF01 | 1 | 1,50 | 0,2 | 16 | 10.0 | - | - | ● | - | - | - | - | - | - | - | - | - | - |
| A4C0155R16CF01 | 1 | 1,50 | 0,2 | 16 | 16.0 | - | - | - | - | - | - | - | - | ● | - | - | - | - |
| A4C0205R06CF02 | 2 | 1,99 | 0,2 | 20 | 6.0 | - | ● | - | - | - | - | - | - | ● | - | - | - | - |
| A4C0205R10CF02 | 2 | 1,99 | 0,2 | 20 | 10.0 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4C0255R06CF02 | 2B | 2,49 | 0,2 | 20 | 6.0 | - | - | - | - | - | - | - | ● | - | - | - | - | - |
| A4C0305R06CF02 | 3 | 3,05 | 0,2 | 20 | 6.0 | - | ● | - | - | - | - | - | ● | - | - | - | - | - |
| A4C0305R10CF02 | 3 | 3,05 | 0,2 | 20 | 10.0 | - | ● | - | - | - | - | ● | - | - | - | - | - | - |
| A4C0405R06CF02 | 4 | 4,05 | 0,2 | 20 | 6.0 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4C0405R10CF02 | 4 | 4,05 | 0,2 | 20 | 10.0 | - | ● | - | - | - | - | ● | - | - | - | - | - | - |

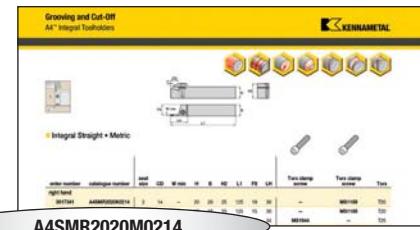


■ CF Precision Moulded • Left Hand

| catalogue number | seat size | W | RR | LI | αL | KCU10 | KCU25 | KCP10 | KCP25 | KCK20 | K313 | KC5010 | KC5025 | KY3500 | KT315 | KB1630 | KB5625 | KD1405 |
|------------------|-----------|------|-----|----|------|-------|-------|-------|-------|-------|------|--------|--------|--------|-------|--------|--------|--------|
| A4C0155L06CF01 | 1 | 1,50 | 0,2 | 16 | 6.0 | - | - | - | - | - | - | - | ● | - | - | - | - | - |
| A4C0205L06CF02 | 2 | 1,99 | 0,2 | 20 | 6.0 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4C0205L10CF02 | 2 | 1,99 | 0,2 | 20 | 10.0 | - | - | - | - | - | - | - | ● | - | - | - | - | - |
| A4C0305L06CF02 | 3 | 3,05 | 0,2 | 20 | 6.0 | - | ● | - | - | - | - | ● | - | - | - | - | - | - |
| A4C0305L10CF02 | 3 | 3,05 | 0,2 | 20 | 10.0 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4C0405L06CF02 | 4 | 4,05 | 0,2 | 20 | 6.0 | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| A4C0405L10CF02 | 4 | 4,05 | 0,2 | 20 | 10.0 | - | ● | - | - | - | - | - | - | - | - | - | - | - |

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.



A4SMR2020M0214

A4

Tooling System

A4 = Grooving and Turning**S**

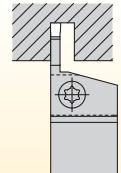
Tool Style

**S** = Straight**E** = End mounted 90°**M**

Support Type

R

Hand of Tool

**R** = Right hand
L = Left hand
N = Neutral**2020M**

Shank Size

02

Seat Size

02
03
04
05
06
08
10**14**

Max Grooving Depth

in millimetres

M =

Maximum support for specific groove widths and straight clearance for unlimited workpiece diameters

E =

No steel support for face grooving

C =

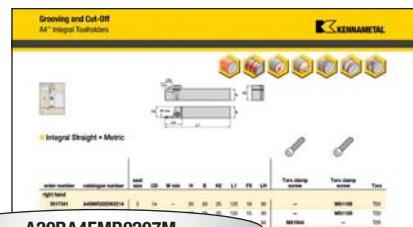
Reinforced Support

metric:

Height x width in mm, letter indicates tool length according to ISO

metric tool length (mm)
K = 125
M = 150
P = 170

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



| A | 20 | R | A4 | E | M | R | 02 | 07 | M |
|------------------------|--------------|------------|--|------------|--------------|-----------------------|----------------------|----------------------|----------------------------|
| Steel Bar with Coolant | Bar Diameter | Bar Length | A4™ Groove and Turn System | Tool Style | Support Type | Hand of Tool | Insert Seat Size | Grooving Depth in mm | Tool Units |
| | | | | | | | | | M = Metric |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | metric bars: R = 200mm S = 150mm T = 300mm | | | | | | |
| | | | | | | | | | |
| | | | metric bars: Bar diameter in millimetres | | | | | | |
| | | | | | | | | | |
| | | | | | | R = Right hand | L = Left hand | | |
| | | | | | | | | | M = Maximum support |

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.



| | | | | | |
|-------------------------|---|---|---|------------------------|------------------------------------|
| KGM | S | L | 2525M | 50 | C |
| Family Name | Tool Style | Hand | Shank Size | Blade Size | Coolant |
| Grooving Modular System | S = Straight mount E = End mount (90°) | L = Left hand R = Right hand | Metric = Height x Width in mm letter indicates tool length according to ISO | 50 65 | C = Through coolant capable |

Grooving Tools and **Beyond**TM

Inserts for Your Shallow Groove and Turn Operations

Top NotchTM



Top Notch Grooving is the proven solution for high productivity. The Top Notch system provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finishing and superior tool life.

FEATURES AND BENEFITS

- The Beyond PVD coated grades are designed to cut a variety of workpiece materials.
- Rigid clamping securely locks insert in place through the toughest cuts.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.

Experience the advantages at your Authorised Kennametal Distributor or at kennametal.com.



kennametal.com

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.

| Grooving and Cut-Off A4™ Integral Toolholders | | | | | | | | | |
|--|------------------|----------|-------|-------|----|------|-------|----------------|--|
| | | | | | | | | | |
| Integral Face Grooving • Outboard • Metric | | | | | | | | | |
| order number | catalogue number | width mm | 2 mm | 0 mm | CD | W mm | F0 | cartridge size | |
| 5001077 | A4M50R0414B048 | 0 | 38 | 40 | 12 | 2 | 10.00 | 30 | |
| 5001078 | A4M50R0414B048 | 0 | 40 | 40 | 12 | 2 | 10.00 | 30 | |
| 5001079 | A4M50R0414B048 | 0 | 40 | 40 | 12 | 2 | 10.00 | 30 | |
| 5001080 | A4M50R0414B048 | 0 | 40 | 44 | 12 | 2 | 10.00 | 30 | |
| | | mm | 1.524 | 1.524 | 12 | 2 | 10.00 | 30 | |

A4M50R0414B048-072

A4M

Family Name

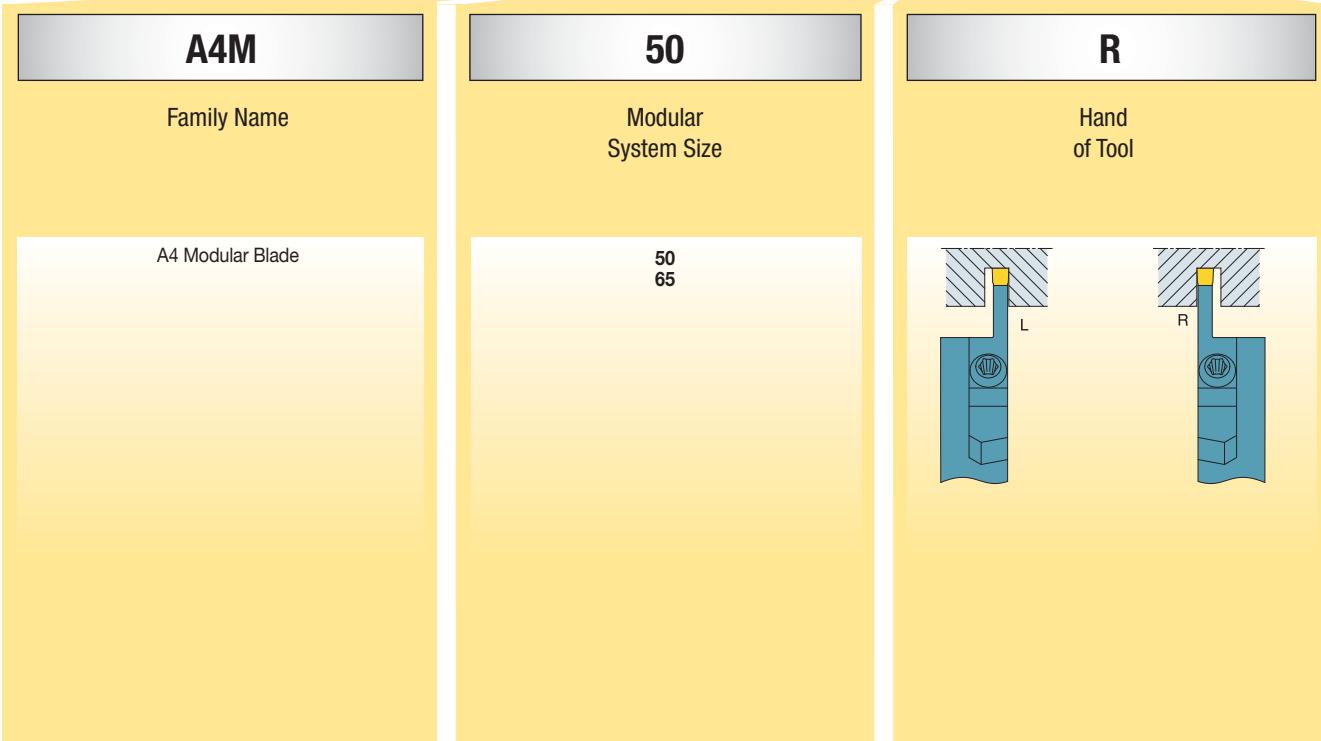
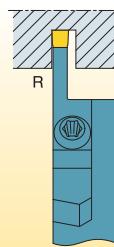
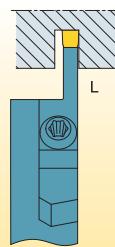
A4 Modular Blade

50

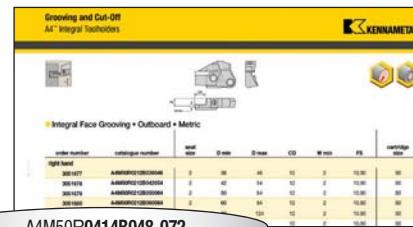
Modular System Size

50
65**R**

Hand of Tool



By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



04

Seat Size

| socket seat size | cutting width mm |
|---------------------|---------------------|
| 02 | 2,00–2,62 |
| 2B | 2,39–2,62 |
| 03 | 3,0–3,05 |
| 04 | 4,0–4,05 |
| 05 | 5,0–5,05 |
| 06 | 6,0–6,05 |
| 08 | 8,0–8,05 |
| 10 | 10,0–10,05 |

14

Maximum
Groove Depth

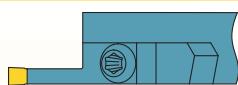


mm

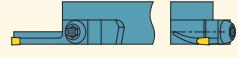
14mm
19mm
20mm
26mm

B

Tool
Style



M = Maximum support for specific groove widths and straight clearance for unlimited workpiece diameters



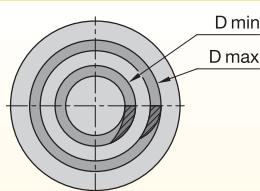
A = Inboard sweep face grooving toolholder



B = Outboard sweep face grooving toolholder

048–072

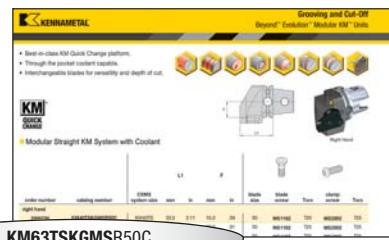
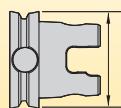
Face Grooving
Diameter Range



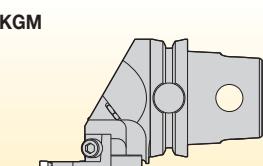
diameters are min and max for outer face groove dia.
999 = unlimited D max

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.

**KM**KM™
Quick-ChangeKM
KM4X™
PSC**63**System
Size40 = 40mm
50 = 50mm
63 = 63mm
80 = 80mm
100 = 100mm**TS**

Feature

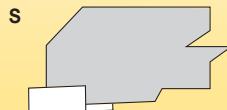
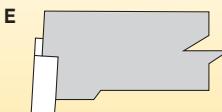
TS
XMZ**KGM**Insert
Holding Method

Modular Grooving

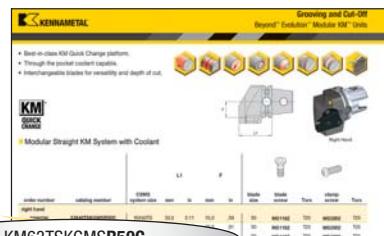
SInsert
Location

E = End mount

S = Side mount



By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



KM63TSKGMSR50C

R

Hand
of Tool

R = Right hand

L = Left hand

50

Blade Size

50
60

C

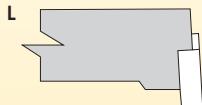
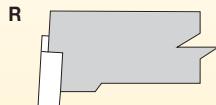
Coolant

C = Through the pocket coolant capable

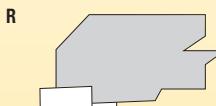
Special
Features

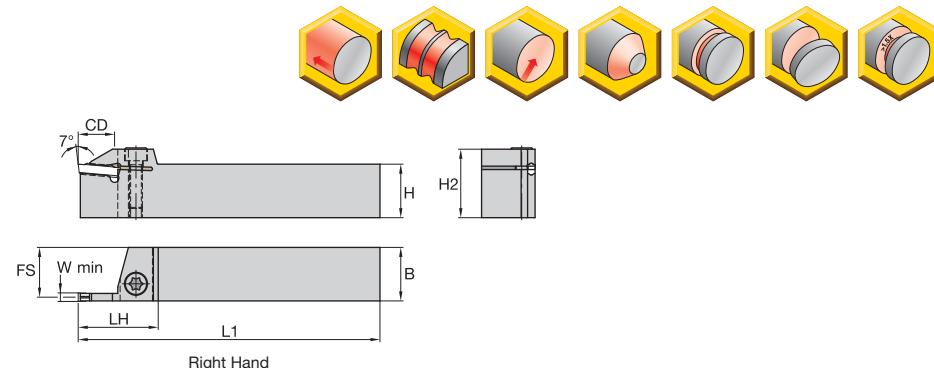
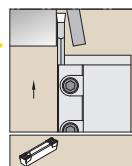
Y = Mazak®
INTEGREX®

End Mount



Side Mount





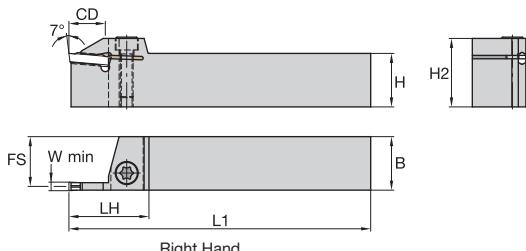
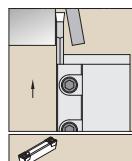
■ Integral Straight • Metric

| order number | catalogue number | seat size | CD | W min | H | B | H2 | L1 | FS | LH | clamp screw | clamp screw | Torx |
|-------------------|------------------|-----------|----|-------|----|----|----|-----|----|----|-------------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 3017341 | A4SMR2020K0214 | 2 | 14 | — | 20 | 20 | 25 | 125 | 19 | 30 | — | MS1160 | T20 |
| 3017342 | A4SMR1616K0214 | 2 | 14 | 2 | 16 | 16 | 25 | 125 | 15 | 30 | — | MS1160 | T20 |
| 2974425 | A4SMR2020K0217 | 2 | 17 | 2 | 20 | 20 | 31 | 125 | 19 | 34 | MS1944 | — | T25 |
| 3017340 | A4SMR2525M0214 | 2 | 14 | 2 | 25 | 25 | 30 | 150 | 24 | 30 | — | MS1160 | T20 |
| 3017339 | A4SMR2525M0217 | 2 | 17 | 2 | 25 | 25 | 31 | 150 | 24 | 34 | MS1944 | — | T25 |
| 1949633 | A4SMR1616K0314 | 3 | 14 | 3 | 16 | 16 | 27 | 125 | 15 | 35 | MS2091 | — | T25 |
| 2503557 | A4SMR2016K0317 | 3 | 17 | 3 | 20 | 16 | 32 | 125 | 15 | 37 | MS1970 | — | T30 |
| 1949635 | A4SMR2020K0314 | 3 | 14 | 3 | 20 | 20 | 27 | 125 | 19 | 35 | MS1595 | — | T30 |
| 2503551 | A4SMR2020K0317 | 3 | 17 | 3 | 20 | 20 | 32 | 125 | 19 | 37 | MS1970 | — | T30 |
| 1949637 | A4SMR2525M0317 | 3 | 17 | 3 | 25 | 25 | 32 | 150 | 24 | 37 | MS1970 | — | T30 |
| 2503559 | A4SMR2016K0417 | 4 | 17 | 4 | 20 | 16 | 32 | 125 | 14 | 37 | MS1970 | — | T30 |
| 1949639 | A4SMR2020K0414 | 4 | 14 | 4 | 20 | 20 | 27 | 125 | 18 | 35 | MS1595 | — | T30 |
| 2503553 | A4SMR2020K0417 | 4 | 17 | 4 | 20 | 20 | 32 | 125 | 18 | 37 | MS1970 | — | T30 |
| 1949641 | A4SMR2525M0417 | 4 | 17 | 4 | 25 | 25 | 32 | 150 | 23 | 37 | MS1970 | — | T30 |
| 1949643 | A4SMR3225P0417 | 4 | 17 | 4 | 32 | 25 | 40 | 170 | 23 | 37 | MS1970 | — | T30 |
| 1949645 | A4SMR2020K0519 | 5 | 19 | 5 | 20 | 20 | 28 | 125 | 18 | 40 | MS1595 | — | T30 |
| 1949647 | A4SMR2525M0520 | 5 | 20 | 5 | 25 | 25 | 33 | 150 | 23 | 40 | MS1970 | — | T30 |
| 1949649 | A4SMR3225P0522 | 5 | 22 | 5 | 32 | 25 | 40 | 170 | 23 | 42 | MS1970 | — | T30 |
| 2503555 | A4SMR2020K0620 | 6 | 20 | 6 | 20 | 20 | 33 | 125 | 17 | 40 | MS1970 | — | T30 |
| 2245484 | A4SMR2525M0620 | 6 | 20 | 6 | 25 | 25 | 33 | 150 | 22 | 40 | MS1970 | — | T30 |
| 2263089 | A4SMR3225P0626 | 6 | 26 | 6 | 32 | 25 | 40 | 170 | 22 | 45 | MS1970 | — | T30 |
| 2245485 | A4SMR2525M0820 | 8 | 20 | 8 | 25 | 25 | 34 | 150 | 21 | 43 | MS1490 | — | T45 |
| 2263091 | A4SMR3225P0826 | 8 | 26 | 8 | 32 | 25 | 41 | 170 | 21 | 47 | MS1490 | — | T45 |
| 2263173 | A4SMR3225P1026 | 10 | 26 | 10 | 32 | 25 | 41 | 170 | 21 | 47 | MS1490 | — | T45 |

(continued)

(Integral Straight • Metric — continued)

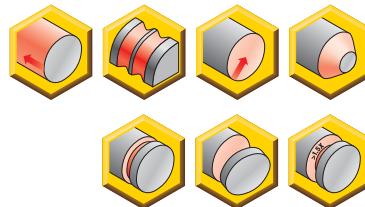
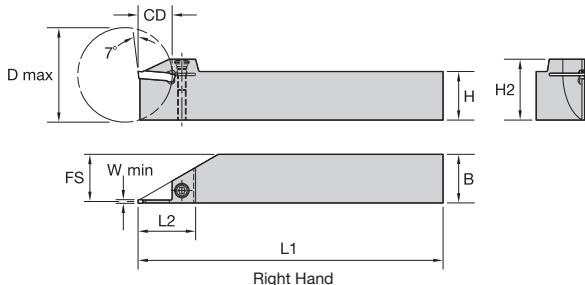
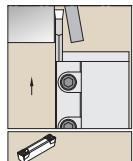

| order number | catalogue number | seat size | CD | W min | H | B | H2 | L1 | FS | LH | clamp screw | clamp screw | Torx |
|------------------|------------------|-----------|----|-------|----|----|----|-----|----|----|-------------|-------------|------|
| left hand | | | | | | | | | | | | | |
| 3017336 | A4SML2020K0214 | 2 | 14 | — | 20 | 20 | 25 | 125 | 19 | 30 | — | MS1160 | T20 |
| 3017338 | A4SML1616K0214 | 2 | 14 | 2 | 16 | 16 | 25 | 125 | 15 | 30 | — | MS1160 | T20 |
| 3017337 | A4SML2020K0217 | 2 | 17 | 2 | 20 | 20 | 31 | 125 | 19 | 34 | MS1944 | — | T25 |
| 3017335 | A4SML2525M0214 | 2 | 14 | 2 | 25 | 25 | 30 | 150 | 24 | 30 | — | MS1160 | T20 |
| 3017334 | A4SML2525M0217 | 2 | 17 | 2 | 25 | 25 | 31 | 150 | 24 | 34 | MS1944 | — | T25 |
| 1949634 | A4SML1616K0314 | 3 | 14 | 3 | 16 | 16 | 27 | 125 | 15 | 35 | MS2091 | — | T25 |
| 2503556 | A4SML2016K0317 | 3 | 17 | 3 | 20 | 16 | 32 | 125 | 15 | 37 | MS1970 | — | T30 |
| 1949636 | A4SML2020K0314 | 3 | 14 | 3 | 20 | 20 | 27 | 125 | 19 | 35 | MS1595 | — | T30 |
| 2503550 | A4SML2020K0317 | 3 | 17 | 3 | 20 | 20 | 32 | 125 | 19 | 37 | MS1970 | — | T30 |
| 1949638 | A4SML2525M0317 | 3 | 17 | 3 | 25 | 25 | 32 | 150 | 24 | 37 | MS1970 | — | T30 |
| 1949640 | A4SML2020K0414 | 4 | 14 | 4 | 20 | 20 | 27 | 125 | 18 | 35 | MS1595 | — | T30 |
| 2503552 | A4SML2020K0417 | 4 | 17 | 4 | 20 | 20 | 32 | 125 | 18 | 37 | MS1970 | — | T30 |
| 1949642 | A4SML2525M0417 | 4 | 17 | 4 | 25 | 25 | 32 | 150 | 23 | 37 | MS1970 | — | T30 |
| 1949644 | A4SML3225P0417 | 4 | 17 | 4 | 32 | 25 | 40 | 170 | 23 | 37 | MS1970 | — | T30 |
| 1949646 | A4SML2020K0519 | 5 | 19 | 5 | 20 | 20 | 28 | 125 | 18 | 40 | MS1595 | — | T30 |
| 1949648 | A4SML2525M0520 | 5 | 20 | 5 | 25 | 25 | 33 | 150 | 23 | 40 | MS1970 | — | T30 |
| 1949650 | A4SML3225P0522 | 5 | 22 | 5 | 32 | 25 | 40 | 170 | 23 | 42 | MS1970 | — | T30 |
| 2503554 | A4SML2020K0620 | 6 | 20 | 6 | 20 | 20 | 33 | 125 | 17 | 40 | MS1970 | — | T30 |
| 2245486 | A4SML2525M0620 | 6 | 20 | 6 | 25 | 25 | 33 | 150 | 22 | 40 | MS1970 | — | T30 |
| 2263090 | A4SML3225P0626 | 6 | 26 | 6 | 32 | 25 | 40 | 170 | 22 | 45 | MS1970 | — | T30 |
| 2245487 | A4SML2525M0820 | 8 | 20 | 8 | 25 | 25 | 34 | 150 | 21 | 43 | MS1490 | — | T45 |
| 2263092 | A4SML3225P0826 | 8 | 26 | 8 | 32 | 25 | 41 | 170 | 21 | 47 | MS1490 | — | T45 |
| 2263174 | A4SML3225P1026 | 10 | 26 | 10 | 32 | 25 | 41 | 170 | 21 | 47 | MS1490 | — | T45 |



■ Integral Straight • Short Projection Toolholders • Metric



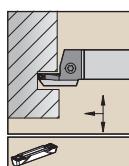
| order number | catalogue number | seat size | CD | W min | H | B | H2 | L1 | FS | LH | clamp screw | clamp screw | Torx |
|-------------------|------------------|-----------|----|-------|----|----|----|-----|----|----|-------------|-------------|------|
| right hand | | | | | | | | | | | | | |
| 3854265 | A4SMR2020K0208 | 2 | 8 | 2 | 20 | 20 | 24 | 125 | 19 | 26 | — | MS1160 | T20 |
| 3854267 | A4SMR2020K0308 | 3 | 8 | 3 | 20 | 20 | 27 | 125 | 19 | 28 | MS1595 | — | T30 |
| 3854269 | A4SMR2020K0408 | 4 | 8 | 4 | 20 | 20 | 27 | 125 | 18 | 28 | MS1595 | — | T30 |
| 3854271 | A4SMR2525M0510 | 5 | 10 | 5 | 25 | 25 | 33 | 150 | 23 | 32 | MS1970 | — | T30 |
| 3854273 | A4SMR2525M0610 | 6 | 10 | 6 | 25 | 25 | 33 | 150 | 22 | 37 | MS1970 | — | T30 |
| left hand | | | | | | | | | | | | | |
| 3854266 | A4SML2020K0208 | 2 | 8 | 2 | 20 | 20 | 24 | 125 | 19 | 26 | — | MS1160 | T20 |
| 3854268 | A4SML2020K0308 | 3 | 8 | 3 | 20 | 20 | 27 | 125 | 19 | 28 | MS1595 | — | T30 |
| 3854270 | A4SML2020K0408 | 4 | 8 | 4 | 20 | 20 | 27 | 125 | 18 | 28 | MS1595 | — | T30 |
| 3854272 | A4SML2525M0510 | 5 | 10 | 5 | 25 | 25 | 33 | 150 | 23 | 32 | MS1970 | — | T30 |
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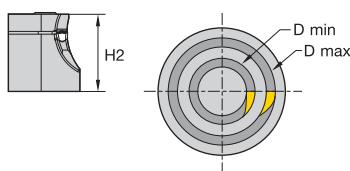
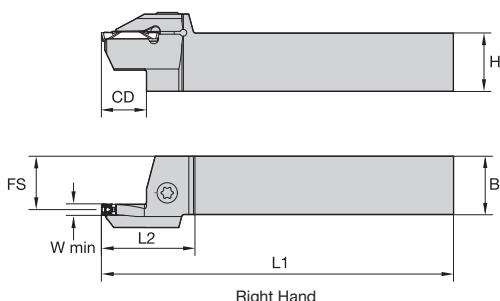
■ Integral Straight Top Clamp • Metric



| order number | catalogue number | seat size | D max | CD | W min | H | B | H2 | L1 | FS | LH | clamp screw | clamp screw | wrench size clamp screw |
|-------------------|------------------|-----------|-------|--------|-------|----|----|----|-----|-------|----|-------------|-------------|-------------------------|
| right hand | | | | | | | | | | | | | | |
| 2982224 | A4SCR1010K0113 | 1 | 27 | 13,500 | 1,50 | 10 | 10 | 21 | 125 | 9,40 | 25 | MS1156 | — | T15 |
| 2978378 | A4SCR1212K0113 | 1 | 27 | 13,500 | 1,50 | 12 | 12 | 21 | 125 | 11,40 | 25 | MS1156 | — | T15 |
| 2982223 | A4SCR1616K0113 | 1 | 27 | 13,500 | 1,50 | 16 | 16 | 21 | 125 | 15,40 | 25 | MS1156 | — | T15 |
| 2982172 | A4SCR2020K0113 | 1 | 27 | 13,500 | 1,50 | 20 | 20 | 25 | 125 | 19,40 | 25 | MS1156 | — | T15 |
| 4169745 | A4SCR1212K0214 | 2 | 28 | 14,000 | 2,00 | 12 | 12 | 21 | 125 | 11,17 | 28 | MS1160 | — | T20 |
| 4169746 | A4SCR1616K0217 | 2 | 34 | 17,000 | 2,00 | 16 | 16 | 26 | 125 | 15,20 | 31 | — | MS1944 | T25 |
| 4169747 | A4SCR1212K0314 | 3 | 28 | 14,000 | 3,00 | 12 | 12 | 23 | 125 | 10,72 | 30 | — | MS2091 | 25 IP |
| 4169748 | A4SCR1616K0317 | 3 | 34 | 17,000 | 3,00 | 16 | 16 | 27 | 125 | 14,72 | 33 | — | MS2091 | 25 IP |
| left hand | | | | | | | | | | | | | | |
| 2982170 | A4SCL1212K0113 | 1 | 27 | 13,500 | 1,50 | 12 | 12 | 21 | 125 | 11,40 | 25 | MS1156 | — | T15 |
| 2982169 | A4SCL1616K0113 | 1 | 27 | 13,500 | 1,50 | 16 | 16 | 21 | 125 | 15,40 | 25 | MS1156 | — | T15 |
| 2982168 | A4SCL2020K0113 | 1 | 27 | 13,500 | 1,50 | 20 | 20 | 25 | 125 | 19,40 | 25 | MS1156 | — | T15 |
| 4169749 | A4SCL1212K0214 | 2 | 28 | 14,000 | 2,00 | 12 | 12 | 21 | 125 | 11,17 | 28 | MS1160 | — | T20 |
| 4169750 | A4SCL1616K0217 | 2 | 34 | 17,000 | 2,00 | 16 | 16 | 26 | 125 | 15,20 | 31 | — | MS1944 | T25 |
| 4169752 | A4SCL1616K0317 | 3 | 34 | 17,000 | 3,00 | 16 | 16 | 27 | 125 | 14,72 | 33 | — | MS2091 | 25 IP |

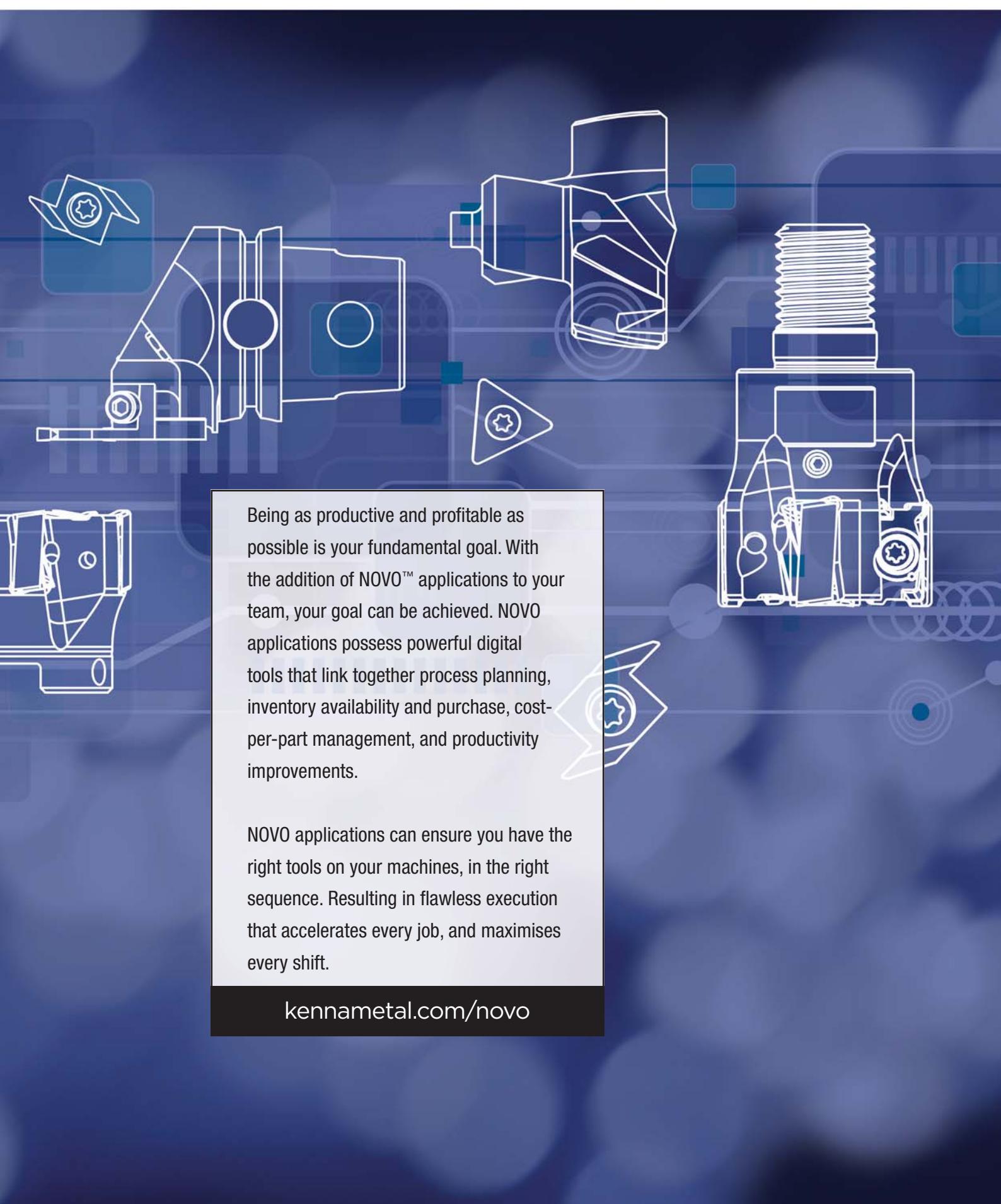


Right hand shown.


■ Integral Face Grooving • Outboard • Metric


| order number | catalogue number | seat size | CD | D min | D max | W min | H | B | H2 | L1 | FS | LH | clamp screw | Torx |
|-------------------|----------------------|-----------|----|-------|-------|-------|----|----|----|-----|-------|----|-------------|------|
| right hand | | | | | | | | | | | | | | |
| 3865920 | A4SBR2020K2S12016020 | 2S | 12 | 16 | 20 | 2,00 | 20 | 20 | 25 | 125 | 19,20 | 28 | — | T20 |
| 3865921 | A4SBR2020K2S12020025 | 2S | 12 | 20 | 25 | 2,00 | 20 | 20 | 25 | 125 | 19,20 | 28 | — | T20 |
| 3865922 | A4SBR2020K2S12025036 | 2S | 12 | 25 | 36 | 2,00 | 20 | 20 | 25 | 125 | 19,20 | 28 | — | T20 |
| 3865923 | A4SBR2020K3S14020025 | 3S | 14 | 20 | 25 | 3,00 | 20 | 20 | 28 | 125 | 18,70 | 35 | MS1595 | T30 |
| 3865924 | A4SBR2020K3S14025036 | 3S | 14 | 25 | 36 | 3,00 | 20 | 20 | 28 | 125 | 18,70 | 35 | MS1595 | T30 |
| 3865926 | A4SBR2020K4S14035048 | 4S | 14 | 35 | 48 | 4,00 | 20 | 20 | 28 | 125 | 18,20 | 35 | MS1595 | T30 |
| 3865927 | A4SBR2525M5S19028038 | 5S | 19 | 28 | 38 | 5,00 | 25 | 25 | 33 | 150 | 22,70 | 40 | MS1970 | T30 |
| 3865928 | A4SBR2525M5S19038058 | 5S | 19 | 38 | 58 | 5,00 | 25 | 25 | 33 | 150 | 22,70 | 40 | MS1970 | T30 |
| left hand | | | | | | | | | | | | | | |
| 3865929 | A4SBL2020K2S12016020 | 2S | 12 | 16 | 20 | 2,00 | 20 | 20 | 25 | 125 | 19,20 | 28 | — | T20 |
| 3865931 | A4SBL2020K2S12025036 | 2S | 12 | 25 | 36 | 2,00 | 20 | 20 | 25 | 125 | 19,20 | 28 | — | T20 |
| 3865932 | A4SBL2020K3S14020025 | 3S | 14 | 20 | 25 | 3,00 | 20 | 20 | 28 | 125 | 18,70 | 35 | MS1595 | T30 |
| 3865934 | A4SBL2020K4S14025035 | 4S | 14 | 25 | 35 | 4,00 | 20 | 20 | 28 | 125 | 18,20 | 35 | MS1595 | T30 |
| 3865937 | A4SBL2525M5S19038058 | 5S | 19 | 38 | 58 | 5,00 | 25 | 25 | 33 | 150 | 22,70 | 40 | MS1970 | T30 |

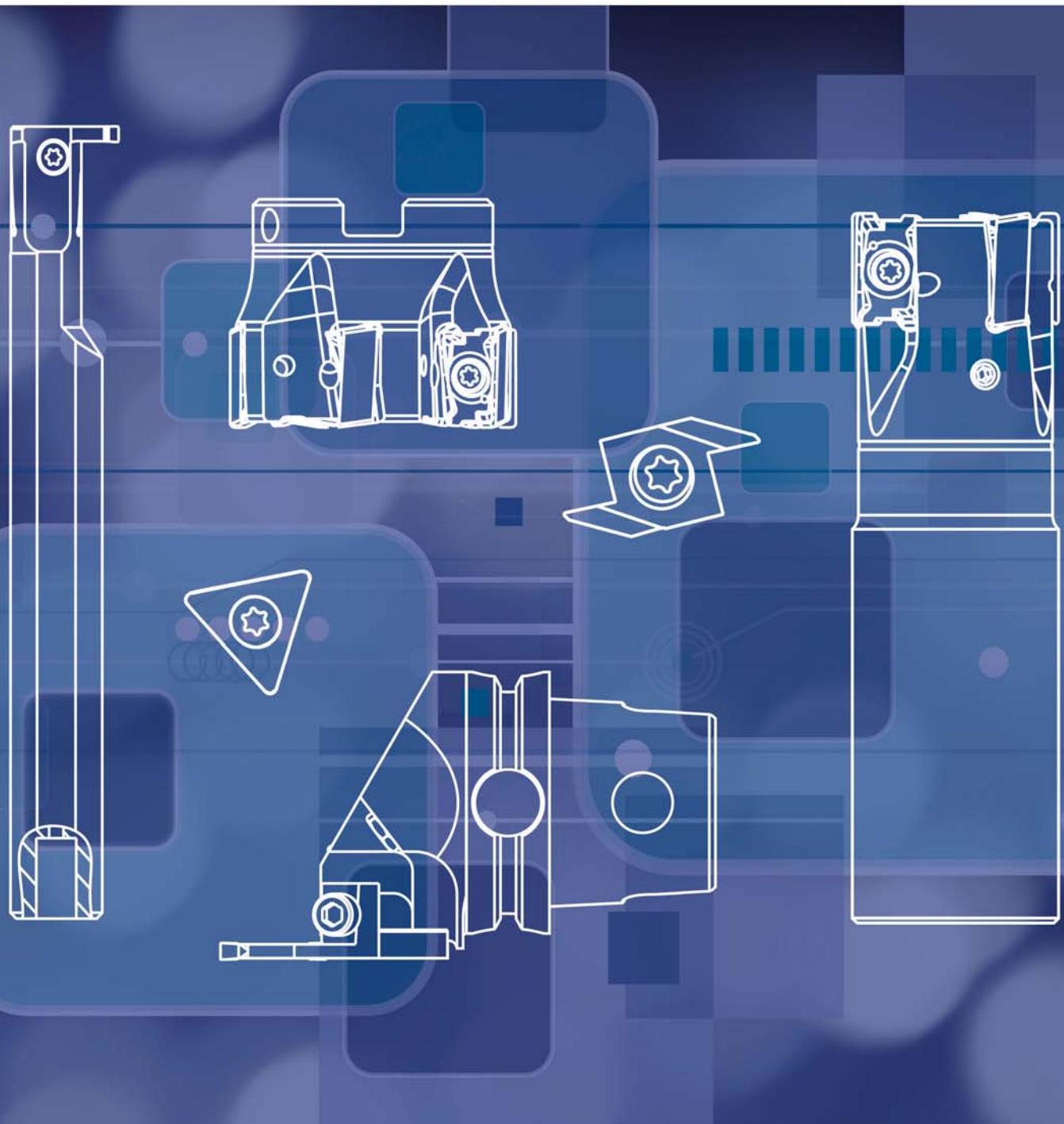
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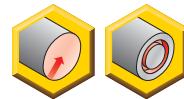
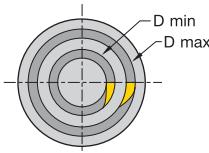
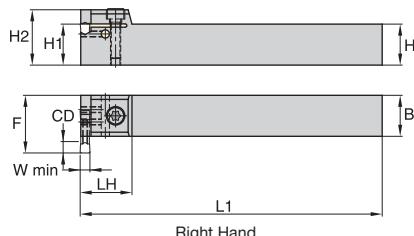
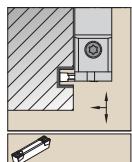


01

THE DIGITAL SOURCE FOR DELIVERING
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NOVOTM



■ Integral Face Grooving • End Mount • Dual Hand • Metric



| order number | catalogue number | seat size | CD | W min | D min | H1 | B | H2 | L1 | F | LH | clamp screw | Torx | hex seating screw | hex (mm) |
|--------------|------------------|-----------|----|-------|-------|----|----|----|-------|------|----|-------------|------|-------------------|----------|
| 2414136 | A4ENN2020K0305 | 3 | 5 | 3,00 | 70 | 20 | 20 | 27 | 125,0 | 25,4 | 25 | MS2091 | T25 | MS2090 | 1.5 mm |
| 2414137 | A4ENN2525M0305 | 3 | 5 | 3,00 | 70 | 25 | 25 | 32 | 150,0 | 30,4 | 25 | MS2091 | T25 | MS2090 | 1.5 mm |
| 1949651 | A4ENN2020K0407 | 4 | 7 | 4,00 | 90 | 20 | 20 | 27 | 125,0 | 27,9 | 25 | MS2091 | T25 | MS2090 | 1.5 mm |
| 1949652 | A4ENN2525M0407 | 4 | 7 | 4,00 | 90 | 25 | 25 | 32 | 150,0 | 33,1 | 25 | MS2091 | T25 | MS2090 | 1.5 mm |
| 1949654 | A4ENN2525M0509 | 5 | 9 | 5,00 | 120 | 25 | 25 | 33 | 150,0 | 35,1 | 34 | MS1970 | T30 | 193.297 | 1.5 mm |
| 2503543 | A4ENN2020K0611 | 6 | 11 | 6,00 | 120 | 20 | 20 | 28 | 125,0 | 35,4 | 34 | MS1595 | T30 | 193.297 | 2 mm |
| 2503544 | A4ENN2525M0611 | 6 | 11 | 6,00 | 120 | 25 | 25 | 33 | 150,0 | 38,9 | 34 | MS1970 | T30 | 193.297 | 2 mm |
| 2503545 | A4ENN3232P0611 | 6 | 11 | 6,00 | 120 | 32 | 32 | 40 | 170,0 | 43,4 | 34 | MS1970 | T30 | 193.297 | 2 mm |

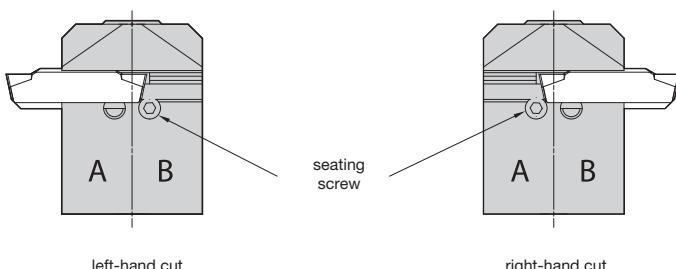
NOTE: D min for face grooving applications.

A4EN-style toolholders are designed without steel support for face grooving capacity. Cutting feed recommendations should be reduced by 25–30%.

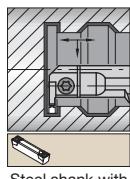
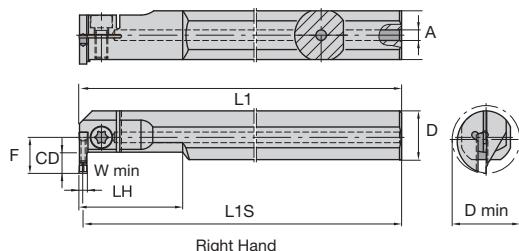
Recommended clamp screw torque, 50–70 in. lbs. (6–8 Nm).

Minimum cutting width supplied for reference only; see insert listing for actual width. Always match seat size of insert to seat size of holder.

A4EN Insert Mounting



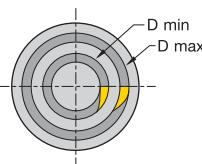
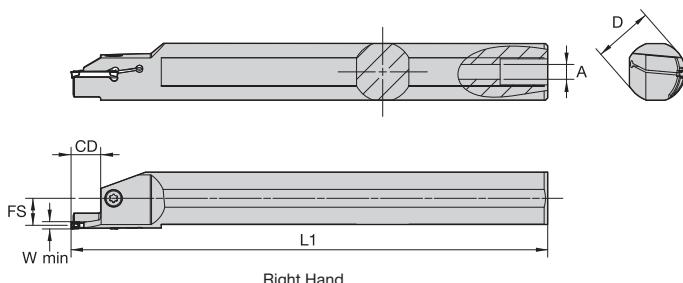
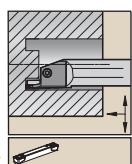
A4EN-style holders can be used for either left- or right-hand applications. The seating screw is to be used in position B for a left-hand cut and in position A for a right-hand cut.


Steel shank with
through coolant.


■ Steel Boring Bar • Metric



| order number | catalogue number | seat size | CD | W min | D | D min | L1 | F | L1S | A | clamp screw | wrench size clamp screw |
|-------------------|------------------|-----------|-------|-------|----|-------|-----|----|-------|------|-------------|-------------------------|
| right hand | | | | | | | | | | | | |
| 2979223 | A20RA4EMR0207M | 2 | 7,00 | 2,00 | 20 | 25 | 200 | 13 | 199,0 | 4,00 | MS2089 | 25 IP |
| 2979225 | A25RA4EMR0210M | 2 | 10,00 | 2,00 | 25 | 32 | 200 | 17 | 199,0 | 5,00 | MS2089 | 25 IP |
| 1949655 | A20RA4EMR0307M | 3 | 7,00 | 3,00 | 20 | 25 | 200 | 13 | 198,5 | 4,00 | MS2089 | 25 IP |
| 1949657 | A25RA4EMR0310M | 3 | 10,00 | 3,00 | 25 | 32 | 200 | 17 | 198,5 | 5,00 | MS1595 | T30 |
| 1949659 | A32SA4EMR0312M | 3 | 12,00 | 3,00 | 32 | 40 | 250 | 22 | 248,5 | 6,00 | MS1595 | T30 |
| 1949661 | A20RA4EMR0407M | 4 | 7,00 | 4,00 | 20 | 25 | 200 | 13 | 198,0 | 4,00 | MS2089 | 25 IP |
| 1949663 | A25RA4EMR0410M | 4 | 10,00 | 4,00 | 25 | 32 | 200 | 17 | 198,0 | 5,00 | MS1595 | T30 |
| 1949665 | A32SA4EMR0412M | 4 | 12,00 | 4,00 | 32 | 40 | 250 | 22 | 248,0 | 6,00 | MS1595 | T30 |
| 1949667 | A40TA4EMR0416M | 4 | 16,00 | 4,00 | 40 | 52 | 300 | 30 | 298,0 | 6,00 | MS1970 | T30 |
| 1949669 | A32SA4EMR0516M | 5 | 16,00 | 5,00 | 32 | 44 | 250 | 26 | 247,5 | 6,00 | MS1595 | T30 |
| 1949671 | A40TA4EMR0516M | 5 | 16,00 | 5,00 | 40 | 52 | 300 | 30 | 297,5 | 6,00 | MS1970 | T30 |
| 2263197 | A40TA4EMR0616M | 6 | 16,00 | 6,00 | 40 | 52 | 300 | 30 | 297,0 | 6,00 | MS1970 | T30 |
| left hand | | | | | | | | | | | | |
| 2979192 | A20RA4EML0207M | 2 | 7,00 | 2,00 | 20 | 25 | 200 | 13 | 199,0 | 4,00 | MS2089 | 25 IP |
| 2979224 | A25RA4EML0210M | 2 | 10,00 | 2,00 | 25 | 32 | 200 | 17 | 199,0 | 5,00 | MS2089 | 25 IP |
| 1949656 | A20RA4EML0307M | 3 | 7,00 | 3,00 | 20 | 25 | 200 | 13 | 198,5 | 4,00 | MS2089 | 25 IP |
| 1949658 | A25RA4EML0310M | 3 | 10,00 | 3,00 | 25 | 32 | 200 | 17 | 198,5 | 5,00 | MS1595 | T30 |
| 1949660 | A32SA4EML0312M | 3 | 12,00 | 3,00 | 32 | 40 | 250 | 22 | 248,5 | 6,00 | MS1595 | T30 |
| 1949662 | A20RA4EML0407M | 4 | 7,00 | 4,00 | 20 | 25 | 200 | 13 | 198,0 | 4,00 | MS2089 | 25 IP |
| 1949664 | A25RA4EML0410M | 4 | 10,00 | 4,00 | 25 | 32 | 200 | 17 | 198,0 | 5,00 | MS1595 | T30 |
| 1949666 | A32SA4EML0412M | 4 | 12,00 | 4,00 | 32 | 40 | 250 | 22 | 248,0 | 6,00 | MS1595 | T30 |
| 1949668 | A40TA4EML0416M | 4 | 16,00 | 4,00 | 40 | 52 | 300 | 30 | 298,0 | 6,00 | MS1970 | T30 |
| 1949670 | A32SA4EML0516M | 5 | 16,00 | 5,00 | 32 | 44 | 250 | 26 | 247,5 | 6,00 | MS1595 | T30 |
| 1949672 | A40TA4EML0516M | 5 | 16,00 | 5,00 | 40 | 52 | 300 | 30 | 297,5 | 6,00 | MS1970 | T30 |
| 2263198 | A40TA4EML0616M | 6 | 16,00 | 6,00 | 40 | 52 | 300 | 30 | 297,0 | 6,00 | MS1970 | T30 |



Steel Face Grooving Boring Bar • Metric

| order number | catalogue number | seat size | CD | D min | D max | W min | D | L1 | FS | A | clamp screw | wrench size clamp screw |
|-------------------|----------------------|-----------|-------|-------|-------|-------|----|-----|----|------|-------------|-------------------------|
| right hand | | | | | | | | | | | | |
| 3871038 | A16RA4SAR2S12M017021 | 2S | 12,00 | 17 | 21 | 2,00 | 16 | 201 | 7 | 4,00 | MS1160 | T20 |
| 3871039 | A20RA4SAR2S12M021026 | 2S | 12,00 | 21 | 23 | 2,00 | 20 | 201 | 9 | 4,00 | MS1160 | T20 |
| 3871040 | A25RA4SAR2S12M026036 | 2S | 12,00 | 26 | 36 | 2,00 | 25 | 201 | 12 | 6,35 | MS1160 | T20 |
| 3871041 | A20RA4SAR3S14M021026 | 3S | 14,00 | 21 | 26 | 3,00 | 20 | 201 | 9 | 4,00 | MS1160 | T20 |
| 3871042 | A25RA4SAR3S14M026036 | 3S | 14,00 | 26 | 36 | 3,00 | 25 | 201 | 11 | 6,35 | MS1160 | T20 |
| left hand | | | | | | | | | | | | |
| 3871033 | A16RA4SAL2S12M017021 | 2S | 12,00 | 17 | 21 | 2,00 | 16 | 201 | 7 | 4,00 | MS1160 | T20 |
| 3871034 | A20RA4SAL2S12M021026 | 2S | 12,00 | 21 | 26 | 2,00 | 20 | 201 | 9 | 4,00 | MS1160 | T20 |
| 3871035 | A25RA4SAL2S12M026036 | 2S | 12,00 | 26 | 36 | 2,00 | 25 | 201 | 12 | 6,35 | MS1160 | T20 |
| 3871037 | A25RA4SAL3S14M026036 | 3S | 14,00 | 26 | 36 | 3,00 | 25 | 201 | 11 | 6,35 | MS1160 | T20 |

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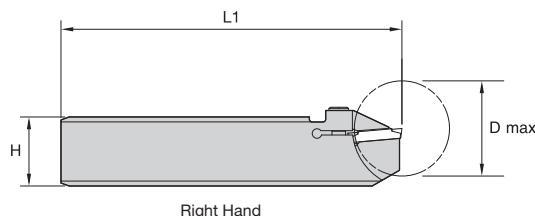
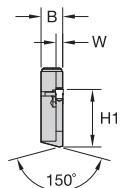
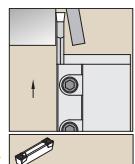
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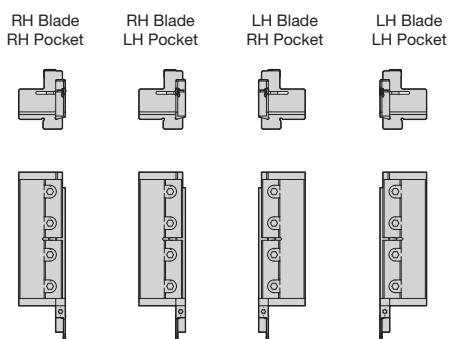


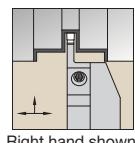
■ Single-Ended Cut-Off Blade • Metric

| order number | catalogue number | seat size | H | W | H1 | L1 | B | D max | clamp screw | Torx |
|-------------------|------------------|-----------|----|-----|------|-----|------|-------|-------------|------|
| right hand | | | | | | | | | | |
| 3967127 | A4BHCL26K0317R | 3 | 26 | 3,0 | 21,4 | 125 | 7,95 | 35 | MS1571 | T20 |
| 3967124 | A4BHCL32K0317R | 3 | 32 | 3,0 | 25,0 | 125 | 7,95 | 35 | MS1571 | T20 |
| 3967117 | A4BHCR32K0217R | 2 | 32 | 2,0 | 25,0 | 125 | 7,95 | 35 | MS1571 | T20 |
| left hand | | | | | | | | | | |
| 3967136 | A4BHCL32K0217L | 2 | 32 | 2,0 | 25,0 | 125 | 7,95 | 35 | MS1571 | T20 |
| 3967137 | A4BHCL32K0317L | 3 | 32 | 3,0 | 25,0 | 125 | 7,95 | 35 | MS1571 | T20 |
| 3967134 | A4BHCR26K0317L | 3 | 26 | 3,0 | 21,4 | 125 | 7,95 | 35 | MS1571 | T20 |

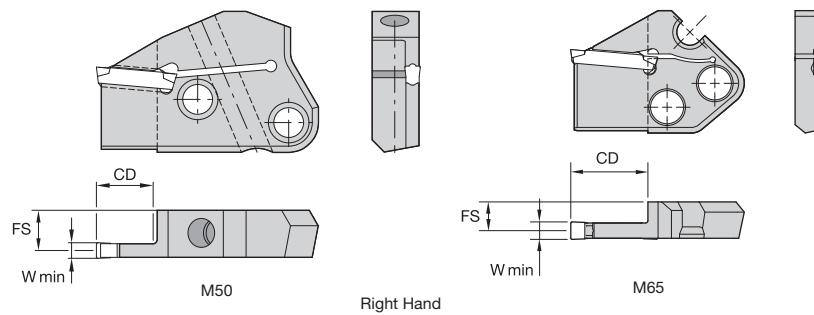
NOTE: Seat size 1 blades only.

Assembly wrenches 170.137 and 170.130 must be ordered separately.



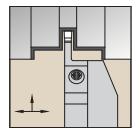


Right hand shown

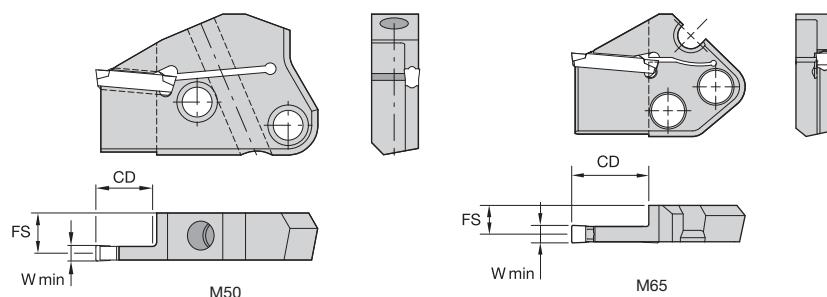


■ Modular Straight Blade with Coolant

| order number | catalogue number | seat size | CD | FS | blade size |
|-------------------|------------------|-----------|------|-------|------------|
| right hand | | | | | |
| 6401815 | A4M50R0314MC | 3 | 14,0 | 10,42 | 50 |
| 6401817 | A4M50R0414MC | 4 | 14,0 | 9,92 | 50 |
| 6401819 | A4M50R0519MC | 5 | 19,0 | 9,42 | 50 |
| 6401834 | A4M65R0620MC | 6 | 20,0 | 9,88 | 65 |
| 6401838 | A4M65R0820MC | 8 | 20,0 | 9,00 | 65 |
| 6401852 | A4M65R1020MC | 10 | 20,0 | 8,35 | 65 |
| 6401831 | A4M65R0522MC | 5 | 22,0 | 10,28 | 65 |
| 6401835 | A4M65R0626MC | 6 | 26,0 | 9,88 | 65 |
| 6401839 | A4M65R0826MC | 8 | 26,0 | 9,00 | 65 |
| 6401853 | A4M65R1026MC | 10 | 26,0 | 8,35 | 65 |
| left hand | | | | | |
| 6401814 | A4M50L0314MC | 3 | 14,0 | 10,42 | 50 |
| 6401816 | A4M50L0414MC | 4 | 14,0 | 9,92 | 50 |
| 6401818 | A4M50L0519MC | 5 | 19,0 | 9,43 | 50 |
| 6401832 | A4M65L0620MC | 6 | 20,0 | 9,88 | 65 |
| 6401836 | A4M65L0820MC | 8 | 20,0 | 9,00 | 65 |
| 6401840 | A4M65L1020MC | 10 | 20,0 | 8,35 | 65 |
| 6401820 | A4M65L0522MC | 5 | 22,0 | 10,28 | 65 |
| 6401833 | A4M65L0626MC | 6 | 26,0 | 9,88 | 65 |
| 6401837 | A4M65L0826MC | 8 | 26,0 | 9,00 | 65 |
| 6401851 | A4M65L1026MC | 10 | 26,0 | 8,35 | 65 |



Right hand shown.

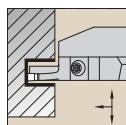


Right Hand

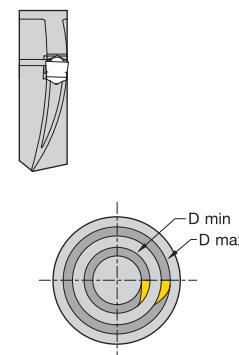
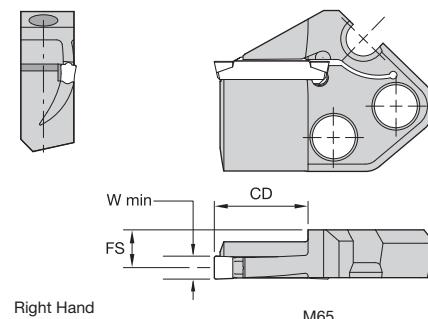
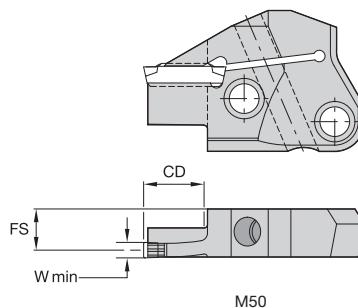
■ Modular Straight Blade

| order number | catalogue number | seat size | W min | CD | FS | blade size |
|-------------------|------------------|-----------|-------|------|-------|------------|
| right hand | | | | | | |
| 3051624 | A4M50R0214M | 2 | 2,00 | 14,0 | 10,87 | 50 |
| 1989348 | A4M50R0314M | 3 | 3,00 | 14,0 | 10,43 | 50 |
| 1989350 | A4M50R0414M | 4 | 4,00 | 14,0 | 9,93 | 50 |
| 1989352 | A4M50R0519M | 5 | 5,00 | 19,0 | 9,43 | 50 |
| 3557114 | A4M65R0620M | 6 | 6,00 | 20,0 | 9,88 | 65 |
| 3557116 | A4M65R0626M | 6 | 6,00 | 26,0 | 9,88 | 65 |
| 3557120 | A4M65R0826M | 8 | 8,00 | 26,0 | 9,00 | 65 |
| 3557124 | A4M65R1026M | 10 | 10,00 | 26,0 | 8,35 | 65 |
| left hand | | | | | | |
| 3022625 | A4M50L0214M | 2 | 2,00 | 14,0 | 10,87 | 50 |
| 1989347 | A4M50L0314M | 3 | 3,00 | 14,0 | 10,43 | 50 |
| 1989349 | A4M50L0414M | 4 | 4,00 | 14,0 | 9,93 | 50 |
| 3051623 | A4M50L2B14M | 2B | 2,50 | 14,0 | 10,70 | 50 |
| 1989351 | A4M50L0519M | 5 | 5,00 | 19,0 | 9,43 | 50 |
| 3557115 | A4M65L0620M | 6 | 6,00 | 20,0 | 9,88 | 65 |
| 3557119 | A4M65L0820M | 8 | 8,00 | 20,0 | 9,00 | 65 |
| 3557123 | A4M65L1020M | 10 | 10,00 | 20,0 | 8,35 | 65 |
| 3557117 | A4M65L0626M | 6 | 6,00 | 26,0 | 9,88 | 65 |
| 3557121 | A4M65L0826M | 8 | 8,00 | 26,0 | 9,00 | 65 |
| 3557125 | A4M65L1026M | 10 | 10,00 | 26,0 | 8,35 | 65 |

NOTE: Seat size 2B only accepts 2B inserts. Seat size 2 accepts 2 or 2B inserts.



Right hand shown.



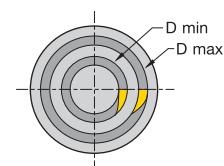
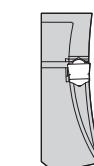
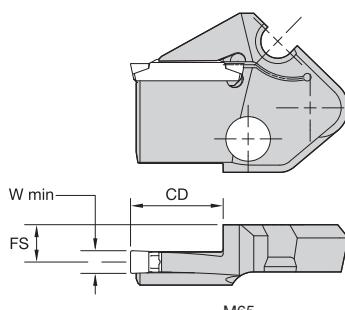
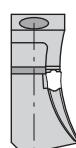
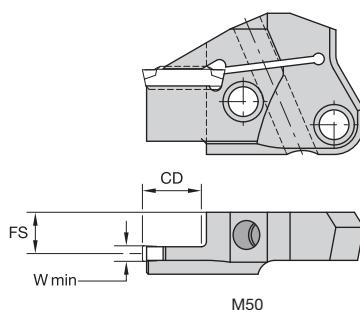
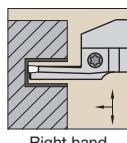
■ Modular Face Grooving Blade • Inboard

| order number | catalogue number | seat size | D min | D max | cartridge size |
|-------------------|--------------------|-----------|-------|-------|----------------|
| right hand | | | | | |
| 3051670 | A4M50R0212A036046 | 2 | 36 | 46 | 50 |
| 3051671 | A4M50R0212A042054 | 2 | 42 | 54 | 50 |
| 3051672 | A4M50R0212A050064 | 2 | 50 | 64 | 50 |
| 3051673 | A4M50R0212A060084 | 2 | 60 | 84 | 50 |
| 3051674 | A4M50R0212A080124 | 2 | 80 | 124 | 50 |
| 3051675 | A4M50R0212A120254 | 2 | 120 | 254 | 50 |
| 3051676 | A4M50R0212A250999 | 2 | 250 | — | 50 |
| 2542517 | A4M50R0314A036048 | 3 | 36 | 48 | 50 |
| 2542518 | A4M50R0314A042058 | 3 | 42 | 58 | 50 |
| 2542519 | A4M50R0314A052074 | 3 | 52 | 74 | 50 |
| 2542520 | A4M50R0314A068100 | 3 | 68 | 100 | 50 |
| 2542521 | A4M50R0314A090160 | 3 | 90 | 160 | 50 |
| 2542522 | A4M50R0314A130300 | 3 | 130 | 300 | 50 |
| 2542523 | A4M50R0314A290999 | 3 | 290 | — | 50 |
| 2542531 | A4M50R0414A048072 | 4 | 48 | 72 | 50 |
| 2542532 | A4M50R0414A064100 | 4 | 64 | 100 | 50 |
| 2542533 | A4M50R0414A092150 | 4 | 92 | 150 | 50 |
| 2542534 | A4M50R0414A132300 | 4 | 132 | 300 | 50 |
| 2542535 | A4M50R0414A290999 | 4 | 290 | — | 50 |
| 2542541 | A4M50R0519A058094 | 5 | 58 | 94 | 50 |
| 2542542 | A4M50R0519A080136 | 5 | 80 | 136 | 50 |
| 2542543 | A4M50R0519A120300 | 5 | 120 | 300 | 50 |
| 2542544 | A4M50R0519A250999 | 5 | 250 | — | 50 |
| 3557131 | A4M65R0624A070-112 | 6 | 70 | 112 | 65 |
| 3557163 | A4M65R0624A100-212 | 6 | 100 | 212 | 65 |
| 3557165 | A4M65R0624A200-999 | 6 | 200 | 999 | 65 |
| 3557167 | A4M65R0824A090-200 | 8 | 90 | 200 | 65 |
| 3557169 | A4M65R0824A184-999 | 8 | 184 | 999 | 65 |
| 3557173 | A4M65R1024A200-999 | 10 | 200 | 999 | 65 |

(continued)

(Modular Face Grooving Blade • Inboard – continued)

| order number | catalogue number | seat size | D min | D max | cartridge size |
|------------------|--------------------|-----------|-------|-------|----------------|
| left hand | | | | | |
| 3051629 | A4M50L0212A060084 | 2 | 60 | 84 | 50 |
| 3051631 | A4M50L0212A120254 | 2 | 120 | 254 | 50 |
| 3051632 | A4M50L0212A250999 | 2 | 250 | — | 50 |
| 2542524 | A4M50L0314A036048 | 3 | 36 | 48 | 50 |
| 2542527 | A4M50L0314A068100 | 3 | 68 | 100 | 50 |
| 2542528 | A4M50L0314A090160 | 3 | 90 | 160 | 50 |
| 2542529 | A4M50L0314A130300 | 3 | 130 | 300 | 50 |
| 2542530 | A4M50L0314A290999 | 3 | 290 | — | 50 |
| 2542537 | A4M50L0414A064100 | 4 | 64 | 100 | 50 |
| 2542538 | A4M50L0414A092150 | 4 | 92 | 150 | 50 |
| 2542539 | A4M50L0414A132300 | 4 | 132 | 300 | 50 |
| 2542540 | A4M50L0414A290999 | 4 | 290 | — | 50 |
| 2542545 | A4M50L0519A058094 | 5 | 58 | 94 | 50 |
| 2542546 | A4M50L0519A080136 | 5 | 80 | 136 | 50 |
| 2542547 | A4M50L0519A120300 | 5 | 120 | 300 | 50 |
| 2542548 | A4M50L0519A250999 | 5 | 250 | — | 50 |
| 3557132 | A4M65L0624A070-112 | 6 | 70 | 112 | 65 |
| 3557164 | A4M65L0624A100-212 | 6 | 100 | 212 | 65 |
| 3557166 | A4M65L0624A200-999 | 6 | 200 | 999 | 65 |
| 3557174 | A4M65L1024A200-999 | 10 | 200 | 999 | 65 |



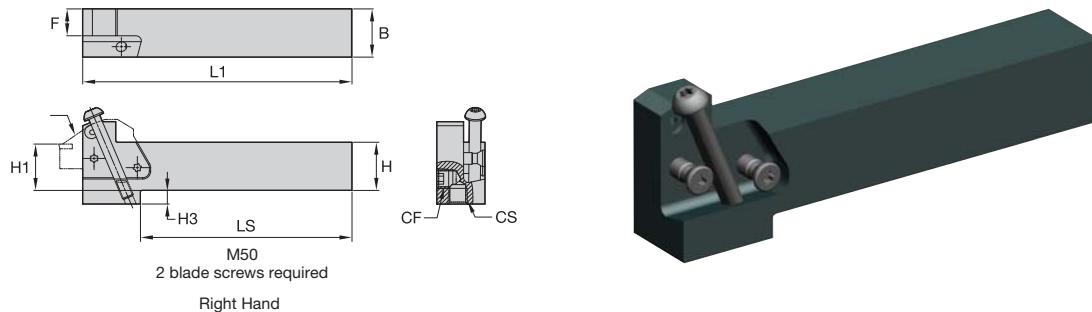
■ Modular Face Grooving Blade • Outboard

| order number | catalogue number | seat size | D min | D max | CD | FS | cartridge size |
|-------------------|--------------------|-----------|-------|-------|-------|--------|----------------|
| right hand | | | | | | | |
| 3051677 | A4M50R0212B036046 | 2 | 36 | 46 | 12,00 | 10,900 | 50 |
| 3051678 | A4M50R0212B042054 | 2 | 42 | 54 | 12,00 | 10,900 | 50 |
| 3051679 | A4M50R0212B050064 | 2 | 50 | 64 | 12,00 | 10,900 | 50 |
| 3051680 | A4M50R0212B060084 | 2 | 60 | 84 | 12,00 | 10,900 | 50 |
| 3051681 | A4M50R0212B080124 | 2 | 80 | 124 | 12,00 | 10,900 | 50 |
| 3051682 | A4M50R0212B120254 | 2 | 120 | 254 | 12,00 | 10,900 | 50 |
| 3051683 | A4M50R0212B250999 | 2 | 250 | — | 12,00 | 10,900 | 50 |
| 3867457 | A4M50R2S12B016020 | 2S | 16 | 20 | 12,00 | 10,900 | 50 |
| 3867458 | A4M50R2S12B020025 | 2S | 20 | 25 | 12,00 | 10,900 | 50 |
| 3867459 | A4M50R2S12B025036 | 2S | 25 | 36 | 12,00 | 10,900 | 50 |
| 2398751 | A4M50R0314B036048 | 3 | 36 | 48 | 14,00 | 10,500 | 50 |
| 2398752 | A4M50R0314B042058 | 3 | 42 | 58 | 14,00 | 10,500 | 50 |
| 2398763 | A4M50R0314B052074 | 3 | 52 | 74 | 14,00 | 10,500 | 50 |
| 2398764 | A4M50R0314B068100 | 3 | 68 | 100 | 14,00 | 10,500 | 50 |
| 2398765 | A4M50R0314B090160 | 3 | 90 | 160 | 14,00 | 10,500 | 50 |
| 2398766 | A4M50R0314B130300 | 3 | 130 | 300 | 14,00 | 10,500 | 50 |
| 2398767 | A4M50R0314B290999 | 3 | 290 | — | 14,00 | 10,500 | 50 |
| 2398775 | A4M50R0414B048072 | 4 | 48 | 72 | 14,00 | 10,000 | 50 |
| 2398776 | A4M50R0414B064100 | 4 | 64 | 100 | 14,00 | 10,000 | 50 |
| 2398777 | A4M50R0414B092150 | 4 | 92 | 150 | 14,00 | 10,000 | 50 |
| 2398778 | A4M50R0414B132300 | 4 | 132 | 300 | 14,00 | 10,000 | 50 |
| 2398779 | A4M50R0414B290999 | 4 | 290 | — | 14,00 | 10,000 | 50 |
| 3867460 | A4M50R3S14B020025 | 3S | 20 | 25 | 14,00 | 10,490 | 50 |
| 3867461 | A4M50R3S14B025036 | 3S | 25 | 36 | 14,00 | 10,490 | 50 |
| 3867462 | A4M50R4S14B025035 | 4S | 25 | 35 | 14,00 | 10,000 | 50 |
| 3867464 | A4M50R5S17B028038 | 5S | 28 | 38 | 17,00 | 9,500 | 50 |
| 2398785 | A4M50R0519B058094 | 5 | 58 | 94 | 19,00 | 9,500 | 50 |
| 2398786 | A4M50R0519B080136 | 5 | 80 | 136 | 19,00 | 9,500 | 50 |
| 2398787 | A4M50R0519B120300 | 5 | 120 | 300 | 19,00 | 9,500 | 50 |
| 2398788 | A4M50R0519B250999 | 5 | 250 | — | 19,00 | 9,500 | 50 |
| 3557175 | A4M65R0624B070-112 | 6 | 70 | 112 | 24,00 | 9,870 | 65 |
| 3557177 | A4M65R0624B100-212 | 6 | 100 | 212 | 24,00 | 9,870 | 65 |
| 3557179 | A4M65R0624B200-999 | 6 | 200 | 999 | 24,00 | 9,870 | 65 |
| 3557181 | A4M65R0824B090-200 | 8 | 90 | 200 | 24,00 | 9,000 | 65 |
| 3557193 | A4M65R0824B184-999 | 8 | 184 | 999 | 24,00 | 9,000 | 65 |
| 3557195 | A4M65R1024B100-220 | 10 | 100 | 220 | 24,00 | 8,350 | 65 |
| 3557197 | A4M65R1024B200-999 | 10 | 200 | 999 | 24,00 | 8,350 | 65 |

(continued)

(Modular Face Grooving Blade • Outboard – continued)

| order number | catalogue number | seat size | D min | D max | CD | FS | cartridge size |
|------------------|--------------------|-----------|-------|-------|-------|--------|----------------|
| left hand | | | | | | | |
| 3051663 | A4M50L0212B036046 | 2 | 36 | 46 | 12,00 | 10,900 | 50 |
| 3051664 | A4M50L0212B042054 | 2 | 42 | 54 | 12,00 | 10,900 | 50 |
| 3051665 | A4M50L0212B050064 | 2 | 50 | 64 | 12,00 | 10,900 | 50 |
| 3051666 | A4M50L0212B060084 | 2 | 60 | 84 | 12,00 | 10,900 | 50 |
| 3051667 | A4M50L0212B080124 | 2 | 80 | 124 | 12,00 | 10,900 | 50 |
| 3051668 | A4M50L0212B120254 | 2 | 120 | 254 | 12,00 | 10,900 | 50 |
| 3867466 | A4M50L2S12B016020 | 2S | 16 | 20 | 12,00 | 10,900 | 50 |
| 3867467 | A4M50L2S12B020025 | 2S | 20 | 25 | 12,00 | 10,900 | 50 |
| 3867468 | A4M50L2S12B025036 | 2S | 25 | 36 | 12,00 | 10,900 | 50 |
| 2398768 | A4M50L0314B036048 | 3 | 36 | 48 | 14,00 | 10,500 | 50 |
| 2398769 | A4M50L0314B042058 | 3 | 42 | 58 | 14,00 | 10,500 | 50 |
| 2398770 | A4M50L0314B052074 | 3 | 52 | 74 | 14,00 | 10,500 | 50 |
| 2398771 | A4M50L0314B068100 | 3 | 68 | 100 | 14,00 | 10,500 | 50 |
| 2398772 | A4M50L0314B090160 | 3 | 90 | 160 | 14,00 | 10,500 | 50 |
| 2398773 | A4M50L0314B130300 | 3 | 130 | 300 | 14,00 | 10,500 | 50 |
| 2398774 | A4M50L0314B290999 | 3 | 290 | — | 14,00 | 10,500 | 50 |
| 2398780 | A4M50L0414B048072 | 4 | 48 | 72 | 14,00 | 10,000 | 50 |
| 2398781 | A4M50L0414B064100 | 4 | 64 | 100 | 14,00 | 10,000 | 50 |
| 2398782 | A4M50L0414B092150 | 4 | 92 | 150 | 14,00 | 10,000 | 50 |
| 2398783 | A4M50L0414B132300 | 4 | 132 | 300 | 14,00 | 10,000 | 50 |
| 2398784 | A4M50L0414B290999 | 4 | 290 | — | 14,00 | 10,000 | 50 |
| 3867469 | A4M50L3S14B020025 | 3S | 20 | 25 | 14,00 | 10,490 | 50 |
| 3867470 | A4M50L3S14B025036 | 3S | 25 | 36 | 14,00 | 10,490 | 50 |
| 3867472 | A4M50L4S14B035048 | 4S | 35 | 48 | 14,00 | 10,000 | 50 |
| 3867484 | A4M50L5S17B028038 | 5S | 28 | 38 | 17,00 | 9,500 | 50 |
| 2398789 | A4M50L0519B058094 | 5 | 58 | 94 | 19,00 | 9,500 | 50 |
| 2398790 | A4M50L0519B080136 | 5 | 80 | 136 | 19,00 | 9,500 | 50 |
| 2398791 | A4M50L0519B120300 | 5 | 120 | 300 | 19,00 | 9,500 | 50 |
| 2398792 | A4M50L0519B250999 | 5 | 250 | — | 19,00 | 9,500 | 50 |
| 3557176 | A4M65L0624B070-112 | 6 | 70 | 112 | 24,00 | 9,870 | 65 |
| 3557178 | A4M65L0624B100-212 | 6 | 100 | 212 | 24,00 | 9,870 | 65 |
| 3557180 | A4M65L0624B200-999 | 6 | 200 | 999 | 24,00 | 9,870 | 65 |
| 3557182 | A4M65L0824B090-200 | 8 | 90 | 200 | 24,00 | 9,000 | 65 |
| 3557194 | A4M65L0824B184-999 | 8 | 184 | 999 | 24,00 | 9,000 | 65 |
| 3557198 | A4M65L1024B200-999 | 10 | 200 | 999 | 24,00 | 8,350 | 65 |



■ Modular Straight Toolholder • Metric

NOTE: For modular straight toolholder with coolant, see page C58.



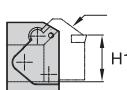
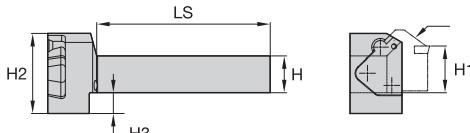
| order number | catalogue number | B | H | L1 | F | LS | H3 | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|----|----|--------|-------|--------|-------|-------------|------|-------------|------|
| right hand | | | | | | | | | | | |
| 1600249 | KGMSR2525M50 | 25 | 25 | 138,75 | 13,84 | 109,00 | 7,00 | MS1162 | T25 | MS2002 | T25 |
| 3553429 | KGMSR2525M65 | 25 | 25 | 150,00 | 13,00 | 120,00 | 14,00 | MS1163 | T30 | — | — |
| 1621083 | KGMSR3232P50 | 32 | 32 | 158,75 | 20,81 | — | — | MS1162 | T25 | MS2002 | T25 |
| 3553431 | KGMSR3232P65 | 32 | 32 | 170,00 | 20,79 | 158,00 | 7,00 | MS1163 | T30 | — | — |
| left hand | | | | | | | | | | | |
| 1600250 | KGMSL2525M50 | 25 | 25 | 138,75 | 13,84 | 109,00 | 7,00 | MS1162 | T25 | MS2002 | T25 |
| 3553430 | KGMSL2525M65 | 25 | 25 | 150,00 | 13,00 | 120,00 | 14,00 | MS1163 | T30 | — | — |
| 1621084 | KGMSL3232P50 | 32 | 32 | 158,75 | 20,81 | — | — | MS1162 | T25 | MS2002 | T25 |
| 3553432 | KGMSL3232P65 | 32 | 32 | 170,00 | 20,79 | 158,00 | 7,00 | MS1163 | T30 | — | — |

NOTE: KGMS..: Right-hand holder uses right-hand blades.

KGME..: Right-hand holder uses left-hand blades.

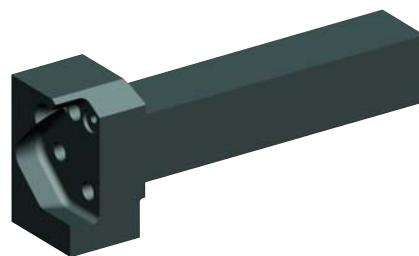
M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).



M65
2 blade screws required

Right Hand



■ Modular End Mount Toolholders • Metric

NOTE: For modular end mount toolholder with coolant, see page C59.



| order number | catalogue number | B | H | L1 | F | LS | H3 | L | blade screw (2 required) | Torx | clamp screw | Torx |
|-------------------|------------------|----|----|--------|-------|--------|-------|--------|--------------------------|------|-------------|------|
| right hand | | | | | | | | | | | | |
| 1600270 | KGMER2525M50 | 25 | 25 | 139,25 | 42,75 | 125,25 | 6,84 | 150,25 | MS1162 | T25 | MS2002 | T25 |
| 3553453 | KGMER2525M65 | 25 | 25 | 138,15 | 35,00 | 129,00 | 14,00 | 150,00 | MS1163 | T30 | — | — |
| 1621085 | KGMER3232P50 | 32 | 32 | 159,25 | 42,75 | 145,25 | — | 170,25 | MS1162 | T25 | MS2002 | T25 |
| 3553455 | KGMER3232P65 | 32 | 32 | 158,15 | 35,00 | 153,00 | 7,00 | 170,00 | MS1163 | T30 | — | — |
| left hand | | | | | | | | | | | | |
| 1600271 | KGMEL2525M50 | 25 | 25 | 139,25 | 42,75 | 125,25 | 6,84 | 150,25 | MS1162 | T25 | MS2002 | T25 |
| 3553454 | KGMEL2525M65 | 25 | 25 | 138,15 | 35,00 | 129,00 | 14,00 | 150,00 | MS1163 | T30 | — | — |
| 1621086 | KGMEL3232P50 | 32 | 32 | 159,25 | 42,75 | 145,25 | — | 170,25 | MS1162 | T25 | MS2002 | T25 |
| 3553456 | KGMEL3232P65 | 32 | 32 | 158,15 | 35,00 | 153,00 | 7,00 | 170,00 | MS1163 | T30 | — | — |

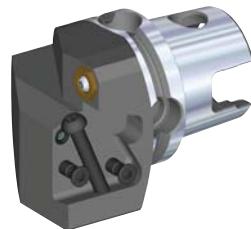
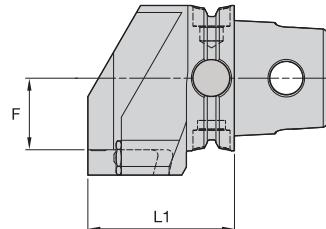
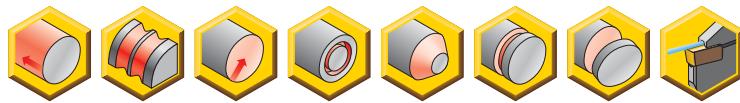
NOTE: KGMS..: Right-hand holder uses right-hand blades.

KGME..: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).

- Best-in-class KM Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand

Modular Straight KM System with Coolant



| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 5999790 | KM40TSKGM50C | KM40TS | 53,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000422 | KM50TSKGM65C | KM50TS | 53,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 5999864 | KM50TSKGM50C | KM50TS | 58,5 | 23,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000431 | KM63TSKGM65C | KM63TS | 58,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 5999948 | KM63TSKGM50C | KM63TS | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999972 | KM63XMZKGM50CY | KM63XMZ | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017695 | KM80TSKGM65C | KM80TS | 63,5 | 40,0 | 65 | MS1163 | T30 | — | — |
| 6000018 | KM80ATCKGM50C | KM80ATC | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000014 | KM80TSKGM50C | KM80TS | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 5999861 | KM40TSKGM50C | KM40TS | 53,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000424 | KM50TSKGM65C | KM50TS | 53,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 5999865 | KM50TSKGM50C | KM50TS | 58,5 | 23,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000433 | KM63TSKGM65C | KM63TS | 58,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 5999949 | KM63TSKGM50C | KM63TS | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999973 | KM63XMZKGM65CY | KM63XMZ | 63,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017696 | KM80TSKGM65C | KM80TS | 63,5 | 40,0 | 65 | MS1163 | T30 | — | — |
| 6000019 | KM80ATCKGM50C | KM80ATC | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000015 | KM80TSKGM50C | KM80TS | 66,5 | 41,0 | 50 | MS1162 | T25 | MS2002 | T25 |

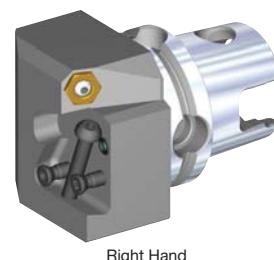
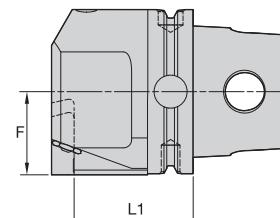
NOTE: KGMS...: Right-hand holder uses right-hand blades.

KGME...: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).

- Best-in-class KM Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



■ Modular End Mount KM System with Coolant • Metric



| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|-------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 5999788 | KM40TSKGMER50C | KM40TS | 28,0 | 20,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999862 | KM50TSKGMER50C | KM50TS | 38,0 | 25,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000410 | KM50TSKGMER65C | KM50TS | 47,0 | 25,50 | 65 | MS1163 | T30 | — | — |
| 6000425 | KM63TSKGMER65C | KM63TS | 47,0 | 32,52 | 65 | MS1163 | T30 | — | — |
| 5999946 | KM63TSKGMER50C | KM63TS | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000434 | KM63XMZKGMER65CY | KM63XMZ | 47,0 | 32,50 | 65 | MS1163 | T30 | — | — |
| 5999950 | KM63XMZKGMER50CY | KM63XMZ | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017697 | KM80ATCKGMER65C | KM80ATC | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000016 | KM80ATCKGMER50C | KM80ATC | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017693 | KM80TSKGMER65C | KM80TS | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000012 | KM80TSKGMER50C | KM80TS | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 5999789 | KM40TSKGML50C | KM40TS | 28,0 | 20,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5999863 | KM50TSKGML50C | KM50TS | 38,0 | 25,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000421 | KM50TSKGML65C | KM50TS | 47,0 | 25,50 | 65 | MS1163 | T30 | — | — |
| 6000430 | KM63TSKGML65C | KM63TS | 47,0 | 32,52 | 65 | MS1163 | T30 | — | — |
| 5999947 | KM63TSKGML50C | KM63TS | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000436 | KM63XMZKGMLF65CY | KM63XMZ | 47,0 | 32,50 | 65 | MS1163 | T30 | — | — |
| 5999971 | KM63XMZKGMLF50CY | KM63XMZ | 48,0 | 32,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017698 | KM80ATCKGML65C | KM80ATC | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000017 | KM80ATCKGML50C | KM80ATC | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6017694 | KM80TSKGML65C | KM80TS | 57,0 | 40,50 | 65 | MS1163 | T30 | — | — |
| 6000013 | KM80TSKGML50C | KM80TS | 58,0 | 40,50 | 50 | MS1162 | T25 | MS2002 | T25 |

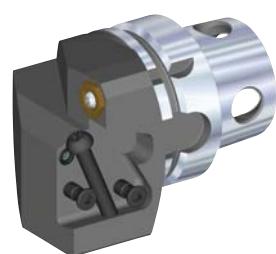
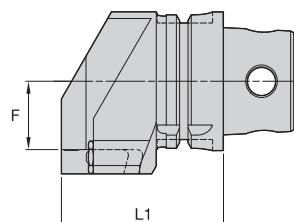
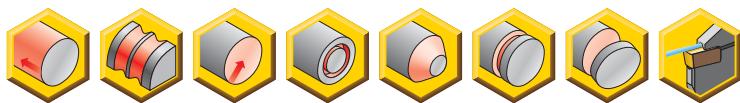
NOTE: KGMS..: Right-hand holder uses right-hand blades.

KGME..: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).

- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand

■ Modular Straight KM4X™ System with Coolant



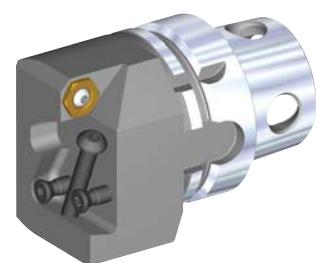
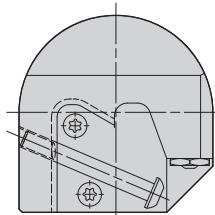
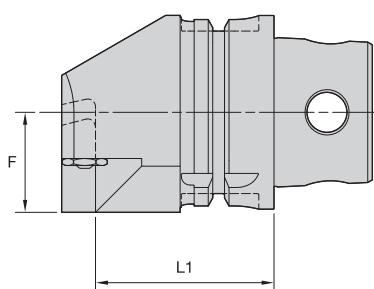
| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 5543560 | KM4X63KGMSR65C | KM4X63 | 68,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 6000407 | KM4X63KGMSR50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 5543558 | KM4X63KGMSL65C | KM4X63 | 68,5 | 30,0 | 65 | MS1163 | T30 | — | — |
| 6000408 | KM4X63KGMSL50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | T25 | MS2002 | T25 |

NOTE: KGMS...: Right-hand holder uses right-hand blades.

KGME...: Right-hand holder uses left-hand blades.

M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).

M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).



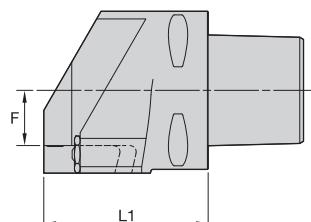
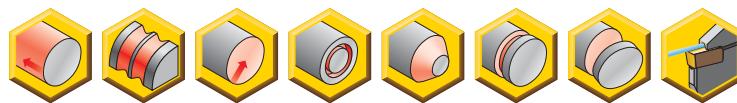
Right Hand

■ Modular End Mount KM4X™ System with Coolant



| order number | catalogue number | CSMS system size | L1 | F | cartridge size | blade screw | nozzle | clamp screw | kg | lbs |
|-------------------|------------------|------------------|------|------|----------------|-------------|----------|-------------|------|------|
| right hand | | | | | | | | | | |
| 5543555 | KM4X63KGMER65C | KM4X63 | 57,0 | 32,5 | 65 | MS1163 | PMT04525 | — | 1,87 | 4.13 |
| 6000404 | KM4X63KGMER50C | KM4X63 | 58,0 | 32,5 | 50 | MS1162 | PMT04525 | MS2002 | 1,85 | 4.08 |
| 6000407 | KM4X63KGMSR50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | PMT04525 | MS2002 | 1,86 | 4.11 |
| left hand | | | | | | | | | | |
| 5543553 | KM4X63KGTEL65C | KM4X63 | 57,0 | 32,5 | 65 | MS1163 | PMT04525 | — | 1,87 | 4.13 |
| 6000405 | KM4X63KGTEL50C | KM4X63 | 58,0 | 32,5 | 50 | MS1162 | PMT04525 | MS2002 | 1,85 | 4.08 |
| 6000408 | KM4X63KGMSL50C | KM4X63 | 73,5 | 31,0 | 50 | MS1162 | PMT04525 | MS2002 | 1,86 | 4.11 |

- Standard PSC Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



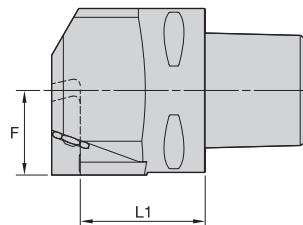
Right Hand

■ Modular Straight PSC System with Coolant



| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 6000028 | PSC40KGMSR50C | PSC40 | 63,5 | 10,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405654 | PSC50KGMSR65C | PSC50 | 49,0 | 25,5 | 65 | MS1163 | T30 | — | — |
| 6000152 | PSC50KGMSR50C | PSC50 | 63,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000464 | PSC63KGMSR65C | PSC63 | 60,5 | 21,0 | 65 | MS1163 | T30 | — | — |
| 6000211 | PSC63KGMSR50C | PSC63 | 65,5 | 22,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000468 | PSC80KGMSR65C | PSC80 | 68,5 | 29,0 | 65 | MS1163 | T30 | — | — |
| 6000216 | PSC80KGMSR50C | PSC80 | 73,5 | 30,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 6000029 | PSC40KGMSL50C | PSC40 | 63,5 | 10,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405655 | PSC50KGMSL65C | PSC50 | 49,0 | 25,5 | 65 | MS1163 | T30 | — | — |
| 6000153 | PSC50KGMSL50C | PSC50 | 63,5 | 15,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000465 | PSC63KGMSL65C | PSC63 | 60,5 | 21,0 | 65 | MS1163 | T30 | — | — |
| 6000213 | PSC63KGMSL50C | PSC63 | 65,5 | 22,0 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000469 | PSC80KGMSL65C | PSC80 | 68,5 | 29,0 | 65 | MS1163 | T30 | — | — |
| 6000217 | PSC80KGMSL50C | PSC80 | 73,5 | 30,0 | 50 | MS1162 | T25 | MS2002 | T25 |

- Standard PSC Quick-Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand

■ Modular End Mount PSC System with Coolant



| order number | catalogue number | CSMS system size | L1 | F | blade size | blade screw | Torx | clamp screw | Torx |
|-------------------|------------------|------------------|------|------|------------|-------------|------|-------------|------|
| right hand | | | | | | | | | |
| 6000026 | PSC40KGMER50C | PSC40 | 33,0 | 20,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000030 | PSC50KGMER50C | PSC50 | 43,0 | 25,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405652 | PSC50KGMER65C | PSC50 | 55,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 6000159 | PSC63KGMER50C | PSC63 | 48,0 | 32,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000462 | PSC63KGMER65C | PSC63 | 49,0 | 32,5 | 65 | MS1163 | T30 | — | — |
| 6000466 | PSC80KGMER65C | PSC80 | 57,0 | 40,5 | 65 | MS1163 | T30 | — | — |
| 6000214 | PSC80KGMER50C | PSC80 | 58,0 | 40,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| left hand | | | | | | | | | |
| 6000027 | PSC40KGMEL50C | PSC40 | 33,0 | 20,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000151 | PSC50KGMEL50C | PSC50 | 43,0 | 25,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 5405653 | PSC50KGMEL65C | PSC50 | 55,5 | 22,0 | 65 | MS1163 | T30 | — | — |
| 6000160 | PSC63KGMEL50C | PSC63 | 48,0 | 32,5 | 50 | MS1162 | T25 | MS2002 | T25 |
| 6000463 | PSC63KGMEL65C | PSC63 | 49,0 | 32,5 | 65 | MS1163 | T30 | — | — |
| 6000467 | PSC80KGMEL65C | PSC80 | 57,0 | 40,5 | 65 | MS1163 | T30 | — | — |
| 6000215 | PSC80KGMEL50C | PSC80 | 58,0 | 40,5 | 50 | MS1162 | T25 | MS2002 | T25 |

➤ Top Notch™

Grooving Tools and Beyond™ Inserts for
Your Shallow Groove and Turn Operations

Primary Application

Top Notch Grooving Tools and Beyond Inserts are the proven solution for high productivity. The Top Notch system provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finishing and superior tool life.

Features and Benefits

- The Beyond PVD coated grades are designed to cut a variety of workpiece materials.
- Rigid clamping securely locks insert in place through the toughest cuts.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.





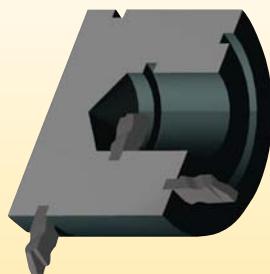
Our rigid clamping design prevents insert movement during high-feed rate applications. This benefit ensures excellent surface finish, improved productivity, and superior tool life and promotes perfect concentricity. The rugged bridge clamp generates locking forces in three directions to provide superior resistance to side thrust and tangential forces.

■ Step 1 • Select system based on the required groove depth

What you need to know

- Groove depth, width, and profile.
- Material to be machined.
- Application to be performed (face, O.D., or I.D. grooving).
- Toolholder requirements (e.g., KM™, square shank, right/left).

Top Notch™



Grooving

For grooving depth $\leq 1.5x$ grooving width, review system capability chart and proceed to Step 2.

Top Notch Grooving for Internal, External, and Face Grooving Applications

| system capabilities | | minimum in (mm) | maximum in (mm) |
|-------------------------|----------|--------------------|--------------------|
| O.D./I.D. grooving | width | .031 (0,79) | .375 (9,53) |
| | depth | .050 (1,27) | .375 (9,53) |
| face grooving | width | .125 (3,18) | .375 (9,53) |
| | depth | .150 (3,81) | .250 (6,35) |
| internal grooving | diameter | .440 (11,2) | — |
| face grooving diameter | standard | .940 (23,9) | — |
| | deep | 1.875 (47,6) | — |
| deep O.D./I.D. grooving | width | .062 (1,57) | .250 (6,35) |
| | depth | .125 (3,18) | .500 (12,70) |
| deep face grooving | width | .125 (3,18) | .250 (6,35) |
| | depth | .250 (6,35) | .500 (12,70) |



■ Step 2 • Select toolholder based on the application

NOTE: Toolholders are available as conventional square shank versions as well as Quick-Change versions.

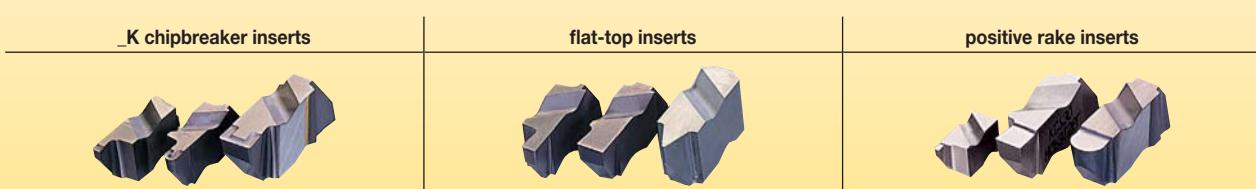
The insert size must match the gage insert of your toolholder selection.

■ Step 3 • Select chipbreaker style and feed rate

Chipbreaker and Feed Rates • in/rev (mm/rev)



| workpiece material and application | P | M | K | N | S | H |
|------------------------------------|--------------------------------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|---|
| first choice | NG-K .003-.011 (.08-.28) | NG-K .0025-.008 (.07-.20) | NG .004-.012 (.01-.30) | NGP .004-.012 (.01-.30) | NG-K .0025-.008 (.07-.20) | NG-ST CBN tipped .002-.004 (.05-.10) |
| alternate choice | NG .004-.012 (.10-.30) | NGP .004-.009 (.10-.23) | NG-K .003-.011 (.08-.28) | NG-K .003-.012 (.08-.30) | NGP .004-.008 (.10-.20) | — |



■ Step 4 • Select grade and speed

Recommendations for Grade

Starting speed chart shown under "Application Guide"

| machining condition | workpiece material | | | | | |
|---|--------------------|------------------|-------------------|--------------------|-----------------|------------------|
| | P | M | K | N | S | H |
| high-performance for optimal conditions (clean cuts, good machine condition, higher speed capability) | KCP10B 120-450 | KCU10 120-260 | KCK20B 150-550 | KD1425 150-1500 | KCU10 15-170 | KB5625 45-230 |
| general purpose (first choice for general machining) | KCP25B 110-365 | KCU25 120-245 | KCU10 60-245 | KCU10 120-975 | KCU10 15-135 | KB5625 80-150 |
| unfavourable conditions (roughing, poor machine condition, interrupted cuts, low speed, I.D. grooving) | KCU25 85-270 | KCU25 90-210 | KCU25 50-195 | K313 40-610 | KCU25 8-110 | KB1630 45-120 |

■ Step 5 • Select insert and holder from catalogue page

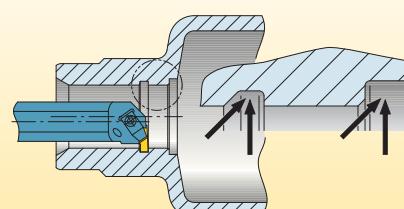
NOTE: The insert size must match the gage insert size of your toolholder selection.

Example for Top Notch • Grooving

Material low-alloyed steel
Groove depth 2mm (.079")
Groove width 3mm (.118")
Operation..... I.D. cut, limited speed capability,
plunge groove and chamfer

Recommendation

Insert..... NG2M300RK
Grade KC5025
Insert width 3mm (.118")
Insert size 2
Toolholder..... A20QNNTOL2 (metric)
A12NEL2 (inch)
Gage insert N.2R



Speed: 120 m/min (400 SFM)
Feed: 0,15 mm/rev (.006 in/rev)

Congratulations!

You have successfully maximised your productivity by selecting the best Top Notch insert geometry, grade, and cutting specifications for your application!

How Do Catalogue Numbers Work?

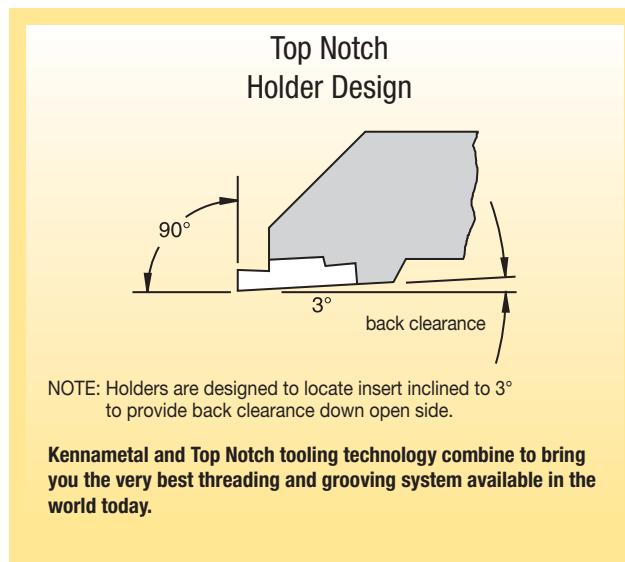
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

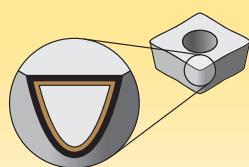
| N | G | | 2 | M | 05 | R | | K | | | | | | | | | | | | | | | |
|---|--------------|--|-------------|--|---------------|---|--|--|---|------|---|------|---|------|---|------|---|------|--|--|--|--|--|
| Type of Insert | Insert Style | Additional Information | Insert Size | Size Identification | Groove Size** | Hand of Insert | Cutting Depth | Chipbreaker Design | Definition of Inserts | | | | | | | | | | | | | | |
| N = Top Notch  | | D = Deep grooving P = Positive C = Groove and chamfer | | M = Metric insert groove width C = Circlip groove insert width is nominal circlip size <input type="checkbox"/> = Blank indicates inch width insert | | L = Left hand R = Right hand | Shown for groove and chamfer inserts in 0,01mm increments. | E = Hone only K = Standard chip control S = T Land and Hone ST = STD Tip (PcBN) | Groove size "J" or "L" for Poly-Vee inserts "I" indicates internal face grooving | | | | | | | | | | | | | | |
| B = Blank (for special forms) F = Face grooving G = Grooving P = Back R = Full radius U = Undercutting (or relieving) V = Poly-Vee | | | | <table border="1"> <thead> <tr> <th>insert number</th><th>W1 mm</th></tr> </thead> <tbody> <tr><td>1</td><td>2,54</td></tr> <tr><td>2</td><td>3,81</td></tr> <tr><td>3</td><td>4,95</td></tr> <tr><td>4</td><td>6,98</td></tr> <tr><td>5</td><td>9,65</td></tr> <tr><td>6</td><td>9,73</td></tr> </tbody> </table> | insert number | W1 mm | 1 | 2,54 | 2 | 3,81 | 3 | 4,95 | 4 | 6,98 | 5 | 9,65 | 6 | 9,73 | | | Position pertains to groove width for F-, G-, and U-style inserts, radii for R-style grooving inserts, and circlip size for groove and chamfer inserts. Dimension in 0,01mm. Metric example: 3,25mm width groove or radius equals "325" catalogue position number. Width Tolerance: ±0,025mm unless otherwise specified. | | |
| insert number | W1 mm | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2,54 | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 3,81 | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4,95 | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 6,98 | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 9,65 | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 9,73 | | | | | | | | | | | | | | | | | | | | | | |

*Kennametal proprietary identification system.

**Omit position for Top Notch NB-style blanks.

| Top Notch Threading and Grooving Insert Dimensions | | |
|--|-------|-------|
| insert size | S mm | W1 mm |
| 1 | 2,54 | 2,54 |
| 2 | 5,56 | 3,81 |
| 3 | 8,74 | 4,95 |
| 4 | 11,51 | 6,48 |
| 5 | 17,48 | 9,65 |
| 6 | 11,51 | 9,73 |
| 8 | 7,93 | 11,13 |



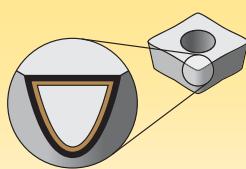


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

← wear resistance → toughness

| Coating | | Grade Description | 05 | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------|--|---|----|----|----|----|----|----|----|----|----|----|
| KCU10 | | Composition: An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. Application: The KCU10™ grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and high-temp alloys with improved edge toughness, notch resistance, and higher cutting speed/feed capability. | P | | | | | | | | | |
| KCU25 | | Composition: An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. Application: The KCU25™ grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cut and high feed rates. | P | | | | | | | | | |
| KCP10B | | Composition: A specially engineered cobalt-enriched carbide grade with thick MTCVD TiCN-Al ₂ O ₃ -TiOCN coating for maximum wear resistance. Application: An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes. | P | | | | | | | | | |
| KCP25B | | Composition: A tough cobalt-enriched carbide grade with a multilayer MTCVD TiCN-Al ₂ O ₃ -TiOCN coating with superior interlayer adhesion. Application: Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimises microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes. | P | | | | | | | | | |
| KCK20B | | Composition: A specially toughened MTCVD TiCN-Al ₂ O ₃ -TiOCN coating over a wear-resistant substrate. Application: Specifically engineered to maximise coating adhesion and edge strength making this grade ideal in wet interrupted cutting of grey and ductile irons. It can be used in a wide range of applications from finishing to roughing to maximise productivity wherever strength and reliability are needed. | P | | | | | | | | | |

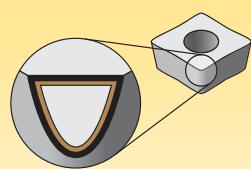


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

← wear resistance → toughness

| Grades | Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|--------|---------|--|----|----|----|----|----|----|----|----|----|
| | | | P | M | K | N | S | H | | | |
| | K313 | Composition: A hard, low binder content, unalloyed WC/Co fine-grain grade. Application: Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temp alloys. Superior thermal deformation and depth-of-cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service. | | M | | | | | | | |
| | KC5010 | Composition: An advanced PVD AlTiN coating over a very deformation-resistant unalloyed carbide substrate. Application: The KC5010™ grade is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and high-temp alloys under stable conditions. It also performs well machining hardened and short chipping materials. | P | | | | | | | | |
| | KC5025 | Composition: An advanced PVD-AlTiN-coated grade with a tough, ultra-fine-grain unalloyed substrate. Application: For general-purpose machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates. | M | | | | | | | | |



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

| Coating | | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------|--------|--|----|----|----|----|----|----|----|----|----|
| Grades | KT315 | Composition: A multilayer PVD TiNTiCN/TiN-coated cermet turning grade. Application: Ideal for high-speed finishing to medium machining of most carbon and alloy steels and stainless steels. Performs very well in cast and ductile iron applications, too. Provides long and consistent tool life and will produce excellent workpiece finishes. | P | | | | | | | | |
| | KB1630 | Composition: An uncoated high content PCBN grade. PCBN tips are brazed onto a carbide insert. Application: Designed for roughing to finishing in interrupted cuts on hardened steels (>45 HRC). It can also be applied on grey cast iron, chilled irons, high chrome alloyed steels, high temp alloys and sintered powder metals. The tipped PCBN inserts are available in a wide range of insert styles, including Top Notch™ and Screw-On geometries. | | | | | | | | | |
| | KB5625 | Composition: A medium content PCBN with a PVD-TiN/AlTiN coating for added wear resistance. Application: Designed for roughing to finishing of hardened steels (>45 HRC). Use on bearing steels, hot and cold work steels, die steels, case hardened steels, carburised and nitrided irons, and some hard coatings. | | | | | | | | | |
| | KD1425 | Composition: A multimodal PCD grade with a range of grain sizes brazed onto a carbide substrate. Application: Engineered for extreme abrasion resistance, combined with good edge strength for demanding applications. An ideal choice for high-silicon aluminium alloys, bi-metallic (AL/GC) materials, MMC, carbon-fibre reinforced plastics, and other abrasive non-metallic materials. | N | | | | | | | | |

| insert style | application | rake angle | page(s) |
|--------------|--|--------------|---------|
| NG | <ul style="list-style-type: none"> General-purpose grooving. O-ring grooving. Circlip grooving. | neutral | C154 |
| NG-K | <ul style="list-style-type: none"> Chip control geometry. General-purpose grooving. O-ring grooving. Circlip grooving. Light turning. | 10° positive | C146 |
| NG-ST | <ul style="list-style-type: none"> Hard turning. | neutral | C163 |
| NGC-K | <ul style="list-style-type: none"> Combined groove and chamfered edge break in one positive plunge with chip control. Designed for DIN 471/472 standard circlip grooves. | 10° positive | C152 |
| NGD | <ul style="list-style-type: none"> Deep grooving. | neutral | C157 |
| NGD-K | <ul style="list-style-type: none"> Chip control geometry. Deep grooving. Light turning. | 10° positive | C149 |
| NGP | <ul style="list-style-type: none"> General-purpose grooving. O-ring grooving. Circlip grooving. | 5° positive | C152 |
| NF | <ul style="list-style-type: none"> Face grooving. Additional side clearance. | neutral | C161 |
| NF-K | <ul style="list-style-type: none"> Face grooving with chip control. Additional side clearance. | 10° positive | C159 |
| NFD-K | <ul style="list-style-type: none"> Deep face grooving with chip control. Additional side clearance. | 10° positive | C160 |

| insert style | application | rake angle | page(s) |
|--------------|---|--------------|-----------|
| NFD-KI | <ul style="list-style-type: none"> Internal deep face grooving with chip control. For use in boring bars for internal face grooves. | 10° positive | C160 |
| NP-K NPD-K | <ul style="list-style-type: none"> Turning. Back turning positive. Profiling with chip control. | 10° positive | C151 |
| NR | <ul style="list-style-type: none"> Full radius grooving. Turning and profiling. | neutral | C158 |
| NR-K | <ul style="list-style-type: none"> Chip control geometry. Full radius grooving, turning, and profiling. | 10° positive | C150 |
| NRD | <ul style="list-style-type: none"> Deep grooving. Full radius end-form. | neutral | C159 |
| NRP | <ul style="list-style-type: none"> Full radius grooving. Light-turning profiling. | 5° positive | C153 |
| NU | <ul style="list-style-type: none"> Undercutting. | neutral | C161 |
| NV | <ul style="list-style-type: none"> Poly-Vee grooving. | neutral | C162 |
| NB/NBD | <ul style="list-style-type: none"> Blanks. Blanks for deep grooving. Available in uncoated grades only. | — | C162–C163 |

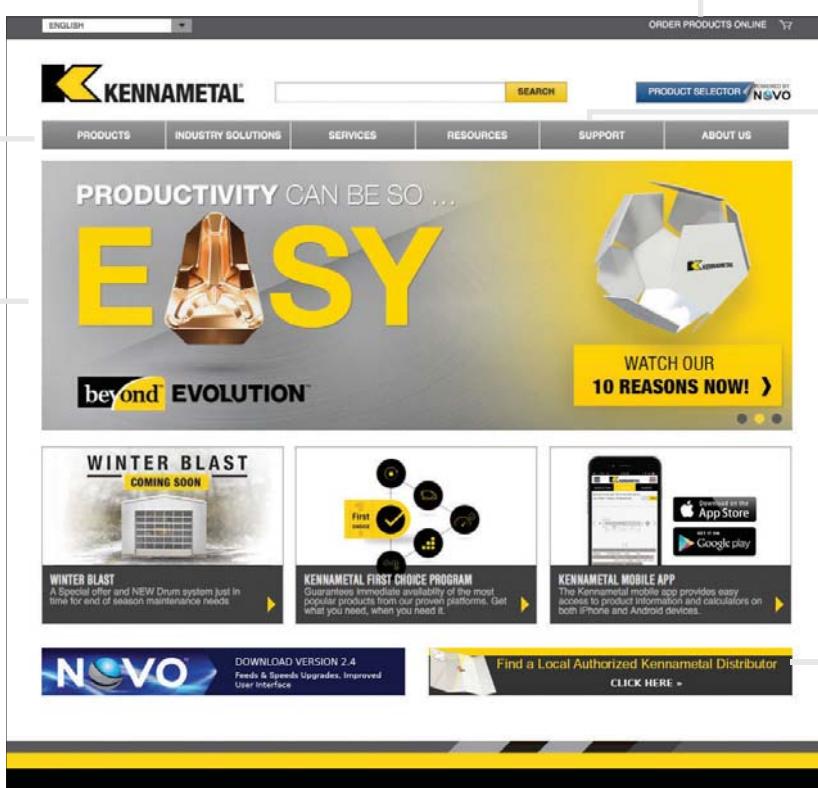
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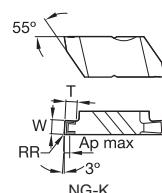
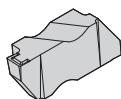
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- Top Notch Beyond Drive™ grades included.



● first choice
○ alternate choice

| P | ● | ● | ● | ● | ○ | ● | ○ | ○ | ● | ● | ● |
|-----------|---|------|------|------|------|------|---|---|---|---|---|
| M | ● | ● | | | ○ | ● | ○ | ○ | ○ | ● | ● |
| K | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | ● |
| N | ● | ○ | | | ● | ○ | ● | ● | ● | ● | ● |
| S | ● | ● | | | ● | ○ | ○ | ○ | ○ | ● | ● |
| H | ○ | | | | ○ | | ○ | ○ | ● | ● | ● |
| NG2M050RK | 2 | 0,50 | 0,03 | 0,64 | 0,09 | 0,64 | ● | ● | - | ● | - |
| NG2031RK | 2 | 0,79 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - |
| NG2M080RK | 2 | 0,80 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - |
| NG2M100RK | 2 | 1,00 | 0,03 | 0,76 | 0,09 | 1,28 | ● | ● | ● | ● | - |
| NG2047RK | 2 | 1,19 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - |
| NG2M120RK | 2 | 1,20 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - |
| NG2M140RK | 2 | 1,40 | 0,03 | 0,76 | 0,09 | 1,28 | ● | ● | ● | ● | - |
| NG2M150RK | 2 | 1,50 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - |
| NG2062RK | 2 | 1,56 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2M170RK | 2 | 1,70 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2M175RK | 2 | 1,75 | 0,03 | 1,09 | 0,19 | 2,81 | - | ● | - | ● | - |
| NG2M195RK | 2 | 1,95 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2M200RK | 2 | 2,00 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2M220RK | 2 | 2,20 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - |
| NG2M225RK | 2 | 2,25 | 0,03 | 1,09 | 0,19 | 2,81 | ● | ● | ● | ● | - |
| NG2094RK | 2 | 2,39 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2M250RK | 2 | 2,50 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - |
| NG2M275RK | 2 | 2,75 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2M300RK | 2 | 3,00 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2125RK | 2 | 3,18 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - |
| NG2M320RK | 2 | 3,20 | 0,03 | 1,09 | 0,19 | 2,79 | - | - | ● | - | - |
| NG2M325RK | 2 | 3,25 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - |
| NG3M100RK | 3 | 1,00 | 0,03 | 0,76 | 0,20 | 1,91 | - | ● | - | ● | - |
| NG3047RK | 3 | 1,19 | 0,03 | 0,76 | 0,19 | 1,91 | ● | ● | ● | ● | - |
| NG3M120RK | 3 | 1,20 | 0,03 | 0,76 | 0,19 | 1,91 | ● | ● | ● | ● | - |
| NG3M150RK | 3 | 1,50 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - |
| NG3062RK | 3 | 1,58 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - |
| NG3M175RK | 3 | 1,75 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - |
| NG3072RK | 3 | 1,83 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - |
| NG3078RK | 3 | 1,98 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - |
| NG3M200RK | 3 | 2,00 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - |
| NG3M220RK | 3 | 2,20 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - |
| NG3M225RK | 3 | 2,24 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - |
| NG3094RK | 3 | 2,39 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | - |
| NG3M250RK | 3 | 2,50 | 0,03 | 1,02 | 0,19 | 3,81 | - | ● | - | ● | - |

Grooving and Cut-Off • Chip Control

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 | | | |
|------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | |
| NG2M050RK | 2 | 0,50 | 0,03 | 0,64 | 0,09 | 0,64 | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2031RK | 2 | 0,79 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | ● | ● | ● | - | ● | - | ● | - | | |
| NG2M080RK | 2 | 0,80 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M100RK | 2 | 1,00 | 0,03 | 0,76 | 0,09 | 1,28 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2047RK | 2 | 1,19 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M120RK | 2 | 1,20 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M140RK | 2 | 1,40 | 0,03 | 0,76 | 0,09 | 1,28 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M150RK | 2 | 1,50 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2062RK | 2 | 1,56 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M170RK | 2 | 1,70 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M175RK | 2 | 1,75 | 0,03 | 1,09 | 0,19 | 2,81 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M195RK | 2 | 1,95 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M200RK | 2 | 2,00 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M220RK | 2 | 2,20 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M225RK | 2 | 2,25 | 0,03 | 1,09 | 0,19 | 2,81 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2094RK | 2 | 2,39 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M250RK | 2 | 2,50 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M275RK | 2 | 2,75 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M300RK | 2 | 3,00 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2125RK | 2 | 3,18 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | | |
| NG2M320RK | 2 | 3,20 | 0,03 | 1,09 | 0,19 | 2,79 | - | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | |
| NG2M325RK | 2 | 3,25 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M100RK | 3 | 1,00 | 0,03 | 0,76 | 0,20 | 1,91 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3047RK | 3 | 1,19 | 0,03 | 0,76 | 0,19 | 1,91 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M120RK | 3 | 1,20 | 0,03 | 0,76 | 0,19 | 1,91 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M150RK | 3 | 1,50 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3062RK | 3 | 1,58 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M175RK | 3 | 1,75 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3072RK | 3 | 1,83 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3078RK | 3 | 1,98 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M200RK | 3 | 2,00 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M220RK | 3 | 2,20 | 0,03 | 1,02 | 0,19 | 2,39 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M225RK | 3 | 2,24 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3094RK | 3 | 2,39 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |
| NG3M250RK | 3 | 2,50 | 0,03 | 1,02 | 0,19 | 3,81 | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - | ● | - |

(continued)

(Groove and Turn • Chip Control – continued)

- first choice
- alternate choice

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

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KCS010 | KCS025 | KT315 | KB1630 | KB5625 | KD1425 |
|-----------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| NG3M275RK | 3 | 2,75 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG3M300RK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG3125RK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG3M320RK | 3 | 3,20 | 0,03 | 1,02 | 0,19 | 3,81 | - | ● | - | ● | - | - | ● | - | - | - | - | - |
| NG3M325RK | 3 | 3,25 | 0,03 | 1,02 | 0,19 | 3,81 | - | ● | - | ● | - | - | ● | - | - | - | - | - |
| NG3M350RK | 3 | 3,50 | 0,03 | 2,92 | 0,32 | 3,81 | - | ● | - | ● | - | - | ● | - | - | - | - | - |
| NG3156RK | 3 | 3,96 | 0,03 | 2,92 | 0,19 | 3,81 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG3M400RK | 3 | 4,00 | 0,03 | 2,92 | 0,32 | 3,81 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG3M425RK | 3 | 4,25 | 0,03 | 2,92 | 0,32 | 3,81 | ● | ● | ● | ● | - | - | ● | - | - | - | - | - |
| NG3M450RK | 3 | 4,50 | 0,03 | 2,92 | 0,32 | 3,81 | - | ● | - | ● | - | - | - | - | - | - | - | - |
| NG3189RK | 3 | 4,80 | 0,03 | 2,92 | 0,57 | 3,81 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG4M300RK | 4 | 3,00 | 0,03 | 1,02 | 0,19 | 3,81 | - | ● | - | ● | - | - | - | - | - | - | - | - |
| NG4125RK | 4 | 3,18 | 0,03 | 1,06 | 0,19 | 3,81 | ● | ● | ● | ● | - | - | ● | - | - | - | - | - |
| NG4M350RK | 4 | 3,50 | 0,03 | 2,92 | 0,57 | 6,35 | - | ● | - | ● | - | - | - | - | - | - | - | - |
| NG4M400RK | 4 | 4,00 | 0,03 | 2,92 | 0,57 | 6,35 | - | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG4M450RK | 4 | 4,50 | 0,03 | 2,92 | 0,57 | 6,35 | - | ● | - | ● | - | - | - | - | - | - | - | - |
| NG4189RK | 4 | 4,80 | 0,03 | 2,92 | 0,57 | 6,35 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG4M500RK | 4 | 5,00 | 0,03 | 2,92 | 0,32 | 6,35 | ● | ● | ● | ● | - | - | - | - | - | - | - | - |
| NG4M550RK | 4 | 5,50 | 0,03 | 3,81 | 0,57 | 6,35 | - | - | - | ● | - | - | - | - | - | - | - | - |
| NG4M600RK | 4 | 6,00 | 0,03 | 3,81 | 0,57 | 6,35 | - | ● | - | ● | - | - | - | - | - | - | - | - |
| NG4250RK left hand | 4 | 6,35 | 0,03 | 3,81 | 0,57 | 6,35 | - | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M050LK | 2 | 0,50 | 0,03 | 0,64 | 0,09 | 0,64 | ● | ● | - | ● | - | - | ● | - | - | - | - | - |
| NG2031LK | 2 | 0,79 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M080LK | 2 | 0,80 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | - | ● | - | - | - | - | - |
| NG2M100LK | 2 | 1,00 | 0,03 | 0,76 | 0,08 | 1,27 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2047LK | 2 | 1,19 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M120LK | 2 | 1,20 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M140LK | 2 | 1,40 | 0,03 | 0,76 | 0,09 | 1,27 | ● | ● | ● | ● | - | - | ● | - | - | - | - | - |
| NG2M150LK | 2 | 1,50 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | - | ● | - | - | - | - | - |
| NG2062LK | 2 | 1,58 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M170LK | 2 | 1,70 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M175LK | 2 | 1,75 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | - | ● | - | - | - | - | - |
| NG2M195LK | 2 | 1,95 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | ● | ● | - | - | ● | - | - | - | - | - |
| NG2M200LK | 2 | 2,00 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M220LK | 2 | 2,20 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | - | - | - | - | - | - | - |
| NG2M225LK | 2 | 2,25 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | - | ● | - | - | - | - | - |
| NG2094LK | 2 | 2,39 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | - | - | ● | ● | - | - | - | - |
| NG2M250LK | 2 | 2,50 | 0,03 | 1,09 | 0,19 | 2,79 | - | ● | - | ● | - | - | ● | - | - | - | - | - |
| NG2M275LK | 2 | 2,75 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | - | ● | - | - | ● | - | - | - | - | - |

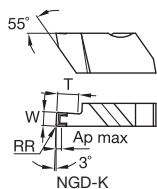
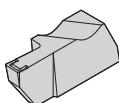
(continued)

(Groove and Turn • Chip Control — continued)

- first choice
- alternate choice

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

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| NG2M300LK | 2 | 3,00 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | ● | — | — | ● | ● | — | — | |
| NG2125LK | 2 | 3,18 | 0,03 | 1,09 | 0,19 | 2,79 | ● | ● | ● | ● | ● | — | — | ● | ● | — | — | |
| NG2M325LK | 2 | 3,25 | 0,03 | 1,09 | 0,19 | 2,79 | — | ● | — | ● | — | — | — | — | — | — | — | |
| NG3M100LK | 3 | 1,00 | 0,03 | 0,76 | 0,20 | 1,91 | — | ● | — | ● | — | — | — | ● | ● | — | — | |
| NG3047LK | 3 | 1,19 | 0,03 | 0,76 | 0,19 | 1,90 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3M120LK | 3 | 1,20 | 0,03 | 0,76 | 0,19 | 1,91 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3M150LK | 3 | 1,50 | 0,03 | 1,02 | 0,19 | 2,39 | — | ● | — | ● | — | — | — | ● | ● | — | — | |
| NG3062LK | 3 | 1,58 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | — | — | — | — | ● | ● | — | — | — | |
| NG3M175LK | 3 | 1,75 | 0,03 | 1,02 | 0,19 | 2,39 | — | ● | — | ● | — | — | — | ● | ● | — | — | |
| NG3072LK | 3 | 1,83 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3078LK | 3 | 1,98 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3M200LK | 3 | 2,00 | 0,03 | 1,02 | 0,19 | 2,39 | — | ● | — | ● | — | — | ● | ● | — | — | — | |
| NG3M220LK | 3 | 2,20 | 0,03 | 1,02 | 0,19 | 2,39 | — | ● | — | ● | — | — | ● | ● | — | — | — | |
| NG3M225LK | 3 | 2,25 | 0,03 | 1,02 | 0,19 | 2,39 | ● | ● | ● | ● | — | — | — | — | — | — | — | |
| NG3094LK | 3 | 2,39 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | — | — | ● | ● | ● | — | — | |
| NG3M250LK | 3 | 2,50 | 0,03 | 1,02 | 0,19 | 3,81 | — | ● | — | ● | — | — | — | ● | — | — | — | |
| NG3M275LK | 3 | 2,75 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | — | — | — | ● | — | — | — | |
| NG3M300LK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3125LK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 3,81 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3M320LK | 3 | 3,20 | 0,03 | 1,02 | 0,19 | 3,81 | — | ● | — | ● | — | — | — | ● | — | — | — | |
| NG3M325LK | 3 | 3,25 | 0,03 | 1,02 | 0,19 | 3,81 | — | ● | — | ● | — | — | — | ● | — | — | — | |
| NG3M350LK | 3 | 3,50 | 0,03 | 2,92 | 0,32 | 3,81 | — | ● | — | ● | — | — | — | ● | — | — | — | |
| NG3156LK | 3 | 3,96 | 0,03 | 2,92 | 0,19 | 3,81 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3M400LK | 3 | 4,00 | 0,03 | 2,92 | 0,32 | 3,81 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG3M425LK | 3 | 4,25 | 0,03 | 2,92 | 0,32 | 3,81 | ● | ● | ● | ● | — | — | — | — | — | — | — | |
| NG3M450LK | 3 | 4,50 | 0,03 | 2,92 | 0,32 | 3,81 | — | ● | — | ● | — | — | — | — | — | — | — | |
| NG3189LK | 3 | 4,80 | 0,03 | 2,92 | 0,57 | 3,81 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG4M300LK | 4 | 3,00 | 0,03 | 1,02 | 0,19 | 3,81 | — | ● | — | ● | — | — | — | — | — | — | — | |
| NG4125LK | 4 | 3,18 | 0,03 | 1,06 | 0,19 | 3,81 | ● | ● | ● | ● | — | — | — | — | — | — | — | |
| NG4M320LK | 4 | 3,20 | 0,03 | 1,02 | 0,19 | 3,81 | — | — | — | ● | — | — | — | — | — | — | — | |
| NG4M350LK | 4 | 3,50 | 0,03 | 2,92 | 0,57 | 6,35 | — | ● | — | ● | — | — | — | — | — | — | — | |
| NG4M400LK | 4 | 4,00 | 0,03 | 2,92 | 0,57 | 6,35 | ● | ● | ● | ● | — | — | — | — | — | — | — | |
| NG4M450LK | 4 | 4,50 | 0,03 | 2,92 | 0,57 | 6,35 | — | ● | — | ● | — | — | — | ● | — | — | — | |
| NG4189LK | 4 | 4,80 | 0,03 | 2,92 | 0,57 | 6,35 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |
| NG4M500LK | 4 | 5,00 | 0,03 | 2,92 | 0,32 | 6,35 | ● | ● | ● | ● | — | — | ● | — | — | — | — | |
| NG4M550LK | 4 | 5,50 | 0,03 | 3,81 | 0,57 | 6,35 | — | — | — | ● | — | — | — | — | — | — | — | |
| NG4M600LK | 4 | 6,00 | 0,03 | 3,81 | 0,57 | 6,35 | — | ● | — | ● | — | — | — | — | — | — | — | |
| NG4250LK | 4 | 6,35 | 0,03 | 3,81 | 0,57 | 6,35 | ● | ● | ● | ● | — | — | ● | ● | — | — | — | |


 ● first choice
 ○ alternate choice

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

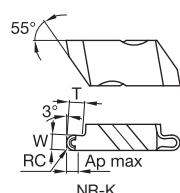
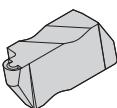
■ Groove and Turn • Deep Grooving • Chip Control

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NGD2M150RK | 2 | 1,50 | 0,03 | 1,09 | 0,19 | 4,06 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD2M200RK | 2 | 2,00 | 0,03 | 1,09 | 0,19 | 5,08 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD2M250RK | 2 | 2,50 | 0,03 | 1,09 | 0,19 | 5,08 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3062RK | 3 | 1,58 | 0,03 | 1,02 | 0,19 | 3,18 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD3M200RK | 3 | 2,00 | 0,03 | 1,02 | 0,19 | 4,06 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3094RK | 3 | 2,39 | 0,03 | 1,02 | 0,19 | 6,35 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD3M250RK | 3 | 2,50 | 0,03 | 1,02 | 0,19 | 6,35 | - | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3M300RK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 6,35 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD3125RK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD3M400RK | 3 | 4,00 | 0,03 | 2,92 | 0,32 | 6,35 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3189RK | 3 | 4,80 | 0,03 | 2,92 | 0,58 | 6,35 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD4125RK | 4 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD4189RK | 4 | 4,80 | 0,03 | 2,92 | 0,57 | 9,53 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD4M550RK | 4 | 5,50 | 0,03 | 3,81 | 0,57 | 12,70 | - | ● | - | - | - | - | - | - | - | - | - | |
| NGD4250RK | 4 | 6,35 | 0,03 | 3,81 | 0,57 | 12,70 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| left hand | | | | | | | | | | | | | | | | | | |
| NGD2M150LK | 2 | 1,50 | 0,03 | 1,09 | 0,19 | 4,06 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD2M200LK | 2 | 2,00 | 0,03 | 1,09 | 0,19 | 5,08 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD2M250LK | 2 | 2,50 | 0,03 | 1,09 | 0,19 | 5,08 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3062LK | 3 | 1,57 | 0,03 | 1,02 | 0,19 | 3,18 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3M200LK | 3 | 2,00 | 0,03 | 1,02 | 0,19 | 4,06 | - | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3094LK | 3 | 2,39 | 0,03 | 1,02 | 0,19 | 6,34 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD3M250LK | 3 | 2,50 | 0,03 | 1,02 | 0,19 | 6,35 | - | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3M300LK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 6,35 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD3125LK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | ● | ● | - | - | - | ● | ● | ● | - | - | - | |
| NGD3M350LK | 3 | 3,50 | 0,03 | 2,92 | 0,32 | 6,35 | - | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3M400LK | 3 | 4,00 | 0,03 | 2,92 | 0,32 | 6,35 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD3189LK | 3 | 4,80 | 0,03 | 2,92 | 0,57 | 6,35 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD4125LK | 4 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD4M400LK | 4 | 4,00 | 0,03 | 2,92 | 0,57 | 9,53 | - | ● | - | - | - | - | - | - | - | - | - | |
| NGD4189LK | 4 | 4,80 | 0,03 | 2,92 | 0,57 | 9,53 | ● | ● | - | - | - | ● | ● | - | - | - | - | |
| NGD4M500LK | 4 | 5,00 | 0,03 | 2,92 | 0,57 | 12,70 | - | ● | - | - | - | - | - | - | - | - | - | |
| NGD4250LK | 4 | 6,35 | 0,03 | 3,80 | 0,57 | 12,70 | ● | ● | - | - | - | ● | ● | - | - | - | - | |

NOTE: Inserts have one cutting edge. Right-hand insert shown; left-hand insert is mirror image.

The following inserts are double ended: NGD3062RK, NGD4125RK, NGD3062LK, and NGD4125LK.

- Full radius inserts with chip control.



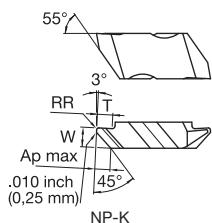
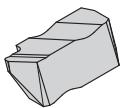
- first choice
- alternate choice

| | | | | | | | | | | | |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| P | Blue | Black | Black | Black | Black | White | White | White | White | Black | White |
| M | Yellow | Black | Black | White | White | White | Black | White | White | White | White |
| K | Red | White | White | White | White | Black | White | White | White | White | White |
| N | Green | Black | White | White | White | White | Black | White | White | White | Black |
| S | Orange | Black | Black | White | White | Black | White | White | White | White | White |
| H | Grey | White | White | White | White | White | White | White | White | Black | Black |

■ Groove and Turn • Full Radius • Chip Control

| catalogue number | insert size | W | Ap max | RC | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KCS010 | KCS025 | KT315 | KB1630 | KB5625 | KD1425 |
|------------------|-------------|------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | |
| NR3031RK | 3 | 1,57 | 1,97 | 0,79 | 2,39 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR3047RK | 3 | 2,39 | 1,91 | 1,19 | 3,81 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR3062RK | 3 | 3,18 | 2,92 | 1,59 | 3,81 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR3078RK | 3 | 3,97 | 2,54 | 1,98 | 3,81 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR4062RK | 4 | 3,18 | 2,92 | 1,59 | 3,81 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR4094RK | 4 | 4,79 | 3,81 | 2,39 | 6,35 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR4125RK | 4 | 6,35 | 3,81 | 3,18 | 6,35 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| left hand | | | | | | | | | | | | | | | | | |
| NR3031LK | 3 | 1,58 | 1,98 | 0,79 | 2,39 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR3047LK | 3 | 2,39 | 1,91 | 1,19 | 3,81 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR3062LK | 3 | 3,18 | 2,92 | 1,59 | 3,81 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR3078LK | 3 | 3,96 | 2,54 | 1,98 | 3,81 | - | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR4062LK | 4 | 3,18 | 2,92 | 1,59 | 3,81 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR4094LK | 4 | 4,79 | 3,81 | 2,39 | 6,35 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |
| NR4125LK | 4 | 6,36 | 3,81 | 3,18 | 6,35 | ● | ● | - | - | - | - | ● | ● | - | - | - | - |

NOTE: Right-hand insert shown; left-hand insert is mirror image.



- first choice
- alternate choice

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

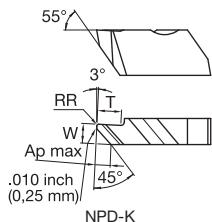
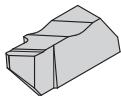
■ Groove and Profile • Chip Control

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NP2002RK | 2 | 3,82 | 0,03 | — | 0,25 | 2,81 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NP2012RK | 2 | 3,82 | 0,03 | — | 0,25 | 2,81 | — | ● | — | — | — | — | — | — | — | — | — | — |
| NP3002RK | 3 | 4,95 | 0,03 | — | 0,25 | 5,08 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| NP3012RK | 3 | 4,95 | 0,03 | — | 0,25 | 5,08 | — | ● | — | — | — | — | ● | — | — | — | — | — |

NOTE: Right-hand insert shown; left-hand insert is mirror image.

Tolerance on W ± 0,13mm (± .005").

- Profiling deep positive inserts.

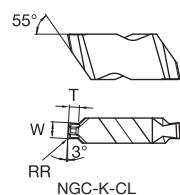
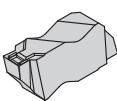


■ Groove and Profile • Deep Grooving • Chip Control

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NPD2002RK | 2 | 3,68 | 0,13 | — | 0,09 | 5,08 | — | ● | — | — | — | — | ● | — | — | — | — | — |
| NPD3002RK | 3 | 4,83 | 0,13 | — | 0,09 | 6,35 | — | ● | — | — | — | — | ● | — | — | — | — | — |
| NPD3012RK | 3 | 4,95 | 0,03 | — | 0,25 | 6,35 | ● | ● | — | — | — | — | ● | — | — | — | — | — |

NOTE: Right-hand insert shown; left-hand insert is mirror image.

Tolerance on W ± 0,13mm (± .005").



● first choice
○ alternate choice

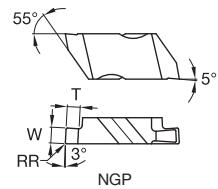
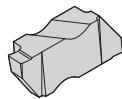
| | |
|---|-------------------|
| P | ● ● ● ● ○ ○ ○ ○ ● |
| M | ● ○ ○ ○ ○ ○ ○ ○ ○ |
| K | ○ ○ ○ ○ ○ ○ ○ ○ ○ |
| N | ● ○ ○ ○ ○ ○ ○ ○ ○ |
| S | ● ○ ○ ○ ○ ○ ○ ○ ○ |
| H | ○ ○ ○ ○ ○ ○ ○ ○ ○ |

■ Groove and Chamfer • Chip Control

| catalogue number | seat size | circlip size | W | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-----------|--------------|------|------|-----|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | |
| NGC2C130R055K | 2 | 1,30 | 1,39 | 0,08 | 0,6 | - | ● - | - | - | - | - | - | - | - | - | - | - |
| NGC2C215R150K | 2 | 2,15 | 2,24 | 0,08 | 1,5 | - | ● - | - | - | - | - | - | - | - | - | - | - |
| left hand | | | | | | | | | | | | | | | | | |
| NGC2C130L055K | 2 | 1,30 | 1,39 | 0,08 | 0,6 | - | ● - | - | - | - | - | - | - | - | - | - | - |
| NGC2C185L125K | 2 | 1,85 | 1,94 | 0,08 | 1,3 | - | ● - | - | - | - | - | - | - | - | - | - | - |
| NGC2C215L150K | 2 | 2,15 | 2,24 | 0,08 | 1,5 | - | ● - | - | - | - | - | - | - | - | - | - | - |

NOTE: Groove and chamfer inserts for circlip grooves to DIN 471/472 specification.

Right-hand insert shown; left-hand insert is mirror image.



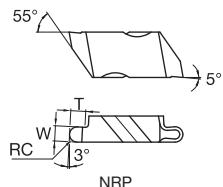
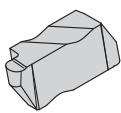
■ Groove and Turn • Positive

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NGP2031R | 2 | 0,79 | 0,03 | - | 0,09 | 1,27 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP2062R | 2 | 1,58 | 0,03 | - | 0,19 | 2,79 | ● - | - | - | - | - | ● - | - | - | - | - | - | |
| NGP2125R | 2 | 3,18 | 0,03 | - | 0,19 | 2,79 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP3088R | 3 | 2,24 | 0,03 | - | 0,19 | 2,39 | ● - | - | - | - | - | - | - | - | - | - | ● | |
| NGP3125R | 3 | 3,18 | 0,03 | - | 0,19 | 3,81 | ● - | - | - | - | - | ● - | - | - | - | - | ● | |
| NGP3156R | 3 | 3,96 | 0,03 | - | 0,19 | 3,81 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP4189R | 4 | 4,80 | 0,03 | - | 0,57 | 6,35 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP4250R | 4 | 6,35 | 0,03 | - | 0,57 | 6,35 | - | - | - | - | - | ● - | - | - | - | - | - | |
| left hand | | | | | | | | | | | | | | | | | | |
| NGP2031L | 2 | 0,79 | 0,03 | - | 0,09 | 1,27 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP2062L | 2 | 1,57 | 0,03 | - | 0,19 | 2,79 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP2125L | 2 | 3,18 | 0,03 | - | 0,19 | 2,79 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP3088L | 3 | 2,24 | 0,03 | - | 0,19 | 2,39 | ● - | - | - | - | - | - | - | - | - | - | - | |
| NGP3125L | 3 | 3,18 | 0,03 | - | 0,19 | 3,81 | - | - | - | - | - | ● - | - | - | - | - | - | |
| NGP4250L | 4 | 6,35 | 0,03 | - | 0,57 | 6,35 | ● - | - | - | - | - | - | - | - | - | - | - | |

NOTE: All KD and KB grades are single-ended tipped inserts.

Right-hand insert shown; left-hand insert is mirror image.

- Full radius positive rake inserts.



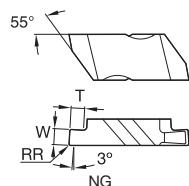
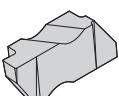
● first choice
 ○ alternate choice

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

■ Groove and Turn • Full Radius • Positive

| catalogue number | insert size | W | Ap max | RC | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | |
| NRP3031R | 3 | 1,58 | — | 0,79 | 2,39 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| NRP3047R | 3 | 2,39 | — | 1,19 | 3,81 | ● | — | — | — | — | — | ● | ● | — | — | — | — |
| NRP3062R | 3 | 3,18 | — | 1,59 | 3,81 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| NRP3094R | 3 | 4,78 | — | 2,39 | 3,81 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| left hand | | | | | | | | | | | | | | | | | |
| NRP3031L | 3 | 1,58 | — | 0,79 | 2,39 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| NRP3047L | 3 | 2,39 | — | 1,19 | 3,81 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| NRP3062L | 3 | 3,18 | — | 1,59 | 3,81 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NRP3094L | 3 | 4,78 | — | 2,39 | 3,81 | ● | — | — | — | — | — | ● | — | — | — | — | — |

NOTE: Right-hand insert shown; left-hand insert is mirror image.



- first choice
- alternate choice

■ Groove and Turn • Flat Top

(continued)

(Groove and Turn • Flat Top — continued)

● first choice
 ○ alternate choice

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

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KGP10B | KGP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| left hand | | | | | | | | | | | | | | | | | | |
| NG1031L | 1 | 0,79 | 0,08 | — | 0,19 | 1,27 | — | ● | — | — | — | — | — | — | — | — | — | — |
| NG1047L | 1 | 1,19 | 0,08 | — | 0,19 | 1,91 | — | ● | — | — | — | — | — | ● | — | — | — | — |
| NG1062L | 1 | 1,58 | 0,08 | — | 0,19 | 1,91 | — | ● | — | — | — | — | ● | — | — | — | — | — |
| NG1094L | 1 | 2,39 | 0,08 | — | 0,19 | 1,91 | — | ● | — | — | — | — | ● | — | — | — | — | — |
| NG2031L | 2 | 0,79 | 0,03 | — | 0,09 | 1,27 | ● | ● | — | — | ● | ● | ● | — | — | — | — | — |
| NG2041L | 2 | 1,04 | 0,03 | — | 0,09 | 1,27 | — | ● | — | — | ● | — | ● | ● | — | — | — | — |
| NG2047L | 2 | 1,19 | 0,03 | — | 0,09 | 1,27 | ● | ● | — | — | ● | — | ● | — | — | — | — | — |
| NG2058L | 2 | 1,47 | 0,03 | — | 0,19 | 1,27 | — | ● | — | — | — | — | — | — | — | — | — | — |
| NG2062L | 2 | 1,58 | 0,03 | — | 0,19 | 2,79 | ● | ● | — | — | ● | ● | ● | ● | — | — | — | — |
| NG2094L | 2 | 2,39 | 0,03 | — | 0,19 | 2,79 | ● | ● | — | — | ● | ● | ● | — | — | — | — | — |
| NG2125L | 2 | 3,18 | 0,03 | — | 0,19 | 2,79 | ● | ● | — | — | ● | — | ● | — | — | — | — | — |
| NG3047L | 3 | 1,19 | 0,03 | — | 0,19 | 1,91 | ● | ● | — | — | ● | ● | ● | — | — | — | — | — |
| NG3062L | 3 | 1,57 | 0,03 | — | 0,19 | 2,38 | ● | ● | — | — | ● | ● | ● | ● | — | — | — | — |
| NG3072L | 3 | 1,83 | 0,03 | — | 0,19 | 2,39 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| NG3078L | 3 | 1,98 | 0,03 | — | 0,19 | 2,39 | ● | — | — | — | — | — | — | — | — | — | — | — |
| NG3088L | 3 | 2,24 | 0,03 | — | 0,19 | 2,39 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| NG3094L | 3 | 2,39 | 0,03 | — | 0,19 | 3,81 | ● | ● | — | — | ● | ● | ● | ● | — | — | — | — |
| NG3097L | 3 | 2,46 | 0,03 | — | 0,32 | 3,81 | ● | ● | — | — | — | — | — | — | — | — | — | — |
| NG3105L | 3 | 2,67 | 0,03 | — | 0,19 | 3,81 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| NG3110L | 3 | 2,79 | 0,03 | — | 0,32 | 3,81 | — | ● | — | — | — | — | ● | — | — | — | — | — |
| NG3122L | 3 | 3,10 | 0,03 | — | 0,19 | 3,81 | — | ● | — | — | — | — | — | — | — | — | — | — |
| NG3125L | 3 | 3,18 | 0,03 | — | 0,19 | 3,81 | ● | ● | — | — | ● | ● | ● | ● | — | — | — | — |
| NG3142L | 3 | 3,61 | 0,03 | — | 0,32 | 3,81 | ● | ● | — | — | — | — | — | — | — | — | — | — |
| NG3156L | 3 | 3,96 | 0,03 | — | 0,19 | 3,81 | — | ● | — | — | — | — | ● | — | — | — | — | — |
| NG3178L | 3 | 4,52 | — | — | 0,19 | 3,81 | — | ● | — | — | — | — | — | — | — | — | — | — |
| NG3185L | 3 | 4,70 | 0,03 | — | 0,57 | 3,81 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NG3189L | 3 | 4,80 | 0,03 | — | 0,57 | 3,81 | ● | ● | — | — | ● | ● | ● | ● | — | — | — | — |
| NG4125L | 4 | 3,18 | 0,03 | — | 0,19 | 3,81 | ● | ● | — | — | ● | — | — | — | — | — | — | — |
| NG4189L | 4 | 4,80 | 0,03 | — | 0,57 | 6,35 | ● | ● | — | — | ● | ● | ● | ● | — | — | ● | — |
| NG4189LEST | 4 | 4,80 | 0,03 | — | 0,57 | 6,35 | ● | ● | — | — | ● | ● | ● | ● | — | — | ● | — |
| NG4250L | 4 | 6,35 | 0,03 | — | 0,57 | 6,35 | ● | ● | — | — | ● | ● | ● | ● | — | — | ● | — |

NOTE: All KD and KB grades are single-ended tipped inserts.
 Right-hand insert shown; left-hand insert is mirror image.



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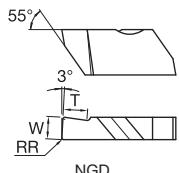
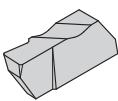
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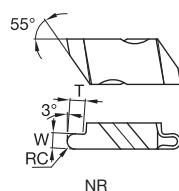
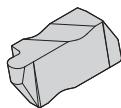
| P | ● | ● | ● | ● | ○ | ○ | ○ | ● | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| M | ● | ● | | | ○ | ● | | | | | | | |
| K | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| N | ● | ○ | | | ○ | ● | ○ | | | | | | |
| S | ● | ● | | | ● | ○ | ○ | | | | | | |
| H | ○ | | | |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

■ Groove and Turn • Deep Grooving • Flat Top

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NGD3189R | 3 | 4,80 | 0,03 | — | 0,57 | 6,35 | ● | — | — | — | — | ● | — | — | — | — | — | |
| NGD4250R | 4 | 6,35 | 0,03 | — | 0,57 | 12,70 | ● | — | — | — | — | ● | — | — | — | — | — | |
| left hand | | | | | | | | | | | | | | | | | | |
| NGD3189L | 3 | 4,80 | 0,03 | — | 0,57 | 6,35 | ● | — | — | — | — | ● | ● | — | — | — | — | |
| NGD4250L | 4 | 6,35 | 0,03 | — | 0,57 | 12,70 | ● | — | — | — | — | ● | ● | — | — | — | — | |

NOTE: Inserts have one cutting edge.

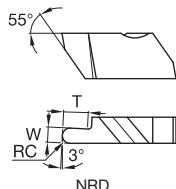
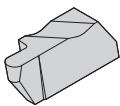
Right-hand insert shown; left-hand insert is mirror image.



■ Groove and Turn • Full Radius • Flat Top

| catalogue number | insert size | W | Ap max | RC | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KE5625 | KD1425 |
|------------------|-------------|------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | |
| NR2M050R | 2 | 1,00 | — | 0,50 | 1,27 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NR2M075R | 2 | 1,50 | — | 0,75 | 2,79 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| NR2031R | 2 | 1,58 | — | 0,79 | 2,79 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NR2M100R | 2 | 2,00 | — | 1,00 | 2,79 | ● | — | — | — | — | — | ● | ● | — | — | — | — |
| NR2047R | 2 | 2,39 | — | 1,19 | 2,79 | — | ● | — | — | — | — | — | — | — | — | — | — |
| NR2M125R | 2 | 2,50 | — | 1,25 | 2,79 | — | — | — | — | — | — | ● | ● | — | — | — | — |
| NR2M150R | 2 | 3,00 | — | 1,50 | 2,79 | — | — | — | — | — | — | ● | ● | — | — | — | — |
| NR2062R | 2 | 3,18 | — | 1,59 | 2,79 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NR2M175R | 2 | 3,50 | — | 1,75 | 2,79 | — | — | — | — | — | — | ● | ● | — | — | — | — |
| NR3031R | 3 | 1,58 | — | 0,79 | 2,39 | ● | ● | — | — | — | — | ● | ● | ● | — | — | — |
| NR3M100R | 3 | 2,00 | — | 1,00 | 2,39 | — | — | — | — | — | — | ● | ● | — | — | — | — |
| NR3047R | 3 | 2,39 | — | 1,19 | 3,81 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NR3M150R | 3 | 3,00 | — | 1,50 | 3,81 | — | — | — | — | — | — | ● | ● | — | — | — | — |
| NR3062R | 3 | 3,18 | — | 1,59 | 3,81 | ● | ● | — | — | — | — | ● | ● | ● | — | — | — |
| NR3078R | 3 | 3,96 | — | 1,98 | 3,81 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NR3M200R | 3 | 4,00 | — | 2,00 | 3,81 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NR3094R | 3 | 4,78 | — | 2,39 | 3,81 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NR4094R | 4 | 4,78 | — | 2,39 | 6,35 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NR4125R | 4 | 6,35 | — | 3,18 | 6,35 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| left hand | | | | | | | | | | | | | | | | | |
| NR2M050L | 2 | 1,00 | — | 0,50 | 1,27 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| NR2031L | 2 | 1,58 | — | 0,79 | 2,79 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NR2M100L | 2 | 2,00 | — | 1,00 | 2,79 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NR2047L | 2 | 2,39 | — | 1,19 | 2,79 | — | ● | — | — | — | — | — | — | — | — | — | — |
| NR2M150L | 2 | 3,00 | — | 1,50 | 2,79 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NR2062L | 2 | 3,18 | — | 1,59 | 2,79 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| NR3031L | 3 | 1,58 | — | 0,79 | 2,39 | ● | ● | — | — | — | — | ● | ● | ● | — | — | — |
| NR3M100L | 3 | 2,00 | — | 1,00 | 2,39 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NR3047L | 3 | 2,39 | — | 1,19 | 3,81 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NR3M150L | 3 | 3,00 | — | 1,50 | 3,81 | ● | — | — | — | — | — | ● | ● | ● | — | — | — |
| NR3062L | 3 | 3,18 | — | 1,59 | 3,81 | ● | ● | — | — | — | — | ● | ● | ● | — | — | — |
| NR3M200L | 3 | 4,00 | — | 2,00 | 3,81 | — | — | — | — | — | — | ● | — | — | — | — | — |
| NR3094L | 3 | 4,78 | — | 2,39 | 3,81 | — | ● | — | — | — | — | ● | ● | ● | — | — | — |
| NR4125L | 4 | 6,35 | — | 3,18 | 6,35 | — | ● | — | — | — | — | ● | — | — | — | — | — |

NOTE: Right-hand insert shown; left-hand insert is mirror image.



● first choice
 ○ alternate choice

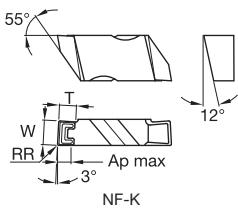
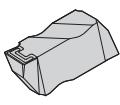
| P | ● | ● | ● | ● | ○ | ○ | ○ | ● | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|
| M | ● | ● | | | ○ | ● | | | | | | | | | |
| K | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | | | | |
| N | ● | ○ | | | ○ | ● | ○ | | | | | | | | |
| S | ● | ● | | | ● | ○ | ○ | | | | | |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

■ Groove and Turn • Deep Grooving • Full Radius • Flat Top

| catalogue number | insert size | W | Ap max | RC | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KE5625 | KD1425 |
|-------------------|-------------|------|--------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | |
| NRD3031R | 3 | 1,58 | — | 0,79 | 3,18 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NRD3062R | 3 | 3,17 | — | 1,59 | 6,35 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NRD4062R | 4 | 3,18 | — | 1,59 | 6,35 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| NRD4094R | 4 | 4,78 | — | 2,39 | 12,70 | ● | — | — | — | — | — | ● | — | — | — | — | — |
| NRD4125R | 4 | 6,35 | — | 3,18 | 12,70 | — | ● | — | — | — | — | ● | — | — | — | — | — |
| left hand | | | | | | | | | | | | | | | | | |
| NRD3031L | 3 | 1,58 | — | 0,79 | 3,18 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NRD3062L | 3 | 3,17 | — | 1,59 | 6,35 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NRD4062L | 4 | 3,18 | — | 1,59 | 6,35 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |
| NRD4094L | 4 | 4,78 | — | 2,39 | 12,70 | ● | ● | — | — | — | — | ● | — | — | — | — | — |
| NRD4125L | 4 | 6,35 | — | 3,18 | 12,70 | ● | ● | — | — | — | — | ● | ● | — | — | — | — |

NOTE: Inserts have one cutting edge.

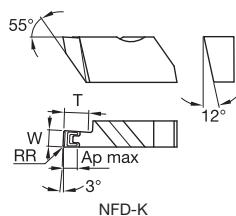
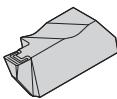
Right-hand insert shown; left-hand insert is mirror image.



■ Face Grooving • Chip Control

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KE5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NF3M200RK | 3 | 2,00 | 0,03 | 1,02 | 0,19 | 1,78 | — | — | — | — | — | — | ● | — | — | — | — | |
| NF3M300RK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 3,81 | — | — | — | — | — | — | ● | — | — | — | — | |
| NF3125RK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 3,81 | — | ● | — | — | — | — | ● | — | — | — | — | |
| NF3156RK | 3 | 3,96 | 0,03 | 2,92 | 0,19 | 3,81 | — | ● | — | — | — | — | — | — | — | — | — | |
| left hand | | | | | | | | | | | | | | | | | | |
| NF3M200LK | 3 | 2,00 | 0,03 | 1,02 | 0,19 | 1,78 | — | — | — | — | — | — | ● | — | — | — | — | |
| NF3M300LK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 3,81 | — | — | — | — | — | — | ● | — | — | — | — | |
| NF3125LK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 3,81 | — | ● | — | — | — | — | ● | — | — | — | — | |
| NF3156LK | 3 | 3,96 | 0,03 | 2,92 | 0,19 | 3,81 | — | ● | — | — | — | — | — | — | — | — | — | |

NOTE: Right-hand insert shown; left-hand insert is mirror image.



● first choice
○ alternate choice

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

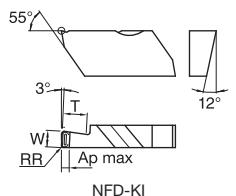
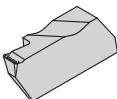
■ Face Grooving • Deep Grooving • Chip Control

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NFD3M300RK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 6,35 | - | - | - | - | - | - | ● | - | - | - | - | |
| NFD3125RK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | - | ● | - | - | - | - | ● | - | - | - | - | |
| NFD4189RK | 4 | 4,80 | 0,03 | 2,92 | 0,57 | 9,53 | - | ● | - | - | - | - | - | - | - | - | - | |
| NFD4250RK | 4 | 6,35 | 0,03 | 3,81 | 0,57 | 12,70 | - | ● | - | - | - | - | - | - | - | - | - | |
| left hand | | | | | | | | | | | | | | | | | | |
| NFD3M300LK | 3 | 3,00 | 0,03 | 1,02 | 0,19 | 6,35 | - | - | - | - | - | - | ● | - | - | - | - | |
| NFD3125LK | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | - | ● | - | - | - | - | ● | - | - | - | - | |
| NFD4189LK | 4 | 4,80 | 0,03 | 2,92 | 0,57 | 9,53 | - | ● | - | - | - | - | ● | - | - | - | - | |
| NFD4250LK | 4 | 6,35 | 0,03 | 3,81 | 0,57 | 12,70 | - | ● | - | - | - | - | - | - | - | - | - | |

NOTE: Inserts have one cutting edge.

Right-hand insert shown; left-hand insert is mirror image.

- Face grooving deep grooving inserts.

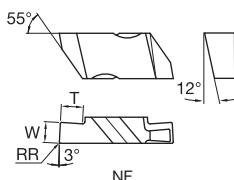
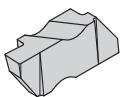


■ Face Grooving • Internal Deep Grooving • Chip Control

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NFD3125RKI | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | - | ● | - | - | - | - | ● | - | - | - | - | |
| NFD3189RKI | 3 | 4,80 | 0,03 | 2,92 | 0,57 | 6,35 | - | ● | - | - | - | - | - | - | - | - | - | |
| left hand | | | | | | | | | | | | | | | | | | |
| NFD3125LKI | 3 | 3,18 | 0,03 | 1,02 | 0,19 | 6,35 | - | ● | - | - | - | - | - | - | - | - | - | |
| NFD3189LKI | 3 | 4,80 | 0,03 | 2,92 | 0,57 | 6,35 | - | ● | - | - | - | - | - | - | - | - | - | |

NOTE: Inserts have one cutting edge.

NFD-KI inserts are compatible with NS-style boring bars only.
Right-hand insert shown; left-hand insert is mirror image.

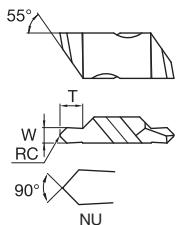
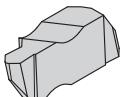

 ● first choice
 ○ alternate choice

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

■ Face Grooving • Flat Top

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|------------------|-------------|------|---------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NF3125R | 3 | 3,18 | 0,03 | — | 0,19 | 3,81 | — | — | — | — | — | ● | — | — | — | — | — | — |
| NF3188R | 3 | 4,78 | 0,03 | — | 0,57 | 3,81 | — | ● | — | — | — | — | — | — | — | — | — | — |
| left hand | | | | | | | | | | | | | | | | | | |
| NF3125L | 3 | 3,18 | 0,03 | — | 0,19 | 3,81 | — | — | — | — | — | ● | — | — | — | — | — | — |
| NF3188L | 3 | 4,78 | 0,03 | — | 0,57 | 3,81 | — | ● | — | — | — | — | — | — | — | — | — | — |

NOTE: Right-hand insert shown; left-hand insert is mirror image.



■ Groove and Turn • Flat Top • 90°

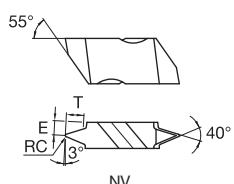
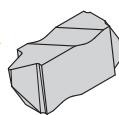
| catalogue number | insert size | W | Ap max | RC | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 | |
|------------------|-------------|------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|---|
| right hand | | | | | | | | | | | | | | | | | | |
| NU3094R | 3 | 2,39 | — | 0,51 | 3,18 | — | — | — | — | — | — | ● | — | — | — | — | — | — |
| NU3125R | 3 | 3,18 | — | 1,19 | 4,78 | — | ● | — | — | — | — | — | — | — | — | — | — | — |
| left hand | | | | | | | | | | | | | | | | | | |
| NU3094L | 3 | 2,39 | — | 0,51 | 3,18 | — | ● | — | — | — | — | ● | — | — | — | — | — | — |
| NU3125L | 3 | 3,18 | — | 1,19 | 4,78 | — | — | — | — | — | — | ● | — | — | — | — | — | — |
| NU3156L | 3 | 3,96 | — | 1,19 | 4,78 | — | — | — | — | — | — | ● | — | — | — | — | — | — |

NOTE: Tolerance on W ± 0,13mm (± .005").

Right-hand insert shown; left-hand insert is mirror image.

NU inserts compatible with NR-style inserts.

- Poly-Vee grooving inserts.

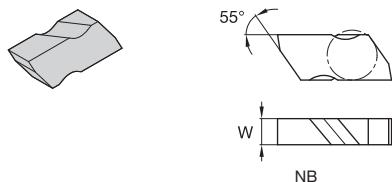


- first choice
- alternate choice

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ○ | ○ | ○ | ● | |
| M | ■ | ■ | ● | ● | | ○ | ● | ○ | | |
| K | ■ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | |
| N | ■ | ● | ○ | | ○ | ● | ● | ○ | | ● |
| S | ■ | ● | ● | | ● | ○ | ○ | ○ | | ○ |
| H | ■ | ○ | | | | ○ | | | ● | ● |

■ Groove and Turn • Flat Top • Poly-Vee

NOTE: Right-hand insert shown; left-hand insert is mirror image.



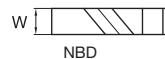
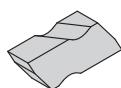
■ Groove and Turn • Blank

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|-------------------|-------------|------|---------|--------|----|---|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NB2R | 2 | 3,84 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| NB3R | 3 | 4,95 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| NB4R | 4 | 6,48 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| left hand | | | | | | | | | | | | | | | | | | |
| NB2L | 2 | 3,84 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| NB3L | 3 | 4,95 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| NB4L | 4 | 6,48 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |

NOTE: NB and NBD blanks are designed to allow modification of the W-dimension and end form. W-dimension is provided to indicate maximum possible width.

• NB and NBB blanks are designed
Available only in uncoated grades.

Right-hand insert shown; left-hand insert is mirror image.



● first choice
 ○ alternate choice

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

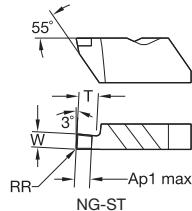
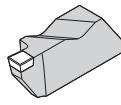
■ Groove and Turn • Deep Grooving • Blank

| catalogue number | insert size | W | W tol ± | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 |
|------------------|-------------|------|---------|--------|----|---|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | | | | | | |
| NBD2R | 2 | 3,81 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| NBD3R | 3 | 4,95 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| left hand | | | | | | | | | | | | | | | | | | |
| NBD3L | 3 | 4,95 | — | — | — | — | — | — | — | — | — | ● | — | — | — | — | — | |

NOTE: NB and NBD blanks are designed to allow modification of the W-dimension and end form. W-dimension is provided to indicate maximum possible width.

Available only in uncoated grades.

Right-hand insert shown; left-hand insert is mirror image.



NG-ST

■ Groove and Turn • Flat Top • PcbN

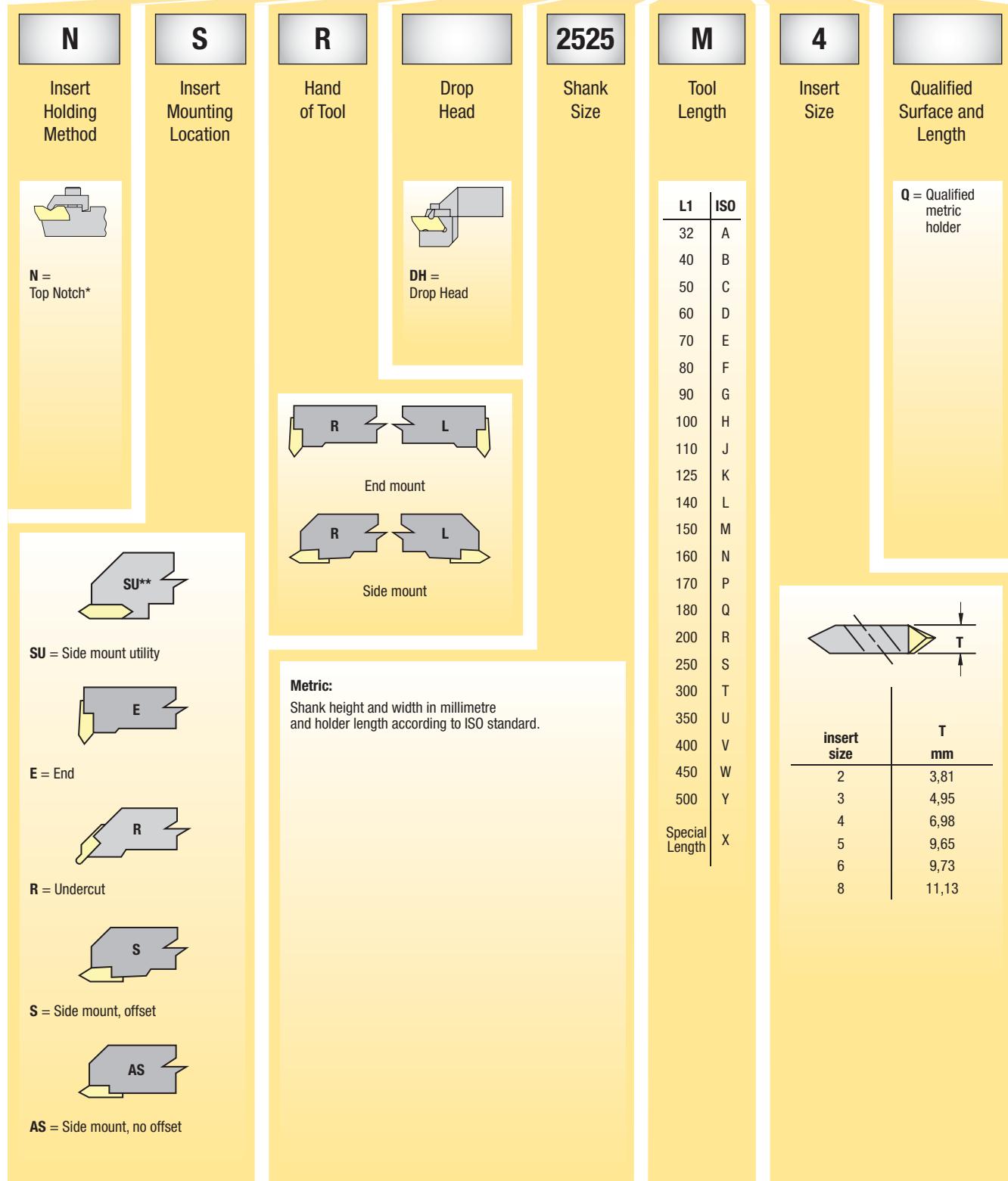
| catalogue number | insert size | W | Ap max | RR | T | KCU10 | KCU25 | KCP10B | KCP25B | KCK20B | K313 | KC5010 | KC5025 | KT315 | KB1630 | KB5625 | KD1425 | |
|-------------------------|-------------|------|--------|------|------|-------|-------|--------|--------|--------|------|--------|--------|-------|--------|--------|--------|--|
| right hand | | | | | | | | | | | | | | | | | | |
| NG3062REST | 3 | 1,58 | — | 0,19 | 2,39 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG3M200RS02020ST | 3 | 2,00 | 2,00 | 0,20 | 2,39 | — | — | — | — | — | — | — | ● | ● | — | — | — | |
| NG3094REST | 3 | 2,39 | — | 0,19 | 3,81 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG3M300RS02020ST | 3 | 3,00 | 3,00 | 0,20 | 3,81 | — | — | — | — | — | — | — | ● | ● | — | — | ● | |
| NG3125REST | 3 | 3,18 | — | 0,19 | 3,81 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG3125RS0820ST | 3 | 3,18 | 3,00 | 0,25 | 3,81 | — | — | — | — | — | — | — | ● | ● | — | — | ● | |
| NG3M400RS02020ST | 3 | 4,00 | 3,00 | 0,20 | 3,81 | — | — | — | — | — | — | — | ● | ● | — | — | ● | |
| NG3189REST | 3 | 4,80 | — | 0,57 | 3,81 | — | — | — | — | — | — | — | — | — | — | — | ● | |
| NG4189REST | 4 | 4,80 | — | 0,57 | 6,35 | — | — | — | — | — | — | — | — | ● | — | — | — | |
| left hand | | | | | | | | | | | | | | | | | | |
| NG3062LEST | 3 | 1,58 | — | 0,19 | 2,39 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG3M200LS02020ST | 3 | 2,00 | 2,00 | 0,20 | 2,39 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG3094LEST | 3 | 2,39 | — | 0,19 | 3,81 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG3125LEST | 3 | 3,18 | — | 0,19 | 3,81 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG3125LS0820ST | 3 | 3,18 | 3,00 | 0,25 | 3,81 | — | — | — | — | — | — | — | ● | — | ● | — | ● | |
| NG4189LEST | 4 | 4,80 | — | 0,57 | 6,35 | — | — | — | — | — | — | — | ● | — | — | — | ● | |

NOTE: All KB grades are single-ended tipped inserts.

Right-hand insert shown; left-hand insert is mirror image.

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.

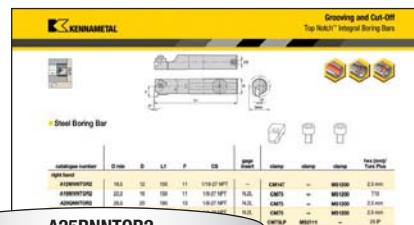


* Kennametal proprietary standard only.

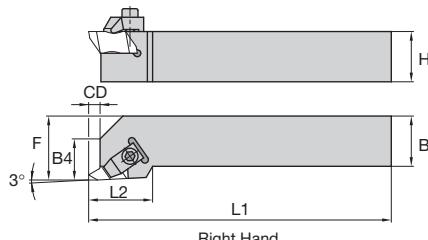
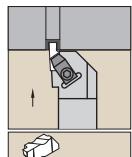
** Side mount utility holder can only use NTU inserts.

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.



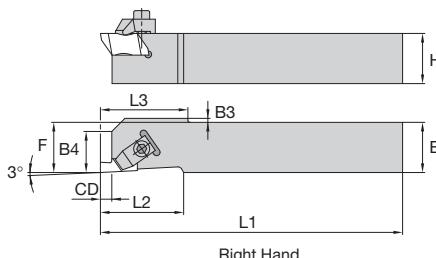
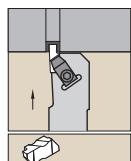
| A | 25 | R | N | N | T | 0 | R | 2 |
|---------------------------------|---|---|-----------------------|--------------|-----------------|------------|-------------|-------------|
| Bar Type | Bar Diameter | Bar Length | Insert Holding Method | Insert Shape | Insert Location | Rake Angle | Hand of Bar | Insert Size |
| | | | | | | | | |
| A = Steel with coolant | 25 = Bar diameter in millimetres | R = Metric bars: K = 125mm M = 150mm Q = 180mm R = 200mm S = 250mm T = 300mm U = 350mm | N* = Top Notch | | | | | |
| | | | | | | | | |
| E = Carbide with coolant | | | | | | | | |
| | | | | | | | | |
| H = Interchangeable head | | | | | | | | |
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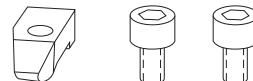
■ Integral Straight

| order number | catalogue number | | | | | | | | gage insert | clamp | clamp screw | clamp screw | hex (mm)/Torx Plus |
|-------------------|------------------|----|----|----|-----|----|----|-----|-------------|--------|-------------|-------------|--------------------|
| | | H | B | F | L1 | LH | B4 | CD | | | | | |
| right hand | | | | | | | | | | | | | |
| 1098790 | NSR1010E2 | 10 | 10 | 14 | 70 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098791 | NSR1212F2 | 12 | 12 | 16 | 80 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098792 | NSR1616H2 | 16 | 16 | 20 | 100 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098793 | NSR2020K2 | 20 | 20 | 25 | 125 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098794 | NSR2525M2 | 25 | 25 | 32 | 150 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098795 | NSR2020K3 | 20 | 20 | 25 | 125 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098796 | NSR2525M3 | 25 | 25 | 32 | 150 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098797 | NSR3225P3 | 32 | 25 | 32 | 170 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098798 | NSR3232P3 | 32 | 32 | 40 | 170 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098799 | NSR2525M4 | 25 | 25 | 32 | 150 | 35 | 14 | 7,5 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098800 | NSR3225P4 | 32 | 25 | 32 | 170 | 35 | 14 | 7,5 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098801 | NSR3232P4 | 32 | 32 | 40 | 170 | 35 | 14 | 7,5 | N.4R | CM72LP | — | MS2111 | 25 IP |
| left hand | | | | | | | | | | | | | |
| 1098861 | NSL1010E2 | 10 | 10 | 14 | 70 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098862 | NSL1212F2 | 12 | 12 | 16 | 80 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098863 | NSL1616H2 | 16 | 16 | 20 | 100 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098864 | NSL2020K2 | 20 | 20 | 25 | 125 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098865 | NSL2525M2 | 25 | 25 | 32 | 150 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098866 | NSL2020K3 | 20 | 20 | 25 | 125 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098867 | NSL2525M3 | 25 | 25 | 32 | 150 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098868 | NSL3225P3 | 32 | 25 | 32 | 170 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098869 | NSL3232P3 | 32 | 32 | 40 | 170 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098870 | NSL2525M4 | 25 | 25 | 32 | 150 | 35 | 14 | 7,5 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098871 | NSL3225P4 | 32 | 25 | 32 | 170 | 35 | 14 | 7,5 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098872 | NSL3232P4 | 32 | 32 | 40 | 170 | 35 | 14 | 7,5 | N.4L | CM73LP | — | MS2111 | 25 IP |

NOTE: F dimension measured over sharp point of N-style threading insert.

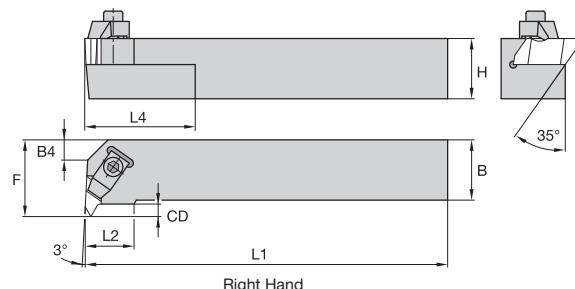
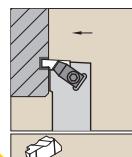


■ Integral Straight • No Offset



| order number | catalogue number | H | B | F | L1 | LH | B4 | CD | B3 | L3 | gage insert | clamp | clamp screw | clamp screw | hex (mm)/Torx Plus |
|-------------------|------------------|----|----|----|-----|----|----|-----|------|----|-------------|---------|-------------|-------------|--------------------|
| right hand | | | | | | | | | | | | | | | |
| 1098788 | NASR1010M2Q | 10 | 10 | 10 | 150 | 19 | 9 | 3,5 | 2,03 | 19 | N.2R | CM182 | MS1200 | — | T10 |
| 1098789 | NASR1212M2Q | 12 | 12 | 12 | 150 | 19 | 9 | 3,5 | — | — | N.2R | CM182 | MS1200 | — | T10 |
| 1098786 | NASR1616K3Q | 16 | 16 | 16 | 125 | 32 | 13 | 5,3 | — | — | N.3R | CM184LP | — | MS2111 | 25 IP |
| left hand | | | | | | | | | | | | | | | |
| 1098859 | NASL1010M2Q | 10 | 10 | 10 | 150 | 19 | 9 | 3,5 | 2,03 | 19 | N.2L | CM183 | MS1200 | — | T10 |
| 1098860 | NASL1212M2Q | 12 | 12 | 12 | 150 | 19 | 9 | 6,9 | — | — | N.2L | CM183 | MS1200 | — | T10 |
| 1098857 | NASL1616K3Q | 16 | 16 | 16 | 125 | 32 | 13 | 5,3 | — | — | N.3L | CM185LP | — | MS2111 | 25 IP |

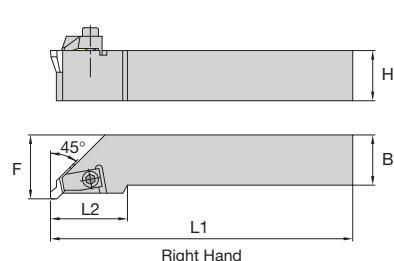
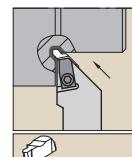
NOTE: F dimension measured over sharp point of N-style threading insert.



■ Integral End Mount

| order number | catalogue number | | | | | | | gage insert | clamp | clamp screw | clamp screw | Torx/Torx Plus |
|-------------------|------------------|----|----|----|-----|----|-----|-------------|--------|-------------|-------------|----------------|
| | | H | B | F | L1 | LH | CD | | | | | |
| right hand | | | | | | | | | | | | |
| 1098803 | NER1616H2 | 16 | 16 | 20 | 100 | 15 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098804 | NER2020K2 | 20 | 20 | 25 | 125 | 15 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098805 | NER2525M2 | 25 | 25 | 32 | 150 | 15 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098806 | NER2525M3 | 25 | 25 | 32 | 150 | 22 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098807 | NER3225P3 | 32 | 25 | 32 | 170 | 22 | 3,8 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098808 | NER2525M4 | 25 | 25 | 35 | 150 | 24 | 6,4 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098809 | NER3225P4 | 32 | 25 | 35 | 170 | 24 | 6,4 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098810 | NER3232P4 | 32 | 32 | 40 | 170 | 24 | 6,4 | N.4L | CM73LP | — | MS2111 | 25 IP |
| left hand | | | | | | | | | | | | |
| 1098874 | NEL1616H2 | 16 | 16 | 20 | 100 | 15 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098875 | NEL2020K2 | 20 | 20 | 25 | 125 | 15 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098876 | NEL2525M2 | 25 | 25 | 32 | 150 | 15 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098877 | NEL2525M3 | 25 | 25 | 32 | 150 | 22 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098878 | NEL3225P3 | 32 | 25 | 32 | 170 | 22 | 3,8 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098879 | NEL2525M4 | 25 | 25 | 35 | 150 | 24 | 6,4 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098880 | NEL3225P4 | 32 | 25 | 35 | 170 | 24 | 6,4 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098881 | NEL3232P4 | 32 | 32 | 40 | 170 | 24 | 6,4 | N.4R | CM72LP | — | MS2111 | 25 IP |

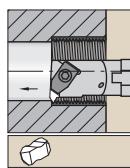
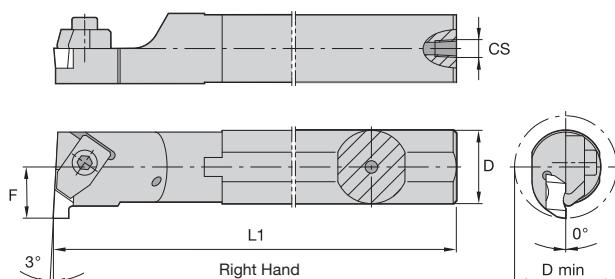
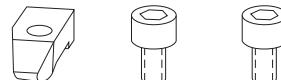
NOTE: F dimension measured over sharp point of N-style threading insert.



■ Integral 45° Undercut • Metric

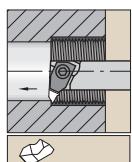
| order number | catalogue number | | | | | | | gage insert | clamp | clamp screw | hex (mm)/Torx Plus |
|-------------------|------------------|----|----|----|-----|----|---------|-------------|--------|-------------|--------------------|
| | | H | B | F | L1 | LH | | | | | |
| right hand | | | | | | | | | | | |
| 1098812 | NRR2020K3 | 20 | 20 | 25 | 125 | 32 | NU3125L | CM73LP | MS2111 | 25 IP | |
| 1098813 | NRR2525M3 | 25 | 25 | 32 | 150 | 32 | NU3125L | CM73LP | MS2111 | 25 IP | |
| 1098814 | NRR3225P3 | 32 | 25 | 32 | 170 | 32 | NU3125L | CM73LP | MS2111 | 25 IP | |
| left hand | | | | | | | | | | | |
| 1098833 | NRL2020K3 | 20 | 20 | 25 | 125 | 32 | NU3125R | CM72LP | MS2111 | 25 IP | |
| 1098844 | NRL2525M3 | 25 | 25 | 32 | 150 | 32 | NU3125R | CM72LP | MS2111 | 25 IP | |
| 1098855 | NRL3225P3 | 32 | 25 | 32 | 170 | 32 | NU3125R | CM72LP | MS2111 | 25 IP | |

NOTE: NR-style toolholders are compatible with "NU" style inserts only.

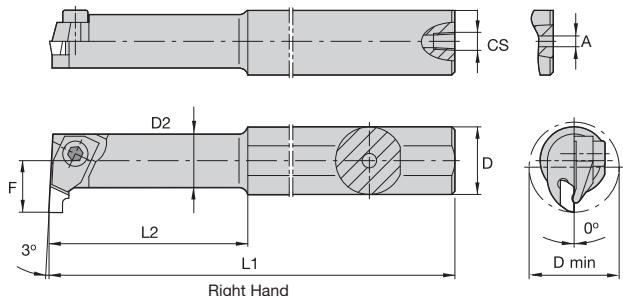

 Steel shank with
through coolant.

Steel Boring Bar • Metric


| order number | catalogue number | D min | D | L1 | F | CS | gage insert | clamp | clamp screw | clamp screw | hex (mm)/Torx Plus |
|-------------------|------------------|-------|----|-----|----|--------------|-------------|--------|-------------|-------------|--------------------|
| right hand | | | | | | | | | | | |
| 1098945 | A12MNNTOR2 | 18,5 | 12 | 150 | 11 | 1/16-27 NPT | — | CM147 | — | MS1200 | 2.5 mm |
| 1098947 | A16MNNTOR2 | 22,0 | 16 | 150 | 11 | 1/8-27 NPT | N.2L | CM75 | — | MS1200 | T10 |
| 1098949 | A20QNNTOR2 | 26,0 | 20 | 180 | 13 | 1/8-27 NPT | N.2L | CM75 | — | MS1200 | 2.5 mm |
| 1098951 | A25RNNTOR2 | 34,0 | 25 | 200 | 17 | 1/4-18 NPT | N.2L | CM75 | — | MS1200 | 2.5 mm |
| 1098953 | A25RNNTOR3 | 34,0 | 25 | 200 | 17 | 1/8 - 27 NPT | N.3L | CM73LP | MS2111 | — | 25 IP |
| 1098955 | A32SNNTOR3 | 44,0 | 32 | 250 | 22 | 1/4-18 NPT | N.3L | CM73LP | MS2111 | — | 25 IP |
| 1098957 | A40TNNTOR3 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.3L | CM73LP | MS2111 | — | 25 IP |
| 1099001 | A40TNNTOR4 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.4L | CM73LP | MS2111 | — | 25 IP |
| 1099003 | A50UNNTOR4 | 70,0 | 50 | 350 | 35 | 1/4-18 NPT | N.4L | CM73LP | MS2111 | — | 25 IP |
| left hand | | | | | | | | | | | |
| 1098946 | A12MNNTOL2 | 18,5 | 12 | 150 | 11 | 1/16-27 NPT | NG2R | CM146 | — | MS1200 | 2.5 mm |
| 1098948 | A16MNNTOL2 | 22,0 | 16 | 150 | 11 | 1/8-27 NPT | N.2R | CM74 | — | MS1200 | T10 |
| 1098950 | A20QNNTOL2 | 26,0 | 20 | 180 | 13 | 1/8-27 NPT | NG2R | CM74 | — | MS1200 | 2.5 mm |
| 1098952 | A25RNNTOL2 | 34,0 | 25 | 200 | 17 | 1/4-18 NPT | N.2R | CM74 | — | MS1200 | 2.5 mm |
| 1098954 | A25RNNTOL3 | 34,0 | 25 | 200 | 17 | 1/4-18 NPT | N.3R | CM72LP | MS2111 | — | 25 IP |
| 1098956 | A32SNNTOL3 | 44,0 | 32 | 250 | 22 | 1/4-18 NPT | N.3R | CM72LP | MS2111 | — | 25 IP |
| 1098958 | A40TNNTOL3 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.3R | CM72LP | MS2111 | — | 25 IP |
| 1099002 | A40TNNTOL4 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.4R | CM72LP | MS2111 | — | 25 IP |

NOTE: Minimum bore capability varies with depth of groove. See page C172 for details.



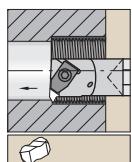
Necked steel shank with through coolant.



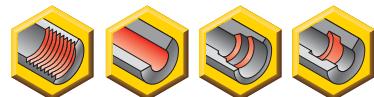
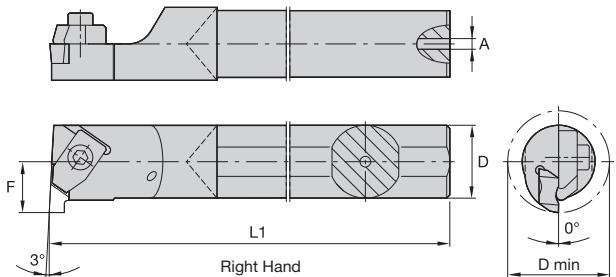
Steel Boring Bar • Small ID • Metric

| order number | catalogue number | D min | D | D2 | L1 | L2 | F | A | CS | gage insert | clamp | clamp screw | hex (mm) |
|-------------------|------------------|-------|----|------|-----|-------|---|-----|-------------|-------------|-------|-------------|----------|
| right hand | | | | | | | | | | | | | |
| 1098944 | A12MNNTOR1 | 11,5 | 12 | 10,0 | 150 | 31,30 | 7 | 4,0 | 1/16-27 NPT | N.1L | CM109 | MS1034 | 1.5 mm |
| 1098943 | A10KNNTOR1 | 11,5 | 10 | 10,0 | 125 | — | 7 | 3,2 | — | NG1L | CM109 | MS1034 | 1.5 mm |

NOTE: Minimum bore capability varies with depth of groove. See page C172 for details.



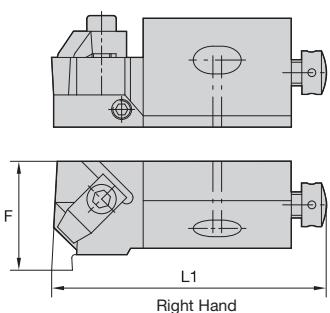
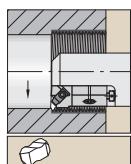
Carbide shank with through coolant.



Carbide Boring Bar

| order number | catalogue number | D min | D | L1 | F | A | gage insert | clamp | clamp screw | Torx/Torx Plus |
|-------------------|------------------|-------|----|-----|----|-------|-------------|-------|-------------|----------------|
| right hand | | | | | | | | | | |
| 1152834 | E16RNNTOR2 | 22,0 | 16 | 200 | 11 | 5,537 | N.2L | CM75 | MS1200 | T10 |
| 1152836 | E20SNNTOR2 | 26,0 | 20 | 250 | 13 | 7,137 | N.2L | CM75 | MS1200 | T10 |
| left hand | | | | | | | | | | |
| 1152835 | E16RNNTOL2 | 22,0 | 16 | 200 | 11 | 5,537 | N.2R | CM74 | MS1200 | T10 |

NOTE: Minimum bore capability varies with depth of groove. See page C172 for details.



Steel Boring Cartridge



| order number | catalogue number | D min | F | L1 | gage insert | clamp | clamp screw | hex (mm) | radial adjusting screw | hex (mm) | axial screw | hex (mm) | washer |
|-------------------|------------------|-------|----|-------|-------------|--------|-------------|----------|------------------------|----------|-------------|----------|--------------|
| right hand | | | | | | | | | | | | | |
| 1098380 | NER12CA2 | 50 | 20 | 55,7 | N.2L | CM75 | MS1025 | 2.5 mm | KUAM23 | 2.5 mm | KUAM31 | 2.5 mm | CSWM 060 050 |
| left hand | | | | | | | | | | | | | |
| 1098624 | NEL12CA2 | 50 | 20 | 55,0 | N.2R | CM74 | MS1025 | 2.5 mm | KUAM23 | 2.5 mm | KUAM31 | 2.5 mm | CSWM 060 050 |
| 1098626 | NEL25CA3 | 100 | 32 | 100,0 | N.3R | CM72LP | MS412 | 4 mm | KUAM26 | 4 mm | KUAM33 | 4 mm | CSWM 100 080 |

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page C172 for details.

F dimension measured over sharp point of Top Notch-style threading insert.

■ Machining Guidelines for Chip Control • Grooving

When the proper cutter diameter is not available, proper cutter positioning will provide positive results.

- Centre height of insert should be positioned at the centre of the workpiece or up to 0,13mm (.005") above.
- Dwell time in the bottom of the groove (more than three revolutions) is not recommended.
- Chip control is feed rate related and should be adjusted to fit the particular situation. Recommended feed range is 0,08–0,3 mm/rev (.003–.012 IPR).

■ Groove Limits (Maximum Internal Groove Depth vs. Minimum Bore Diameter)

| insert catalogue number | maximum internal groove depth mm | minimum bore diameter mm |
|-------------------------|----------------------------------|--------------------------|
| NG-1094L | 1,91 | 20,32 |
| — | 1,02 | 11,18 |
| NG-2031R/L | 1,27 | 18,54 |
| NG-2041R/L | — | — |
| NG-2047R/L | — | — |
| NG-2058R/L | — | — |
| — | 2,79 | 63,50 |
| NG-2062R/L | 2,59 | 44,45 |
| NG-2094R/L | 2,49 | 38,10 |
| NG-2125R/L | 2,03 | 25,40 |
| — | 1,40 | 18,54 |
| NG-3047R/L | — | — |
| NG-3062R/L | 2,39 | 44,45 |
| NG-3072R/L | 2,29 | 41,28 |
| NG-3078R/L | 1,91 | 34,93 |
| NG-3088R/L | — | — |
| NG-3094R/L | — | — |
| NG-3097R/L | 3,81 | 60,33 |
| NG-3105R/L | — | — |
| NG-3110R/L | 3,68 | 53,98 |
| NG-3122R/L | — | — |
| NG-3125R/L | 3,51 | 47,63 |
| NG-3142R/L | — | — |
| NG-3156R/L | 3,18 | 41,28 |
| NG-3178R/L | — | — |
| NG-3185R/L | 2,79 | 34,93 |
| NG-3189R/L | — | — |
| NG-4125R/L | 3,81 | 69,85 |
| — | 6,35 | 146,05 |
| NG-4189R/L | 6,22 | 127,00 |
| NG-4213R/L | 6,10 | 114,30 |
| NG-4219R/L | 5,54 | 82,55 |
| NG-4250R/L | 5,08 | 63,50 |

NOTE: The same maximum groove depth and minimum bore diameter values also apply to metric, NG-K (chip control), and NR (full radius) inserts of similar size.

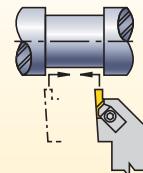
■ Machining Guidelines for Chip Control • Turning/Profiling

Maximum depth of cut for side cutting (turning/profiling) depends on the material being cut and the width of the tool.

- 0,79–1,6mm (.031–.062") wide insert can cut up to 0,6mm (.025" deep).
- 1,7–3,3mm (.067–.128") wide insert can cut up to 1mm (.040" deep).
- 3,5–4,8mm (.138–.189") wide insert can cut up to 2mm (.080" deep).
- 5–6,35mm (.197–.250") wide insert can cut up to 3mm (.120" deep).

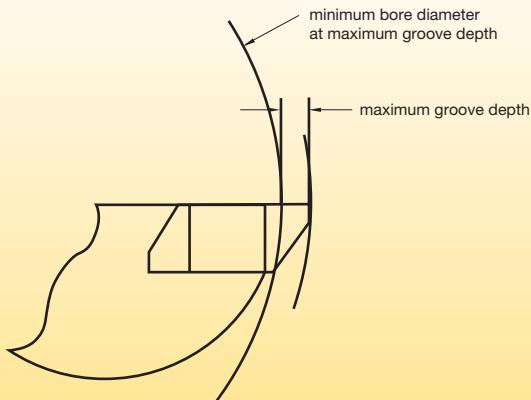
■ Finish Turning the Groove

1. Plunge both sides of groove width.
2. Plunge centre area to remove web of material remaining.
3. To avoid insert chipping and to achieve groove wall perpendicularity, follow the tool path outlined.
4. Use the lightest depth of cut that still allows good chipbreaking, tool life, and surface finish.



| insert catalogue number | maximum internal groove depth mm | minimum bore diameter mm |
|-------------------------|----------------------------------|--------------------------|
| — | 9,53 | 731,82 |
| NG-5250R/L | 9,17 | 401,62 |
| NG-5281R/L | 8,74 | 274,62 |
| NG-5312R/L | 8,31 | 185,72 |
| NG-5344R/L | 7,47 | 122,22 |
| NG-5375R/L | 6,53 | 90,47 |
| — | 5,46 | 71,42 |
| NG-6250R/L | 6,35 | 146,05 |
| NG-6281R/L | 6,22 | 127,00 |
| NG-6312R/L | 6,10 | 114,30 |
| NG-6344R/L | 5,54 | 82,55 |
| NG-6375R/L | 5,08 | 63,50 |

■ Internal Groove Depth versus Bar Interference



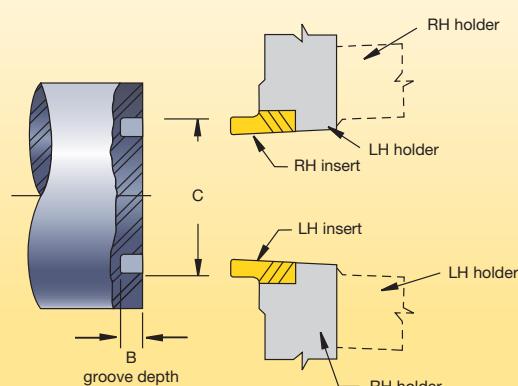
NOTE: Internal grooving depth limits are a function of bar clearance versus bore diameters.

■ Machining Guidelines for Face Grooving Operations • External

Standard NF/NDF Inserts

| insert family | maximum groove depth "B" mm | minimum groove diameter "C" mm |
|---------------|--------------------------------|-----------------------------------|
| NF-3 | 1,52 | 23,90 |
| NF-3 | 2,39 | 30,50 |
| NF-3 | 3,18 | 36,10 |
| NF-3 | 3,81 | 41,30 |
| NFD-3 | 6,35 | 47,60 |
| NF-4/6 | 1,52 | 23,90 |
| NF-4/6 | 2,39 | 30,50 |
| NF-4/6 | 3,18 | 36,10 |
| NF-4/6 | 3,81 | 41,30 |
| NF-4/6 | 4,78 | 47,60 |
| NF-4/6 | 6,35 | 57,20 |
| NFD-4 | 9,53 | 57,20 |
| NFD-4 | 12,70 | 57,20 |

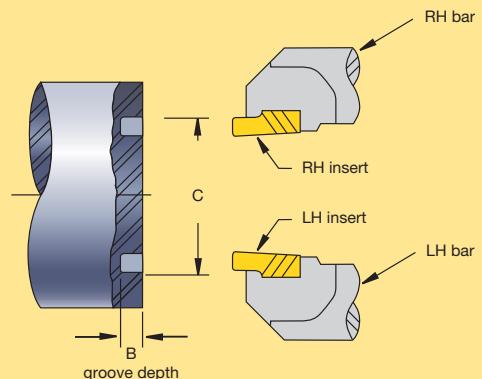
Toolholders



Standard NG/NGD Inserts

| insert family | maximum groove depth "B" mm | minimum groove diameter "C" mm |
|---------------|--------------------------------|-----------------------------------|
| NG-2 | 1,27 | 54,0 |
| NG-2 | 2,79 | 88,9 |
| NG-3 | 2,39 | 101,6 |
| NG-3 | 3,18 | 127,0 |
| NG-3 | 3,81 | 139,7 |
| NGD-3 | 6,35 | 174,6 |
| NG-4 | 3,81 | 152,4 |
| NG-4 | 6,35 | 209,6 |
| NGD-4 | 9,53 | 222,3 |
| NGD-4 | 12,70 | 222,3 |
| NG-5 | 9,53 | 333,0 |

Boring Bars

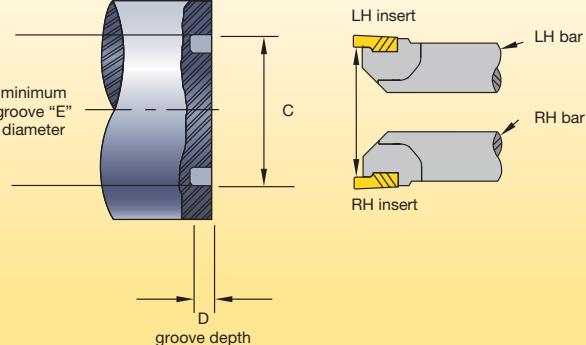


■ Machining Guidelines for Face Grooving Operations • Internal

| insert family | maximum groove depth "D" mm | minimum groove diameter "E" mm |
|---------------|--------------------------------|-----------------------------------|
| NFD-3-KI | 6,35 | 57,2 |

NOTE: For internal applications, use only NFD-KI inserts.

Boring Bars



■ Tool Application Guidelines

- Always use good general machining practices.
- Make the machine and workpiece setup as rigid as possible.
- Integral shank toolholders offer the best rigidity. They should be your first toolholder choice, when possible.
- Use the toolholder with the shortest possible depth of cut for the application ("CD" dimension).
- When changing inserts, make sure the new insert locates securely against the toolholder's positive stop.

- Never tighten the clamping screw without an insert in the pocket.
- Toolholder projection out of the tool block should be as short as possible.
- Inserts should cut as close to centre as possible.
- Dwell time in bottom of groove should be less than three revolutions.
- Recommended cutting speed and feeds are a starting point. Adjust, as necessary, for optimum tool life and chip control.

Definitions and Guidelines

1. Width of cut (W) = width of the insert.
2. Lead angle = 0° (neutral); 6° (RH or LH).

Reduce bur of cut-off faces:

- Use lead angle-type inserts (Figures 1 and 2). Lead angle on a cut-off insert reduces the bur that remains on the part but decreases tool life and increases tool side deflection and possibly cycle time.
- If 0° lead angle is mandatory, use the narrowest possible cut-off insert and blade. This will minimise the centre stub or cut-off bur length.

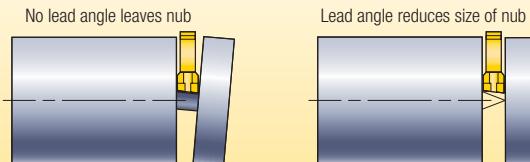
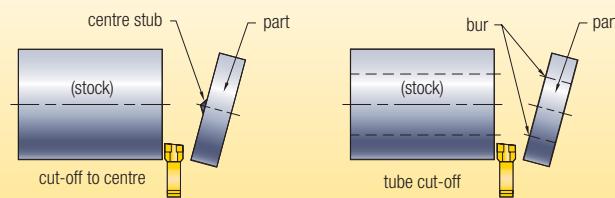
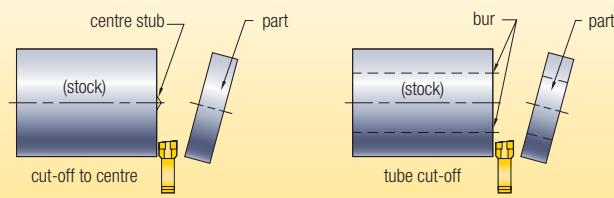


Figure 1
Insert selection **left-hand lead**



Left-hand lead insert leaves centre stub or bur on part and produces clean stock surface.

Figure 2
Insert selection **right-hand lead**



Reduces nub but decreases tool life and productivity

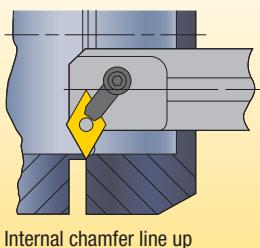
Right-hand lead insert leaves centre stub or bur on stock and produces clean part surface.

- Check total height and maintain on centre with part diameter.
- The cutting edge height should be within $\pm 0,1\text{mm}$ (.004") to the centre; recommended cutting position is $0,05\text{mm}$ (.002") above centre.

■ Tubing

- On tubing-type parts that require a chamfer on the I.D., align I.D. chamfer tool with cut-off surface. This will enable the chamfering operation to actually separate the part from the bar (see Figure 3). Note the part may drop onto the chamfering bar, which, in this case, will act like a catcher for the part.

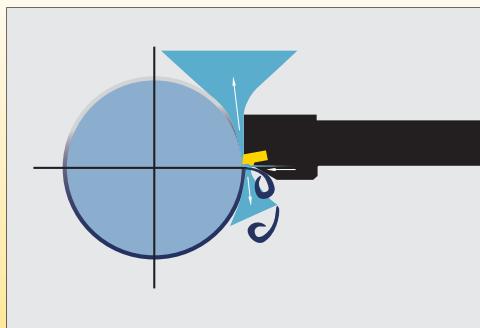
Figure 3



Improve surface finish of cut-off faces:

- Use insert with 0° lead angle.
- Increase coolant flow or improve application technique, as shown in Figure 4.
- Decrease the feed rate near the break-through point of the cut.
- Check that the grooving tool is set at the correct angle.
- Use blades with the greatest possible face height and smallest possible cutting width.
- Increase the speed.

Figure 4

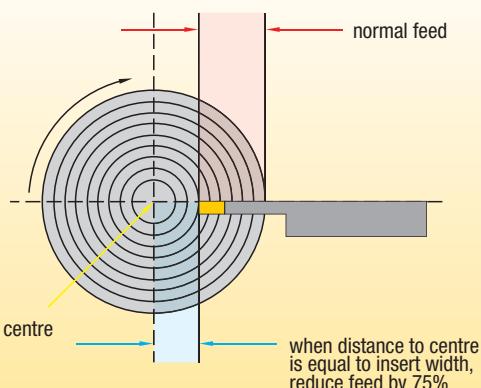


Preferred method for applying coolant

- Mount cut-off tool upside down. This enables gravity to remove chips and avoid cutting the chips twice. Another benefit of mounting the tool upside down is preventing chips from wedging between the tool insert and the groove side walls, which galls the side wall surfaces.

■ Programming Guidelines

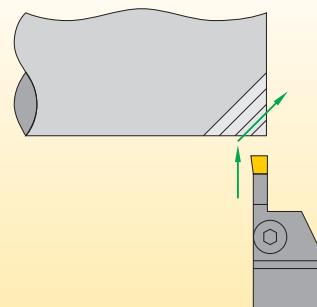
Feed reduction in cut-off



Feed reduction when approaching centre = longer tool life

Chamfering

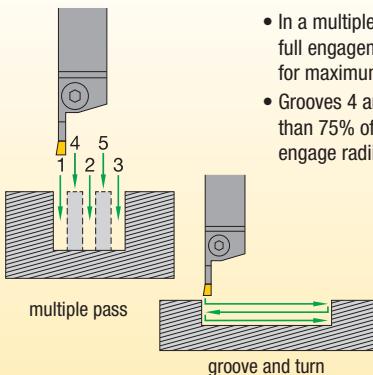
Chamfering with a grooving tool reduced machine index time and tool stations.



(continued)

■ Programming Guidelines (*continued*)

Pocketing



- In a multiple-pass operation, generate full engagement grooves in 1, 2, and 3 for maximum stability.
- Grooves 4 and 5 should be no more than 75% of insert width, so as not to engage radii.

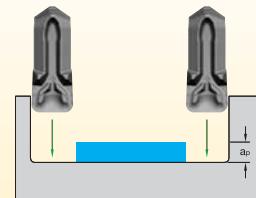
If pocket is deeper than wide = multiple pass

If pocket is wider than deep = groove and turn

Square Pocket

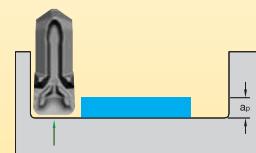
Steps 1 and 2

Plunge the radius and wall on each side to open up two grooves.



Step 3

Retract tool 0,1mm; this is necessary to create a flat bottom.



Step 4

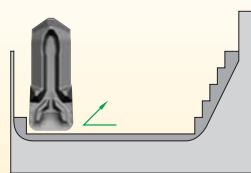
Side turn. This tool is designed to deflect, creating the necessary front clearance.



Profile Pocket

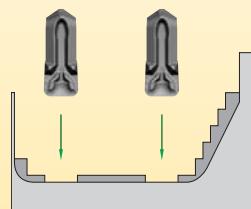
Step 1

Rough to have about the same amount of stock left on all surfaces for finish.



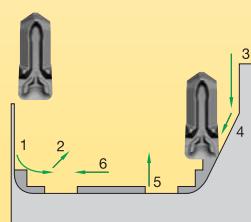
Step 2

Open up two grooves away from wall and radius.



Step 3

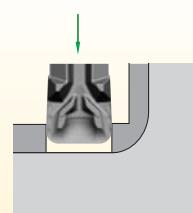
(1 and 2) Finish wall and radius.
(3 and 4) Finish wall, angle, and radius on opposite side of pocket.
(5) Retract tool 0,1mm (.004").
(6) Side turn to finish the floor of the pocket.



Generating a Radius

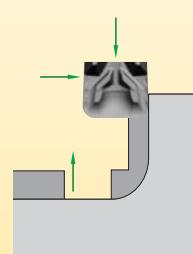
Step 1

Open up a groove away from the radius.



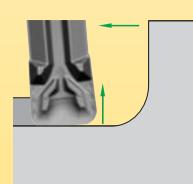
Step 2

Retract and move the material on the wall and generate the radius. By generating the groove in the prior step, only one surface is engaged at a time, reducing the risk of vibrations.



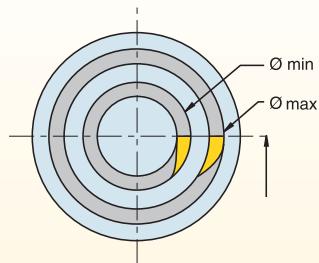
Step 3

Retract the tool 0,1mm (.004") and then side turn.



■ Grooving Tool Failure and Solution Guide

Face Grooving Application Guidelines



Tool Selection

- When selecting the toolholder, always start at the largest diameter possible and work toward the smaller diameter. This will allow the strongest tool to be used.

Cutting the First Groove

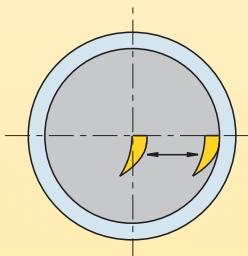
- The outside diameter of the first groove must be between the diameter minimum and diameter maximum capability of the face grooving tool (see illustration above). This creates clearance for the toolholder.

Chip Control

- Adjust speed and feed for good chip control and evacuation from the groove. Chip compaction can cause poor surface finish, tool breakage, and reduced tool life.

Tool Setting

- The tool should be set as close to the centre as possible to avoid extreme formation of burs.
- Align the cutting edge square to the workpiece.



Widening a Face Groove

- After the first groove has been cut, the groove width can be widened in either direction using the same tool. The best practice is to work from the O.D. to the I.D.

Practical Solutions to Grooving Problems

| problem | remedy |
|-------------------------|--|
| bur | <ol style="list-style-type: none"> 1. Verify tool centre height. 2. Use sharp tools (index more often). 3. Use positive rake PVD coated insert. 4. Use correct grade for workpiece material. 5. Use correct geometry (e.g., positive rake for workhardening material). 6. Change tool path. |
| poor surface finish | <ol style="list-style-type: none"> 1. Increase speed. 2. Use sharp tools (index more often). 3. Dwell time in bottom 1–3 revolutions (max). 4. Use proper chip control geometry. 5. Increase coolant flow. 6. Verify proper setup (overhang, shank size). 7. Use correct geometry (e.g., positive rake for workhardening material). |
| groove bottom not flat | <ol style="list-style-type: none"> 1. Use sharp tools (index more often). 2. Dwell time in bottom 1–3 revolutions (max). 3. Reduce tool overhang (increase rigidity). 4. Reduce feed rate at groove bottom. 5. Use a wider insert. 6. Verify tool centre height. |
| poor chip control | <ol style="list-style-type: none"> 1. Use sharp tools (index more often). 2. Increase coolant concentration. 3. Adjust feed rate (usually increase first). |
| chatter | <ol style="list-style-type: none"> 1. Reduce tool and workpiece overhang. 2. Adjust speed (usually increase first). 3. Adjust feed (usually increase first). 4. Verify tool centre height. |
| insert chipping | <ol style="list-style-type: none"> 1. Use correct grade for workpiece material. 2. Increase speed. 3. Reduce feed. 4. Use a stronger grade. 5. Increase tool and setup rigidity. |
| built-up edge | <ol style="list-style-type: none"> 1. Use positive rake PVD coated insert. 2. Increase speed. 3. Reduce feed. 4. Increase coolant flow/concentration. 5. Use cermets. |
| side walls not straight | <ol style="list-style-type: none"> 1. Check tool alignment for square. 2. Reduce workpiece and tool overhang. 3. Use sharp inserts (index more often). |

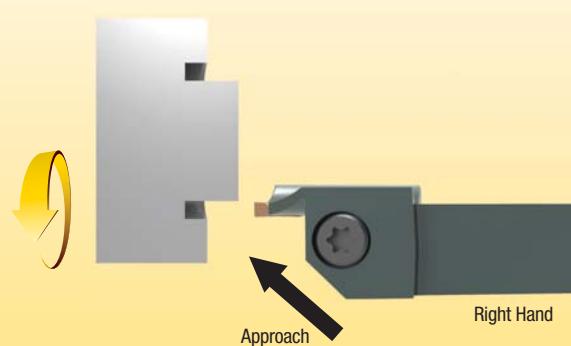
Steps to proper face grooving tool selection

- Step 1: Select your spindle rotation
- Step 2: Select your angle of approach and toolholder orientation

Integral Tooling

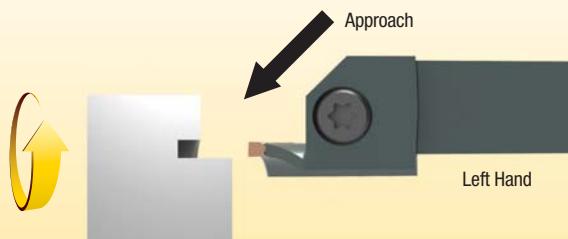
Anti-Clockwise Rotation

Square Shank

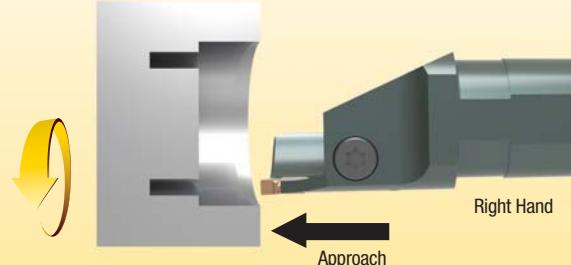


Clockwise Rotation

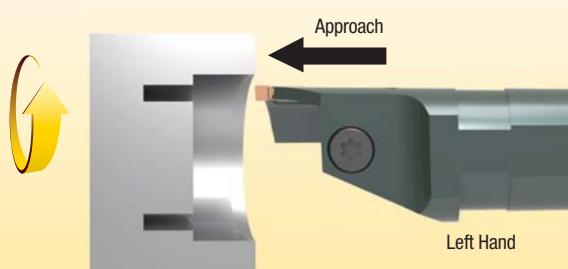
Square Shank



Boring Bar



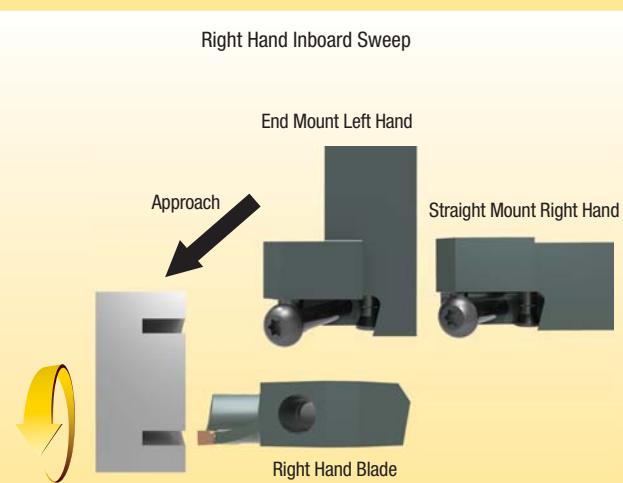
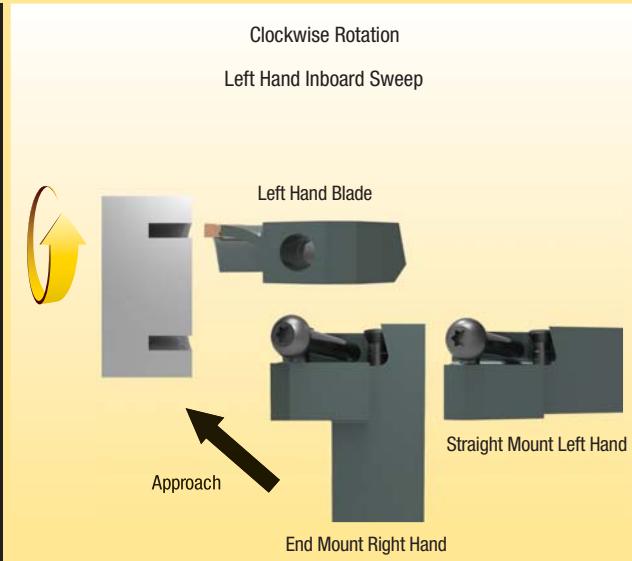
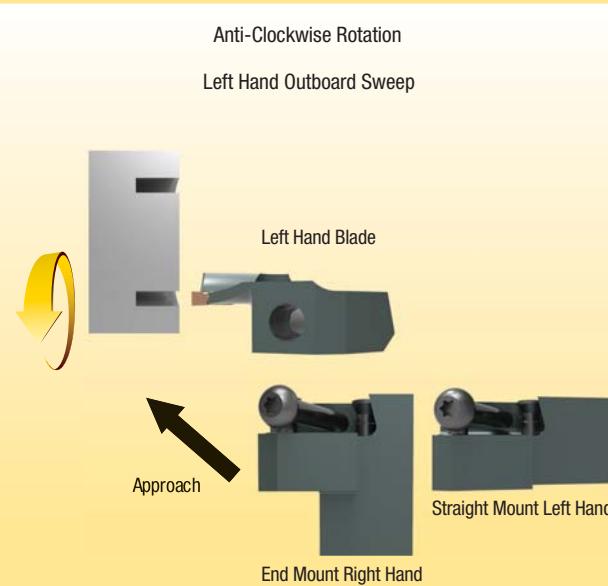
Boring Bar

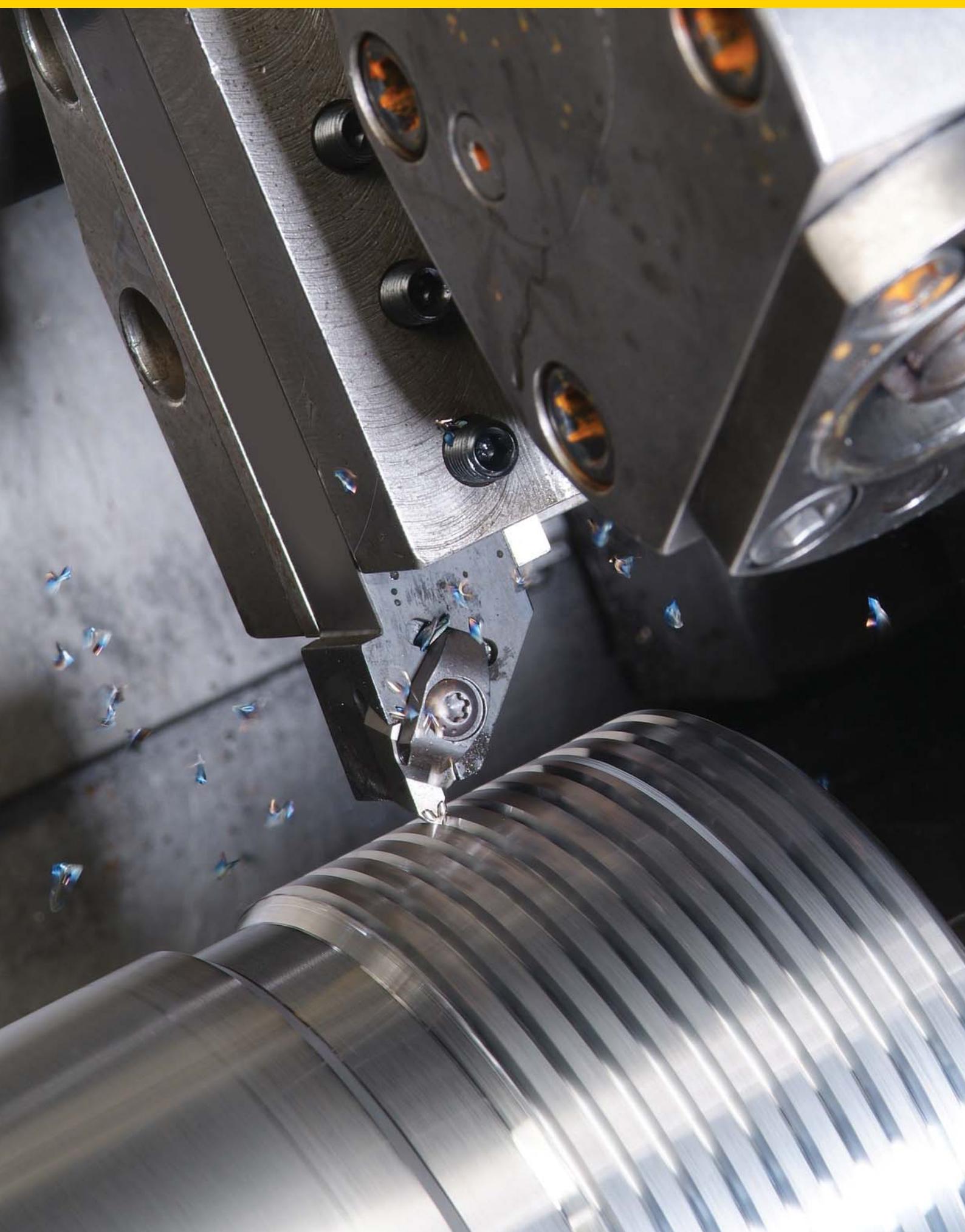


Steps to proper modular face grooving tool selection

- Step 1: Select your spindle rotation
- Step 2: Select your angle of approach and toolholder orientation
- Step 3: Identify combination of blade and shank tool

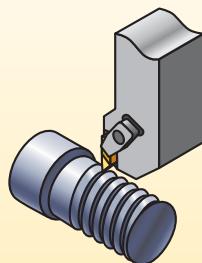
Modular Tooling





Threading

| | |
|---|-----------------|
| Threading Application Guide..... | D2–D3 |
| Top Notch Threading | D4–D43 |
| Laydown Threading..... | D44–D87 |
| Threading Technical Information..... | D88–D110 |

**Top Notch
External
Threading****Square Shank Toolholder Sizes:**

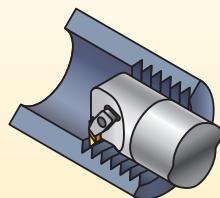
- Metric — 10–32mm

Cresting (Full Profile):

UN TPI of 32–7
ISO 1,5–3,0mm pitch

**60° Partial Profile — Flat Top
(NTF and NTK):**

UN 44–4.5 TPI
ISO 0,6–5,5mm pitch

**Top Notch
Internal
Threading****Boring Bar Diameters:**

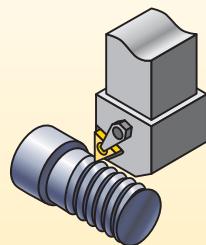
- Metric — 10–50mm
- Minimum bore — 11,5mm
- Steel

Cresting (Full Profile):

UN 16–8 TPI
ISO 1,5–3,0mm pitch

**60° Partial Profile — Flat Top
(NT-1L, NTF, and NTK):**

UN 24–4.5 TPI
ISO 1,0–5,5mm pitch

**LT Laydown
External
Threading**

Square Shank Toolholder Sizes:

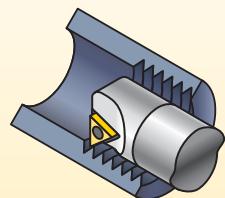
- Metric — 8–40mm available

Cresting (Full Profile):

UN 48–8 TPI
ISO 0,5–5,0mm pitch

60° Partial Profile:

UN 48–4 TPI
ISO 0,5–6,0mm pitch

**LT Laydown
Internal
Threading**

Boring Bar Diameters:

- Metric — 12–50mm
- Minimum bore — 13mm
- Steel and carbide

**Cresting (Full Profile)
and Partial Profile:**

UN 48–8 TPI
ISO 0,5–5,0mm pitch

60° Partial Profile:

UN 48–4 TPI
ISO 0,5–6,0mm pitch

55° Partial Profile:

UN 48–5 TPI
ISO 0,5–5,0mm pitch

➤ Top Notch™ Thread Tooling

The Proven High-Productivity Threading Solution

Top Notch threading with Beyond™ insert technology provides consistent tool performance and superior clamping thread to almost any operation. With the largest selection of grades and geometries in the industry, the Top Notch threading system is a proven solution.

Features and Benefits

Choosing the Top Notch Threading System

- A superior choice for heavy-duty applications like machining of Acme, Buttress, and API threads. Top Notch is also the best system for coarse pitch and multitooth threading applications.
- Largest selection of insert geometries and grades in the industry.
- A very rigid insert clamping design ensures best tool life, surface finish, and workpiece quality.
- Simplicity of the Top Notch design does not require shim selection for thread helix angles. This helps to avoid mistakes on the shop floor.
- Reduce inventory by using the same Top Notch toolholders and boring bars with either threading or grooving inserts.
- Top Notch chipbreaker inserts eliminate long troublesome coils.
- An excellent choice for special thread forms and toolholder designs.

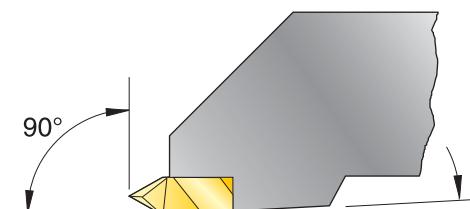
Top Notch inserts are available in KCU10™ and KCU25™ grades to withstand the demands placed on the cutting edge of the threading insert.

The versatility of the Top Notch™ steel enables you to use both threading and grooving inserts in the same toolholder.



Precision-Ground Thread Form

- Minimises built-up edge.
- Precisely cuts most common materials.
- Reduces cutting forces.
- Ensures accurate high-quality threads.



NOTE: Holders are designed to locate inserts inclined to 3° to provide back clearance down open side.

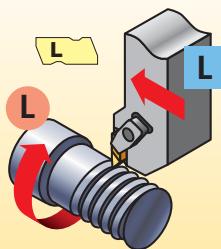
Superior Chip Control

- Eliminates long, troublesome coils.
- Excellent for internal threading operations.
- Available in partial profile inserts for 60° thread forms.

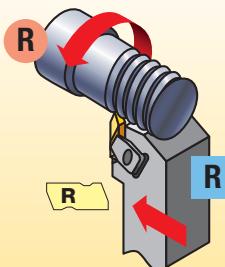
Step 1 • Select Threading Method and Hand of Tooling

Required Information:

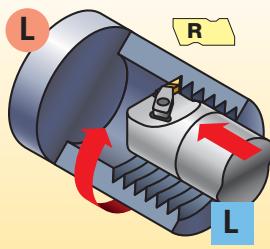
- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.


Feed direction toward the chuck • RECOMMENDED


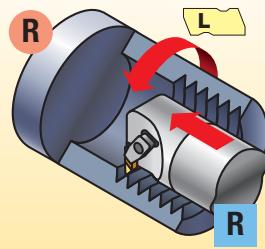
external left-hand thread



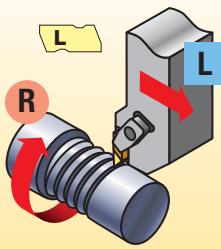
external right-hand thread



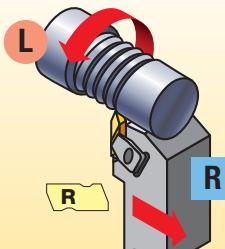
internal left-hand thread



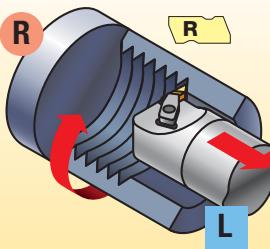
internal right-hand thread

Feed direction away from the chuck


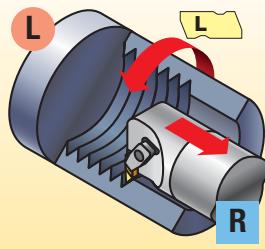
external right-hand thread



external left-hand thread



internal right-hand thread



internal left-hand thread

Step 2 • Select Holder from Catalogue Page

The insert size must match the gage insert size of your toolholder selection:

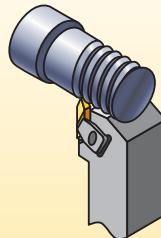
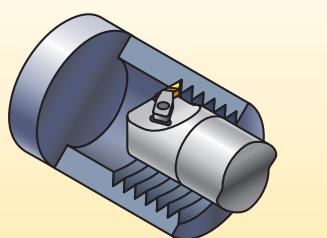
Select the appropriate holder for the insert size and hand:

Required Information:

- External/internal operation.
- Minimum bore diameter (for internal operations).
- Hand of tool.
- Insert size (gage insert).

| catalogue number | gage insert |
|------------------|-------------|
| NSR-163D | N.3R |
| NSR-164D | N.4R |

NOTE: Top Notch toolholders and boring bars are listed with a gage insert to indicate the size and hand required. They are compatible with both grooving and threading inserts of the same size.



NOTE: Optimise your threading operation by using the proper infeed method and the recommended infeed values.

See the technical section on pages D88–D110 of this catalogue.
For internal threading, minimum bore varies depending on thread type.
See page D102 for details.

Step 3 • Choose Insert for Application

- See threading insert overview on page D11.
- Select cresting inserts for fully controlled thread form including diameter control. Cresting inserts eliminate the need for deburring.
- Non-cresting partial profile inserts can cut a variety of thread pitches.
- Note insert size for toolholder selection.

| | insert size | catalogue number | KCU25/ KC5025 | KCU10/ KC5010 |
|---|-------------|------------------|------------------|------------------|
| 2 | NT-2RK | ● | ● | ● |
| 3 | NT-3RK | ● | ● | ● |
| 4 | NT-4RK | ● | ● | ● |

Step 4 • Select Grade and Speed

Recommendations for Grade and Speed Selection — m/min

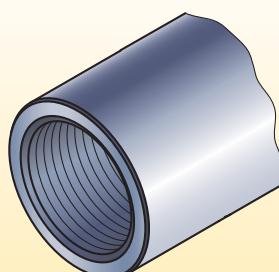
| workpiece material | steel | stainless steel | cast iron | non-ferrous metals | high-temp alloys |
|----------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| insert style | chip control or neutral | chip control or positive | neutral | positive | positive |
| optimum cutting conditions | KCU10/KC5010 70–260 | KCU10/KC5010 90–245 | KCU10/KC5010 60–245 | KC5410 90–550 | KCU10/KC5010 30–150 |
| first choice | KCU25/KC5025 50–230 | KCU25/KC5025 75–230 | KCU25/KC5025 50–180 | KCU25/KC5025 60–455 | KCU25/KC5025 20–120 |

Examples:

Chip Control: NT-K or NT-CK (partial profile only)
Neutral: NT, NT-C, NTF, NTC, NJ, NJF,
 NDC-V, NA, NDC, NTB-A/B
Positive: NTP, NTK, NJP, NJK

Top Notch Threading Example:

| | | | |
|----------------------------|---|------------------------|-----------|
| application: | 8 TPI Acme internal right-hand thread | Recommendation: | |
| material: | alloy steel | insert: | NA3L8 |
| workpiece diameter: | 114.3mm good cutting conditions feed towards the chuck | grade: | KCU10 |
| | | insert size: | 3 |
| | | boring bar: | A40NER3 |
| | | gage insert: | N.3L |
| | | speed: | 150 m/min |
| | | infeed passes*: | 12 passes |



*Infeed recommendations provided in technical data section on pages D97–D101.


Recommended Starting Speeds [m/min]

| Material Group | | K68 | | | KCU10/KC5010 | | | KCU25/KC5025 | | | KC5410 | | |
|----------------|------------|-----|-----|-----|--------------|-----|-----|--------------|-----|-----|--------|-----|-----|
| | | - | - | - | 135 | 200 | 260 | 105 | 165 | 230 | - | - | - |
| P | 0-1 | - | - | - | 135 | 200 | 260 | 105 | 165 | 230 | - | - | - |
| | 2 | - | - | - | 130 | 190 | 245 | 100 | 150 | 200 | - | - | - |
| | 3 | - | - | - | 105 | 155 | 200 | 75 | 125 | 170 | - | - | - |
| | 4 | - | - | - | 70 | 120 | 160 | 60 | 95 | 130 | - | - | - |
| | 5 | - | - | - | 105 | 155 | 200 | 75 | 130 | 170 | - | - | - |
| | 6 | - | - | - | 70 | 120 | 160 | 50 | 90 | 130 | - | - | - |
| M | 1 | 45 | 75 | 105 | 120 | 180 | 245 | 90 | 170 | 230 | - | - | - |
| | 2 | 35 | 65 | 100 | 90 | 165 | 210 | 75 | 140 | 200 | - | - | - |
| | 3 | 35 | 65 | 100 | 90 | 165 | 210 | 75 | 135 | 200 | - | - | - |
| K | 1 | 30 | 75 | 120 | 120 | 180 | 245 | 90 | 135 | 180 | - | - | - |
| | 2 | 25 | 60 | 100 | 90 | 150 | 210 | 70 | 120 | 170 | - | - | - |
| | 3 | 20 | 55 | 90 | 60 | 105 | 150 | 50 | 85 | 120 | - | - | - |
| N | 1-2 | 90 | 245 | 365 | 150 | 365 | 550 | 120 | 305 | 455 | 245 | 425 | 610 |
| | 3 | 45 | 75 | 105 | 90 | 135 | 180 | 60 | 105 | 150 | 90 | 150 | 210 |
| | 4 | 60 | 120 | 180 | 120 | 305 | 455 | 100 | 200 | 305 | 120 | 305 | 455 |
| | 5 | 45 | 90 | 150 | 90 | 165 | 245 | 70 | 135 | 195 | 120 | 210 | 305 |
| | 6 | 35 | 75 | 120 | 120 | 210 | 305 | 100 | 170 | 245 | 120 | 245 | 365 |
| S | 1 | 8 | 25 | 45 | 30 | 70 | 105 | 20 | 40 | 60 | - | - | - |
| | 2 | 8 | 24 | 40 | 30 | 65 | 100 | 20 | 35 | 45 | - | - | - |
| | 3 | 8 | 24 | 40 | 30 | 65 | 100 | 20 | 35 | 45 | - | - | - |
| | 4 | 9 | 60 | 105 | 55 | 105 | 150 | 45 | 85 | 120 | - | - | - |
| H | 1 | - | - | - | 30 | 45 | 60 | - | - | - | - | - | - |
| | 2 | - | - | - | 15 | 30 | 45 | - | - | - | - | - | - |
| | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4 | - | - | - | - | - | - | - | - | - | - | - | - |

NOTE: FIRST choice starting speeds are in **bold** type.

NOVO KNOWS CAD/CAM

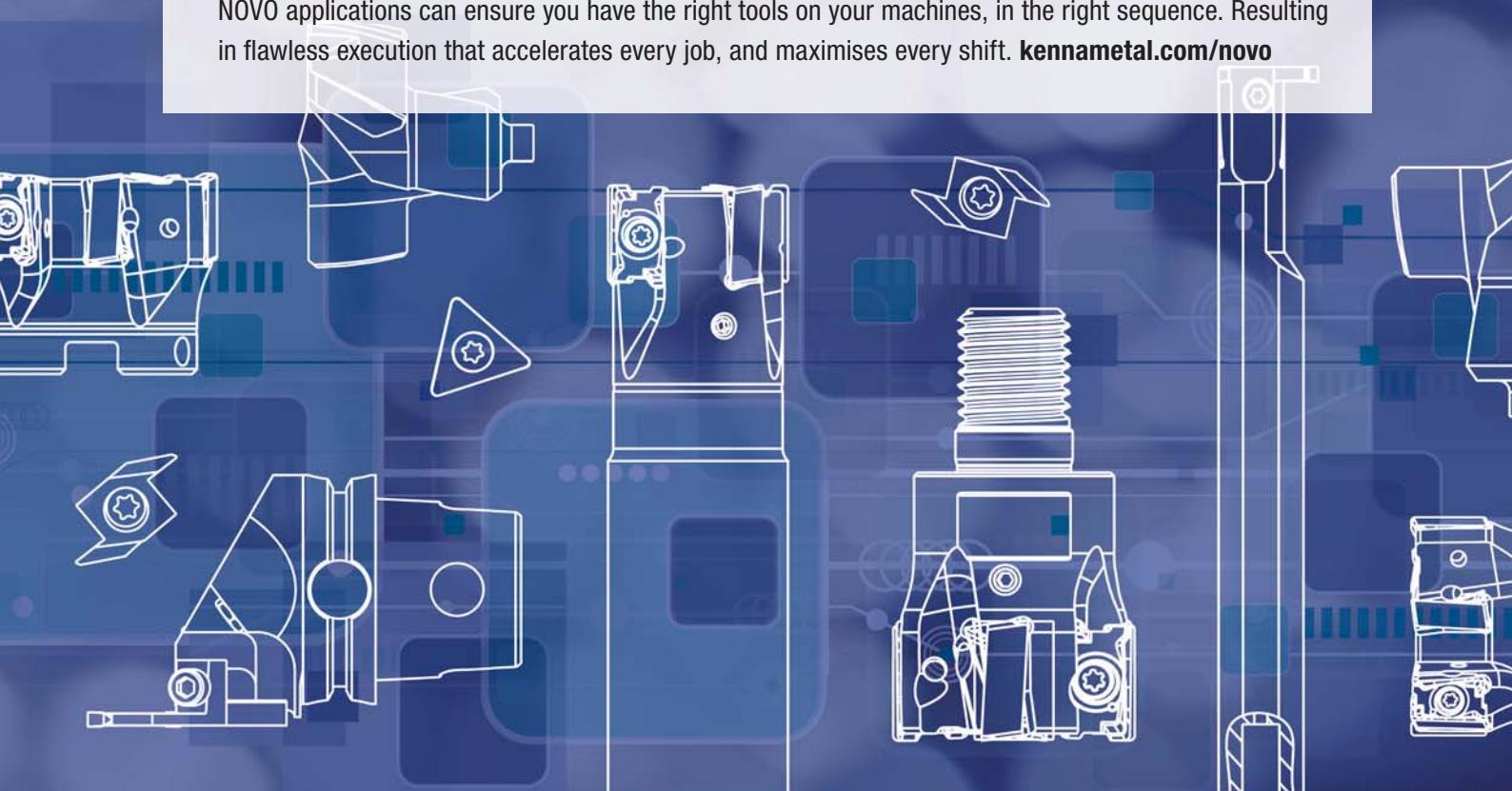
With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

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



01

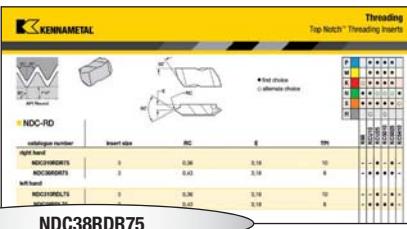
THE DIGITAL SOURCE FOR DELIVERING SMART MACHINING SOLUTIONS

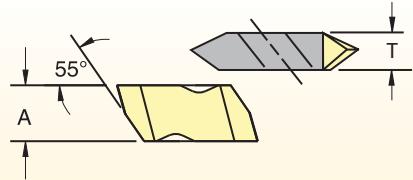
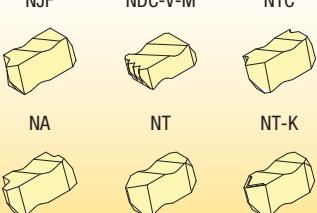
kennametal.com/novo

NOVO™

How Do Catalogue Numbers Work?

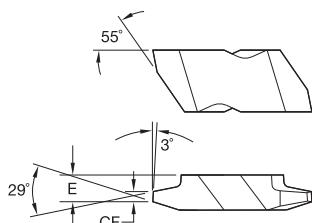
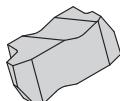
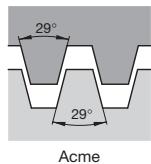
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



| N | D | C | 3 | 8RD | R | 75 | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------|--|-------------|--|---|----------------------|------------------------|---|------|------|---|------|------|---|------|------|---|-------|------|---|-------|------|---|-------|------|---|------|-------|--|--|--|
| Type of Insert | Insert | Additional Information | Insert Size | Industry Thread Identification | Hand of Insert | Definition of Insert | Additional Information | | | | | | | | | | | | | | | | | | | | | | | | |
| N — Top Notch* | Insert | C | 3 | 8RD | R | 75 | | | | | | | | | | | | | | | | | | | | | | | | | |
| N — Top Notch* | | B — Buttress F — Fine pitch S — Stub Acme C — Cresting P — Positive rake K — Fine pitch, positive | | Indicates API or drilling industry form designation (e.g., 10RD, 8RD, .038) or controlled root radius threading inserts indicate the root radius in .001" increments (NJ, NJF, NJP, NJK) or M indicates metric ISO thread | R — Right hand L — Left hand | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A — Acme D — API or NPT J — UNJ thread T — 60° V thread W — 55° V Whitworth | | | |  | • Threads per inch or pitch (for metric) • "A" or "B" type Buttress insert • Taper per foot — API threads | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Top Notch insert dimensions | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | <table border="1"> <thead> <tr> <th>insert size</th><th>A mm</th><th>T mm</th></tr> </thead> <tbody> <tr><td>1</td><td>2,54</td><td>2,54</td></tr> <tr><td>2</td><td>5,56</td><td>3,81</td></tr> <tr><td>3</td><td>8,74</td><td>4,95</td></tr> <tr><td>4</td><td>11,51</td><td>6,48</td></tr> <tr><td>5</td><td>17,48</td><td>9,65</td></tr> <tr><td>6</td><td>11,51</td><td>9,73</td></tr> <tr><td>8</td><td>7,93</td><td>11,13</td></tr> </tbody> </table> | insert size | A mm | T mm | 1 | 2,54 | 2,54 | 2 | 5,56 | 3,81 | 3 | 8,74 | 4,95 | 4 | 11,51 | 6,48 | 5 | 17,48 | 9,65 | 6 | 11,51 | 9,73 | 8 | 7,93 | 11,13 | I — Internal thread E — External thread (used only if internal and external thread forms are different) M — Multiple tooth K — Standard chip control C — Coarse pitch D — Dryseal | | |
| insert size | A mm | T mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2,54 | 2,54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 5,56 | 3,81 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 8,74 | 4,95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 11,51 | 6,48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 17,48 | 9,65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 11,51 | 9,73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 7,93 | 11,13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | |

*Kennametal proprietary standard only.

| style | | | thread profile | standard | tolerance class | cresting | application | page(s) |
|------------------|----------|----------|---|---|--------------------|----------|--|-------------|
| chip control — K | neutral | positive | | | | | | |
| NT-K | NT | NTP | Partial Profile 60° | — | — | N | General use for 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches. | D19, D24 |
| NT-CK | | | Partial Profile 60° — coarse pitch | — | — | N | Coarse pitch 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches. | D21 |
| | NTF | NTK | Partial Profile 60° — fine pitch | — | — | N | Fine pitch 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches — able to thread close to shoulders. | D23 |
| | NTU | | Partial Profile 60° — fine pitch | — | — | N | Four-edged insert for 60° partial profile threading — requires NSU-style toolholder for size 4U insert. | D24 |
| | NTC-M | | Metric ISO | ISO R262, DIN 13 | 6g/6H | Y | Widely used metric 60° V-form for all industries. | D21 |
| | NTC | | American UN | ANSI B1.1:74 | 2A/2B | Y | Widely used inch-based 60° V-form for all industries. | D20 |
| | NJ | NJP | UNJ | MIL-S-8879C | 3A/3B | N | Controlled root radius on external threads for military and aerospace industries. | D17– D18 |
| | NJF | NJK | UNJ — fine pitch | MIL-S-8879C | 3A/3B | N | Controlled root radius on external threads for military and aerospace industries — able to thread close to shoulders. | D17– D18 |
| | NDC-V | | NPT | ANSI/ACME B1.201: 1983 | Standard NPT | Y | National Pipe Thread standard forms for pipe fittings. | D16 |
| | NDC-V-M | | NPT — multi-tooth | ANSI/ACME B1.201: 1983 | Standard NPT | Y | High-productivity multi-tooth threading inserts for NPT threads. | D16 |
| | NWC-E | | Whitworth, BSW, BSP | BS 84:1956, ISO 228/1:1982, DIN 259 | Medium Class A | Y | Widely used 55° form for gas and water connections. | D25 |
| | ND | | API Rotary Shoulder Connections — partial profile | API SPEC. 7:1990 | Standard API | N | 60° V-form used for rotary shoulder pipe connections in the oil and gas industry including V-.038R, V-.040, and V-.050 forms. | D14 |
| | NDC | | API Rotary Shoulder Connections — cresting | API SPEC. 7:1990 | Standard API | Y | 60° V-form used for rotary shoulder pipe connections in the oil and gas industry including V-.038R, V-.040, and V-.050 forms — complete cresting form including taper. | D14 |
| | NDC-RD | | API Round | API STD. 5B:1979 | Standard API RD | Y | 60° V-form with large radius for casing, tubing, and line pipe in the oil and gas industry, including 8 and 10 round forms. | D15 |
| | NDC-RD-M | | API Round — multi-tooth | API STD. 5B:1979 | Standard API RD | Y | High productivity multitooth threading inserts for API round threads. | D15 |
| | NA | | Acme | ANSI B1.5:1988 | 3G | N | 29° truncated thread form for motion applications in a wide variety of industries. | D12 |
| | NAS | | Stub Acme | ANSI B1.8:1988 | 2G | N | Shallow depth 29° truncated thread form for motion applications in a wide variety of industries. | D13 |
| | NTB-A | | American Buttress — 7° clearance flank leading (Push) | ANSI B1.9:1973 | Class 2 | N | Sawtooth form for axial load bearing applications in a variety of industries — use the "A" style when the 7° clearance flank is the leading flank. | D19 |
| | NTB-B | | American Buttress — 45° clearance flank leading (Pull) | ANSI B1.9:1973 | Class 2 | N | Sawtooth form for axial load bearing applications in a variety of industries — use the "B" style when the 45° clearance flank is the leading flank. | D20 |

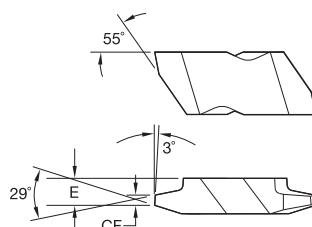
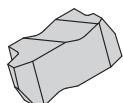
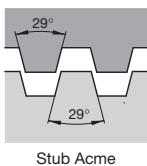


● first choice
○ alternate choice

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

■ NA

| catalogue number | insert size | RC | E | CF | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|----|------|-------|-----|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | |
| NA3R10 | 3 | — | 3,79 | 0,810 | 10 | — | ● | ● | ● | ● | — |
| NA3R12 | 3 | — | 3,79 | 0,719 | 12 | — | ● | — | — | ● | — |
| NA3R16 | 3 | — | 3,79 | 0,523 | 16 | — | ● | — | — | — | — |
| NA3R4 | 3 | — | 3,38 | 2,222 | 4 | — | — | ● | ● | ● | — |
| NA3R5 | 3 | — | 3,79 | 1,750 | 5 | — | ● | ● | ● | ● | — |
| NA3R6 | 3 | — | 3,79 | 1,438 | 6 | — | ● | ● | ● | ● | — |
| NA3R8 | 3 | — | 3,79 | 1,044 | 8 | — | ● | ● | ● | ● | — |
| NA4R4 | 4 | — | 5,13 | 2,223 | 4 | — | — | ● | ● | ● | — |
| NA4R5 | 4 | — | 5,13 | 1,750 | 5 | — | — | — | — | ● | — |
| NA4R6 | 4 | — | 5,13 | 1,438 | 6 | — | — | — | — | ● | — |
| NA6R25 | 6 | — | 7,19 | 3,635 | 2.5 | — | — | — | — | ● | — |
| NA6R2 | 6 | — | 7,19 | 4,577 | 2 | — | ● | ● | ● | ● | — |
| NA6R3 | 6 | — | 7,19 | 3,007 | 3 | — | — | ● | — | ● | — |
| left hand | | | | | | | | | | | |
| NA3L8 | 3 | — | 3,79 | 1,044 | 8 | — | ● | ● | ● | ● | — |
| NA3L10 | 3 | — | 3,79 | 0,810 | 10 | — | — | ● | — | ● | — |
| NA3L12 | 3 | — | 3,79 | 0,719 | 12 | — | — | — | ● | ● | — |
| NA3L4 | 3 | — | 3,38 | 2,222 | 4 | ● | ● | ● | ● | ● | — |
| NA3L5 | 3 | — | 3,79 | 1,750 | 5 | — | — | ● | ● | ● | — |
| NA3L6 | 3 | — | 3,79 | 1,438 | 6 | — | — | ● | ● | ● | — |
| NA4L5 | 4 | — | 5,13 | 1,750 | 5 | — | — | — | — | ● | — |
| NA4L6 | 4 | — | 5,13 | 1,438 | 6 | — | — | — | — | ● | — |
| NA4L8 | 4 | — | 5,13 | 1,044 | 8 | — | — | ● | — | — | — |
| NA4L4 | 4 | — | 5,13 | 2,223 | 4 | — | ● | — | — | ● | — |
| NA6L3 | 6 | — | 7,19 | 3,007 | 3 | — | — | ● | — | ● | — |
| NA6L25 | 6 | — | 7,19 | 3,635 | 2.5 | — | — | ● | — | — | — |
| NA6L2 | 6 | — | 7,19 | 4,577 | 2 | — | — | ● | ● | ● | — |
| NA3L16 | 3 | — | 3,79 | 0,523 | 16 | — | ● | — | — | — | — |

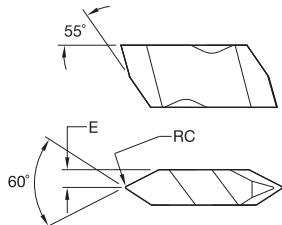
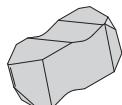
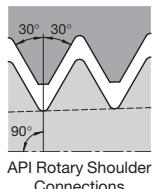


- first choice
- alternate choice

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

■ NAS

| catalogue number | insert size | RC | E | CF | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|----|------|-------|-----|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | |
| NAS3R10 | 3 | — | 3,79 | 0,940 | 10 | — | ● | — | ● | ● | — |
| NAS3R12 | 3 | — | 3,79 | 0,828 | 12 | — | — | ● | — | ● | — |
| NAS3R16 | 3 | — | 3,79 | 0,605 | 16 | — | — | — | — | ● | — |
| NAS3R4 | 3 | — | 3,79 | 2,550 | 4 | — | — | ● | — | ● | — |
| NAS3R5 | 3 | — | 3,79 | 2,014 | 5 | — | ● | — | — | ● | — |
| NAS3R6 | 3 | — | 3,79 | 1,656 | 6 | — | ● | — | ● | ● | — |
| NAS3R8 | 3 | — | 3,79 | 1,209 | 8 | — | ● | ● | ● | ● | — |
| left hand | | | | | | | | | | | |
| NAS3L10 | 3 | — | 3,79 | 0,940 | 10 | — | ● | — | — | ● | — |
| NAS3L12 | 3 | — | 3,79 | 0,828 | 12 | — | — | — | — | ● | — |
| NAS3L4 | 3 | — | 3,79 | 2,550 | 4 | — | — | ● | — | ● | — |
| NAS3L5 | 3 | — | 3,79 | 2,014 | 5 | — | ● | — | — | ● | — |
| NAS3L6 | 3 | — | 3,79 | 1,656 | 6 | — | ● | ● | ● | ● | — |
| NAS3L8 | 3 | — | 3,79 | 1,209 | 8 | — | ● | ● | ● | ● | — |

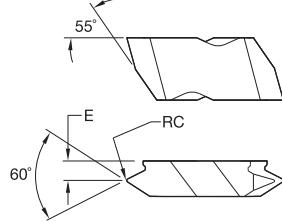
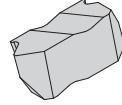
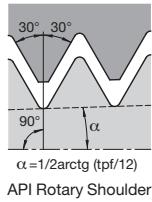


● first choice
○ alternate choice

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

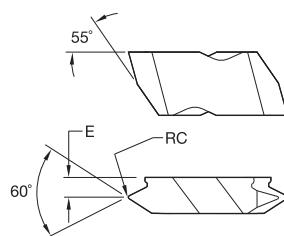
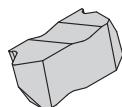
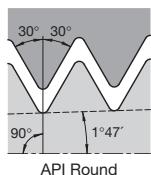
ND • Partial Profile

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|-----|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | |
| ND3040R | 3 | 0,45 | 2,08 | 5 | - | - | - | ● | - | - |
| ND3038R | 3 | 0,90 | 2,08 | 4 | - | - | - | ● | - | - |
| ND4050R | 4 | 0,57 | 3,25 | 4 | - | - | ● | - | - | - |
| left hand | | | | | | | | | | |
| ND3038L | 3 | 0,90 | 2,08 | 4 | - | - | - | ● | - | - |
| ND3040L | 3 | 0,45 | 2,08 | 5 | - | - | ● | - | - | - |



NDC • Cresting

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|-----|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | |
| NDC3040R3 | 3 | 0,45 | 3,73 | 5 | - | - | - | ● | - | - |
| NDC4040R3 | 4 | 0,45 | 3,73 | 5 | - | - | - | ● | - | - |
| NDC4050R2 | 4 | 0,57 | 4,65 | 4 | - | - | - | ● | - | - |
| NDC4050R3 | 4 | 0,57 | 4,65 | 4 | - | - | - | ● | - | - |
| NDC4038R2 | 4 | 0,90 | 4,65 | 4 | - | - | - | ● | - | - |
| left hand | | | | | | | | | | |
| NDC3040L3 | 3 | 0,45 | 3,73 | 5 | - | - | ● | - | - | - |
| NDC4050L2 | 4 | 0,57 | 4,65 | 4 | - | - | - | ● | - | - |
| NDC4038L2 | 4 | 0,90 | 4,65 | 4 | - | - | - | ● | - | - |

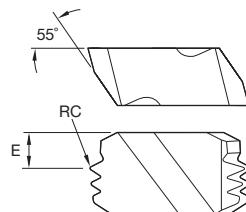
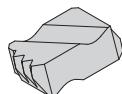
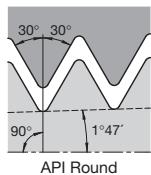


- first choice
- alternate choice

| | | | | | | | |
|---|--|--|--|--|--|--|--|
| P | | | | | | | |
| M | | | | | | | |
| K | | | | | | | |
| N | | | | | | | |
| S | | | | | | | |
| H | | | | | | | |

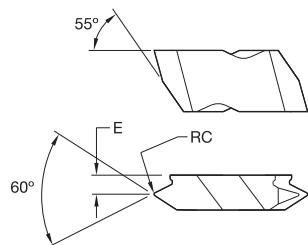
■ NDC-RD

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KCS010 | KCS025 | KCS410 |
|------------------|-------------|------|------|-----|-----|-------|-------|--------|--------|--------|
| right hand | | | | | - | - | - | - | - | - |
| NDC310RDR75 | 3 | 0,36 | 3,18 | 10 | - | - | - | - | ● | - |
| NDC38RDR75 | 3 | 0,43 | 3,18 | 8 | - | - | ● | ● | ● | - |
| left hand | | | | | - | - | - | - | - | - |
| NDC310RDL75 | 3 | 0,36 | 3,18 | 10 | - | - | - | - | ● | - |
| NDC38RDL75 | 3 | 0,43 | 3,18 | 8 | - | - | ● | ● | ● | - |



■ NDC-RD-M • Multitooth

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|--------------------|-------------|------|------|-----|-----|-------|-------|--------|--------|--------|
| right hand | | | | | - | ● | - | - | - | - |
| NDC68RDR75M | 6 | 0,41 | 2,62 | 8 | - | ● | - | - | - | - |

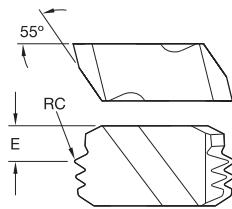
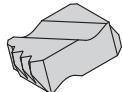
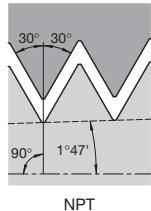


● first choice
○ alternate choice

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

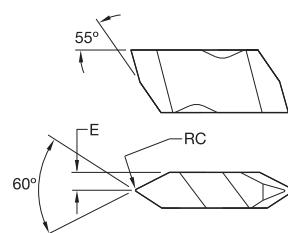
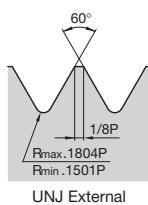
■ NDC-V

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | - | - | - | - | - | - |
| NDC327VR75 | 3 | 0,05 | 3,66 | 27 | - | ● | - | - | - | - |
| NDC314VR75 | 3 | 0,08 | 3,66 | 14 | - | ● | - | - | - | - |
| NDC3115VR75 | 3 | 0,10 | 3,66 | 11.5 | - | ● | - | ● | - | - |
| NDC38VR75 | 3 | 0,13 | 2,54 | 8 | - | - | - | ● | - | - |
| left hand | | | | | - | - | - | - | - | - |
| NDC3115VL75 | 3 | 0,10 | 3,66 | 11.5 | - | ● | - | ● | - | - |
| NDC38VL75 | 3 | 0,13 | 2,54 | 8 | - | - | - | ● | - | - |



■ NDC-V-M • Multitooth

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | - | - | - | - | - | - |
| NDC8115VR75M | 8 | 0,10 | 2,59 | 11.5 | - | ● | - | - | - | - |
| NDC88VR75M | 8 | 0,13 | 2,41 | 8 | - | ● | - | ● | - | - |
| left hand | | | | | - | - | - | ● | - | - |
| NDC88VL75M | 8 | 0,13 | 2,41 | 8 | - | - | - | ● | - | - |

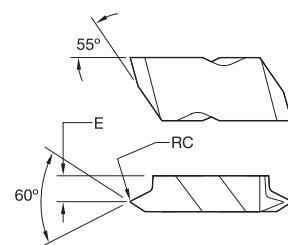
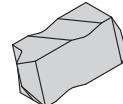
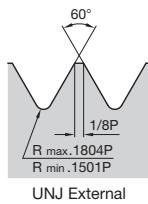


- first choice
- alternate choice

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

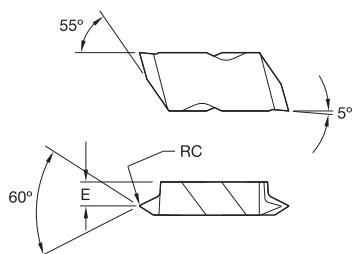
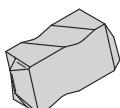
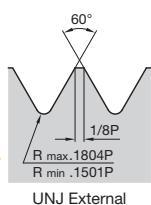
NJ

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NJ3010R16 | 3 | 0,25 | 2,49 | — | — | 16 | — | ● | — | ● | — | ● | — |
| NJ3014R12 | 3 | 0,33 | 2,49 | — | — | 12 | — | — | ● | ● | ● | ● | — |
| NJ3020R8 | 3 | 0,49 | 2,49 | — | — | 8 | — | — | — | — | ● | ● | — |
| left hand | | | | | | | | | | | | | |
| NJ3010L16 | 3 | 0,25 | 2,49 | — | — | 16 | — | — | — | — | — | ● | — |
| NJ3014L12 | 3 | 0,33 | 2,49 | — | — | 12 | — | — | — | — | ● | ● | — |
| NJ3020L8 | 3 | 0,49 | 2,49 | — | — | 8 | — | — | — | — | — | ● | — |



NJF

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NJF3005R32 | 3 | 0,13 | 3,58 | — | — | 32 | — | — | ● | — | ● | — | — |
| NJF3006R28 | 3 | 0,15 | 3,58 | — | — | 28 | — | — | — | — | ● | ● | — |
| NJF3007R24 | 3 | 0,17 | 3,58 | — | — | 24 | — | — | — | — | ● | ● | — |
| NJF3008R20 | 3 | 0,20 | 3,58 | — | — | 20 | — | — | — | — | ● | ● | — |
| NJF3009R18 | 3 | 0,22 | 3,58 | — | — | 18 | — | ● | — | ● | ● | ● | — |
| NJF3010R16 | 3 | 0,25 | 3,58 | — | — | 16 | — | — | — | — | ● | ● | — |
| NJF3012R14 | 3 | 0,28 | 3,58 | — | — | 14 | — | — | — | ● | ● | ● | — |
| left hand | | | | | | | | | | | | | |
| NJF3007L24 | 3 | 0,17 | 3,58 | — | — | 24 | — | — | — | — | ● | — | — |
| NJF3008L20 | 3 | 0,20 | 3,58 | — | — | 20 | — | — | — | — | ● | — | — |
| NJF3010L16 | 3 | 0,25 | 3,58 | — | — | 16 | — | — | — | ● | — | ● | — |

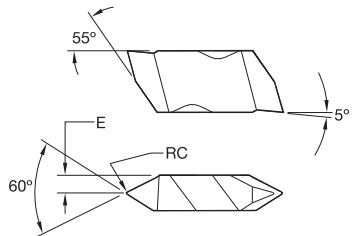
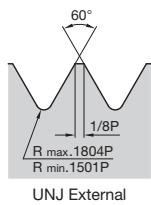


● first choice
○ alternate choice

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

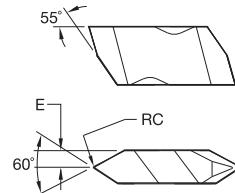
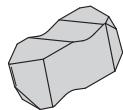
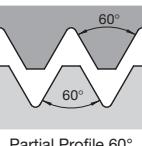
■ NJK

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NJK3005R32 | 3 | 0,13 | 3,58 | — | — | 32 | — | — | — | — | ● | ● | — |
| NJK3006R28 | 3 | 0,15 | 3,58 | — | — | 28 | — | — | — | ● | ● | — | — |
| NJK3007R24 | 3 | 0,17 | 3,58 | — | — | 24 | — | — | — | ● | ● | ● | — |
| NJK3008R20 | 3 | 0,20 | 3,58 | — | — | 20 | — | — | ● | ● | ● | ● | — |
| NJK3009R18 | 3 | 0,22 | 3,58 | — | — | 18 | — | — | — | ● | ● | ● | — |
| NJK3010R16 | 3 | 0,25 | 3,58 | — | — | 16 | — | — | — | ● | ● | ● | — |
| NJK3012R14 | 3 | 0,28 | 3,58 | — | — | 14 | — | — | — | ● | ● | ● | — |
| left hand | | | | | | | | | | | | | |
| NJK3005L32 | 3 | 0,13 | 3,58 | — | — | 32 | — | — | — | — | — | ● | — |
| NJK3006L28 | 3 | 0,15 | 3,58 | — | — | 28 | — | — | — | — | — | ● | — |



■ NJP

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NJP3010R16 | 3 | 0,25 | 2,49 | — | — | 16 | — | — | ● | — | ● | ● | — |
| NJP3014R12 | 3 | 0,33 | 2,49 | — | — | 12 | — | — | ● | ● | ● | ● | — |
| NJP3020R8 | 3 | 0,49 | 2,49 | — | — | 8 | — | — | — | ● | ● | ● | — |
| left hand | | | | | | | | | | | | | |
| NJP3010L16 | 3 | 0,25 | 2,49 | — | — | 16 | — | — | — | — | — | ● | — |
| NJP3014L12 | 3 | 0,33 | 2,49 | — | — | 12 | — | — | — | — | ● | — | — |
| NJP3020L8 | 3 | 0,49 | 2,49 | — | — | 8 | — | — | — | — | — | ● | — |

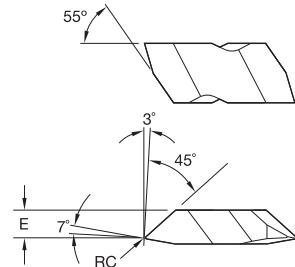
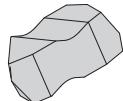
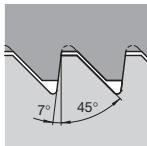


● first choice
 ○ alternate choice

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

NT

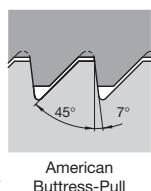
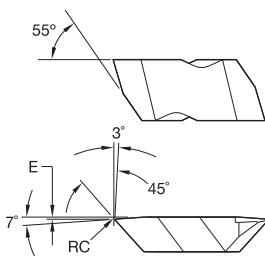
| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NT2R | 2 | 0,10 | 1,90 | 0,70-3,0 | 1,25-3,5 | 8-36 | 7-20 | ● | ● | ● | ● | ● | - |
| NT3R | 3 | 0,17 | 2,49 | 1,25-4,0 | 2,0-5,0 | 6-20 | 5-12 | ● | ● | ● | ● | ● | - |
| NT4R | 4 | 0,17 | 3,25 | 1,25-6,25 | 2,0-6,25 | 4-20 | 4-12 | ● | ● | ● | ● | ● | - |
| left hand | | | | | | | | | | | | | |
| NT2L | 2 | 0,10 | 1,90 | 0,70-3,0 | 1,25-3,5 | 8-36 | 7-20 | ● | ● | ● | ● | ● | - |
| NT3L | 3 | 0,17 | 2,49 | 1,25-4,0 | 2,0-5,0 | 6-20 | 5-12 | ● | ● | ● | ● | ● | - |
| NT4L | 4 | 0,17 | 3,25 | 1,25-6,25 | 2,0-6,25 | 4-20 | 4-12 | ● | ● | ● | ● | ● | - |



American Buttress-Push

NTB-A

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|-------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | |
| NTB2RA | 2 | 0,08 | 3,20 | 16-20 | ● | - | - | - | - | - |
| NTB3RA | 3 | 0,17 | 4,17 | 8-16 | - | ● | - | - | ● | - |
| NTB4RA | 4 | 0,25 | 5,23 | 4-6 | - | ● | - | - | - | - |
| left hand | | | | | | | | | | |
| NTB3LA | 3 | 0,17 | 4,17 | 8-16 | ● | - | - | ● | ● | - |

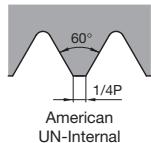
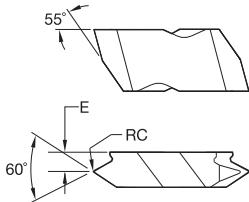
American
Buttress-Pull

● first choice
○ alternate choice

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

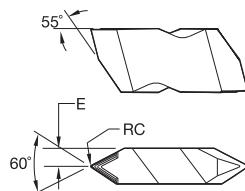
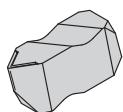
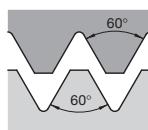
■ NTB-B

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|-------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | |
| NTB2RB | 2 | 0,08 | 0,25 | 16-20 | - | - | - | ● | - | - |
| NTB3R12B | 3 | 0,16 | 2,49 | 12 | - | - | - | ● | - | - |
| NTB3RB | 3 | 0,17 | 0,31 | 8-16 | ● | ● | ● | ● | - | - |
| NTB4RB | 4 | 0,25 | 0,41 | 4-6 | - | ● | - | ● | ● | - |
| left hand | | | | | | | | | | |
| NTB2LB | 2 | 0,08 | 0,25 | 16-20 | - | ● | - | ● | - | - |
| NTB3L12B | 3 | 0,16 | 2,49 | 12 | - | - | - | ● | - | - |
| NTB3LB | 3 | 0,17 | 0,31 | 8-16 | ● | ● | - | ● | ● | - |
| NTB4LB | 4 | 0,25 | 0,41 | 4-6 | - | - | ● | ● | - | - |

American
UN-Internal

■ NTC-I

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NTC3R12I | 3 | 0,10 | 3,76 | - | - | - | 12 | - | - | - | ● | - | - |
| left hand | | | | | | | | | | | | | |
| NTC3L12I | 3 | 0,10 | 3,76 | - | - | - | 12 | - | - | - | ● | - | - |
| NTC3L14I | 3 | 0,09 | 3,76 | - | - | - | 14 | - | - | - | ● | - | - |
| NTC3L16I | 3 | 0,08 | 3,76 | - | - | - | 16 | - | - | - | ● | - | - |
| NTC3L8I | 3 | 0,18 | 2,72 | - | - | - | 8 | - | - | - | ● | - | - |
| NTC3L10I | 3 | 0,13 | 2,72 | - | - | - | 10 | - | - | - | ● | - | - |

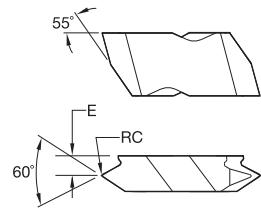
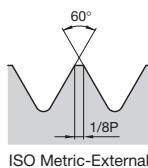


- first choice
- alternate choice

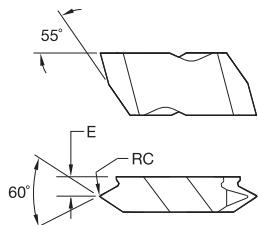
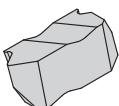
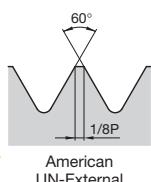
| | | | | | | | | |
|---|------|-----|---|---|---|---|---|---|
| P | | | | ● | ● | ● | ● | |
| M | | ■ | | ● | ● | ● | ● | |
| K | | ■■ | ○ | ● | ● | ● | ● | |
| N | | ■■■ | ● | ● | ○ | ○ | ○ | ● |
| S | ■■■ | ● | ● | ● | ● | ● | ● | ○ |
| H | ■■■■ | | | ○ | | ○ | | |

■ NT-CK

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NT3RCK | 3 | 0,34 | 2,46 | 2,5-4,0 | 4,0 | 6-11 | 6 | - | ● | ● | ● | ● | - |
| NT4RCK | 4 | 0,34 | 3,23 | 2,5-5,5 | 4,0-5,5 | 4,5-11 | 4,5-6 | - | - | ● | ● | ● | - |
| left hand | | | | | | | | | | | | | |
| NT3LCK | 3 | 0,34 | 2,46 | 2,5-4,0 | 4,0 | 6-11 | 6 | - | ● | ● | ● | ● | - |
| NT4LCK | 4 | 0,34 | 3,23 | 2,5-5,5 | 4,0-5,5 | 4,5-11 | 4,5-6 | - | - | ● | - | ● | - |



■ NTC-M-E

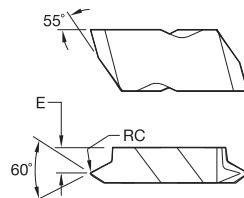
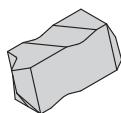
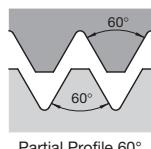


● first choice
○ alternate choice

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

NTC-E

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NTC3R32E | 3 | 0,10 | 3,76 | — | — | 32 | — | — | ● | — | — | ● | — |
| NTC3R28E | 3 | 0,12 | 3,76 | — | — | 28 | — | — | — | — | — | ● | — |
| NTC3R24E | 3 | 0,13 | 3,76 | — | — | 24 | — | — | — | — | — | ● | ● |
| NTC3R20E | 3 | 0,16 | 3,76 | — | — | 20 | — | — | ● | — | ● | ● | — |
| NTC3R18E | 3 | 0,18 | 3,76 | — | — | 18 | — | — | ● | ● | ● | ● | — |
| NTC3R16E | 3 | 0,19 | 3,76 | — | — | 16 | — | — | — | — | ● | ● | — |
| NTC3R14E | 3 | 0,22 | 3,76 | — | — | 14 | — | — | — | — | ● | ● | — |
| NTC3R13E | 3 | 0,24 | 3,76 | — | — | 13 | — | — | — | — | ● | ● | — |
| NTC3R12E | 3 | 0,25 | 3,76 | — | — | 12 | — | — | — | — | ● | ● | — |
| NTC3R11E | 3 | 0,28 | 2,72 | — | — | 11 | — | — | ● | — | — | ● | — |
| NTC3R10E | 3 | 0,32 | 2,72 | — | — | 10 | — | — | — | — | ● | ● | — |
| NTC3R9E | 3 | 0,36 | 2,72 | — | — | 9 | — | — | ● | — | — | — | — |
| NTC3R8E | 3 | 0,41 | 2,72 | — | — | 8 | — | — | ● | — | ● | ● | — |
| NTC3R7E | 3 | 0,47 | 2,72 | — | — | 7 | — | — | — | — | — | ● | — |
| left hand | | | | | | | | | | | | | |
| NTC3L16E | 3 | 0,19 | 3,76 | — | — | 16 | — | — | ● | — | — | — | — |
| NTC3L12E | 3 | 0,25 | 3,76 | — | — | 12 | — | — | ● | — | — | — | — |
| NTC3L10E | 3 | 0,32 | 2,72 | — | — | 10 | — | — | ● | — | — | — | — |
| NTC3L8E | 3 | 0,41 | 2,72 | — | — | 8 | — | — | — | — | — | ● | — |

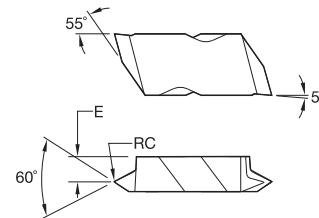
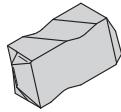
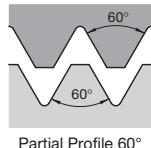


● first choice
 ○ alternate choice

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

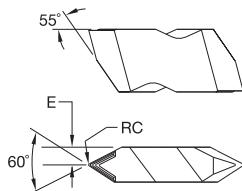
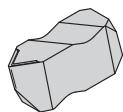
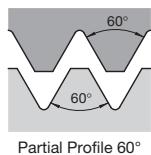
NTF

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NTF2R | 2 | 0,08 | 2,79 | 0,60-1,75 | 1,0-2,0 | 14-44 | 12-24 | ● | ● | ● | ● | ● | - |
| NTF3R | 3 | 0,08 | 3,58 | 0,60-2,5 | 1,0-2,5 | 10-44 | 9-24 | ● | ● | ● | ● | ● | - |
| NTF4R | 4 | 0,08 | 5,11 | 0,60-2,5 | 1,0-2,5 | 10-44 | 9-24 | - | - | - | - | ● | - |
| left hand | | | | | | | | | | | | | |
| NTF2L | 2 | 0,08 | 2,79 | 0,60-1,75 | 1,0-2,0 | 14-44 | 12-24 | ● | ● | ● | ● | ● | - |
| NTF3L | 3 | 0,08 | 3,58 | 0,60-2,5 | 1,0-2,5 | 10-44 | 9-24 | ● | ● | ● | ● | ● | - |



NTK

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NTK2R | 2 | 0,08 | 2,79 | 0,60-1,75 | 1,0-2,0 | 14-44 | 12-24 | ● | ● | ● | ● | ● | - |
| NTK3R | 3 | 0,08 | 3,58 | 0,60-2,50 | 1,0-2,5 | 10-44 | 9-24 | ● | ● | ● | ● | ● | - |
| left hand | | | | | | | | | | | | | |
| NTK2L | 2 | 0,08 | 2,79 | 0,60-1,75 | 1,0-2,0 | 14-44 | 12-24 | ● | ● | ● | ● | ● | - |
| NTK3L | 3 | 0,08 | 3,58 | 0,60-2,50 | 1,0-2,5 | 10-44 | 9-24 | ● | ● | ● | ● | ● | - |

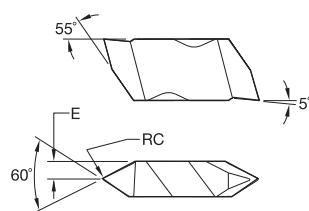
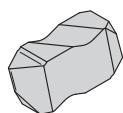
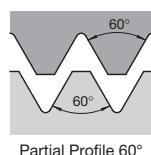


- first choice
- alternate choice

| | | | | | | |
|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | |
| M | ■ | ● | ● | ● | ● | |
| K | ■ | ○ | ● | ● | ● | |
| N | ■ | ● | ● | ○ | ○ | ● |
| S | ■ | ● | ● | ● | ● | ○ |
| H | | ○ | ● | ○ | | |

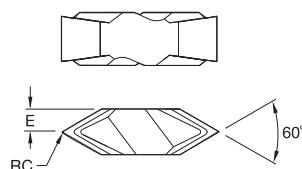
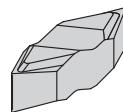
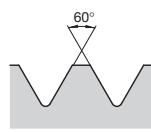
NT-K

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NT2RK | 2 | 0,10 | 1,90 | 0,70-3,0 | 1,25-3,5 | 8-36 | 7-20 | - | ● | ● | ● | ● | - |
| NT3RK | 3 | 0,17 | 2,49 | 1,25-4,0 | 2,0-5,0 | 6-20 | 5-12 | - | ● | ● | ● | ● | - |
| NT4RK | 4 | 0,16 | 3,24 | 1,25-6,25 | 2,0-6,25 | 4-20 | 4-12 | - | ● | ● | ● | ● | - |
| left hand | | | | | | | | | | | | | |
| NT2LK | 2 | 0,10 | 1,90 | 0,70-3,0 | 1,25-3,5 | 8-36 | 7-20 | - | ● | ● | ● | ● | - |
| NT3LK | 3 | 0,17 | 2,49 | 1,25-4,0 | 2,0-5,0 | 6-20 | 5-12 | - | ● | ● | ● | ● | - |
| NT4LK | 4 | 0,16 | 3,24 | 1,25-6,25 | 2,0-6,25 | 4-20 | 4-12 | - | ● | ● | ● | ● | - |



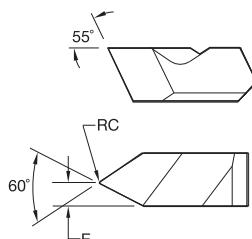
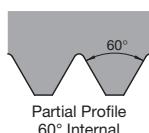
NTP

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NTP2R | 2 | 0,10 | 1,91 | 0,70-3,0 | 1,25-3,5 | 8-36 | 7-20 | ● | ● | ● | ● | ● | - |
| NTP3R | 3 | 0,17 | 2,49 | 1,25-4,0 | 2,0-5,0 | 6-20 | 5-12 | ● | ● | ● | ● | ● | ● |
| NTP4R | 4 | 0,17 | 3,25 | 1,25-6,25 | 2,0-6,25 | 4-20 | 4-12 | - | ● | ● | ● | ● | - |
| left hand | | | | | | | | | | | | | |
| NTP2L | 2 | 0,10 | 1,91 | 0,70-3,0 | 1,25-3,5 | 8-36 | 7-20 | ● | ● | ● | ● | ● | - |
| NTP3L | 3 | 0,17 | 2,49 | 1,25-4,0 | 2,0-5,0 | 6-20 | 5-12 | ● | ● | ● | ● | ● | - |
| NTP4L | 4 | 0,17 | 3,25 | 1,25-6,25 | 2,0-6,25 | 4-20 | 4-12 | - | - | - | ● | ● | - |



NTU

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|-------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | | | | |
| NTU4R | 4U | 0,11 | 3,18 | 1,25-6,25 | - | 4-20 | - | - | - | ● | - | ● | - |

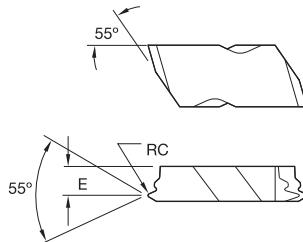
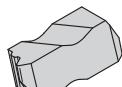
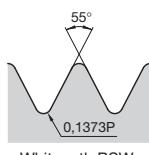


- first choice
- alternate choice

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | | | |
| M | ■ | | ● | ● | ● | ● | | |
| K | ■ | ○ | ● | ● | ● | ● | | |
| N | ■ | ● | ● | ○ | ○ | ○ | ● | |
| S | ■ | ● | ● | ● | ● | ● | ● | ○ |
| H | ■ | ○ | ● | ● | ○ | ● | ● | |

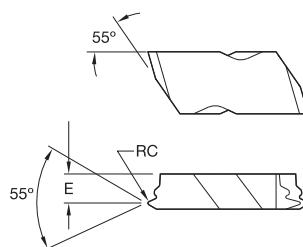
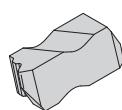
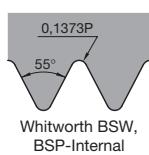
NT-1L

| catalogue number | insert size | RC | E | external thread pitch mm | internal thread pitch mm | external TPI | internal TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|--------------------------|--------------------------|--------------|--------------|-----|-------|-------|--------|--------|--------|
| left hand | | | | | | | | | | | | | |
| NT1L | 1 | 0,08 | 1,09 | — | 1,0-2,0 | — | 12-24 | ● | ● | ● | ● | ● | — |



NWC-E

| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|-----|-----|-------|-------|--------|--------|--------|
| right hand | | | | | | | | | | |
| NWC3R14E | 3 | 0,24 | 3,43 | 14 | — | — | ● | ● | — | — |
| NWC3R11E | 3 | 0,30 | 3,43 | 11 | — | — | — | ● | ● | — |

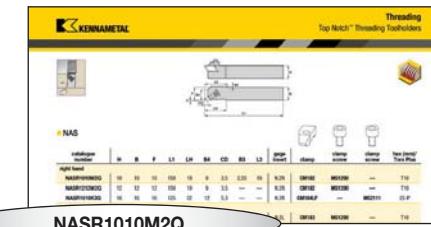


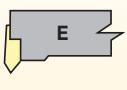
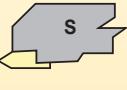
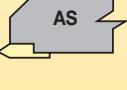
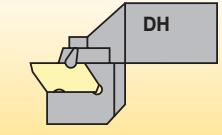
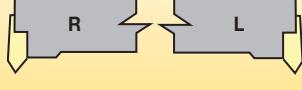
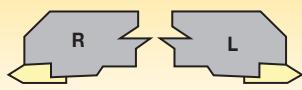
NWC-I

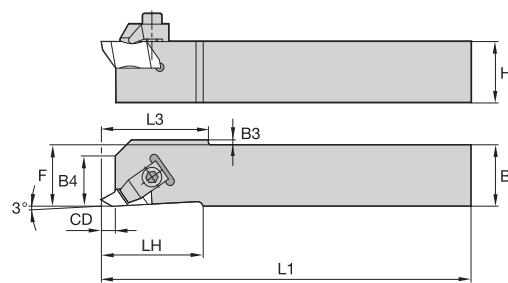
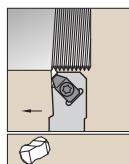
| catalogue number | insert size | RC | E | TPI | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|------------------|-------------|------|------|-----|-----|-------|-------|--------|--------|--------|
| left hand | | | | | | | | | | |
| NWC3L11I | 3 | 0,30 | 3,43 | 11 | — | — | — | — | ● | — |

How Do Catalogue Numbers Work?

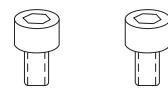
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



| N | AS | R | | 1010 | M | 2 | Q | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|--|--|--|-------------|------------------|----|---|----|---|----|---|----|---|----|---|----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|----------------|---|--|---|------|---|------|---|------|---|------|---|------|---|-------|-----------------------------|
| Insert Holding Method | Insert Mounting Location | Hand of Tool | Drop Head | Shank Size | Tool Length | Insert Size | Qualified Holder | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N — Top Notch™  | End mount  E | Side mount, offset  S | Side mount, no offset  AS | Shank height and width in mm and holder  DH | L1 ISO <table border="1"><tr><td>32</td><td>A</td></tr><tr><td>40</td><td>B</td></tr><tr><td>50</td><td>C</td></tr><tr><td>60</td><td>D</td></tr><tr><td>70</td><td>E</td></tr><tr><td>80</td><td>F</td></tr><tr><td>90</td><td>G</td></tr><tr><td>100</td><td>H</td></tr><tr><td>110</td><td>J</td></tr><tr><td>125</td><td>K</td></tr><tr><td>140</td><td>L</td></tr><tr><td>150</td><td>M</td></tr><tr><td>160</td><td>N</td></tr><tr><td>170</td><td>P</td></tr><tr><td>180</td><td>Q</td></tr><tr><td>200</td><td>R</td></tr><tr><td>250</td><td>S</td></tr><tr><td>300</td><td>T</td></tr><tr><td>350</td><td>U</td></tr><tr><td>400</td><td>V</td></tr><tr><td>450</td><td>W</td></tr><tr><td>500</td><td>Y</td></tr><tr><td>special length</td><td>X</td></tr></table> | 32 | A | 40 | B | 50 | C | 60 | D | 70 | E | 80 | F | 90 | G | 100 | H | 110 | J | 125 | K | 140 | L | 150 | M | 160 | N | 170 | P | 180 | Q | 200 | R | 250 | S | 300 | T | 350 | U | 400 | V | 450 | W | 500 | Y | special length | X | insert size T <table border="1"><tr><td>2</td><td>3,81</td></tr><tr><td>3</td><td>4,95</td></tr><tr><td>4</td><td>6,98</td></tr><tr><td>5</td><td>9,65</td></tr><tr><td>6</td><td>9,73</td></tr><tr><td>8</td><td>11,13</td></tr></table> | 2 | 3,81 | 3 | 4,95 | 4 | 6,98 | 5 | 9,65 | 6 | 9,73 | 8 | 11,13 | Q — Qualified holder |
| 32 | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | G | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 110 | J | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 125 | K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 140 | L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | M | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 160 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 170 | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180 | Q | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 250 | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 | T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 350 | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 400 | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 450 | W | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| special length | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 3,81 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4,95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 6,98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 9,65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 9,73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 11,13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | End mount  R L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Side mount  R L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

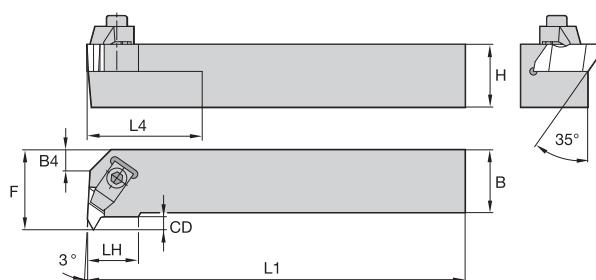
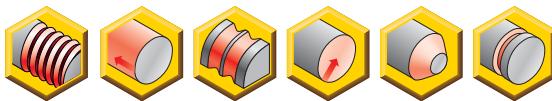
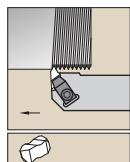


NAS

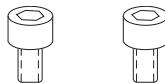


| order number | catalogue number | H | B | F | L1 | LH | B4 | CD | B3 | L3 | gage insert | clamp screw | clamp screw | clamp | hex (mm)/Torx Plus |
|-------------------|------------------|----|----|----|-----|----|----|-----|------|----|-------------|-------------|-------------|--------|--------------------|
| right hand | | | | | | | | | | | | | | | |
| 1098788 | NASR1010M2Q | 10 | 10 | 10 | 150 | 19 | 9 | 3,5 | 2,03 | 19 | N.2R | CM182 | MS1200 | — | T10 |
| 1098789 | NASR1212M2Q | 12 | 12 | 12 | 150 | 19 | 9 | 3,5 | — | — | N.2R | CM182 | MS1200 | — | T10 |
| 1098786 | NASR1616K3Q | 16 | 16 | 16 | 125 | 32 | 13 | 5,3 | — | — | N.3R | CM184LP | — | MS2111 | 25 IP |
| left hand | | | | | | | | | | | | | | | |
| 1098859 | NASL1010M2Q | 10 | 10 | 10 | 150 | 19 | 9 | 3,5 | 2,03 | 19 | N.2L | CM183 | MS1200 | — | T10 |
| 1098860 | NASL1212M2Q | 12 | 12 | 12 | 150 | 19 | 9 | 6,9 | — | — | N.2L | CM183 | MS1200 | — | T10 |
| 1098857 | NASL1616K3Q | 16 | 16 | 16 | 125 | 32 | 13 | 5,3 | — | — | N.3L | CM185LP | — | MS2111 | 25 IP |

NOTE: F dimension measured over sharp point of N-style threading insert.

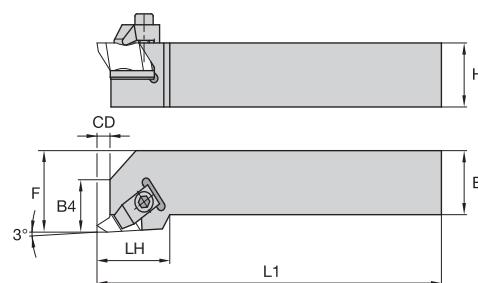
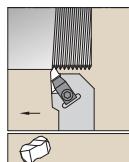


■ NE



| order number | catalogue number | H | B | F | L1 | LH | CD | L4 | gage insert | clamp screw | clamp screw | clamp | hex (mm)/Torx Plus |
|-------------------|------------------|----|----|----|-----|----|-----|------|-------------|-------------|-------------|--------|--------------------|
| right hand | | | | | | | | | | | | | |
| 1098803 | NER1616H2 | 16 | 16 | 20 | 100 | 15 | 3,5 | — | N.2L | CM75 | MS1200 | — | T10 |
| 1098804 | NER2020K2 | 20 | 20 | 25 | 125 | 15 | 3,5 | — | N.2L | CM75 | MS1200 | — | T10 |
| 1098805 | NER2525M2 | 25 | 25 | 32 | 150 | 15 | 3,5 | 25,4 | N.2L | CM75 | MS1200 | — | T10 |
| 1098806 | NER2525M3 | 25 | 25 | 32 | 150 | 22 | 5,3 | 50,8 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098808 | NER2525M4 | 25 | 25 | 35 | 150 | 24 | 6,4 | 50,8 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098807 | NER3225P3 | 32 | 25 | 32 | 170 | 22 | 3,8 | 50,8 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098809 | NER3225P4 | 32 | 25 | 35 | 170 | 24 | 6,4 | 50,8 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098810 | NER3232P4 | 32 | 32 | 40 | 170 | 24 | 6,4 | 50,8 | N.4L | CM73LP | — | MS2111 | 25 IP |
| left hand | | | | | | | | | | | | | |
| 1098874 | NEL1616H2 | 16 | 16 | 20 | 100 | 15 | 3,5 | — | N.2R | CM74 | MS1200 | — | T10 |
| 1098875 | NEL2020K2 | 20 | 20 | 25 | 125 | 15 | 3,5 | — | N.2R | CM74 | MS1200 | — | T10 |
| 1098876 | NEL2525M2 | 25 | 25 | 32 | 150 | 15 | 3,5 | 25,4 | N.2R | CM74 | MS1200 | — | T10 |
| 1098877 | NEL2525M3 | 25 | 25 | 32 | 150 | 22 | 5,3 | 50,8 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098879 | NEL2525M4 | 25 | 25 | 35 | 150 | 24 | 6,4 | 50,8 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098878 | NEL3225P3 | 32 | 25 | 32 | 170 | 22 | 3,8 | 50,8 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098880 | NEL3225P4 | 32 | 25 | 35 | 170 | 24 | 6,4 | 50,8 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098881 | NEL3232P4 | 32 | 32 | 40 | 170 | 24 | 6,4 | 50,8 | N.4R | CM72LP | — | MS2111 | 25 IP |

NOTE: F dimension measured over sharp point of Top Notch-style threading insert.

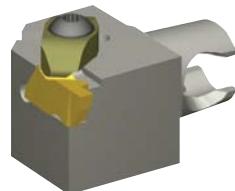
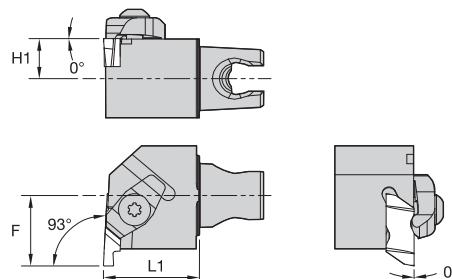
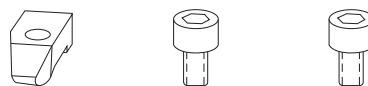


■ NS

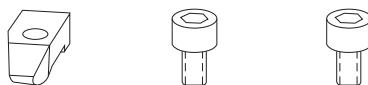


| order number | catalogue number | H | B | F | L1 | LH | B4 | CD | gage insert | clamp | clamp screw | clamp screw | hex (mm)/Torx Plus |
|-------------------|------------------|----|----|----|-----|----|----|-----|-------------|--------|-------------|-------------|--------------------|
| right hand | | | | | | | | | | | | | |
| 1098790 | NSR1010E2 | 10 | 10 | 14 | 70 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098791 | NSR1212F2 | 12 | 12 | 16 | 80 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098792 | NSR1616H2 | 16 | 16 | 20 | 100 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098793 | NSR2020K2 | 20 | 20 | 25 | 125 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098795 | NSR2020K3 | 20 | 20 | 25 | 125 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098794 | NSR2525M2 | 25 | 25 | 32 | 150 | 19 | 9 | 3,5 | N.2R | CM74 | MS1200 | — | T10 |
| 1098796 | NSR2525M3 | 25 | 25 | 32 | 150 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098799 | NSR2525M4 | 25 | 25 | 32 | 150 | 35 | 14 | 7,5 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098797 | NSR3225P3 | 32 | 25 | 32 | 170 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098800 | NSR3225P4 | 32 | 25 | 32 | 170 | 35 | 14 | 7,5 | N.4R | CM72LP | — | MS2111 | 25 IP |
| 1098798 | NSR3232P3 | 32 | 32 | 40 | 170 | 32 | 13 | 5,3 | N.3R | CM72LP | — | MS2111 | 25 IP |
| 1098801 | NSR3232P4 | 32 | 32 | 40 | 170 | 35 | 14 | 7,5 | N.4R | CM72LP | — | MS2111 | 25 IP |
| left hand | | | | | | | | | | | | | |
| 1098861 | NSL1010E2 | 10 | 10 | 14 | 70 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098862 | NSL1212F2 | 12 | 12 | 16 | 80 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098863 | NSL1616H2 | 16 | 16 | 20 | 100 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098864 | NSL2020K2 | 20 | 20 | 25 | 125 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098866 | NSL2020K3 | 20 | 20 | 25 | 125 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098865 | NSL2525M2 | 25 | 25 | 32 | 150 | 19 | 9 | 3,5 | N.2L | CM75 | MS1200 | — | T10 |
| 1098867 | NSL2525M3 | 25 | 25 | 32 | 150 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098870 | NSL2525M4 | 25 | 25 | 32 | 150 | 35 | 14 | 7,5 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098868 | NSL3225P3 | 32 | 25 | 32 | 170 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098871 | NSL3225P4 | 32 | 25 | 32 | 170 | 35 | 14 | 7,5 | N.4L | CM73LP | — | MS2111 | 25 IP |
| 1098869 | NSL3232P3 | 32 | 32 | 40 | 170 | 32 | 13 | 5,3 | N.3L | CM73LP | — | MS2111 | 25 IP |
| 1098872 | NSL3232P4 | 32 | 32 | 40 | 170 | 35 | 14 | 7,5 | N.4L | CM73LP | — | MS2111 | 25 IP |

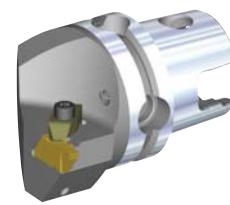
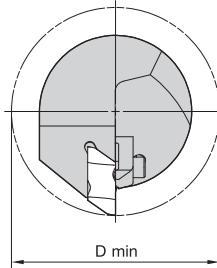
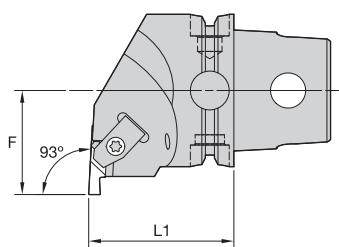
NOTE: F dimension measured over sharp point of Top Notch-style threading and grooving insert.


■ **NE 93°**


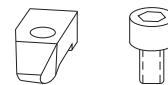
| order number | catalogue number | L1 | F | H1 | gage insert | clamp | clamp screw | clamp screw |
|-------------------|------------------|----|----|------|-------------|--------|-------------|-------------|
| right hand | | | | | | | | |
| 2399462 | KM25NER230 | 30 | 22 | 12,5 | NG2L | CM75 | — | MS1200 |
| 2399494 | KM25NER330 | 30 | 22 | 12,5 | NG3L | CM73LP | MS2111 | — |
| 2399496 | KM25NER430 | 30 | 24 | 12,5 | NG4L | CM73LP | MS2111 | — |
| left hand | | | | | | | | |
| 2399495 | KM25NEL330 | 30 | 22 | 12,5 | NG3R | CM72LP | MS2111 | — |
| 2399497 | KM25NEL430 | 30 | 24 | 12,5 | NG4R | CM72LP | MS2111 | — |

■ **NS 93°**


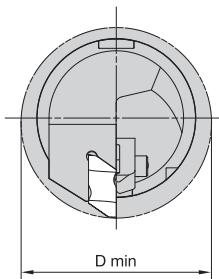
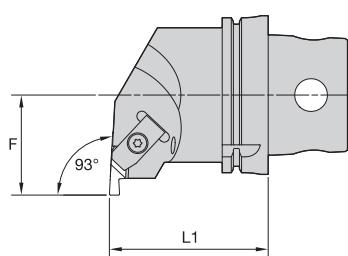
| order number | catalogue number | L1 | F | H1 | gage insert | clamp | clamp screw | clamp screw |
|-------------------|------------------|----|----|------|-------------|---------|-------------|-------------|
| right hand | | | | | | | | |
| 2399498 | KM25NSR230 | 30 | 16 | 12,5 | NG2R | CM74 | — | MS1200 |
| 2399500 | KM25NSR330 | 30 | 16 | 12,5 | NG3R | CM72LP | MS2111 | — |
| left hand | | | | | | | | |
| 2399499 | KM25NSL230 | 30 | 16 | 12,5 | NG2L | CM75 | — | MS1200 |
| 2399501 | KM25NSL330 | 30 | 16 | 12,5 | NG3L | CM73LP | MS2111 | — |
| 2399503 | KM25NSL430 | 30 | 16 | 12,5 | NG4L | CM213LP | MS2111 | — |



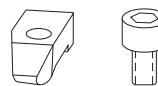
Threading

■ NE 93°


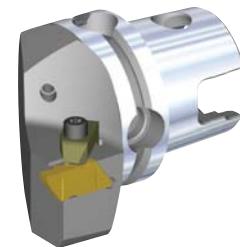
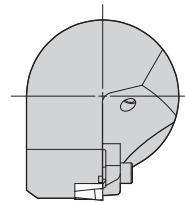
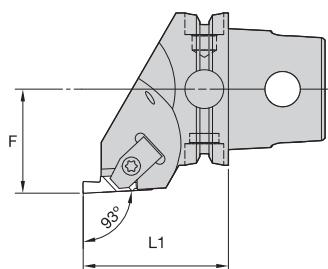
| order number | catalogue number | L1 | | F | | D min | | gage insert | clamp | clamp screw | kg | lbs |
|-------------------|------------------|----|-------|----|-------|-------|-------|-------------|-------|-------------|------|-----|
| | | mm | in | mm | in | mm | in | | | | | |
| right hand | | | | | | | | | | | | |
| 3902285 | KM40TSNER2 | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | NG2L | CM75 | MS1488 | 0,30 | .66 |
| 3902286 | KM40TSNER3 | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | NG3L | CM73 | MS1489 | 0,30 | .67 |
| 3902287 | KM40TSNER4 | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | NG4L | CM73 | MS1489 | 0,30 | .65 |
| left hand | | | | | | | | | | | | |
| 3902132 | KM40TSNEL2 | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | NG2R | CM74 | MS1488 | 0,30 | .66 |
| 3902283 | KM40TSNEL3 | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | NG3R | CM-72 | MS1489 | 0,30 | .67 |
| 3902284 | KM40TSNEL4 | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | NG4R | CM-72 | MS1489 | 0,30 | .65 |



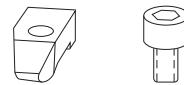
■ NE



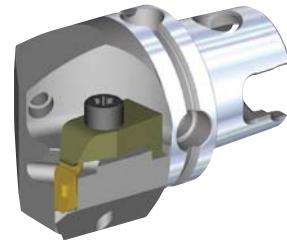
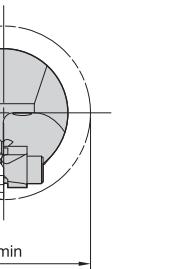
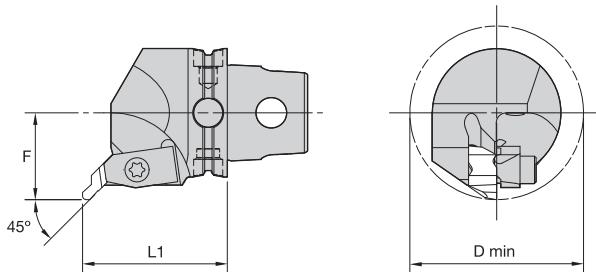
| order number | catalogue number | L1 | | F | | D min | | gage insert | clamp | clamp screw | kg | lbs |
|-------------------|------------------|-----|-------|----|-------|-------|-------|-------------|-------|-------------|------|-------|
| | | mm | in | mm | in | mm | in | | | | | |
| right hand | | | | | | | | | | | | |
| 5337758 | KM4X100NER3 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG3L | CM73 | MS1489 | 4,45 | 9.80 |
| 5337759 | KM4X100NER4 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG4L | CM73 | MS1489 | 4,51 | 9.93 |
| 5337770 | KM4X100NER5 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG5L | CM81 | MS1490 | 4,65 | 10.25 |
| 5337771 | KM4X100NER6 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG6L | CM121 | MS1489 | 4,48 | 9.88 |
| left hand | | | | | | | | | | | | |
| 5337754 | KM4X100NEL3 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG3R | CM-72 | MS1489 | 4,45 | 9.80 |
| 5337755 | KM4X100NEL4 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG4R | CM-72 | MS1489 | 4,51 | 9.93 |
| 5337756 | KM4X100NEL5 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG5R | CM80 | MS1490 | 4,65 | 10.25 |
| 5337757 | KM4X100NEL6 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG6R | CM120 | MS1489 | 4,48 | 9.88 |



Threading

■ NS 93°


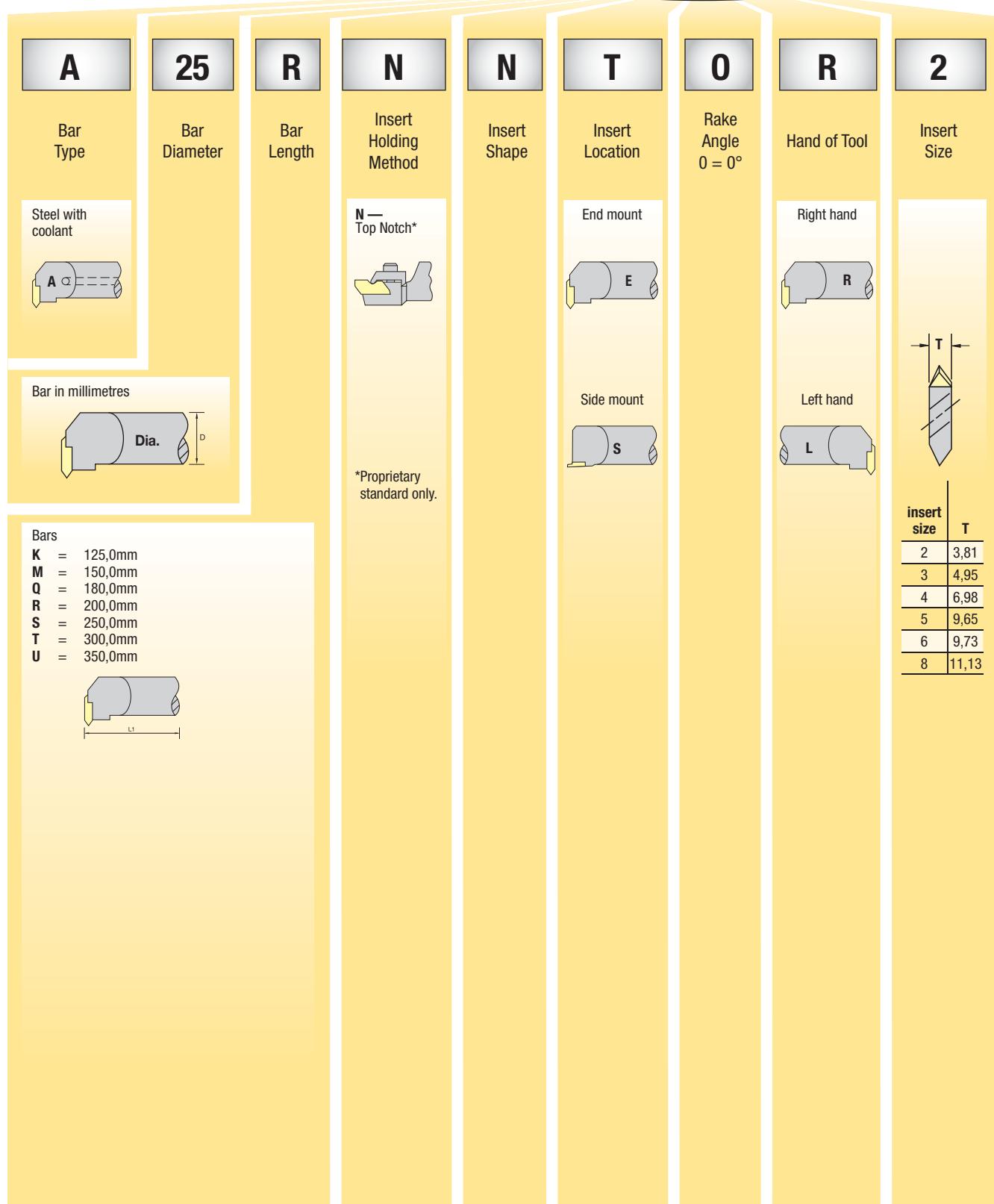
| order number | catalogue number | L1 | | F | | gage insert | clamp | clamp screw | kg | lbs |
|-------------------|------------------|----|-------|----|-------|-------------|-------|-------------|------|-----|
| | | mm | in | mm | in | | | | | |
| right hand | | | | | | | | | | |
| 3902293 | KM40TSNSR2 | 40 | 1.575 | 27 | 1.063 | NG2R | CM74 | MS1488 | 0,32 | .70 |
| 3902294 | KM40TSNSR3 | 47 | 1.850 | 27 | 1.063 | NG3R | CM-72 | MS1489 | 0,32 | .71 |
| 3902295 | KM40TSNSR4 | 47 | 1.850 | 27 | 1.063 | NG4R | CM-72 | MS1489 | 0,30 | .66 |
| left hand | | | | | | | | | | |
| 3902290 | KM40TSNSL2 | 40 | 1.575 | 27 | 1.063 | NG2L | CM75 | MS1488 | 0,32 | .70 |
| 3902291 | KM40TSNSL3 | 47 | 1.850 | 27 | 1.063 | NG3L | CM73 | MS1489 | 0,33 | .72 |
| 3902292 | KM40TSNSL4 | 47 | 1.850 | 27 | 1.063 | NG4L | CM73 | MS1489 | 0,30 | .66 |


■ NR 45°


| order number | catalogue number | L1 | | F | | D min | | gage insert | clamp | clamp screw | kg | lbs |
|-------------------|------------------|----|-------|----|-------|-------|-------|-------------|-------|-------------|------|-----|
| | | mm | in | mm | in | mm | in | | | | | |
| right hand | | | | | | | | | | | | |
| 3902289 | KM40TSNRR3045M | 45 | 1.772 | 27 | 1.063 | 54 | 2.126 | NU3L | CM73 | MS1489 | 0,34 | .75 |
| left hand | | | | | | | | | | | | |
| 3902288 | KM40TSNRL3045M | 45 | 1.772 | 27 | 1.063 | 54 | 2.126 | NU3R | CM-72 | MS1489 | 0,33 | .74 |

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.



Beyond™ Top Notch™ Profiling



Top Notch is the proven solution for high productivity.

The Top Notch system provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finishing and superior tool life.

FEATURES AND BENEFITS

Higher Productivity and Profitability

- Lower cutting forces increase speeds and reduce cycle time.
- Extended tool life.

Reliability

- Predictable tool life/uniform wear.
- Resists chip flow damage.
- Consistent surface finish.

Versatility

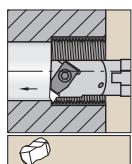
- Products can be applied across a wide range of applications.
- Use in low- to high-speed applications.
- Complete portfolio of products.
- For finish to rough turning of steel, cast iron, stainless steel, and high-temp alloys.



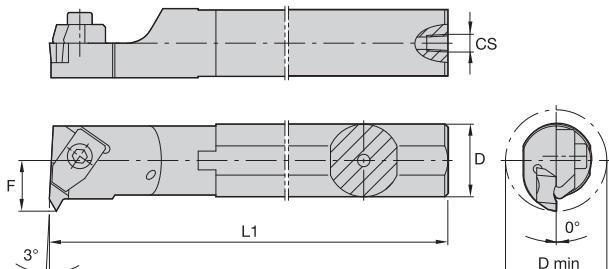
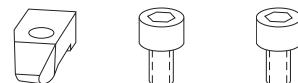
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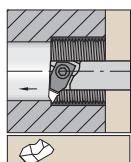
Steel shank with through coolant.

**A-NNT**

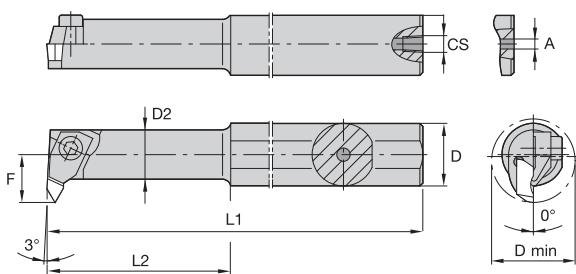
| order number | catalogue number | D min | D | L1 | F | CS | gage insert | clamp | clamp screw | clamp screw | hex (mm)/Torx Plus |
|-------------------|------------------|-------|----|-----|----|--------------|-------------|--------|-------------|-------------|--------------------|
| right hand | | | | | | | | | | | |
| 1098945 | A12MNNTOR2 | 18,5 | 12 | 150 | 11 | 1/16-27 NPT | — | CM147 | — | MS1200 | 2.5 mm |
| 1098947 | A16MNNTOR2 | 22,0 | 16 | 150 | 11 | 1/8-27 NPT | N.2L | CM75 | — | MS1200 | T10 |
| 1098949 | A20QNNTOR2 | 26,0 | 20 | 180 | 13 | 1/8-27 NPT | N.2L | CM75 | — | MS1200 | 2.5 mm |
| 1098951 | A25RNNTOR2 | 34,0 | 25 | 200 | 17 | 1/4-18 NPT | N.2L | CM75 | — | MS1200 | 2.5 mm |
| 1098953 | A25RNNTOR3 | 34,0 | 25 | 200 | 17 | 1/8 - 27 NPT | N.3L | CM73LP | MS2111 | — | 25 IP |
| 1098955 | A32SNNTOR3 | 44,0 | 32 | 250 | 22 | 1/4-18 NPT | N.3L | CM73LP | MS2111 | — | 25 IP |
| 1098957 | A40TNNTOR3 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.3L | CM73LP | MS2111 | — | 25 IP |
| 1099001 | A40TNNTOR4 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.4L | CM73LP | MS2111 | — | 25 IP |
| 1099003 | A50UNNTOR4 | 70,0 | 50 | 350 | 35 | 1/4-18 NPT | N.4L | CM73LP | MS2111 | — | 25 IP |
| left hand | | | | | | | | | | | |
| 1098946 | A12MNNTOL2 | 18,5 | 12 | 150 | 11 | 1/16-27 NPT | NG2R | CM146 | — | MS1200 | 2.5 mm |
| 1098948 | A16MNNTOL2 | 22,0 | 16 | 150 | 11 | 1/8-27 NPT | N.2R | CM74 | — | MS1200 | T10 |
| 1098950 | A20QNNTOL2 | 26,0 | 20 | 180 | 13 | 1/8-27 NPT | NG2R | CM74 | — | MS1200 | 2.5 mm |
| 1098952 | A25RNNTOL2 | 34,0 | 25 | 200 | 17 | 1/4-18 NPT | N.2R | CM74 | — | MS1200 | 2.5 mm |
| 1098954 | A25RNNTOL3 | 34,0 | 25 | 200 | 17 | 1/4-18 NPT | N.3R | CM72LP | MS2111 | — | 25 IP |
| 1098956 | A32SNNTOL3 | 44,0 | 32 | 250 | 22 | 1/4-18 NPT | N.3R | CM72LP | MS2111 | — | 25 IP |
| 1098958 | A40TNNTOL3 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.3R | CM72LP | MS2111 | — | 25 IP |
| 1099002 | A40TNNTOL4 | 54,0 | 40 | 300 | 27 | 1/4-18 NPT | N.4R | CM72LP | MS2111 | — | 25 IP |

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page D102 for details.

F dimension measured over sharp point of NG-style grooving insert.



Necked steel shank with through coolant.

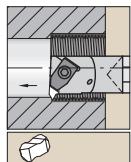


A-NNT -1

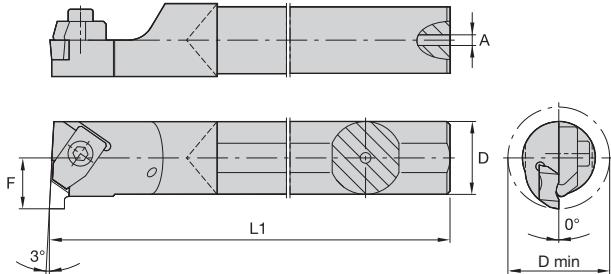


| order number | catalogue number | D min | D | HDD | L1 | L2 | F | A | CS | gage insert | clamp | clamp screw | hex (mm) |
|-------------------|------------------|-------|----|------|-----|-------|---|-----|-------------|-------------|-------|-------------|----------|
| right hand | | | | | | | | | | | | | |
| 1098943 | A10KNNTOR1 | 11,5 | 10 | 10,0 | 125 | — | 7 | 3,2 | — | NG1L | CM109 | MS1034 | 1.5 mm |
| 1098944 | A12MNNTOR1 | 11,5 | 12 | 10,0 | 150 | 31,30 | 7 | 4,0 | 1/16-27 NPT | N.1L | CM109 | MS1034 | 1.5 mm |

NOTE: F dimension measured over sharp point of Top Notch style threading insert.



Carbide shank with through coolant.



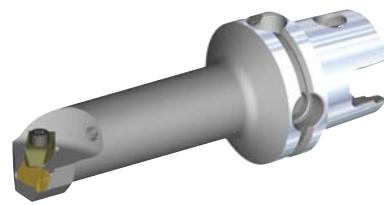
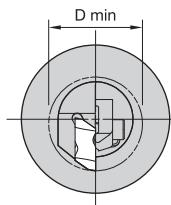
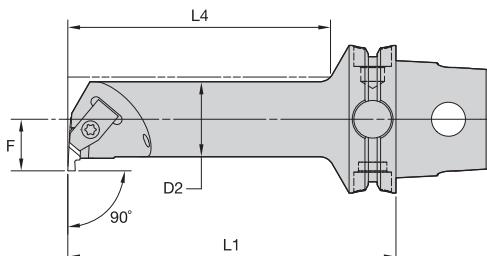
E-NNT



| order number | catalogue number | D min | D | L1 | F | A | gage insert | clamp | clamp screw | Torx/Torx Plus |
|-------------------|------------------|-------|----|-----|----|-----|-------------|-------|-------------|----------------|
| right hand | | | | | | | | | | |
| 1152834 | E16RNNTOR2 | 22 | 16 | 200 | 11 | 5,5 | N.2L | CM75 | MS1200 | T10 |
| 1152836 | E20SNNTOR2 | 26 | 20 | 250 | 13 | 7,1 | N.2L | CM75 | MS1200 | T10 |
| left hand | | | | | | | | | | |
| 1152835 | E16RNNTOL2 | 22 | 16 | 200 | 11 | 5,5 | N.2R | CM74 | MS1200 | T10 |

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page D102 for details.

F dimension measured over sharp point of Top Notch style threading insert.



Threading


■ NE 90° • Steel

| order number | catalogue number | D2 | | D min | | F | L4 | | L1 | | gage insert | kg | lbs |
|-------------------|------------------|----|-------|-------|------|----|------|----|-------|-----|-------------|------|-----------|
| | | mm | in | mm | in | | mm | in | mm | in | | | |
| right hand | | | | | | | | | | | | | |
| 3955481 | KM40TSS12ENER2 | 12 | .472 | 19 | .73 | 11 | .433 | 42 | 1.655 | 70 | 2.756 | NG2L | 0,27 .58 |
| 3955483 | KM40TSS16FNER2 | 16 | .630 | 20 | .79 | 11 | .433 | 56 | 2.209 | 80 | 3.150 | NG2L | 0,28 .62 |
| 3955485 | KM40TSS20GNER2 | 20 | .787 | 25 | .98 | 13 | .512 | 70 | 2.757 | 90 | 3.543 | NG2L | 0,35 .76 |
| 3955487 | KM40TSS25ENER2 | 25 | .984 | 32 | 1.26 | 17 | .669 | 55 | 2.169 | 70 | 2.756 | NG2L | 0,34 .75 |
| 3955491 | KM40TSS25ENER3 | 25 | .984 | 34 | 1.34 | 17 | .669 | 55 | 2.169 | 70 | 2.756 | NG3L | 0,35 .77 |
| 3955489 | KM40TSS25HNER2 | 25 | .984 | 32 | 1.26 | 17 | .669 | 75 | 2.954 | 100 | 3.937 | NG2L | 0,49 1.08 |
| 3955493 | KM40TSS25HNER3 | 25 | .984 | 34 | 1.34 | 17 | .669 | 75 | 2.954 | 100 | 3.937 | NG3L | 0,49 1.09 |
| 3955497 | KM40TSS32GNER3 | 32 | 1.260 | 40 | 1.57 | 22 | .866 | 76 | 2.993 | 90 | 3.543 | NG3L | 0,55 1.21 |
| 3955495 | KM40TSS32JNER3 | 32 | 1.260 | 40 | 1.57 | 22 | .866 | 96 | 3.780 | 110 | 4.331 | NG3L | 0,67 1.48 |
| left hand | | | | | | | | | | | | | |
| 3955480 | KM40TSS12ENEL2 | 12 | .472 | 19 | .73 | 11 | .433 | 42 | 1.655 | 70 | 2.756 | NG2R | 0,27 .59 |
| 3955482 | KM40TSS16FNEL2 | 16 | .630 | 20 | .79 | 11 | .433 | 56 | 2.209 | 80 | 3.150 | NG2R | 0,28 .62 |
| 3955484 | KM40TSS20GNEL2 | 20 | .787 | 25 | .98 | 13 | .512 | 70 | 2.757 | 90 | 3.543 | NG2R | 0,35 .76 |
| 3955486 | KM40TSS25ENEL2 | 25 | .984 | 32 | 1.26 | 17 | .669 | 55 | 2.169 | 70 | 2.756 | NG2R | 0,34 .75 |
| 3955490 | KM40TSS25ENEL3 | 25 | .984 | 34 | 1.34 | 17 | .669 | 55 | 2.169 | 70 | 2.756 | NG3R | 0,35 .77 |
| 3955492 | KM40TSS25HNEL3 | 25 | .984 | 34 | 1.34 | 17 | .669 | 75 | 2.954 | 100 | 3.937 | NG3R | 0,49 1.09 |
| 3955496 | KM40TSS32GNEL3 | 32 | 1.260 | 40 | 1.57 | 22 | .866 | 76 | 2.993 | 90 | 3.543 | NG3R | 0,55 1.21 |

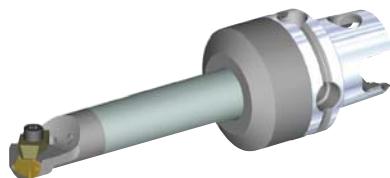
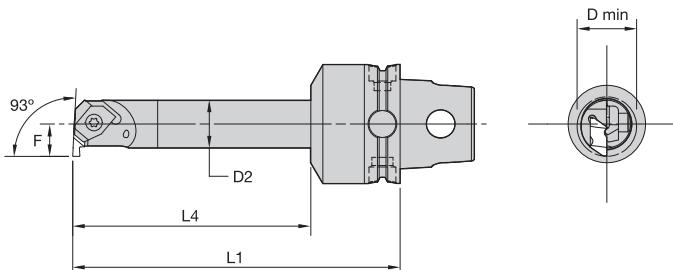
(continued)

(NE 90° • Steel – continued)

■ Spare Parts



| catalogue number | clamp | clamp screw |
|-------------------|-------|-------------|
| right hand | | |
| KM40TSS12ENER2 | CM147 | MS1488 |
| KM40TSS16FNER2 | CM147 | MS1488 |
| KM40TSS20GNER2 | CM75 | MS1488 |
| KM40TSS25ENER2 | CM75 | MS1488 |
| KM40TSS25ENER3 | CM73 | MS1489 |
| KM40TSS25HNER2 | CM75 | MS1488 |
| KM40TSS25HNER3 | CM73 | MS1489 |
| KM40TSS32GNER3 | CM73 | MS1489 |
| KM40TSS32JNER3 | CM73 | MS1489 |
| left hand | | |
| KM40TSS12ENEL2 | CM146 | MS1488 |
| KM40TSS16FNEL2 | CM146 | MS1488 |
| KM40TSS20GNEL2 | CM74 | MS1488 |
| KM40TSS25ENEL2 | CM74 | MS1488 |
| KM40TSS25ENEL3 | CM-72 | MS1489 |
| KM40TSS25HNEL3 | CM-72 | MS1489 |
| KM40TSS32GNEL3 | CM-72 | MS1489 |



Threading

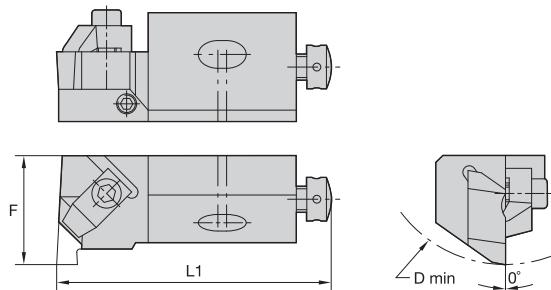
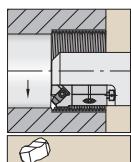


■ NE 90° • Carbide

| order number | catalogue number | D2 | D min | | F | L4 | | L1 | | gage insert | kg | lbs |
|--------------|------------------|----|-------|----|-----|----|------|----|------|-------------|-------|------|
| | | mm | in | mm | in | mm | in | mm | in | | | |
| right hand | | | | | | | | | | | | |
| 3951836 | KM40TSE16JNER2 | 16 | .630 | 20 | .79 | 11 | .433 | 80 | 3.15 | 110 | 4.331 | NG2L |
| left hand | | | | | | | | | | | | |
| 3951835 | KM40TSE16JNEL2 | 16 | .630 | 20 | .79 | 11 | .433 | 80 | 3.15 | 110 | 4.331 | NG2R |

■ Spare Parts

| | | | |
|------------|------------------|-------|-------------|
| | catalogue number | clamp | clamp screw |
| right hand | KM40TSE16JNER2 | CM146 | MS1488 |
| left hand | KM40TSE16JNEL2 | CM147 | MS1488 |



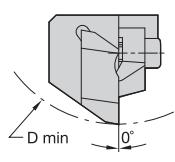
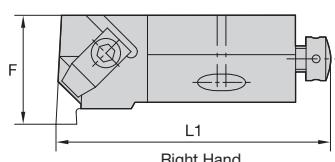
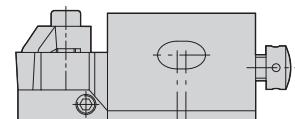
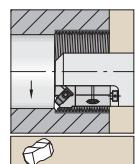
Steel Boring Cartridge



| order number | catalogue number | D min | F | L1 | gage insert | clamp | clamp screw | hex (mm) | radial adjusting screw | hex (mm) | axial screw | hex (mm) | washer |
|--------------|------------------|-------|----|-------|-------------|--------|-------------|----------|------------------------|----------|-------------|----------|--------------|
| right hand | | | | | | | | | | | | | |
| 1098380 | NER12CA2 | 50 | 20 | 55,7 | N.2L | CM75 | MS1025 | 2.5 mm | KUAM23 | 2.5 mm | KUAM31 | 2.5 mm | CSWM 060 050 |
| left hand | | | | | | | | | | | | | |
| 1098624 | NEL12CA2 | 50 | 20 | 55,0 | N.2R | CM74 | MS1025 | 2.5 mm | KUAM23 | 2.5 mm | KUAM31 | 2.5 mm | CSWM 060 050 |
| 1098626 | NEL25CA3 | 100 | 32 | 100,0 | N.3R | CM72LP | MS412 | 4 mm | KUAM26 | 4 mm | KUAM33 | 4 mm | CSWM 100 080 |

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page D102 for details.

F dimension measured over sharp point of Top Notch-style threading insert.



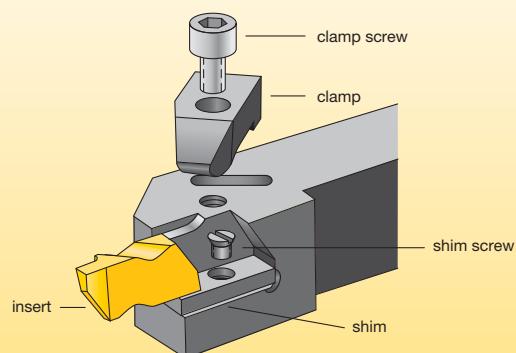
Steel Boring Cartridge



| order number | catalogue number | D min | F | L1 | gage insert | clamp | clamp screw | hex (mm) | radial adjusting screw | hex (mm) | axial screw | hex (mm) | washer |
|-------------------|------------------|-------|----|-------|-------------|--------|-------------|----------|------------------------|----------|-------------|----------|--------------|
| right hand | | | | | | | | | | | | | |
| 1098380 | NER12CA2 | 50 | 20 | 55,7 | N.2L | CM75 | MS1025 | 2.5 mm | KUAM23 | 2.5 mm | KUAM31 | 2.5 mm | CSWM 060 050 |
| left hand | | | | | | | | | | | | | |
| 1098624 | NEL12CA2 | 50 | 20 | 55,0 | N.2R | CM74 | MS1025 | 2.5 mm | KUAM23 | 2.5 mm | KUAM31 | 2.5 mm | CSWM 060 050 |
| 1098626 | NEL25CA3 | 100 | 32 | 100,0 | N.3R | CM72LP | MS412 | 4 mm | KUAM26 | 4 mm | KUAM33 | 4 mm | CSWM 100 080 |

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page D102 for details.

F dimension measured over sharp point of Top Notch style threading insert.

Toolholders and Boring Bars


| insert size and style | clamp | clamp screw | shim | shim screw |
|----------------------------------|--------|-------------|--------|------------|
| NG-1L | CM-109 | S-304 | - | - |
| NG-2R | CM-182 | S-310 | - | - |
| NG-2L | CM-183 | S-310 | - | - |
| NG-2R | CM-74 | S-310 | - | - |
| NG-2L | CM-75 | S-310 | - | - |
| NG-3R | CM-184 | S-412 | - | - |
| NG-3L | CM-185 | S-412 | - | - |
| NG-3R | CM-72 | S-412 | - | - |
| NG-3L | CM-73 | S-412 | - | - |
| NG-3R* | CM-78 | S-412 | - | - |
| NG-3L* | CM-70 | S-412 | - | - |
| NG-4R | CM-72 | S-412 | SM-420 | SL-344 |
| NG-4L | CM-73 | S-412 | SM-420 | SL-344 |
| NG-5R | CM-80 | S-352 | - | - |
| NG-5L | CM-81 | S-352 | - | - |
| NG-6R | CM-120 | S-412 | SM-416 | S-111 |
| NG-6L | CM-121 | S-412 | SM-416 | S-111 |
| NG-8R | CM-144 | S-422 | SM-419 | S-112 |
| NG-8L | CM-145 | S-422 | SM-419 | S-112 |
| NG-8R** | CM-144 | S-422 | SM-427 | S-111 |
| NG-8L** | CM-145 | S-422 | SM-427 | S-111 |
| Top Notch relief grooving | | | | |
| NU-3125R | CM-72 | S-412 | - | - |
| NU-3125L | CM-73 | S-412 | - | - |
| NU-3125R** | CM-72 | S-618 | - | - |
| NU-3125L** | CM-73 | S-618 | - | - |

*25mm diameter boring head.

**Boring head.

➤ LT • Laydown Triangle Threading

Primary Application

Laydown triangle (LT) threading is the system of choice for fine-pitch threads, high-helix/multistart threads, and single-point threading in small-diameter bores. With a wide selection of CB-style chip control inserts, you will receive superior chip management for excellent surface finishes and minimal operator intervention. The low-profile design enables unrestricted chip flow — ideal for I.D. threads. Variable shim angles enable proper cutting geometry for high-helix angle and reverse helix angle threading, maximising tool life and improving thread quality.

Features and Benefits

Precision-Ground Thread Form on LT and LT-CB

- Minimises built-up edge.
- Precisely cuts most common materials.
- Reduces cutting forces.
- Ensures accurate, high-quality threads.

Superior Chip Control

- Eliminates long, troublesome coils.
- Excellent for internal threading operations.
- Available in both partial and full profile inserts for all common thread forms.

KC5010™ and KC5025™ Premium PVD TiAIN-Coated Grades

- Increase tool life at existing machining conditions.
- Increase productivity by outperforming conventional PVD grades with up to a 30% advantage in cutting speeds.

Kenna Universal™ Inserts

- Precision moulded LT-K thread form provides outstanding utility and value.
- Excellent chip control combined with the KU25T™ grade enables trouble-free threading on a variety of workpiece materials.



Step 1 • Select Threading Method and Hand of Tooling

Required Information:

- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.



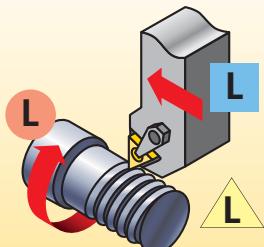
hand of thread



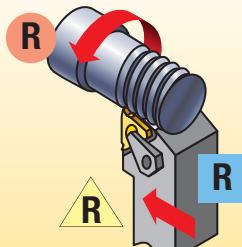
hand of toolholder



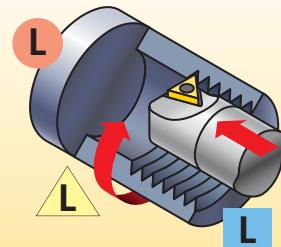
hand of insert

Feed direction toward the chuck • standard helix • RECOMMENDED


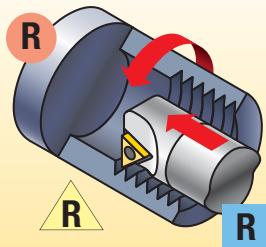
external left-hand thread



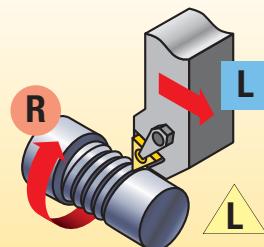
external right-hand thread



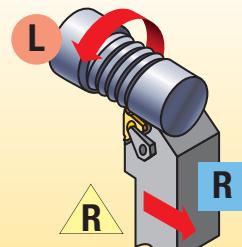
internal left-hand thread



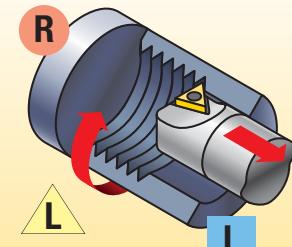
internal right-hand thread

Feed direction away from the chuck • reverse helix*


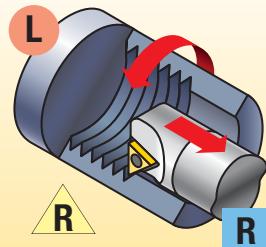
external right-hand thread



external left-hand thread



internal right-hand thread



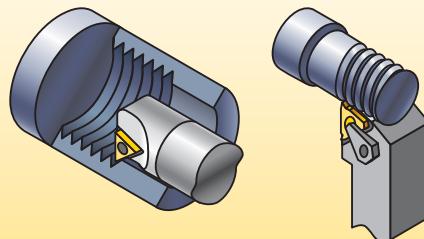
internal left-hand thread

*Negative shim required

Step 2 • Select Holder from Catalogue Page

Required Information:

- External/internal operation.
- Minimum bore diameter (for internal operations).
- Hand of tool.
- Insert size (gage insert).

Select the appropriate holder for the insert size and hand:


The insert size must match the gage insert size of your toolholder selection:

| catalogue number | gage insert | minimum bore diameter | shim |
|------------------|-------------|-----------------------|--------|
| S0812LSER2 | 2IRA60 | 16,5mm | SM-YI3 |
| S2020LSER3 | 3IR... | 36,8mm | SM-YI3 |

Step 3 • Choose Insert for Application

- Select cresting inserts for fully controlled thread form including diameter.
- Cresting inserts eliminate the need for deburring and are optimised for the best tool life at that pitch.
- Non-cresting partial profile inserts offer the flexibility to cut a variety of thread pitches with one insert.
- Note insert size for toolholder selection.

NOTE: See threading insert overview on page D50.

| insert size | catalogue number | KCU25/KC5025 | |
|-------------|------------------|--------------|----|
| | | 11 | 16 |
| 2IRA60 | 3IRAG60 | • | • |

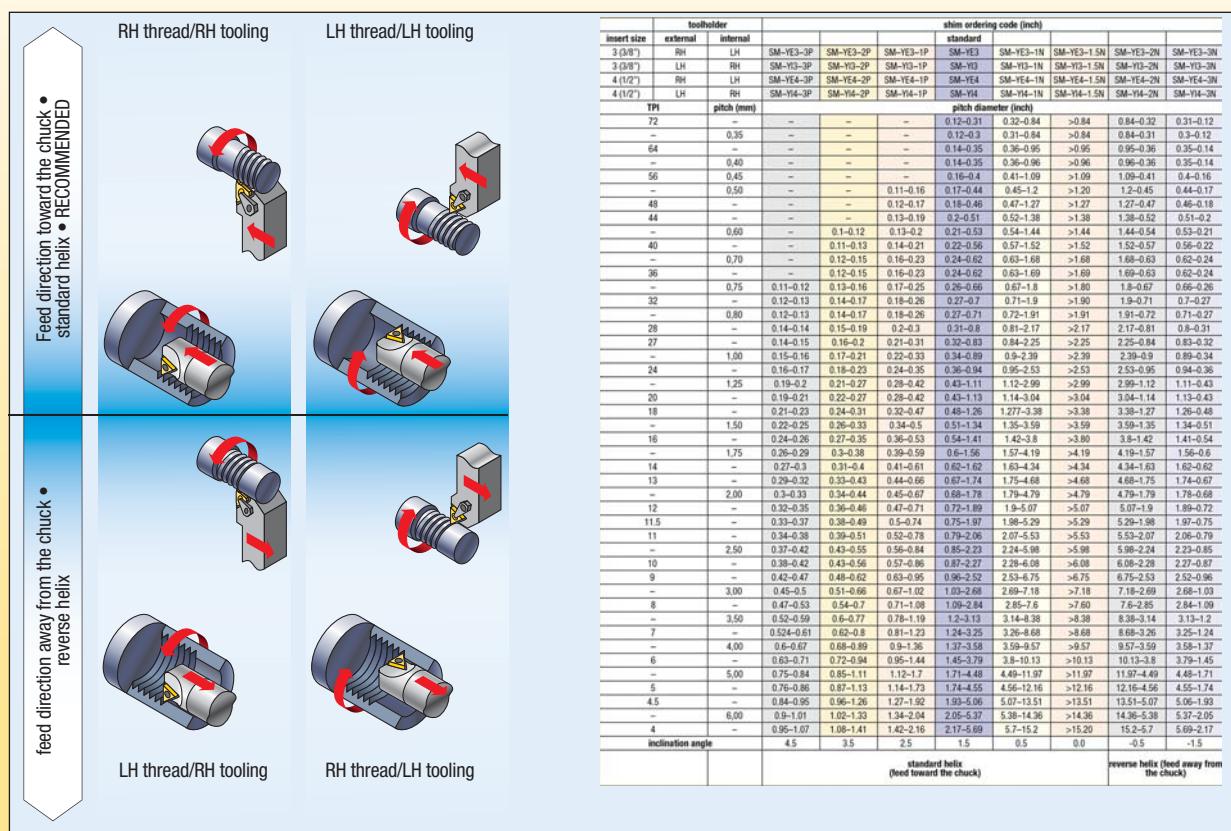
Step 4 • Select Appropriate Shim

Required Information:

- Thread form (TPI or pitch).
 - Pitch diameter.
 - Helix method (hand of tool, feed direction, hand of thread).
 - Number of starts

Select the proper shim: SMYE... for external RH or internal LH

SMYI for internal BH or external LH



If recommended shim is different from shim supplied with toolholder, order shim separately.

NOTE: Optimise your threading operation by using the proper infeed angle and the recommended infeed values.

See the Technical Section on pages D88–D110.

Also see detailed shim selection information on pages D109–D110.

Step 5 • Select Grade and Speed

Recommendations for Grade and Speed Selection – m/min

| | workpiece material | P | M | K | N | S |
|------------------|----------------------------|------------------|---|--|------------------|---|
| Kenna Perfect™ | insert style | CB chipbreaker |  |  | CB chipbreaker |  |
| | optimum cutting conditions | KC5010 70–260 | KC5010 90–245 | KC5010 60–245 | KC5010 90–550 | KC5010 30–150 |
| | first choice | KC5025 50–230 | KC5025 75–230 | KC5025 50–180 | KC5025 60–455 | KC5025 20–120 |
| Kenna Universal™ | insert style | -K chipbreaker | |  | | |
| | selection | KU25T 45–210 | KU25T 70–205 | KU25T 45–160 | KU25T 55–410 | KU25T 20–110 |

NOTE: See threading insert overview on page D50.

 ■ Recommended Starting Speeds [m/min]

| Material Group | | KC5010 | | | KC5025 | | | KU25T | | |
|----------------|-----|--------|------------|-----|--------|------------|-----|-------|------------|-----|
| P | 0-1 | 135 | 200 | 260 | 105 | 165 | 230 | 95 | 150 | 210 |
| | 2 | 130 | 190 | 245 | 100 | 150 | 200 | 90 | 135 | 180 |
| | 3 | 105 | 155 | 200 | 75 | 125 | 170 | 70 | 115 | 155 |
| | 4 | 70 | 120 | 160 | 60 | 95 | 130 | 55 | 85 | 115 |
| | 5 | 105 | 155 | 200 | 75 | 130 | 170 | 70 | 115 | 155 |
| | 6 | 70 | 120 | 160 | 50 | 90 | 130 | 45 | 80 | 115 |
| M | 1 | 120 | 180 | 245 | 90 | 170 | 230 | 80 | 155 | 205 |
| | 2 | 90 | 165 | 210 | 75 | 140 | 200 | 70 | 125 | 180 |
| | 3 | 90 | 165 | 210 | 75 | 135 | 200 | 70 | 120 | 180 |
| K | 1 | 120 | 180 | 245 | 90 | 135 | 180 | 80 | 120 | 160 |
| | 2 | 90 | 150 | 210 | 70 | 120 | 170 | 65 | 110 | 155 |
| | 3 | 60 | 105 | 150 | 50 | 85 | 120 | 45 | 75 | 110 |
| N | 1-2 | 150 | 365 | 550 | 120 | 305 | 455 | 110 | 275 | 410 |
| | 3 | 90 | 135 | 180 | 60 | 105 | 150 | 55 | 95 | 135 |
| | 4 | 120 | 305 | 455 | 100 | 200 | 305 | 90 | 180 | 275 |
| | 5 | 90 | 165 | 245 | 70 | 135 | 195 | 65 | 120 | 175 |
| | 6 | 120 | 210 | 305 | 100 | 170 | 245 | 90 | 155 | 220 |
| | 1 | 30 | 70 | 105 | 20 | 40 | 60 | 20 | 35 | 55 |
| S | 2 | 30 | 65 | 100 | 20 | 35 | 45 | 20 | 30 | 40 |
| | 3 | 30 | 65 | 100 | 20 | 35 | 45 | 20 | 30 | 40 |
| | 4 | 55 | 105 | 150 | 45 | 85 | 120 | 40 | 75 | 110 |
| | 1 | 30 | 45 | 60 | — | — | — | — | — | — |
| H | 2 | 15 | 30 | 45 | — | — | — | — | — | — |
| | 3 | — | — | — | — | — | — | — | — | — |
| | 4 | — | — | — | — | — | — | — | — | — |

NOTE: FIRST choice starting speeds are in **bold** type.

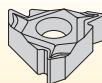
How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding image to easily identify which attributes apply.

| Threading LT Threading Inserts | | | | | | | | | |
|-----------------------------------|--|------------------|-------------|----|-----|-----|-----------------|-----|----|
| | | catalogue number | insert size | PC | EX | E | Thread pitch mm | TPI | |
| right hand | | LT | — | — | 1.2 | 1.5 | — | 10 | — |
| | | LT16ERUNCB | 16 | — | — | 1.2 | 1.5 | — | 12 |
| | | LT16ERUNCB | 16 | — | — | 1.2 | 1.5 | — | 14 |
| | | LT16ERUNCB | 16 | — | — | 0.8 | 0.8 | — | 16 |
| | | LT16ERUNCB | 16 | — | — | 0.7 | 0.8 | — | 18 |
| | | LT16ERUNCB | 16 | — | — | 0.7 | 0.8 | — | 20 |
| | | LT16ERUNCB | 16 | — | — | 0.7 | 0.8 | — | 24 |
| | | LT16ERUNCB | 16 | — | — | 0.8 | — | — | 28 |

LT

Type of Insert



LT = Laydown triangle threading

16

Cutting Edge Length (Size)

ER

Hand of Insert

ER = External right hand

EL = External left hand

NR = Internal right hand

NL = Internal left hand

20

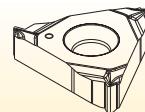
Thread Pitch

UN

Thread Profile

CB

Chip Control



□ = Flat top

CB = Chipbreaker

K = Kenna Universal™ chipbreaker

Insert size

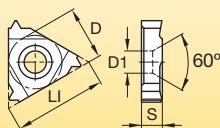
LI (mm)

D (mm)

S (mm)

D1 (mm)

| Insert size | LI (mm) | D (mm) | S (mm) | D1 (mm) |
|-------------|---------|--------|--------|---------|
| 11 | 11,0 | 6,35 | 3,20 | 3,25 |
| 16 | 16,5 | 9,52 | 3,63 | 3,94 |
| 22 | 22,0 | 12,70 | 4,78 | 4,88 |


partial profile

| designation | thread pitch (mm) | TPI |
|-------------|-------------------|-------|
| A | 0,50–1,5 | 48–16 |
| AG | 0,50–3,0 | 48–8 |
| G | 1,75–3,0 | 14–8 |
| N | 3,50–5,0 | 7–5 |

full profile

actual TPI or pitch in mm is designated | 0,5–4,0 | 48–8

ISO = ISO metric 60°

UN = American UN 60°

60 = Partial profile non-cresting 60°

55 = Partial profile non-cresting 55°

W = Whitworth 55°

BSPT = British Standard Pipe Thread 55°

NPT = American National Pipe Thread 60°

ACME = American Acme

STACME = American Stub Acme

TR = Trapez DIN 103

RD = Round DIN 405

UNJ = Controlled root radius 60°

NPTF = Dryseal 60°

API = American Petroleum Institute Threads

BUT = API Buttress Casing

APIRD = API Round

The Kennametal LT Advantage

Every box of 10 inserts includes a free Torx wrench and spare locking screw, except LT-K inserts.

| style | | | thread profile | standard | tolerance class | cresting | application | page(s) |
|---|---|---|---------------------------------|-------------------------------------|-----------------|----------|--|---------------------|
| CB | K | flat top | | | | | | |
|  |  |  | Partial profile 60° | — | — | N | General use for 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches. | D53–D54, D66–D67 |
|  |  |  | Metric ISO | ISO R262, DIN 13 | 6g/6H | Y | Widely used metric 60° V-form for all industries. | D57–D58, D70–D71 |
|  |  |  | American UN | ANSI B1.1:74 | 2A/2B | Y | Widely used inch-based 60° V-form for all industries. | D62–D63, D74–D75 |
| | |  | UNJ | MIL-S-8879C | 3A/3B | Y | Controlled root radius on external threads for military and aerospace industries, 60° thread form. | D63, D75 |
|  | |  | NPT | USAS B2.1:1968 | Standard NPT | Y | National Pipe Thread standard 60° thread form for pipe fittings. | D59, D72 |
|  | |  | NPTF | ANSI B1.20.3-1976 | Class 2 | Y | Dryseal-type NPT 60° thread form for pipe fittings. | D60, D72 |
| |  |  | Partial profile 55° | — | — | N | General use for 55° thread forms such as Whitworth, BSW, and BSP where non-cresting inserts are desired to cut a variety of pitches. | D52, D65–D66 |
| | |  | BSPT | BS 21:1985 | Standard BSPT | Y | 55° form for pipe fittings. | D56, D69 |
|  |  |  | Whitworth, BSW, BSF, BSP | BS 84:1956, ISO 228/1:1985, DIN 259 | Medium Class A | Y | Widely used 55° form for gas and water connections. | D64–D65, D76 |
| | |  | API Rotary Shoulder Connections | API SPEC. 7:1990 | Standard API | Y | 60° V-form used for rotary shoulder pipe connections in the oil and gas industry including V-.038R, V-.040, and V-.050 forms. | D55, D68 |
| | |  | API round | API STD. 5B:1979 | Standard API RD | Y | 60° V-form with large radius for casing, tubing, and line pipe in the oil and gas industry, including 8 and 10 round forms. | D55, D69 |
| | |  | API Buttress Casing | API SPEC. 7:1990 | Standard API | Y | 45° buttress-style form used for pipe casing connections in the oil and gas industry. | D56, D69 |
| | |  | Acme | ANSI B1.5:1988 | 3G | N | 29° truncated thread form for motion applications in a wide variety of industries. | D54, D68 |
| | |  | Stub Acme | ANSI B1.8:1988 | 2G | N | Shallow depth 29° truncated thread form for motion applications in a wide variety of industries. | D61, D73 |
| | |  | Round | DIN 405 | 7h/7H | Y | Round thread form for tube fittings in the chemical and food industries. | D60, D73 |
| | |  | Trapez | DIN 103 | 7e/7H | N | 30° truncated metric thread form for motion applications. | D61, D73 |

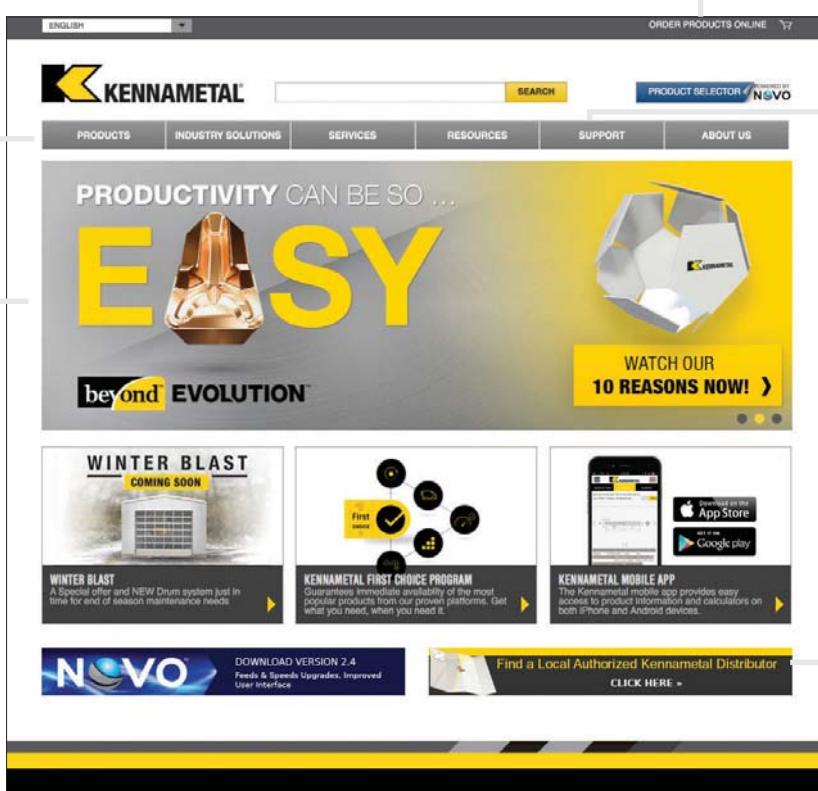
Kennametal on the Web

kennametal.com

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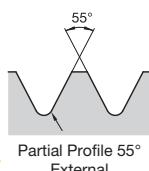
Register on Konnect for the full functionality of the Kennametal online ordering website.

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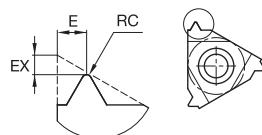
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Partial Profile 55° External



- first choice
- alternate choice

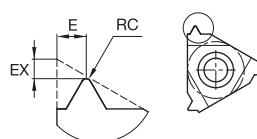
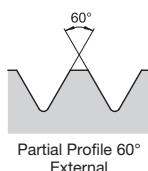
| | | | |
|---|---|---|---|
| P | ● | ● | ● |
| M | ● | ● | ● |
| K | ● | ● | ● |
| N | ○ | ○ | ○ |
| S | ● | ● | ● |
| H | ○ | | |

■ LT-ER/L-55

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|------|-----------------|-------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ERA55 | 16 | 0,05 | 0,8 | 0,89 | 0,50-1,50 | 16-48 | - | ● | - |
| LT16ERAG55 | 16 | 0,08 | 1,2 | 1,70 | 0,50-3,00 | 8-48 | ● | ● | - |
| 16ERG55 | 16 | 0,20 | 1,2 | 1,70 | 1,75-3,00 | 8-14 | - | ● | - |
| LT22ERN55 | 22 | 0,43 | 1,7 | 2,49 | 3,50-5,00 | 5-7 | - | ● | - |
| left hand | | | | | | | | | |
| LT16ELAG55 | 16 | 0,08 | 1,2 | 1,70 | 0,50-3,00 | 8-48 | - | ● | - |

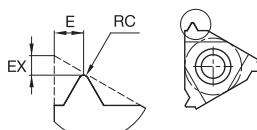
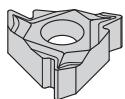
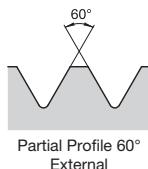
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|---|---|---|---|---|
| P | | ● | ● | ● |
| M | ■ | ● | ● | ● |
| K | ■ | ● | ● | ● |
| N | ■ | ○ | ○ | ○ |
| S | ■ | ● | ● | ● |
| H | ■ | ○ | | |

● first choice
○ alternate choice



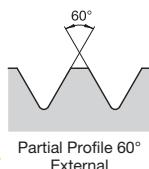
■ LT-ER/L-60

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|-----|-----------------|-------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ERA60 | 16 | 0,05 | 0,8 | 0,9 | 0,50-1,50 | 16-48 | ● | ● | - |
| 16ERAG60 | 16 | 0,08 | 1,2 | 1,7 | 0,50-3,0 | 8-48 | - | ● | - |
| LT16ERAG60 | 16 | 0,08 | 1,2 | 1,7 | 0,50-3,0 | 8-48 | ● | - | - |
| LT16ERG60 | 16 | 0,28 | 1,2 | 1,7 | 1,75-3,0 | 8-14 | ● | ● | - |
| LT22ERN60 | 22 | 0,53 | 1,7 | 2,5 | 3,5-5,0 | 5-7 | - | ● | - |
| left hand | | | | | | | | | |
| LT16ELA60 | 16 | 0,05 | 0,8 | 0,9 | 0,50-1,50 | 16-48 | - | ● | - |
| LT16ELAG60 | 16 | 0,08 | 1,2 | 1,7 | 0,50-3,0 | 8-48 | - | ● | - |
| LT16ELG60 | 16 | 0,28 | 1,2 | 1,7 | 1,75-3,0 | 8-14 | - | ● | - |
| LT22ELN60 | 22 | 0,53 | 1,7 | 2,5 | 3,5-5,0 | 5-7 | - | ● | - |

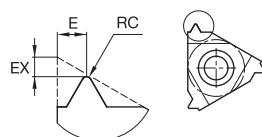
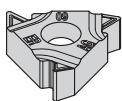


■ LT-ER-60CB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|-----|-----------------|------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ERAG60CB | 16 | 0,08 | 0,9 | 1,5 | 0,50-3,0 | 8-48 | ● | ● | - |



Partial Profile 60° External

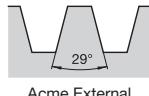


- first choice
- alternate choice

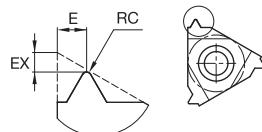
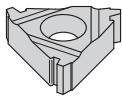
| | | | | |
|---|--|---|---|---|
| P | | ● | ● | ● |
| M | | ● | ● | ● |
| K | | ● | ● | ● |
| N | | ○ | ○ | ○ |
| S | | ● | ● | ● |
| H | | ○ | | |

■ LT-ER-60K

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|---------------------------|-------------|------|-----|-----|-----------------|------|--------|--------|-------|
| right hand LT16ERAG60K | 16 | 0,08 | 1,2 | 1,7 | 0,50-3,0 | 8-48 | - | - | ● |



Acme External

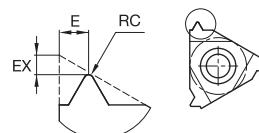
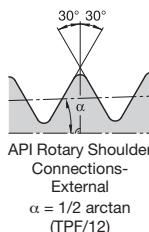


■ LT-ER/L-ACME

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|----------------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand LT16ER10ACME | 16 | — | 1,3 | 1,40 | — | 10 | — | ● | — |
| LT16ER12ACME | 16 | — | 1,1 | 1,19 | — | 12 | — | ● | — |
| LT16ER16ACME | 16 | — | 1,0 | 1,09 | — | 16 | — | ● | — |
| LT16ER8ACME | 16 | — | 1,4 | 1,50 | — | 8 | — | ● | — |
| LT22ER5ACME | 22 | — | 2,0 | 2,29 | — | 5 | — | ● | — |
| LT22ER6ACME | 22 | — | 1,8 | 2,11 | — | 6 | — | ● | — |

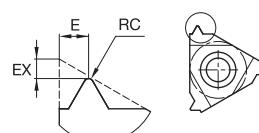
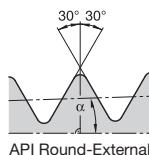
| | | | | |
|---|--|---|---|---|
| P | | ● | ● | ● |
| M | | ● | ● | ● |
| K | | ● | ● | ● |
| N | | ○ | ○ | ○ |
| S | | ● | ● | ● |
| H | | ○ | | |

● first choice
○ alternate choice



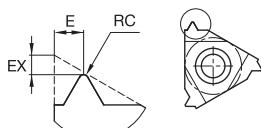
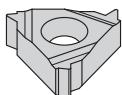
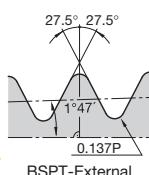
■ LT-ER/L-API

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT22ER4API382 | 22 | — | 2,1 | 2,79 | — | 4 | — | ● | — |
| LT22ER4API502 | 22 | — | 2,0 | 2,90 | — | 4 | ● | ● | — |
| LT22ER4API503 | 22 | — | 2,0 | 2,90 | — | 4 | ● | — | — |
| LT22ER5API403 | 22 | — | 1,8 | 2,60 | — | 5 | ● | — | — |
| LT27ER4API502 | 28 | 0,64 | 2,0 | 2,79 | — | 4 | — | ● | — |
| LT27ER4API382 | 28 | 0,97 | 2,0 | 2,79 | — | 4 | — | ● | — |



■ LT-ER/L-APIRD

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER10APIRD | 16 | — | 1,2 | 1,40 | — | 10 | — | ● | — |
| LT16ER8APIRD | 16 | — | 1,3 | 1,50 | — | 8 | — | ● | — |
| left hand | | | | | | | | | |
| LT16EL8APIRD | 16 | — | 1,3 | 1,50 | — | 8 | — | ● | — |



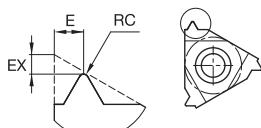
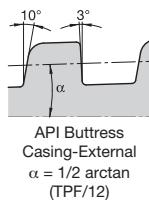
- first choice
- alternate choice

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

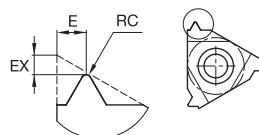
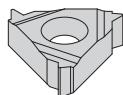
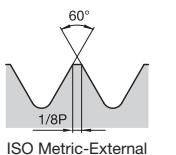
Threading

■ LT-ER/L-BSPT

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER11BSPT | 16 | — | 1,1 | 1,50 | — | 11 | — | ● | — |
| LT16ER14BSPT | 16 | — | 1,0 | 1,19 | — | 14 | — | ● | — |

**■ LT-ER/L-BUT**

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT22ER5BUT75 | 22 | — | 3,1 | 1,91 | — | 5 | — | ● | — |

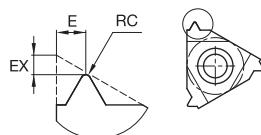
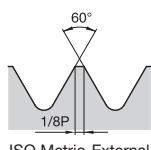


● first choice
○ alternate choice

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

■ LT-ER/L-ISO

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER05ISO | 16 | — | 0,6 | 0,4 | 0,50 | — | — | ● | — |
| LT16ER07ISO | 16 | — | 0,6 | 0,6 | 0,75 | — | — | ● | — |
| LT16ER10ISO | 16 | — | 0,7 | 0,7 | 1,0 | — | ● | ● | — |
| LT16ER12ISO | 16 | — | 0,8 | 0,9 | 1,25 | — | ● | ● | — |
| LT16ER15ISO | 16 | — | 0,8 | 1,0 | 1,5 | — | ● | ● | — |
| LT16ER175ISO | 16 | — | 0,9 | 1,2 | 1,75 | — | ● | ● | — |
| LT16ER20ISO | 16 | — | 1,0 | 1,3 | 2,0 | — | ● | ● | — |
| LT16ER25ISO | 16 | — | 1,1 | 1,5 | 2,5 | — | ● | ● | — |
| LT16ER30ISO | 16 | — | 1,2 | 1,6 | 3,0 | — | ● | ● | — |
| LT22ER35ISO | 22 | — | 1,6 | 2,3 | 3,5 | — | — | ● | — |
| LT22ER40ISO | 22 | — | 1,6 | 2,3 | 4,0 | — | — | ● | — |
| LT22ER45ISO | 22 | — | 1,7 | 2,4 | 4,5 | — | — | ● | — |
| LT22ER50ISO | 22 | — | 1,7 | 2,5 | 5,0 | — | — | ● | — |
| left hand | | | | | | | | | |
| LT16EL15ISO | 16 | — | 0,8 | 1,0 | 1,5 | — | ● | ● | — |
| LT16EL175ISO | 16 | — | 0,9 | 1,2 | 1,75 | — | — | ● | — |
| LT16EL20ISO | 16 | — | 1,0 | 1,3 | 2,0 | — | — | ● | — |
| LT16EL25ISO | 16 | — | 1,1 | 1,5 | 2,5 | — | — | ● | — |
| LT16EL30ISO | 16 | — | 1,2 | 1,6 | 3,0 | — | — | ● | — |
| LT16EL05ISO | 16 | — | 0,6 | 0,4 | 0,50 | — | — | ● | — |
| LT16EL075ISO | 16 | — | 0,6 | 0,6 | 0,75 | — | — | ● | — |
| LT16EL10ISO | 16 | — | 0,7 | 0,7 | 1,0 | — | — | ● | — |
| LT16EL12ISO | 16 | — | 0,8 | 0,9 | 1,25 | — | — | ● | — |
| LT22EL35ISO | 22 | — | 1,6 | 2,3 | 3,5 | — | — | ● | — |



● first choice
○ alternate choice

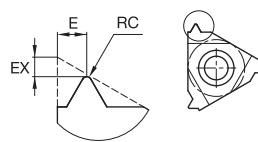
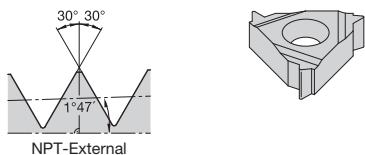
| | | | |
|---|---|---|---|
| P | ● | ● | ● |
| M | ● | ● | ● |
| K | ● | ● | ● |
| N | ○ | ○ | ○ |
| S | ● | ● | ● |
| H | ○ | | |

LT-ER-ISOCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER05ISOCB | 16 | — | 1,2 | 0,5 | 0,50 | — | ● | ● | — |
| LT16ER075ISOCB | 16 | — | 1,2 | 0,6 | 0,75 | — | ● | ● | — |
| LT16ER10ISOCB | 16 | — | 0,7 | 0,8 | 1,0 | — | ● | ● | — |
| LT16ER125ISOCB | 16 | — | 0,7 | 0,8 | 1,25 | — | ● | ● | — |
| LT16ER15ISOCB | 16 | — | 0,7 | 0,8 | 1,5 | — | ● | ● | — |
| LT16ER175ISOCB | 16 | — | 1,2 | 1,5 | 1,75 | — | ● | ● | — |
| LT16ER20ISOCB | 16 | — | 1,2 | 1,5 | 2,0 | — | ● | ● | — |
| LT16ER25ISOCB | 16 | — | 1,2 | 1,5 | 2,5 | — | — | ● | — |
| LT16ER30ISOCB | 16 | — | 1,3 | 1,5 | 3,0 | — | ● | ● | — |

| | | | | |
|---|---|---|---|---|
| P | | ● | ● | ● |
| M | ■ | ● | ● | ● |
| K | ■ | ● | ● | ● |
| N | ■ | ○ | ○ | ○ |
| S | ■ | ● | ● | ● |
| H | ■ | ○ | | |

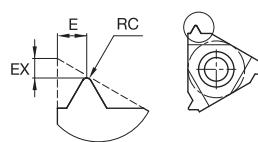
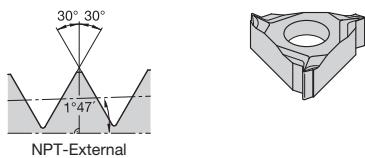
● first choice
○ alternate choice



Threading

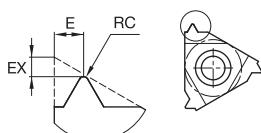
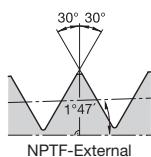
■ LT-ER/L-NPT

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER115NPT | 16 | — | 1,1 | 1,5 | — | 11.5 | ● | ● | — |
| LT16ER14NPT | 16 | — | 0,9 | 1,2 | — | 14 | ● | ● | — |
| LT16ER18NPT | 16 | — | 0,8 | 1,0 | — | 18 | ● | ● | — |
| LT16ER27NPT | 16 | — | 0,7 | 0,8 | — | 27 | — | ● | — |
| LT16ER8NPT | 16 | — | 1,3 | 1,8 | — | 8 | — | ● | — |



■ LT-ER-NPTCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER14NPTCB | 16 | — | 1,1 | 1,5 | — | 14 | ● | ● | — |

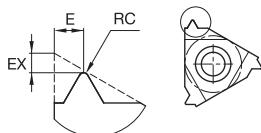
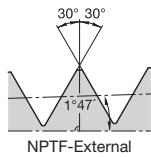


● first choice
○ alternate choice

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

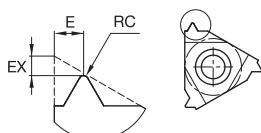
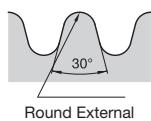
■ LT-ER/L-NPTF

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER115NPTF | 16 | — | 1,1 | 1,5 | — | 11.5 | — | ● | — |
| LT16ER14NPTF | 16 | — | 0,9 | 1,2 | — | 14 | — | ● | — |



■ LT-ER-NPTFCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER115NPTFCB | 16 | — | 1,1 | 1,5 | — | 11.5 | — | ● | — |

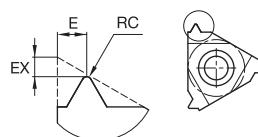
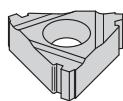
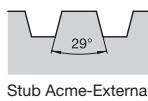


■ LT-ER/L-RD

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER8RD | 16 | 0,76 | 1,4 | 1,30 | — | 8 | — | ● | — |
| LT22ER6RD | 22 | 1,01 | 1,5 | 1,70 | — | 6 | — | ● | — |

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

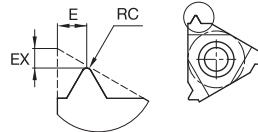
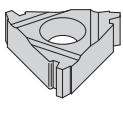
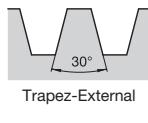
● first choice
○ alternate choice



Stub Acme-External

■ LT-ER/L-STACME

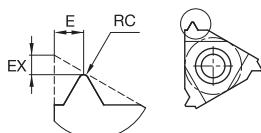
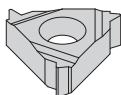
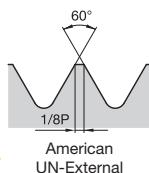
| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER10STACME | 16 | — | 1,2 | 1,30 | — | 10 | — | ● | — |
| LT16ER12STACME | 16 | — | 1,2 | 1,19 | — | 12 | — | ● | — |
| LT16ER16STACME | 16 | — | 1,0 | 0,99 | — | 16 | — | ● | — |
| LT16ER6STACME | 16 | — | 1,7 | 1,80 | — | 6 | — | ● | — |
| LT16ER8STACME | 16 | — | 1,4 | 1,50 | — | 8 | — | ● | — |
| LT22ER5STACME | 22 | — | 2,1 | 2,29 | — | 5 | — | ● | — |



Trapez-External

■ LT-ER/L-TR

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER2TR | 16 | — | 1,1 | 1,30 | 2,0 | — | — | ● | — |
| LT16ER3TR | 16 | — | 1,3 | 1,50 | 3,0 | — | — | ● | — |
| LT22ER4TR | 22 | — | 1,7 | 1,91 | 4,0 | — | — | ● | — |
| LT22ER5TR | 22 | — | 2,1 | 2,50 | 5,0 | — | — | ● | — |



- first choice
- alternate choice

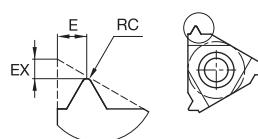
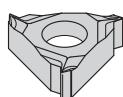
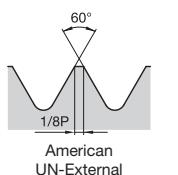
| | | | |
|---|---|---|---|
| P | ● | ● | ● |
| M | ● | ● | ● |
| K | ● | ● | ● |
| N | ○ | ○ | ○ |
| S | ● | ● | ● |
| H | ○ | | |

■ LT-ER/L-UN

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER10UN | 16 | — | 1,1 | 1,5 | — | 10 | — | ● | — |
| LT16ER12UN | 16 | — | 1,1 | 1,4 | — | 12 | ● | ● | — |
| LT16ER14UN | 16 | — | 1,0 | 1,2 | — | 14 | ● | ● | — |
| LT16ER16UN | 16 | — | 0,9 | 1,1 | — | 16 | ● | ● | — |
| LT16ER18UN | 16 | — | 0,8 | 1,0 | — | 18 | ● | ● | — |
| LT16ER20UN | 16 | — | 0,8 | 0,9 | — | 20 | ● | ● | — |
| LT16ER24UN | 16 | — | 0,7 | 0,8 | — | 24 | ● | ● | — |
| LT16ER28UN | 16 | — | 0,6 | 0,7 | — | 28 | ● | ● | — |
| LT16ER32UN | 16 | — | 0,6 | 0,6 | — | 32 | ● | ● | — |
| LT16ER36UN | 16 | — | 0,6 | 0,6 | — | 36 | — | ● | — |
| LT16ER40UN | 16 | — | 0,6 | 0,6 | — | 40 | — | ● | — |
| LT16ER48UN | 16 | — | 0,6 | 0,6 | — | 48 | — | ● | — |
| LT16ER8UN | 16 | — | 1,2 | 1,6 | — | 8 | — | ● | — |
| left hand | | | | | | | | | |
| LT16EL24UN | 16 | — | 0,7 | 0,8 | — | 24 | — | ● | — |
| LT16EL28UN | 16 | — | 0,6 | 0,7 | — | 28 | — | ● | — |
| LT16EL8UN | 16 | — | 1,2 | 1,6 | — | 8 | — | ● | — |
| LT16EL12UN | 16 | — | 1,1 | 1,4 | — | 12 | — | ● | — |
| LT16EL14UN | 16 | — | 1,0 | 1,2 | — | 14 | — | ● | — |
| LT16EL16UN | 16 | — | 0,9 | 1,1 | — | 16 | — | ● | — |
| LT16EL18UN | 16 | — | 0,8 | 1,0 | — | 18 | — | ● | — |
| LT16EL20UN | 16 | — | 0,8 | 0,9 | — | 20 | — | ● | — |

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

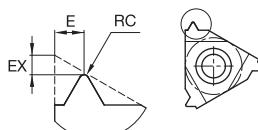
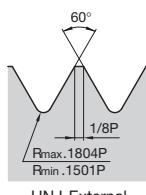
- first choice
- alternate choice



Threading

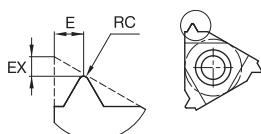
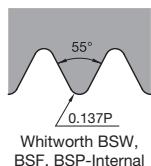
■ LT-ER-UNCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER10UNCB | 16 | — | 1,2 | 1,5 | — | 10 | — | ● | — |
| LT16ER12UNCB | 16 | — | 1,2 | 1,5 | — | 12 | ● | ● | — |
| LT16ER14UNCB | 16 | — | 1,2 | 1,5 | — | 14 | ● | ● | — |
| LT16ER16UNCB | 16 | — | 0,8 | 0,8 | — | 16 | ● | ● | — |
| LT16ER18UNCB | 16 | — | 0,7 | 0,8 | — | 18 | ● | ● | — |
| LT16ER20UNCB | 16 | — | 0,7 | 0,8 | — | 20 | ● | ● | — |
| LT16ER24UNCB | 16 | — | 0,7 | 0,8 | — | 24 | ● | ● | — |
| LT16ER28UNCB | 16 | — | 0,7 | 0,8 | — | 28 | ● | ● | — |
| LT16ER32UNCB | 16 | — | 1,2 | 0,5 | — | 32 | ● | ● | — |
| LT16ER8UNCB | 16 | — | 1,3 | 1,5 | — | 8 | ● | ● | — |



■ LT-ER/L-UNJ

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER12UNJ | 16 | — | 1,1 | 1,3 | — | 12 | ● | ● | — |
| LT16ER14UNJ | 16 | — | 1,0 | 1,2 | — | 14 | ● | ● | — |
| LT16ER16UNJ | 16 | — | 0,9 | 1,1 | — | 16 | ● | ● | — |
| LT16ER18UNJ | 16 | — | 0,8 | 1,0 | — | 18 | ● | ● | — |
| LT16ER20UNJ | 16 | — | 0,8 | 0,9 | — | 20 | ● | ● | — |
| LT16ER24UNJ | 16 | — | 0,7 | 0,8 | — | 24 | — | ● | — |
| LT16ER28UNJ | 16 | — | 0,7 | 0,7 | — | 28 | — | ● | — |
| LT16ER32UNJ | 16 | — | 0,6 | 0,7 | — | 32 | — | ● | — |
| left hand | | | | | | | | | |
| LT16EL16UNJ | 16 | — | 0,9 | 1,1 | — | 16 | — | ● | — |



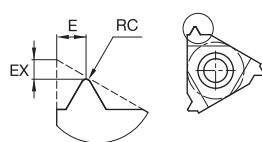
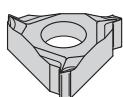
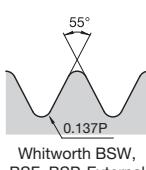
● first choice
○ alternate choice

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

■ LT-ER/L-W

Threading

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER10W | 16 | — | 1,1 | 1,50 | — | 10 | — | ● | — |
| LT16ER11W | 16 | — | 1,1 | 1,50 | — | 11 | ● | ● | — |
| LT16ER12W | 16 | — | 1,1 | 1,40 | — | 12 | — | ● | — |
| LT16ER14W | 16 | — | 1,0 | 1,19 | — | 14 | ● | ● | — |
| LT16ER16W | 16 | — | 0,9 | 1,09 | — | 16 | — | ● | — |
| LT16ER18W | 16 | — | 0,8 | 0,99 | — | 18 | — | ● | — |
| LT16ER19W | 16 | — | 0,8 | 0,99 | — | 19 | ● | ● | — |
| LT16ER20W | 16 | — | 0,8 | 0,89 | — | 20 | — | ● | — |
| LT16ER24W | 16 | — | 0,7 | 0,79 | — | 24 | — | ● | — |
| LT16ER28W | 16 | — | 0,6 | 0,69 | — | 28 | — | ● | — |
| LT16ER8W | 16 | — | 1,2 | 1,50 | — | 8 | — | ● | — |
| LT16ER9W | 16 | — | 1,2 | 1,70 | — | 9 | — | ● | — |
| LT22ER6W | 22 | — | 1,6 | 2,29 | — | 6 | — | ● | — |
| LT22ER7W | 22 | — | 1,6 | 2,29 | — | 7 | — | ● | — |
| left hand | | | | | | | | | |
| LT16EL11W | 16 | — | 1,1 | 1,50 | — | 11 | — | ● | — |
| LT16EL14W | 16 | — | 1,0 | 1,19 | — | 14 | — | ● | — |

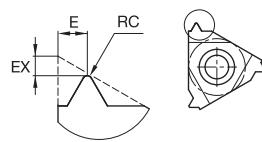
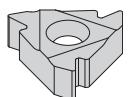
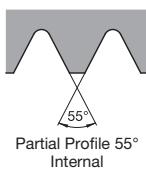


● first choice
○ alternate choice

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

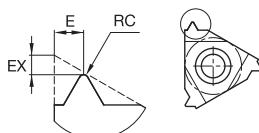
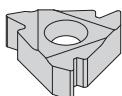
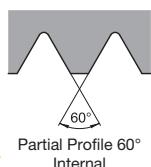
■ LT-ER-WCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16ER11WCB | 16 | — | 1,3 | 1,50 | — | 11 | — | ● | — |
| LT16ER14WCB | 16 | — | 1,3 | 1,50 | — | 14 | ● | ● | — |



■ LT-NR/L-55

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|------|-----------------|-------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NRA55 | 11 | 0,05 | 0,8 | 0,89 | 0,50-1,50 | 16-48 | — | ● | — |
| LT16NRA55 | 16 | 0,05 | 0,8 | 0,89 | 0,50-1,50 | 16-48 | — | ● | — |
| LT16NRAG55 | 16 | 0,07 | 1,2 | 1,70 | 0,50-3,00 | 8-48 | — | ● | — |
| LT16NRG55 | 16 | 0,21 | 1,2 | 1,70 | 1,75-3,00 | 8-14 | — | ● | — |
| LT22NRN55 | 22 | 0,43 | 1,7 | 2,49 | 3,50-5,00 | 5-7 | — | ● | — |



● first choice
○ alternate choice

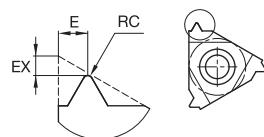
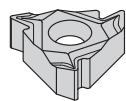
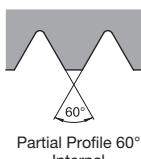
| | | | |
|---|---|---|---|
| P | ● | ● | ● |
| M | ● | ● | ● |
| K | ● | ● | ● |
| N | ○ | ○ | ○ |
| S | ● | ● | ● |
| H | ○ | | |

■ LT-NR/L-60

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|-----|-----------------|-------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NRA60 | 11 | 0,05 | 0,8 | 0,9 | 0,50-1,5 | 48-16 | ● | ● | - |
| LT16NRA60 | 16 | 0,05 | 0,8 | 0,9 | 0,50-1,5 | 48-16 | ● | ● | - |
| LT16NRAG60 | 16 | 0,05 | 1,2 | 1,7 | 0,50-3,0 | 48-8 | ● | ● | - |
| LT16NRG60 | 16 | 0,15 | 1,2 | 1,7 | 1,75-3,0 | 14-8 | ● | ● | - |
| LT22NPN60 | 22 | 0,31 | 1,7 | 2,5 | 3,5-5,0 | 7-5 | - | ● | - |
| left hand | | | | | | | | | |
| LT11NLA60 | 11 | 0,05 | 0,8 | 0,9 | 0,50-1,5 | 48-16 | - | ● | - |
| LT16NLA60 | 16 | 0,05 | 0,8 | 0,9 | 0,50-1,5 | 48-16 | - | ● | - |
| LT16NLAG60 | 16 | 0,05 | 1,2 | 1,7 | 0,50-3,0 | 48-8 | - | ● | - |
| LT16NLG60 | 16 | 0,15 | 1,2 | 1,7 | 1,75-3,0 | 14-8 | - | ● | - |
| LT22NLN60 | 22 | 0,31 | 1,7 | 2,5 | 3,5-5,0 | 7-5 | - | ● | - |

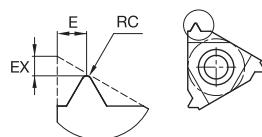
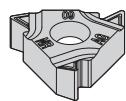
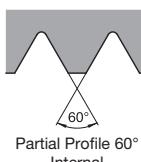
| | | | | |
|---|---|---|---|---|
| P | | ● | ● | ● |
| M | ■ | ● | ● | ● |
| K | ■ | ● | ● | ● |
| N | ■ | ○ | ○ | ○ |
| S | ■ | ● | ● | ● |
| H | ■ | ○ | | |

● first choice
○ alternate choice



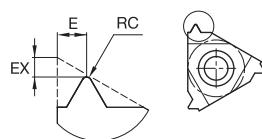
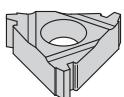
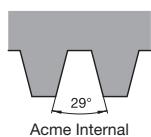
■ LT-NR-60CB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|-----|-----------------|-------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NRRA60CB | 11 | 0,05 | 0,6 | 0,8 | 0,50-1,50 | 48-16 | - | ● | - |
| LT16NRAG60CB | 16 | 0,05 | 0,9 | 1,5 | 0,50-3,0 | 48-8 | - | ● | - |
| LT16NRG60CB | 16 | 0,16 | 1,0 | 1,5 | 1,75-3,0 | 14-8 | - | ● | - |



■ LT-NR-60K

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|-----|-----------------|------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NRAG60K | 16 | 0,04 | 1,2 | 1,7 | 0,50-3,0 | 48-8 | - | - | ● |

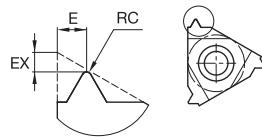
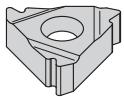
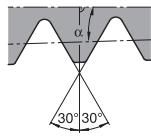


● first choice
○ alternate choice

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

■ LT-NR/L-ACME

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NR10ACME | 16 | — | 1,2 | 1,30 | — | 10 | — | ● | — |
| LT16NR12ACME | 16 | — | 1,2 | 1,30 | — | 12 | — | ● | — |
| LT16NR8ACME | 16 | — | 1,4 | 1,50 | — | 8 | — | ● | — |
| LT22NR5ACME | 22 | — | 2,0 | 2,29 | — | 5 | — | ● | — |
| LT22NR6ACME | 22 | — | 1,8 | 2,11 | — | 6 | — | ● | — |



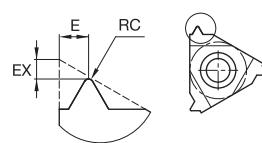
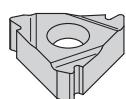
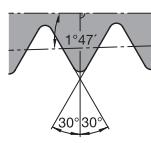
API Rotary Shoulder
Connections-
Internal
 $\alpha = 1/2 \arctan (TPF/12)$

■ LT-NR/L-API

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|------|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT22NR4API382 | 22 | — | 2,1 | 2,79 | — | 4 | — | ● | — |
| LT22NR4API502 | 22 | — | 2,1 | 3,10 | — | 4 | — | ● | — |
| LT22NR5API403 | 22 | — | 1,8 | 2,60 | — | 5 | — | ● | — |
| LT27NR4API502 | 28 | 0,65 | 2,0 | 3,79 | — | 4 | — | ● | — |
| LT27NR4API382 | 28 | 0,99 | 2,0 | 2,79 | — | 4 | — | ● | — |

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

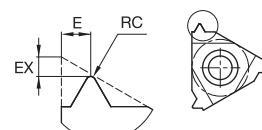
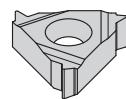
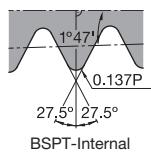
● first choice
○ alternate choice



API Round-Internal

■ LT-NR/L-APIRD

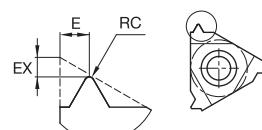
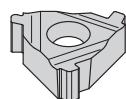
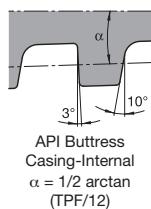
| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NR10APIRD | 16 | — | 1,2 | 1,40 | — | 10 | — | ● | — |
| LT16NR8APIRD | 16 | — | 1,3 | 1,50 | — | 8 | — | ● | — |



BSPT-Internal

■ LT-NR/L-BSPT

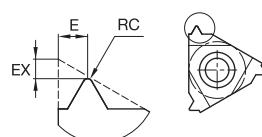
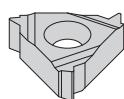
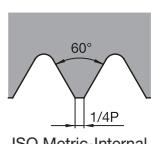
| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR14BSPT | 11 | — | 0,9 | 0,99 | — | 14 | — | ● | — |
| LT16NR11BSPT | 16 | — | 1,1 | 1,50 | — | 11 | — | ● | — |
| LT16NR14BSPT | 16 | — | 1,0 | 1,19 | — | 14 | — | ● | — |



API Buttress
Casing-Internal
 $\alpha = 1/2 \arctan(TPF/12)$

■ LT-NR/L-BUT

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT22NR5BUT1 | 22 | — | 2,8 | 1,91 | — | 5 | — | ● | — |
| LT22NR5BUT75 | 22 | — | 2,8 | 1,91 | — | 5 | — | ● | — |

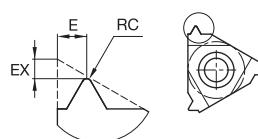
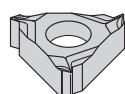
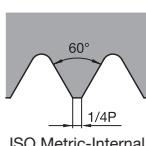


● first choice
○ alternate choice

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

■ LT-NR/L-ISO

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR05ISO | 11 | — | 0,6 | 0,4 | 0,50 | — | — | ● | — |
| LT11NR075ISO | 11 | — | 0,6 | 0,6 | 0,75 | — | — | ● | — |
| LT11NR10ISO | 11 | — | 0,6 | 0,7 | 1,0 | — | — | ● | — |
| LT11NR125ISO | 11 | — | 0,8 | 0,9 | 1,25 | — | — | ● | — |
| LT11NR15ISO | 11 | — | 0,8 | 1,0 | 1,5 | — | ● | ● | — |
| LT11NR175ISO | 11 | — | 0,9 | 1,1 | 1,75 | — | — | ● | — |
| LT11NR20ISO | 11 | — | 0,9 | 1,1 | 2,0 | — | — | ● | — |
| LT16NR05ISO | 16 | — | 0,6 | 0,4 | 0,50 | — | — | ● | — |
| LT16NR075ISO | 16 | — | 0,6 | 0,6 | 0,75 | — | — | ● | — |
| LT16NR10ISO | 16 | — | 0,6 | 0,7 | 1,0 | — | ● | ● | — |
| LT16NR125ISO | 16 | — | 0,8 | 0,9 | 1,25 | — | — | ● | — |
| LT16NR15ISO | 16 | — | 0,8 | 1,0 | 1,5 | — | ● | ● | — |
| LT16NR175ISO | 16 | — | 0,9 | 1,2 | 1,75 | — | — | ● | — |
| LT16NR20ISO | 16 | — | 1,0 | 1,3 | 2,0 | — | ● | ● | — |
| LT16NR25ISO | 16 | — | 1,1 | 1,5 | 2,5 | — | — | ● | — |
| LT16NR30ISO | 16 | — | 1,1 | 1,5 | 3,0 | — | ● | ● | — |
| LT22NR35ISO | 22 | — | 1,6 | 2,3 | 3,5 | — | — | ● | — |
| LT22NR40ISO | 22 | — | 1,6 | 2,3 | 4,0 | — | — | ● | — |
| LT22NR45ISO | 22 | — | 1,6 | 2,4 | 4,5 | — | — | ● | — |
| LT22NR50ISO | 22 | — | 1,6 | 2,3 | 5,0 | — | — | ● | — |
| left hand | | | | | | | | | |
| LT11NL15ISO | 11 | — | 0,8 | 1,0 | 1,5 | — | — | ● | — |
| LT11NL10ISO | 11 | — | 0,6 | 0,7 | 1,0 | — | — | ● | — |
| LT16NL30ISO | 16 | — | 1,1 | 1,5 | 3,0 | — | — | ● | — |
| LT16NL10ISO | 16 | — | 0,6 | 0,7 | 1,0 | — | — | ● | — |
| LT16NL15ISO | 16 | — | 0,8 | 1,0 | 1,5 | — | — | ● | — |
| LT16NL20ISO | 16 | — | 1,0 | 1,3 | 2,0 | — | — | ● | — |
| LT16NL25ISO | 16 | — | 1,1 | 1,5 | 2,5 | — | — | ● | — |

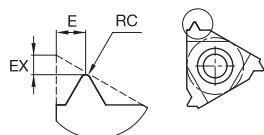
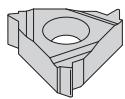


● first choice
○ alternate choice

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

■ LT-NR-ISOCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR075ISOCB | 11 | — | 1,2 | 0,5 | 0,75 | — | — | ● | — |
| LT11NR10ISOCB | 11 | — | 0,7 | 0,8 | 1,0 | — | — | ● | — |
| LT11NR125ISOCB | 11 | — | 0,7 | 0,8 | 1,25 | — | — | ● | — |
| LT11NR15ISOCB | 11 | — | 0,7 | 0,8 | 1,5 | — | — | ● | — |
| LT16NR10ISOCB | 16 | — | 0,7 | 0,8 | 1,0 | — | — | ● | — |
| LT16NR15ISOCB | 16 | — | 0,7 | 0,8 | 1,5 | — | — | ● | — |
| LT16NR20ISOCB | 16 | — | 1,1 | 1,5 | 2,0 | — | — | ● | — |
| LT16NR25ISOCB | 16 | — | 1,1 | 1,5 | 2,5 | — | — | ● | — |

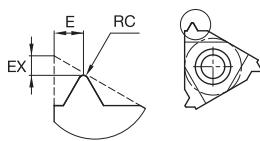
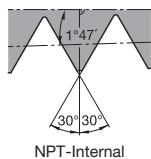


| | | | | |
|---|--|---|---|---|
| P | | ● | ● | ● |
| M | | ● | ● | ● |
| K | | ● | ● | ● |
| N | | ○ | ○ | ○ |
| S | | ● | ● | ● |
| H | | ○ | | |

● first choice
○ alternate choice

■ LT-NR/L-NPT

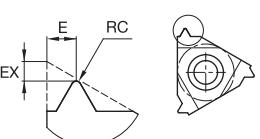
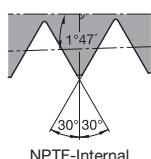
| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR14NPT | 11 | — | 0,8 | 1,0 | — | 14 | ● | ● | — |
| LT11NR18NPT | 11 | — | 0,8 | 1,0 | — | 18 | — | ● | — |
| LT16NR115NPT | 16 | — | 1,1 | 1,5 | — | 11,5 | ● | ● | — |
| LT16NR14NPT | 16 | — | 0,9 | 1,2 | — | 14 | — | ● | — |
| LT16NR8NPT | 16 | — | 1,3 | 1,8 | — | 8 | — | ● | — |



NPT-Internal

■ LT-NR-NPTCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|------|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NR115NPTCB | 16 | — | 1,1 | 1,5 | — | 11,5 | — | ● | — |
| LT16NR14NPTCB | 16 | — | 1,4 | 1,2 | — | 14 | — | ● | — |



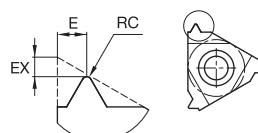
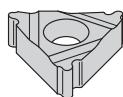
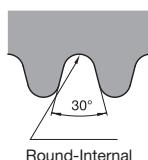
NPTF-Internal

■ LT-NR/L-NPTF

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR14NPTF | 11 | — | 0,8 | 0,99 | — | 14 | — | ● | — |
| LT16NR14NPTF | 16 | — | 0,9 | 1,19 | — | 14 | — | ● | — |

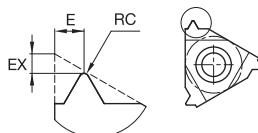
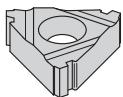
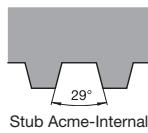
| | | | | |
|---|--|---|---|---|
| P | | ● | ● | ● |
| M | | ● | ● | ● |
| K | | ● | ● | ● |
| N | | ○ | ○ | ○ |
| S | | ● | ● | ● |
| H | | ○ | | |

● first choice
○ alternate choice



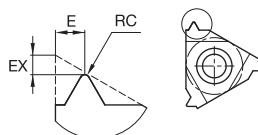
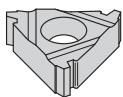
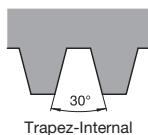
■ LT-NR/L-RD

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|------------------|-------------|------|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NR8RD | 16 | 0,70 | 1,4 | 1,40 | — | 8 | — | ● | — |
| LT22NR6RD | 22 | 0,93 | 1,5 | 1,70 | — | 6 | — | ● | — |



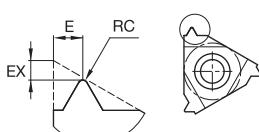
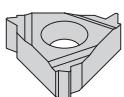
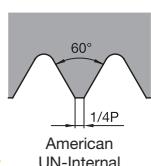
■ LT-NR/L-STACME

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NR10STACME | 16 | — | 1,2 | 1,30 | — | 10 | — | ● | — |
| LT16NR12STACME | 16 | — | 1,1 | 1,19 | — | 12 | — | ● | — |
| LT16NR14STACME | 16 | — | 1,1 | 1,09 | — | 14 | — | ● | — |
| LT16NR16STACME | 16 | — | 1,0 | 0,99 | — | 16 | — | ● | — |
| LT16NR6STACME | 16 | — | 1,7 | 1,80 | — | 6 | — | ● | — |
| LT16NR8STACME | 16 | — | 1,4 | 1,50 | — | 8 | — | ● | — |



■ LT-NR/L-TR

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NR2TR | 16 | — | 1,1 | 1,30 | 2,0 | — | — | ● | — |
| LT16NR3TR | 16 | — | 1,3 | 1,50 | 3,0 | — | — | ● | — |
| LT22NR4TR | 22 | — | 1,7 | 1,91 | 4,0 | — | — | ● | — |
| LT22NR5TR | 22 | — | 2,1 | 2,50 | 5,0 | — | — | ● | — |

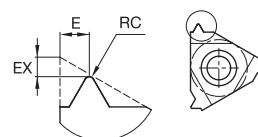
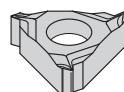
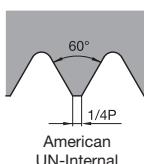


● first choice
○ alternate choice

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

■ LT-NR/L-UN

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR16UN | 11 | — | 0,9 | 1,1 | — | 16 | ● ● — | — | — |
| LT11NR18UN | 11 | — | 0,8 | 1,0 | — | 18 | — ● — | — | — |
| LT11NR20UN | 11 | — | 0,8 | 0,9 | — | 20 | — ● — | — | — |
| LT11NR24UN | 11 | — | 0,7 | 0,8 | — | 24 | — ● — | — | — |
| LT11NR28UN | 11 | — | 0,6 | 0,7 | — | 28 | — ● — | — | — |
| LT11NR32UN | 11 | — | 0,6 | 0,6 | — | 32 | — ● — | — | — |
| LT11NR40UN | 11 | — | 0,6 | 0,6 | — | 40 | — ● — | — | — |
| LT16NR10UN | 16 | — | 1,1 | 1,5 | — | 10 | — ● — | — | — |
| LT16NR12UN | 16 | — | 1,1 | 1,4 | — | 12 | ● ● — | — | — |
| LT16NR14UN | 16 | — | 0,9 | 1,2 | — | 14 | — ● — | — | — |
| LT16NR16UN | 16 | — | 0,9 | 1,1 | — | 16 | — ● — | — | — |
| LT16NR18UN | 16 | — | 0,8 | 1,0 | — | 18 | — ● — | — | — |
| LT16NR20UN | 16 | — | 0,8 | 0,9 | — | 20 | — ● — | — | — |
| LT16NR24UN | 16 | — | 0,7 | 0,8 | — | 24 | — ● — | — | — |
| LT16NR28UN | 16 | — | 0,6 | 0,7 | — | 28 | — ● — | — | — |
| LT16NR32UN | 16 | — | 0,6 | 0,6 | — | 32 | — ● — | — | — |
| LT16NR8UN | 16 | — | 1,1 | 1,5 | — | 8 | — ● — | — | — |
| left hand | | | | | | | | | |
| LT11NL32UN | 11 | — | 0,6 | 0,6 | — | 32 | — ● — | — | — |
| LT16NL10UN | 16 | — | 1,1 | 1,5 | — | 10 | — ● — | — | — |
| LT16NL12UN | 16 | — | 1,1 | 1,4 | — | 12 | — ● — | — | — |
| LT16NL16UN | 16 | — | 0,9 | 1,1 | — | 16 | — ● — | — | — |

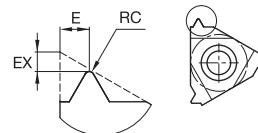
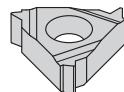
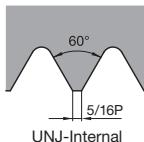


● first choice
○ alternate choice

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

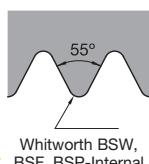
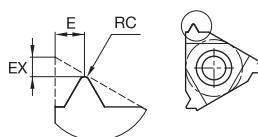
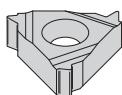
■ LT-NR-UNCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR16UNCB | 11 | — | 0,7 | 0,8 | — | 16 | — | ● | — |
| LT11NR18UNCB | 11 | — | 0,6 | 0,8 | — | 18 | — | ● | — |
| LT11NR20UNCB | 11 | — | 0,6 | 0,8 | — | 20 | — | ● | — |
| LT11NR24UNCB | 11 | — | 0,7 | 0,8 | — | 24 | — | ● | — |
| LT11NR32UNCB | 11 | — | 1,2 | 0,5 | — | 32 | — | ● | — |
| LT16NR10UNCB | 16 | — | 1,1 | 1,5 | — | 10 | — | ● | — |
| LT16NR12UNCB | 16 | — | 1,1 | 1,5 | — | 12 | — | ● | — |
| LT16NR14UNCB | 16 | — | 1,1 | 1,5 | — | 14 | — | ● | — |
| LT16NR16UNCB | 16 | — | 0,7 | 0,8 | — | 16 | — | ● | — |
| LT16NR18UNCB | 16 | — | 0,6 | 0,8 | — | 18 | — | ● | — |
| LT16NR20UNCB | 16 | — | 0,7 | 0,6 | — | 20 | — | ● | — |
| LT16NR8UNCB | 16 | — | 1,1 | 1,5 | — | 8 | — | ● | — |



■ LT-NR/L-UNJ

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|-----|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR14UNJ | 11 | — | 1,0 | 1,2 | — | 14 | — | ● | — |
| LT11NR16UNJ | 11 | — | 0,9 | 1,1 | — | 16 | — | ● | — |
| LT11NR18UNJ | 11 | — | 0,8 | 1,0 | — | 18 | — | ● | — |
| LT16NR12UNJ | 16 | — | 1,1 | 1,3 | — | 12 | — | ● | — |
| LT16NR16UNJ | 16 | — | 0,9 | 1,1 | — | 16 | — | ● | — |

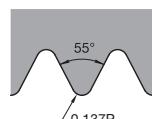
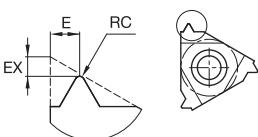
Whitworth BSW,
BSF, BSP-Internal

● first choice
○ alternate choice

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

■ LT-NR/L-W

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT11NR14W | 11 | — | 0,9 | 1,09 | — | 14 | — | ● | — |
| LT11NR19W | 11 | — | 0,8 | 0,99 | — | 19 | — | ● | — |
| LT16NR10W | 16 | — | 1,1 | 1,50 | — | 10 | — | ● | — |
| LT16NR11W | 16 | — | 1,1 | 1,50 | — | 11 | ● | ● | — |
| LT16NR12W | 16 | — | 1,1 | 1,40 | — | 12 | — | ● | — |
| LT16NR14W | 16 | — | 1,0 | 1,19 | — | 14 | — | ● | — |
| LT16NR16W | 16 | — | 0,9 | 1,09 | — | 16 | — | ● | — |
| LT16NR19W | 16 | — | 0,8 | 0,99 | — | 19 | — | ● | — |
| LT16NR20W | 16 | — | 0,8 | 0,89 | — | 20 | — | ● | — |
| LT16NR8W | 16 | — | 1,2 | 1,50 | — | 8 | — | ● | — |
| LT22NR7W | 22 | — | 1,6 | 2,29 | — | 7 | — | ● | — |
| left hand | | | | | | | | | |
| LT16NL11W | 16 | — | 1,1 | 1,50 | — | 11 | — | ● | — |

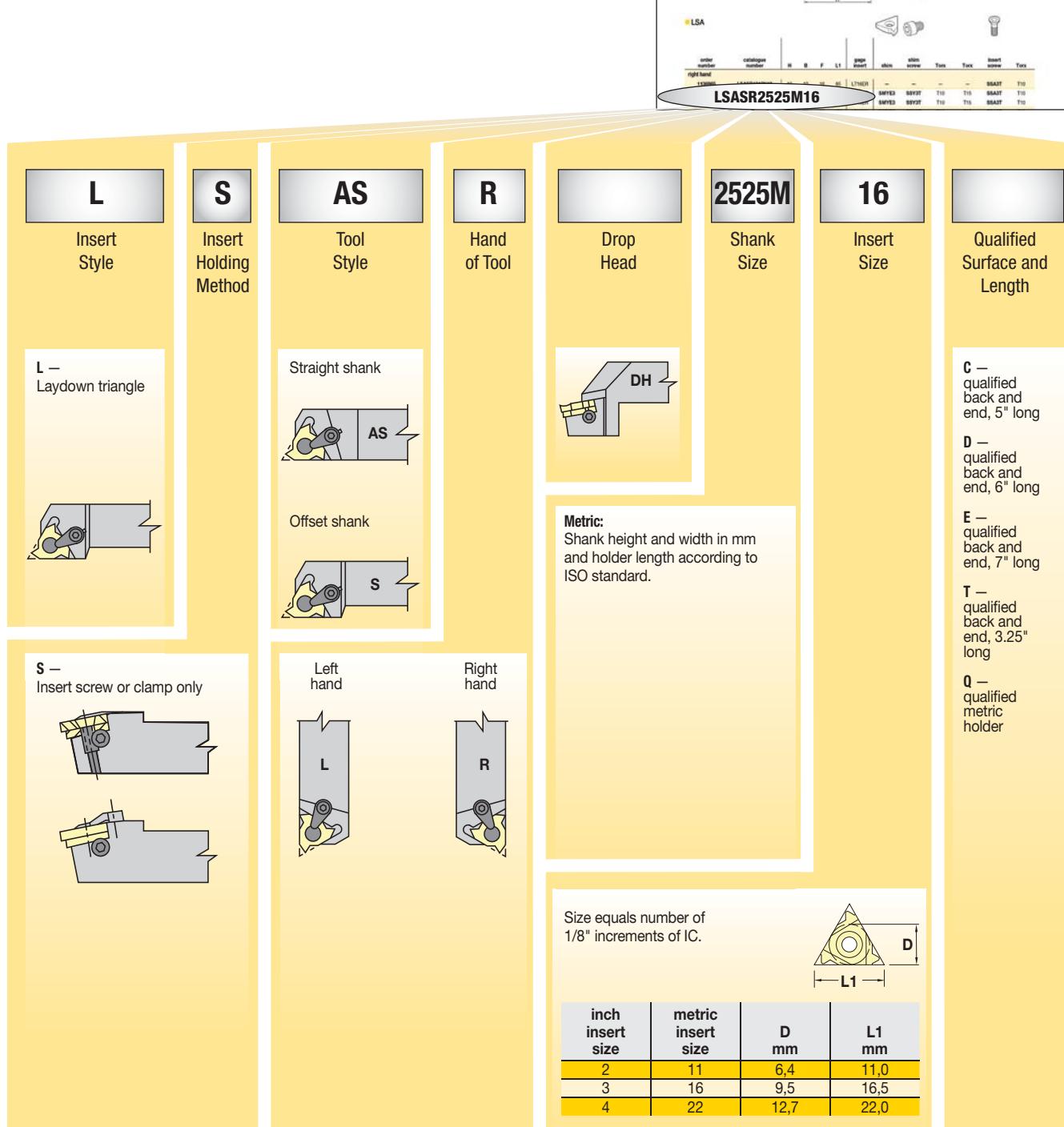
Whitworth BSW,
BSF, BSP-Internal

■ LT-NR-WCB

| catalogue number | insert size | RC | EX | E | thread pitch mm | TPI | KC5010 | KC5025 | KU25T |
|-------------------|-------------|----|-----|------|-----------------|-----|--------|--------|-------|
| right hand | | | | | | | | | |
| LT16NR11WCB | 16 | — | 1,3 | 1,50 | — | 11 | — | ● | — |
| LT16NR14WCB | 16 | — | 1,3 | 1,50 | — | 14 | — | ● | — |

How Do Catalogue Numbers Work?

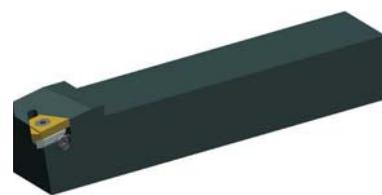
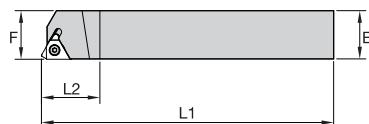
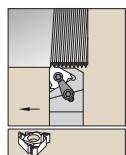
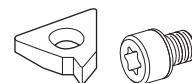
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding image to easily identify which attributes apply.



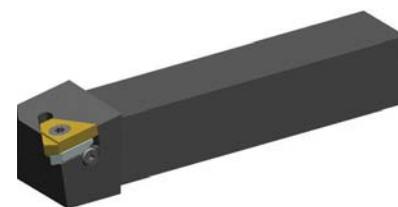
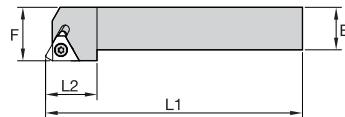
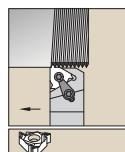
NOTE: Toolholders with primary shank sizes larger than 1/2" or 12mm are supplied with clamp and insert screw.

Secure the insert with either the clamp or insert screw. **Do not use both.**

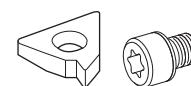
For Threading Shim Catalogue Numbering System, please see page D80.


■ **LSA**


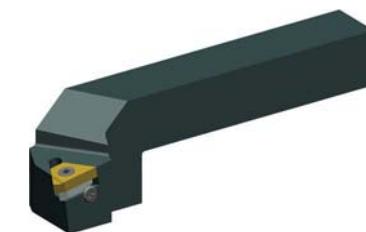
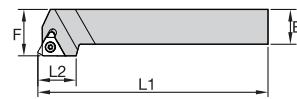
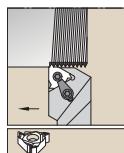
| order number | catalogue number | H | B | F | L1 | gage insert | shim | shim screw | Torx | Torx | insert screw | Torx |
|-------------------|------------------|----|----|----|-----|-------------|-------|------------|------|------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1136965 | LSASR1212N16 | 12 | 12 | 16 | 85 | LT16ER | — | — | — | — | SSA3T | T10 |
| 1136984 | LSASR1616H16 | 16 | 16 | 16 | 100 | LT16ER | SMYE3 | SSY3T | T10 | T15 | SSA3T | T10 |
| 1136992 | LSASR2020K16 | 20 | 20 | 20 | 125 | LT16ER | SMYE3 | SSY3T | T10 | T15 | SSA3T | T10 |
| 1137000 | LSASR2525M16 | 25 | 25 | 25 | 150 | LT16ER | SMYE3 | SSY3T | T10 | T15 | SSA3T | T10 |
| 1137007 | LSASR2525M22 | 25 | 25 | 25 | 150 | LT22ER | SMYE4 | SSY4T | T20 | T20 | SSA4T | T20 |
| 1125454 | LSASR3232P16 | 32 | 32 | 32 | 170 | LT16ER | SMYE3 | SSY3T | T10 | T15 | SSA3T | T10 |
| 1611931 | LSASR3232P22 | 32 | 32 | 32 | 170 | LT22ER | SMYE4 | SSY4T | T20 | T20 | SSA4T | T20 |
| left hand | | | | | | | | | | | | |
| 1136926 | LSASL1212N16 | 12 | 12 | 16 | 85 | LT16EL | — | — | — | — | SSA3T | T10 |
| 1136935 | LSASL1616H16 | 16 | 16 | 16 | 100 | LT16EL | SMYI3 | SSY3T | T10 | T15 | SSA3T | T10 |
| 1136943 | LSASL2020K16 | 20 | 20 | 20 | 125 | LT16EL | SMYI3 | SSY3T | T10 | T15 | SSA3T | T10 |
| 1136951 | LSASL2525M16 | 25 | 25 | 25 | 150 | LT16EL | SMYI3 | SSY3T | T10 | T15 | SSA3T | T10 |
| 1136959 | LSASL2525M22 | 25 | 25 | 25 | 150 | LT22EL | SMYI4 | SSY4T | T20 | T20 | SSA4T | T20 |



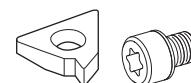
LSS



| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | Torx | insert screw | Torx |
|-------------------|------------------|----|----|----|-----|----|-------------|-------|------------|------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1137054 | LSSR2020K16Q | 20 | 20 | 25 | 125 | 25 | LT16ER | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1137063 | LSSR2525M16Q | 25 | 25 | 32 | 150 | 25 | LT16ER | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1137069 | LSSR2525M22Q | 25 | 25 | 32 | 150 | 30 | LT22ER | SMYE4 | SSY4T | T20 | SSA4T | T20 |
| 1611933 | LSSR3232P16Q | 32 | 32 | 40 | 170 | 32 | LT16ER | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1611935 | LSSR3232P22Q | 32 | 32 | 40 | 170 | 30 | LT22ER | SMYE4 | SSY4T | T20 | SSA4T | T20 |
| left hand | | | | | | | | | | | | |
| 1192325 | LSSL2020K16Q | 20 | 20 | 25 | 125 | 25 | LT16EL | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1137022 | LSSL2525M16Q | 25 | 25 | 32 | 150 | 25 | LT16EL | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1137029 | LSSL2525M22Q | 25 | 25 | 32 | 150 | 30 | LT22EL | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 1611934 | LSSL3232P16Q | 32 | 32 | 40 | 170 | 32 | LT16EL | SMYI3 | SSY3T | T10 | SSA3T | T10 |



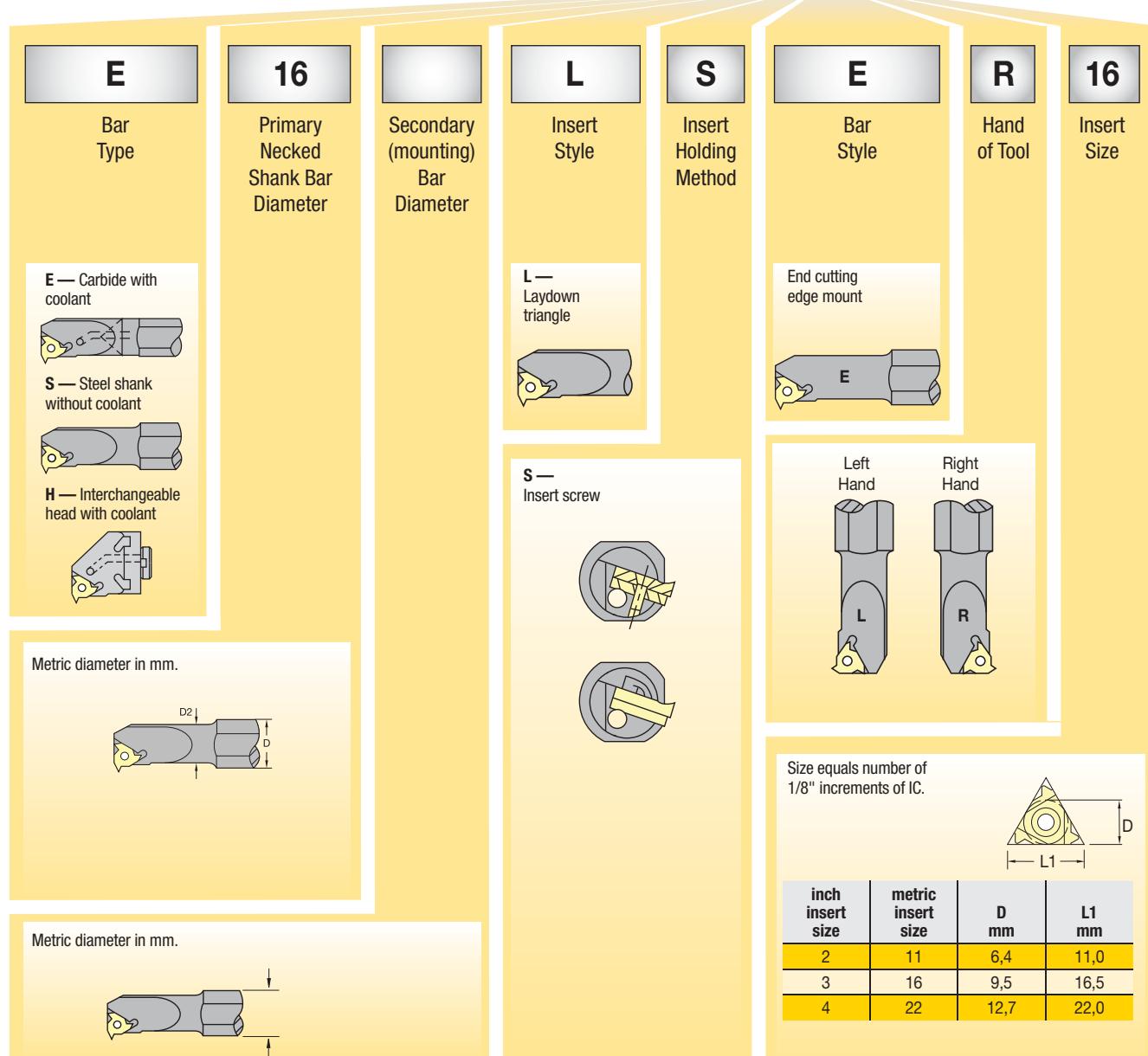
LSS-DH



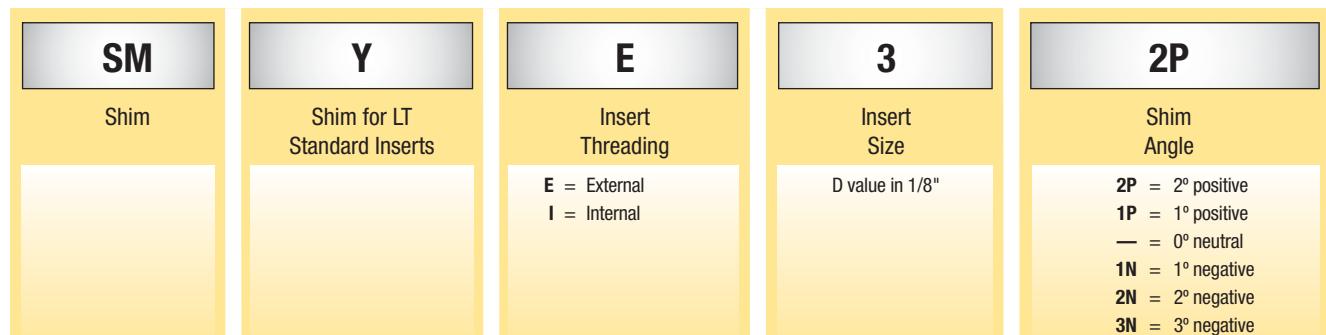
| order number | catalogue number | H | B | F | L1 | LH | gage insert | shim | shim screw | Torx | insert screw | Torx |
|-------------------|------------------|----|----|----|-----|----|-------------|-------|------------|------|--------------|------|
| right hand | | | | | | | | | | | | |
| 1174502 | LSSRDH2020K16Q | 20 | 20 | 25 | 125 | 38 | LT16ER | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1611938 | LSSRDH2525M16 | 25 | 25 | 32 | 150 | 38 | LT16ER | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1137036 | LSSRDH2525M22Q | 25 | 25 | 32 | 150 | 38 | LT22ER | SMYE4 | SSY4T | T20 | SSA4T | T20 |
| left hand | | | | | | | | | | | | |
| 1611939 | LSSLDH2525M16 | 25 | 25 | 32 | 150 | 38 | LT16EL | SMYI3 | SSY3T | T10 | SSA3T | T10 |

How Do Catalogue Numbers Work?

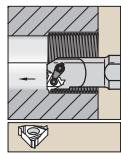
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding image to easily identify which attributes apply.



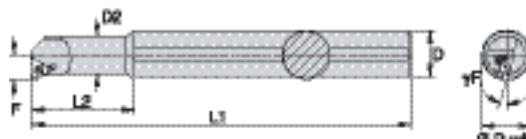
LT Threading Shim Catalogue Numbering System



For shims and shim kits, see pages D109–D110.



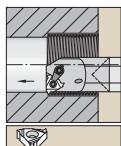
Steel shank with through coolant.



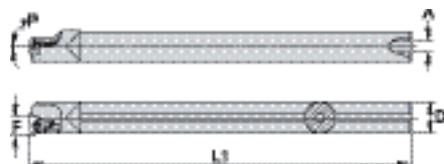
A-LSE



| order number | catalogue number | D | D min | D2 | F | L1 | L2 | γF° | γP° | gage insert | shim | shim screw | Torx | insert screw | Torx |
|-------------------|------------------|----|-------|------|------|-----|-----|------------------|------------------|-------------|-------|------------|------|--------------|------|
| right hand | | | | | | | | | | | | | | | |
| 1131468 | A1020LSER11 | 20 | 13 | — | 7,3 | 180 | 25 | -15.0 | -1.5 | LT11NR | — | — | — | SSN2T | T8 |
| 1131481 | A1320LSER11 | 20 | 16 | — | 8,9 | 180 | 32 | -15.0 | -1.5 | LT11NR | — | — | — | SSN2T | T8 |
| 1612581 | A1320LSER16 | 20 | 17 | — | 10,3 | 180 | 32 | -15.0 | -1.5 | LT16NR | — | — | — | SSA3T | T10 |
| 1798921 | A1616LSER16 | 16 | 20 | 16,0 | 11,3 | 150 | 32 | -15.0 | -1.5 | LT16NR | — | — | — | SSA3T | T10 |
| 1131509 | A1620LSER16 | 20 | 20 | — | 11,7 | 180 | 36 | -15.0 | -1.5 | LT16NR | — | — | — | SSA3T | T10 |
| 1131524 | A2020LSER16 | 20 | 24 | 20,0 | 13,4 | 180 | 40 | -15.0 | -1.5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1131547 | A2525LSER16 | 25 | 29 | — | 16,1 | 200 | 45 | -15.0 | -1.5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1131566 | A2525LSER22 | 25 | 32 | — | 17,2 | 200 | 45 | -15.0 | -1.5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 1612584 | A2020LSER22 | 20 | 27 | 20,0 | 15,6 | 180 | 50 | -15.0 | -1.5 | LT22NR | — | — | — | SSA4T | T20 |
| 1131574 | A2532LSER16 | 32 | 29 | — | 16,3 | 250 | 60 | -15.0 | -1.5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1131582 | A2532LSER22 | 32 | 32 | — | 17,4 | 250 | 60 | -15.0 | -1.5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 1612587 | A3232LSER22 | 32 | 39 | 32,0 | 21,5 | 250 | 60 | -15.0 | -1.5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 1798922 | A4040LSER22 | 40 | 47 | 40,0 | 25,8 | 300 | 60 | -15.0 | -1.5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 1798920 | A1010LSER11 | 10 | 13 | 10,0 | 7,3 | 100 | 100 | -15.0 | -1.5 | LT11NR | — | — | — | SSN2T | T8 |
| left hand | | | | | | | | | | | | | | | |
| 1612586 | A2532LSEL16 | 32 | 29 | — | 16,3 | 250 | — | -15.0 | -1.5 | LT16NL | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1131458 | A1020LSEL11 | 20 | 13 | — | 7,3 | 180 | 25 | -15.0 | -1.5 | LT11NL | — | — | — | SSN2T | T8 |
| 1131476 | A1320LSEL11 | 20 | 16 | — | 8,9 | 180 | 32 | -15.0 | -1.5 | LT11NL | — | — | — | SSN2T | T8 |
| 1798980 | A1616LSEL16 | 16 | 20 | 16,0 | 11,3 | 150 | 32 | -15.0 | -1.5 | LT16NL | — | — | — | SSA3T | T10 |
| 1131499 | A1620LSEL16 | 20 | 20 | — | 11,5 | 180 | 40 | -15.0 | -1.5 | LT16NL | — | — | — | SSA3T | T10 |
| 1131516 | A2020LSEL16 | 20 | 24 | 20,0 | 13,4 | 180 | 40 | -15.0 | -1.5 | LT16NL | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1131532 | A2525LSEL16 | 25 | 29 | — | 16,1 | 200 | 45 | -15.0 | -1.5 | LT16NL | SMYE3 | SSY3T | T10 | SSA3T | T10 |
| 1131540 | A2525LSEL22 | 25 | 32 | — | 17,2 | 200 | 45 | -15.0 | -1.5 | LT22NL | SMYE4 | SSY4T | T20 | SSA4T | T20 |
| 1612585 | A2020LSEL22 | 20 | 27 | 20,0 | 15,6 | 180 | 50 | -15.0 | -1.5 | LT22NL | — | — | — | SSA4T | T20 |
| 1612588 | A3232LSEL22 | 32 | 39 | 32,0 | 21,5 | 250 | 60 | -15.0 | -1.5 | LT22NL | SMYE4 | SSY4T | T20 | SSA4T | T20 |
| 1799093 | A4040LSEL22 | 40 | 47 | 40,0 | 25,8 | 300 | 60 | -15.0 | -1.5 | LT22NL | SMYE4 | SSY4T | T20 | SSA4T | T20 |
| 1798979 | A1010LSEL11 | 10 | 13 | 10,0 | 7,3 | 100 | 100 | -15.0 | -1.5 | LT11NL | — | — | — | SSN2T | T8 |



Carbide shank with through coolant.

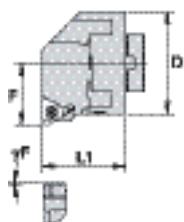
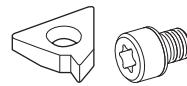
**E-LSE**

| order number | catalogue number | D | D min | F | L1 | A | γF° | γP° | gage insert | shim | shim screw | Torx | insert screw | Torx |
|-------------------|------------------|----|-------|------|-------|---|------------------|------------------|-------------|-------|------------|------|--------------|------|
| right hand | | | | | | | | | | | | | | |
| 1152844 | E16RLSER16 | 16 | 20 | 11,5 | 200,0 | 6 | -15 | -1.5 | LT16NR | — | — | — | SN3TPKG | T10 |
| 1152846 | E20LSER16 | 20 | 24 | 13,4 | 250,0 | 7 | -15 | -1.5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1152848 | E25LSER16 | 25 | 29 | 15,8 | 300,0 | 8 | -15 | -1.5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |

NOTE: Items listed without a shim are designed for a 1.5° inclination angle.

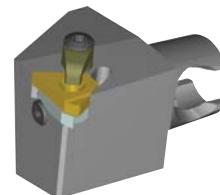
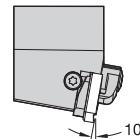
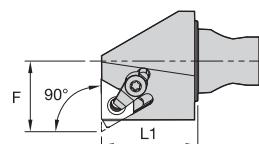
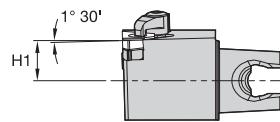


With through coolant.

**H-LSE**

| order number | catalogue number | D | D min | L1 | F | γF° | γP° | gage insert | shim | shim screw | Torx | insert screw | Torx |
|-------------------|------------------|----|-------|------|------|------------------|------------------|-------------|-------|------------|------|--------------|------|
| right hand | | | | | | | | | | | | | |
| 1095216 | H16LSER3 | 25 | 30,5 | 41,3 | 16,4 | -15,0 | -1,5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1095218 | H20LSER3 | 32 | 36,8 | 41,3 | 19,3 | -15,0 | -1,5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1095220 | H24LSER3 | 38 | 44,7 | 41,3 | 22,5 | -15,0 | -1,5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1095224 | H24LSER4 | 38 | 45,3 | 41,3 | 24,7 | -15,0 | -1,5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 1803997 | H40LSER22 | 40 | 47,0 | 41,3 | 25,9 | -15,0 | -1,5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 1803995 | H50LSER16 | 50 | 54,0 | 41,3 | 28,6 | -15,0 | -1,5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1803999 | H50LSER22 | 50 | 56,0 | 41,3 | 30,5 | -15,0 | -1,5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 3842905 | H50LSER27 | 50 | 58,0 | 41,3 | 31,4 | -15,0 | -1,5 | LT27NR | SMYI5 | SSY5T | T25 | SSA5T | T25 |
| 1095222 | H32LSER3 | 51 | 61,0 | 41,3 | 32,4 | -15,0 | -1,5 | LT16NR | SMYI3 | SSY3T | T10 | SSA3T | T10 |
| 1095226 | H32LSER4 | 51 | 61,0 | 41,3 | 32,4 | -15,0 | -1,5 | LT22NR | SMYI4 | SSY4T | T20 | SSA4T | T20 |
| 3842895 | H32LSER5 | 51 | 61,0 | 41,3 | 32,5 | -15,0 | -1,5 | LT27NR | SMYI5 | SSY5T | T25 | SSA5T | T25 |
| 3842897 | H40LSER5 | 64 | 77,0 | 41,3 | 38,9 | -15,0 | -1,5 | LT27NR | SMYI5 | SSY5T | T25 | SSA5T | T25 |

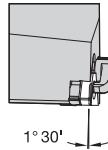
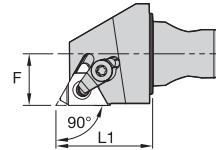
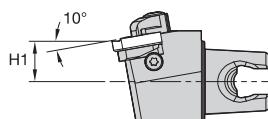
NOTE: For boring adaptors, see pages B386.



Threading

LSE • End Mount

| order number | catalogue number | L1 | F | H1 | gage insert | insert screw | shim | shim screw |
|-----------------------|------------------|----|----|------|-------------|--------------|-------|------------|
| right hand 2399506 | KM25LSE1630 | 30 | 22 | 12,5 | LT16EL | SSA3T | SMYI3 | SSY3T |
| left hand 2399507 | KM25LSEL1630 | 30 | 22 | 12,5 | LT16ER | SSA3T | SMYE3 | SSY3T |



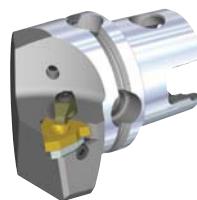
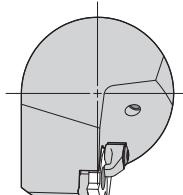
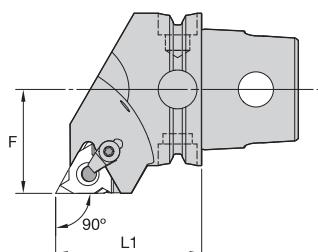
LSS • Side Mount

| order number | catalogue number | L1 | F | H1 | gage insert | insert screw | shim | shim screw |
|-----------------------|------------------|----|----|------|-------------|--------------|-------|------------|
| right hand 2399504 | KM25LSSR1630 | 30 | 16 | 12,5 | LT16ER | SSA3T | SMYE3 | SSY3T |
| 3176219 | KM25LSSR2230 | 30 | 16 | 12,5 | LT22ER | SSA4T | SMYE4 | SSY4T |
| left hand 2399505 | KM25LSSL1630 | 30 | 16 | 12,5 | LT16EL | SSA3T | SMYI3 | SSY3T |
| 3176220 | KM25LSSL2230 | 30 | 16 | 12,5 | LT22EL | SSA4T | SMYI4 | SSY4T |



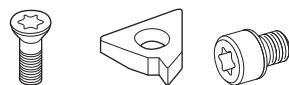


Threading

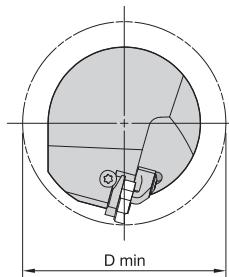
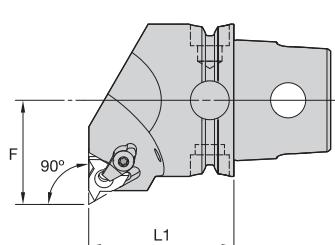


Clamp shown in images is no longer available.

■ LSS 90°



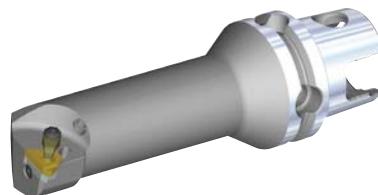
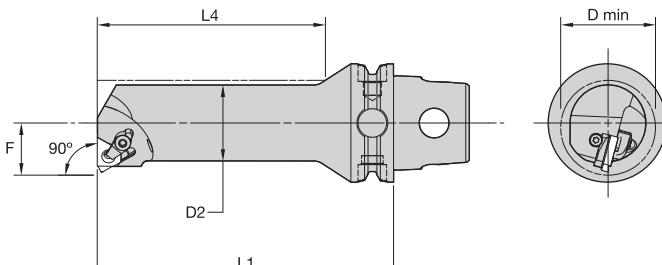
| order number | catalogue number | L1 mm | L1 in | F mm | F in | gage insert | insert screw | shim | shim screw | kg | lbs |
|-------------------|------------------|----------|----------|---------|---------|-------------|--------------|-------|------------|------|-----|
| right hand | | | | | | | | | | | |
| 3950857 | KM40TSLSSR16 | 40 | 1.575 | 27 | 1.063 | LT16ER | SSA3T | SMYE3 | SSY3T | 0,31 | .68 |
| 3950858 | KM40TSLSSR22 | 40 | 1.575 | 27 | 1.063 | LT22ER | SSA4T | SMYE4 | SSY4T | 0,30 | .66 |
| 3959401 | KM40TSLSSR27 | 45 | 1.772 | 27 | 1.063 | LT27ER | SSA5T | SMYE5 | SSY5T | 0,37 | .82 |
| left hand | | | | | | | | | | | |
| 3950855 | KM40TSLSSL16 | 40 | 1.575 | 27 | 1.063 | LT16EL | SSA3T | SMYI3 | SSY3T | 0,32 | .70 |
| 3950856 | KM40TSLSSL22 | 40 | 1.575 | 27 | 1.063 | LT22EL | SSA4T | SMYI4 | SSY4T | 0,31 | .68 |
| 3959400 | KM40TSLSSL27 | 45 | 1.772 | 27 | 1.063 | LT27EL | SSA5T | SMYI5 | SSY5T | 0,37 | .82 |



Threading

LSE-N 90° • Internal Only


| order number | catalogue number | L1 | | F | | D min | | gage insert | insert screw | shim | shim screw | kg | lbs |
|-------------------|------------------|----|-------|----|-------|-------|-------|-------------|--------------|-------|------------|------|-----|
| | | mm | in | mm | in | mm | in | | | | | | |
| right hand | | | | | | | | | | | | | |
| 3950832 | KM40TSLSER16N | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | LT16NR | SSA3T | SMYI3 | SSY3T | 0,35 | .77 |
| 3950854 | KM40TSLSER22N | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | LT22NR | SSA4T | SMYI4 | SSY4T | 0,35 | .77 |
| 3959399 | KM40TSLSER27N | 45 | 1.772 | 27 | 1.063 | 54 | 2.126 | LT27NR | SSA5T | SMYI5 | SSY5T | 0,39 | .86 |
| left hand | | | | | | | | | | | | | |
| 3950831 | KM40TSLSEL16N | 40 | 1.575 | 27 | 1.063 | 54 | 2.126 | LT16NL | SSA3T | SMYE3 | SSY3T | 0,35 | .77 |



LSE 90°

| order number | catalogue number | D2 mm | D2 in | D min mm | D min in | F mm | F in | L4 mm | L4 in | L1 mm | L1 in | gage insert | kg | lbs |
|-------------------|------------------|----------|----------|-------------|-------------|---------|---------|----------|----------|----------|----------|-------------|------|------|
| right hand | | | | | | | | | | | | | | |
| 3955464 | KM40TSS10DLSER11 | 10 | .39 | 13 | .51 | 7 | .276 | 35 | 1.38 | 60 | 2.362 | LT11NR | 0,22 | .49 |
| 3955466 | KM40TSS12ELSER11 | 12 | .47 | 16 | .63 | 9 | .354 | 42 | 1.66 | 70 | 2.756 | LT11NR | 0,25 | .56 |
| 3955468 | KM40TSS16FLSER16 | 16 | .63 | 20 | .79 | 11 | .433 | 56 | 2.21 | 80 | 3.150 | LT16NR | 0,28 | .61 |
| 3955470 | KM40TSS20GLSER16 | 20 | .79 | 25 | .98 | 13 | .512 | 70 | 2.76 | 90 | 3.543 | LT16NR | 0,34 | .75 |
| 3955472 | KM40TSS25HLSER16 | 25 | .98 | 32 | 1.26 | 17 | .669 | 75 | 2.95 | 100 | 3.937 | LT16NR | 0,50 | 1.11 |
| 3955474 | KM40TSS32JLSEL16 | 32 | 1.26 | 40 | 1.57 | 22 | .866 | 96 | 3.78 | 110 | 4.331 | LT16NR | 0,72 | 1.58 |
| 3955476 | KM40TSS32JLSEL22 | 32 | 1.26 | 40 | 1.57 | 22 | .866 | 96 | 3.78 | 110 | 4.331 | LT22NL | 0,71 | 1.56 |
| left hand | | | | | | | | | | | | | | |
| 3955463 | KM40TSS10DLSEL11 | 10 | .39 | 13 | .51 | 7 | .276 | 35 | 1.38 | 60 | 2.362 | LT11NL | 0,22 | .49 |
| 3955465 | KM40TSS12ELSEL11 | 12 | .47 | 16 | .63 | 9 | .354 | 42 | 1.65 | 70 | 2.756 | LT11NL | 0,25 | .55 |
| 3955469 | KM40TSS20GLSEL16 | 20 | .79 | 25 | .98 | 13 | .512 | 70 | 2.76 | 90 | 3.543 | LT16NL | 0,34 | .75 |
| 3955471 | KM40TSS25HLSEL16 | 25 | .98 | 32 | 1.26 | 17 | .669 | 75 | 2.95 | 100 | 3.937 | LT16NL | 0,50 | 1.11 |
| 3955473 | KM40TSS32JLSEL16 | 32 | 1.26 | 40 | 1.57 | 22 | .866 | 96 | 3.78 | 110 | 4.331 | LT16NL | 0,72 | 1.58 |
| 3955475 | KM40TSS32JLSEL22 | 32 | 1.26 | 40 | 1.57 | 22 | .866 | 96 | 3.78 | 110 | 4.331 | LT22NL | 0,71 | 1.56 |

NOTE: Items listed without a shim are designed for a 1,5° inclination angle.

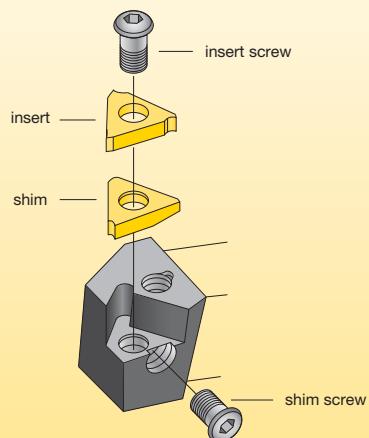
Spare Parts

| catalogue number | insert screw | shim | shim screw |
|-------------------|--------------|-------|------------|
| right hand | | | |
| KM40TSS10DLSER11 | SSN2T | — | — |
| KM40TSS12ELSER11 | SSN2T | — | — |
| KM40TSS16FLSER16 | SN3TPKG | — | — |
| KM40TSS20GLSER16 | SSA3T | SMYI3 | SSY3T |
| KM40TSS25HLSER16 | SSA3T | SMYI3 | SSY3T |
| KM40TSS32JLSEL16 | SSA3T | SMYI3 | SSY3T |
| KM40TSS32JLSEL22 | SSA4T | SMYI4 | SSY4T |
| left hand | | | |
| KM40TSS10DLSEL11 | SSN2T | — | — |
| KM40TSS12ELSEL11 | SSN2T | — | — |
| KM40TSS20GLSEL16 | SSA3T | SMYE3 | SSY3T |
| KM40TSS25HLSEL16 | SSA3T | SMYE3 | SSY3T |
| KM40TSS32JLSEL16 | SSA3T | SMYE3 | SSY3T |
| KM40TSS32JLSEL22 | SSA4T | SMYE4 | SSY4T |

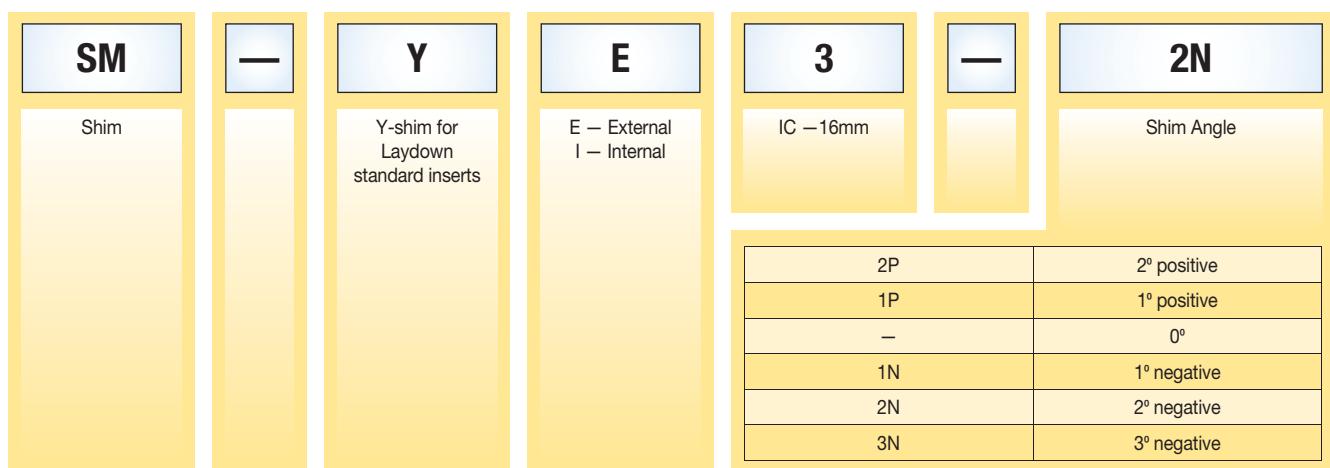
Laydown Threading Toolholders

In all cases, the proper shim selection is important.

Kennametal toolholders are supplied with a shim for a 1.5° lead angle. Change the shim if your thread is more than 1° different. For more details on proper shim selections, see pages D109–D110.



| |  |  |  |
|---|---|---|---|
| insert size and screw | insert screw | shim | shim screw and washer |
| 3ER  | SS-A3T | SM-YI3 | SS-Y3T |
| 3EL  | SS-A3T | SM-YI3 | SS-Y3T |
| 4ER  | SS-A4T | SM-YI4 | SS-Y4T |
| 4EL  | SS-A4T | SM-YI4 | SS-Y4T |
| Laydown Threading boring bars | | | |
| 2IR  | SS-N2T | — | — |
| 2IL  | SS-N2T | — | — |
| 3IR  | SS-A3T | SM-YI3 | SS-Y3T |
| 3IL  | SS-A3T | SM-YI4 | SS-Y3T |
| 4IR  | SS-A4T | SM-YI4 | SS-Y4T |
| 4IL  | SS-A4T | SM-YI4 | SS-Y4T |



| resultant angle | | 3.5° | 2.5° | 1.5° | 0.5° | -0.5° | -1.5° |
|------------------|--------------------------------|------------------------|------------------------|------------------|------------------------|------------------------|------------------------|
| insert size (IC) | toolholder | shim ordering code | | | | | |
| 16mm | ex. RH/in. LH ex. LH/in. RH | SM-YE3-2P SM-YI3-2P | SM-YE3-1P SM-YI3-1P | SM-YE3 SM-YI3 | SM-YE3-1N SM-YI3-1N | SM-YE3-2N SM-YI3-2N | SM-YE3-3N SM-YI3-3N |
| 22mm | ex. RH/in. LH ex. LH/in. RH | SM-YE4-2P SM-YI4-2P | SM-YE4-1P SM-YI4-1P | SM-YE4 SM-YI4 | SM-YE4-1N SM-YI4-1N | SM-YE4-2N SM-YI4-2N | SM-YE4-3N SM-YI4-3N |

Slanted Shim Kit

Because you might occasionally need different shims than those supplied with our standard toolholders, we strongly recommend that shim kits be readily available in every tool shop.

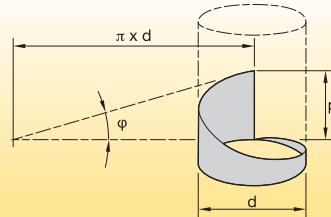
| insert size | shim size (D) | ordering code | contains slanted shims |
|-------------|---------------|---------------|--|
| 3x | 16mm | ABY3SET | SM-YE3-2P, 1P, 1N, 2N, 3N SM-YI3-2P, 1P, 1N, 2N, 3N |
| 4x | 22mm | ABY4 | SM-YE4-2P, 1P, 1N, 2N, 3N SM-YI4-2P, 1P, 1N, 2N, 3N |

The Helix Angle

Example:
d = 48,06mm (1.892")
p = 3,175mm (.125")

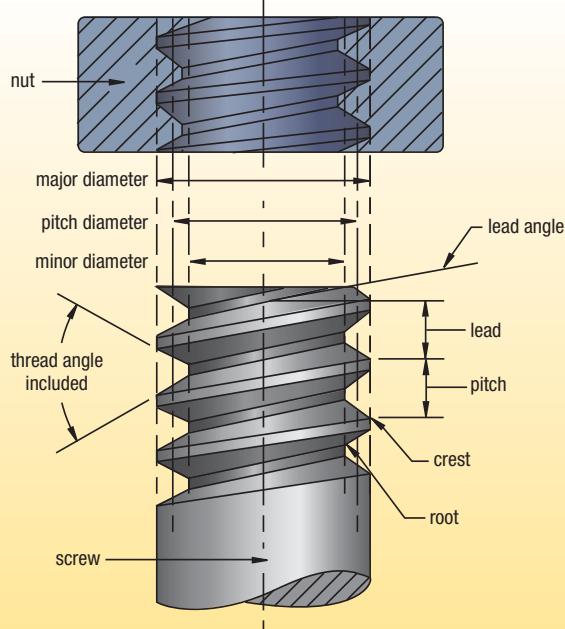
ϕ = Helix angle
p = pitch
d = pitch diameter

$$\phi = \arctan \left(\frac{p * \text{starts}}{\pi * \emptyset} \right) = 1.13^\circ$$

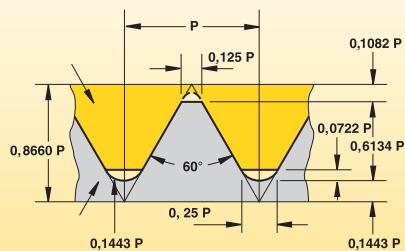


Screw Thread Definitions

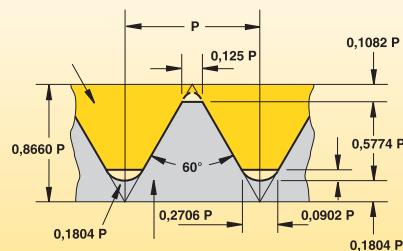
1. **Major diameter** — The largest diameter of a straight screw thread. This applies to both internal and external threads.
2. **Pitch diameter** — On a straight thread, it is the diameter which passes through the thread profiles at such points which make the thread width of the groove equal to one-half of the basic pitch. On a "perfect thread," this occurs at the point where the widths of the thread and groove are equal.
3. **Thread angle (included)** — The included angle between the individual flanks of the thread form.
4. **Minor diameter** — The smallest diameter of a straight screw thread. This applies to both internal and external threads.
5. **Lead angle** — On a straight thread, the lead angle is the angle created by the helix of the thread at the pitch diameter with a plane perpendicular to the axis.
6. **Lead** — The distance a screw thread advances axially in one revolution. On a single start, the pitch and lead are identical. The lead is equal to the pitch times the number of starts.
7. **Pitch** — The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the thread axis.
8. **Crest** — The outer most surface of the thread form which joins the flanks.
9. **Root** — The inner most surface of the thread form which joins the flanks.



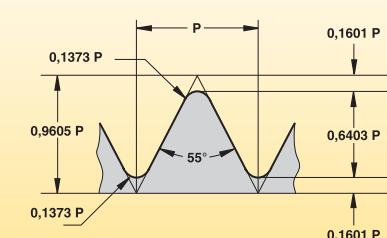
NOTE: Threads per inch (TPI) not shown:
The number of threads per inch measured axially.
The terms pitch and TPI are often used interchangeably. TPI = 1/pitch

ISO M (Metric) and UN (Unified National)


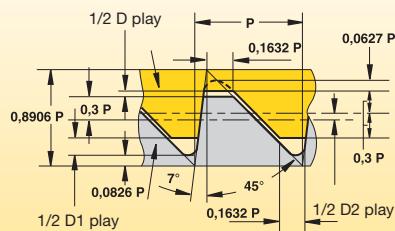
Use: All branches of mechanical industry.

UNJ (controlled root radius)


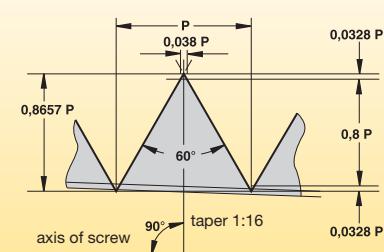
Use: Aircraft and space industry.

Whitworth (BSW)


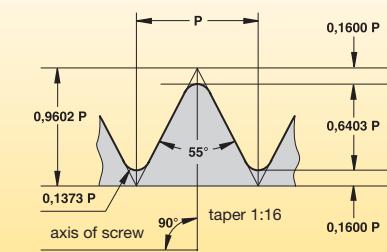
Use: Fittings and pipe couplings for gas, water, and sewer lines (replaced by ISO).

American Buttress


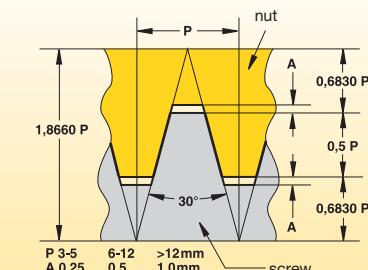
Use: Fittings and pipe couplings.

NPT (American National Pipe Thread)


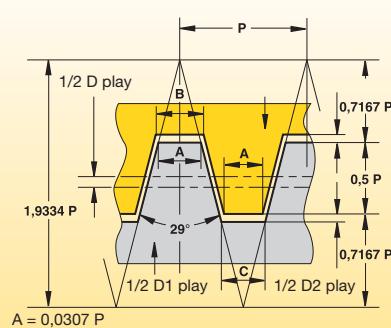
Use: Fittings and pipe couplings.

BSPT (British Standard Pipe Thread)


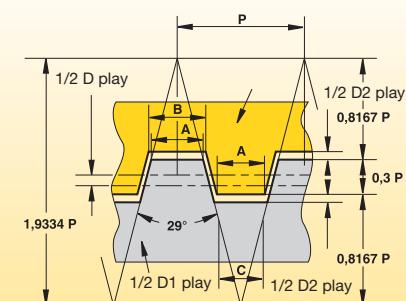
Use: Pipe thread for steam, gas, and water lines.

TR DIN 103


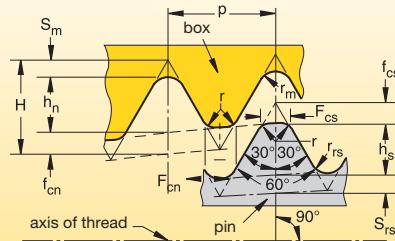
Use: Mechanical industry for motion transmission screws.

Acme


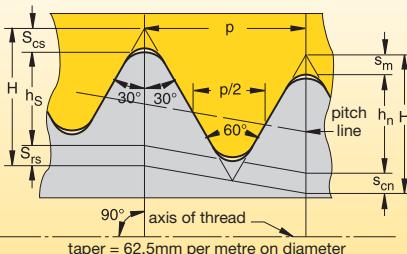
Use: Acme-General is used in mechanical industry for motion transmission screws.

Acme, truncated (Stub)


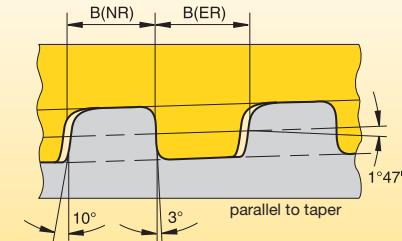
Use: Where normal Acme is too deep.

API Rotary Shoulder Connection


NOTE: Taper shown exaggerated.

API Casing and Tubing Round Thread Form


NOTE: Taper shown exaggerated.

API Buttress


Suggested Grades and Speeds for Threading Various Workpiece Materials

| workpiece group | workpiece material | recommended surface speed — m/mm | | | | |
|--|---|----------------------------------|------------|--------|---------|--------|
| | | uncoated | PVD coated | | | |
| | | K68 | KC5010 | KC5025 | KC5410 | KU25T |
| free-machining carbon steel | 10L18, 10L45, 1213, 12L13, 12L14, 1140, 1141, 11L44, 1151, 10L50 | — | 91–198 | 45–198 | — | 91–137 |
| plain carbon steel | 10063, 1008, 1010, 1015, 1018, 1020, 1025, 1026, 1108, 1117 | — | 76–198 | 45–175 | — | 76–122 |
| alloy steels/tool steels 150–325 HB (up to 35 HRC) | 1042, 1045, 1070, 1080, 1085, 1090, 1095, 1541, 1561, 1572, | — | 76–198 | 38–167 | — | 73–122 |
| alloy steels/tool steels 330–450 HB (36–47 HRC) | 5140, 8620, W1, O1, S1, P20, H13, D2, A6, H13, L6 | — | 61–160 | — | — | 61–106 |
| martensitic/ferritic stainless/precipitation hardening | 416, 420F, 440F, 405, 409, 429, 430, 434, 436, 442, PH | — | 45–160 | 30–122 | — | 24–61 |
| austenitic stainless steel | 201, 202, 301, 302, 303, 304, 304, 305, 321, 347, 348, 310, 314, 316, 316L, 330 | 61–106 | 61–198 | 46–137 | — | 24–106 |
| grey cast iron 135–270 HB | class 20, 30, 35, 45 | 61–91 | 61–237 | 46–122 | — | 30–110 |
| grey cast iron 275–450 HB | class 50, 55, 60 | 45–76 | 45–175 | 15–76 | — | 30–110 |
| alloy/ductile iron | A536, J434C, 60-40-18, 80-55-06, 100-70-03 | 45–76 | 45–198 | 30–160 | — | 30–110 |
| free-machining aluminium alloys | 2024-T4, 2014-T6, 6061-T6 2011-T3, 3003-H18, A2, Alcan, Alcoa 510, Duralumin | 122–244 | 122–365 | — | 152–457 | 30–305 |
| high-silicon aluminium alloys | A380, A390, A380-1, A390-1, A380-2 | — | — | — | — | — |
| copper/zinc/brass | | 76–183 | 76–304 | 46–236 | — | 30–244 |
| non-metallics | Graphite, Nylon, Plastics, Rubbers, Phenolics, Carbon | 122–457 | 122–396 | 46–305 | — | 30–244 |
| high-temperature alloys 125–269 HB (up to 27 HRC) | Nickel 200, Monel, R405, Monel K500, INCONEL 600, INCONEL® 625/901x750/718, Waspaloy, Hastelloy C | 24–37 | 24–122 | 13–76 | — | 11–85 |
| high-temperature alloys 260–450 HB (26–47 HRC) | Rene 95, Waspaloy A286, Incoloy 800, Haynes 188, Stellite F, Haynes 25 | 24–30 | 30–76 | 6–61 | — | 11–61 |
| titanium alloys | Ti-6Al-4V, Ti-5Al-2.5Sn | 34–55 | 34–99 | — | — | 11–76 |

NOTE: When workpiece hardness levels are at the top of a range, starting m/mm should be at the lower end. Regularly inspect insert clamps for worn flats.

Edge preparation:
Uncoated — sharp
PVD coated — light hone except positive top rake, top rake-sharp

| problem | cause | possible solution |
|-------------------------|---|---|
| thread with torn finish | <ul style="list-style-type: none"> Burs. Torn finish. Steps. Improper shim. Improper infeed. | <ul style="list-style-type: none"> Use modified flank infeed. Use full profile insert. Increase coolant concentration. Increases m/min. Check machine "Z" travel axis. Check insert form. Check for correct shim in LT system. Calculate flank clearance. |
| chatter | <ul style="list-style-type: none"> Poor rigidity. Insert movement. Improper infeed. Off centreline. | <ul style="list-style-type: none"> Use modified flank infeed. Minimise tool overhang. Check for workpiece deflection. Check insert and clamp. Verify that tool cutting position is at workpiece centreline. Adjust number of passes. Fewer passes reduce chatter. |
| built-up edge | <ul style="list-style-type: none"> Speed too low. Insufficient coolant. Chip load. | <ul style="list-style-type: none"> Increase m/min. Increase coolant concentration and/or flow. Adjust infeed angle. Increase depth of cut per pass. |
| deformation | <ul style="list-style-type: none"> Wrong grade. Speed too high. Improper infeed angle. Insufficient coolant. | <ul style="list-style-type: none"> Use modified flank infeed. Use a more wear-resistant grade (e.g., KC5010™). Reduce m/mm. Increase coolant flow. |
| chipping | <ul style="list-style-type: none"> Improper infeed. Chip load. Wrong grade. Incorrect speed. Poor rigidity. | <ul style="list-style-type: none"> Use modified flank infeed. Increase or decrease number of passes. Eliminate spring passes. Use tougher grade (e.g., KC5025™). Increase m/mm if chipping on trailing edge. Decrease m/mm if chipping on leading edge. Minimise tool overhang. Check for insert movement/check clamp. Torque screw or clamp to correct value. Check for possible part deflection. Calculate flank clearance. Ensure correct shim. |
| broken nose | <ul style="list-style-type: none"> Heavy chip load. Small nose radius. Wrong grade. Improper infeed. | <ul style="list-style-type: none"> Use modified flank infeed. Decrease chip load. Use large nose radius if possible. Use tougher grade (e.g., KC5025). |
| flank wear | <ul style="list-style-type: none"> Improper shim. Wrong grade. Insufficient coolant. Off centreline. Insufficient flank clearance. Improper infeed angle. | <ul style="list-style-type: none"> Ensure correct shim. Use a more wear-resistant grade (e.g., KC5025). Increase coolant flow. Check the centreline height of the tool. (The smaller the diameter, the more critical the need for centreline accuracy.) Calculate flank clearance and change shim to increase clearance on worn flank. If wear is on trailing flank, increase infeed angle clearance. |

(continued)

(Technical Information • Failure and Solution Guide – continued)

| problem | possible solution | | | | | | | | | | | | | | | | |
|--------------------------------|-------------------|--------------|--------------------|---|---------------------------|--------------------------|---------------|--------------------|--------------------|--------------------|--------------------------------------|----------------------|---------------|-------------------------|------------|----------------------|---|
| | increase m/min | reduce m/min | increase chip load | decrease chip load where failure occurs | use tougher carbide grade | use harder carbide grade | apply coolant | use coated carbide | use topping insert | change infed angle | check for insert movement and reseat | reduce tool overhang | reselect shim | apply chipbreaker style | reduce DOC | adjust centre height | begin cutting threads 12mm before workpiece | change infed method |
| chatter | • | | | • | | | | | | • | • | | | | • | | • |
| bur on crest | • | | | | | | | | • | | | | | | | | • |
| short tool life | | • | • | • | | • | | • | | | | | | | | | • |
| chipped leading edge | | | • | • | • | | | | | | | | | | | | |
| chipped trailing edge | | | | | • | | | | | • | | | | | | | |
| broken nose (first pass) | • | | | | | | | | | | | | | • | • | | |
| broken nose (after first pass) | | | | • | • | | | | | • | | • | | | | | • |
| built-up on cutting edge | • | | • | | | | | • | • | | | | | | | | • |
| premature topping | | | | | | | | | | | | • | | | | | |
| splitting threads | | | | | | | | | | | | | | | | • | |
| poor chip evacuation | | | | | | | | | | | | | • | | | | • |

Kennametal insert technology brings chip control to your threading operations with the Top Notch™ platform. The proprietary Kennametal recessed chip groove, when used according to our recommendations, controls the chip in most applications. Our positive rake design lowers cutting pressures, which in turn lowers damaging heat generation thus providing better tool life. Long, stringy chips no longer mar the workpiece surface finish. The danger to operators when removing long chips from the workpiece and chuck is eliminated. All of these benefits combine to improve the productivity of your threading operations.

The Last Pass

Some CNC controls require the last pass to be at a 0° infeed angle because the chip will not break on the last pass. On most carbon and alloy steels, the last pass can remain at 0,127mm depth of cut and produce an acceptable finish. For some materials, a 0,025mm to 0,076mm (spring) pass may be used to improve surface finish, however, chip breaking action may be compromised.

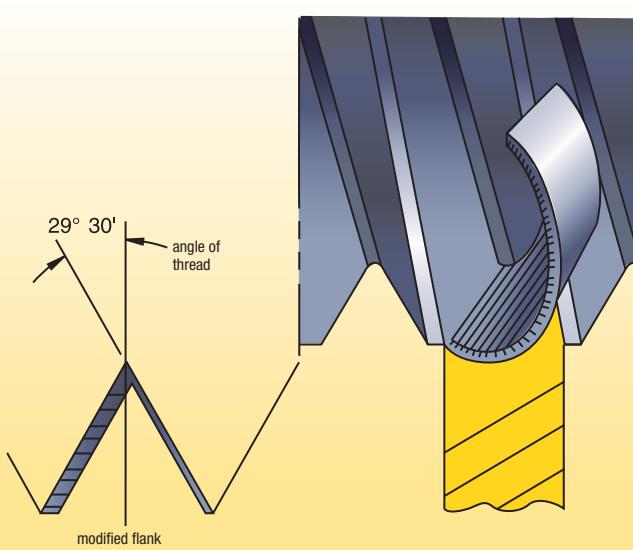


Machine Programming

Modern CNC controls allow the programmer to easily adjust infeed angle, the number of passes, and depth of cut for each pass. The chip control threading insert performs best at an infeed angle of 29° 30', although 15° to 30° is acceptable. Also, it is important to maintain a minimum of 0,127mm depth of cut on every pass. In most applications, use of CNC canned cycles produce only marginally successful results. Custom written programmes are better and are recommended.

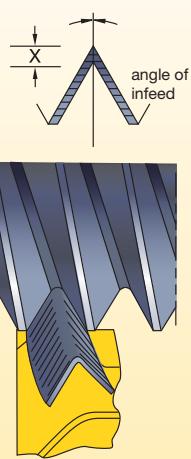
Infeed Angle

In order to effectively and consistently break the chip, it is important to use an infeed angle between 28° and 29° 30'. Do not apply chip control inserts at infeed angles less than 15°.



Radial

modified flank

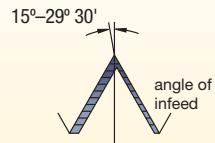


Advantage —

- Cutting on both sides of the thread form places all of the cutting edge in the cut and protects edge from chipping.
- Even wear on the insert.

Modified flank

modified flank



Advantage —

- Tool cuts both sides of thread form, so it is protected from chipping similar to 0° infeed. Channel-type chip develops, but uneven chip thickness helps remove the chip similar to flank infeed.
- This is the preferred method, especially when used with a chip control insert.
- Combined radial and/or alternating flank infeed.
- Results in good tool life, with wear evenly distributed over both flanks.

Alternating flank

alternating flank



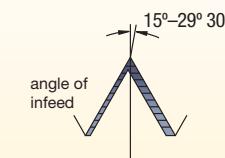
Advantage —

- Increased tool life because both edges are used equally.

NOTE: Some machine tools may require special programming techniques to achieve this method of infeed.

Reversed modified flank

modified flank



Advantage —

- Tool cuts both sides of thread form, so it is protected from chipping similar to 0° infeed. Channel-type chip develops, but uneven chip thickness helps remove the chip similar to flank infeed.
- This is the preferred method, especially when used with a chip control insert.
- Combined radial and/or alternating flank infeed.
- Results in good tool life, with wear evenly distributed over both flanks.
- As chip flow is the reversed feed direction, it is an excellent choice for internal threading.

Disadvantage —

- Tool develops a channel chip that may be difficult to handle.
- Tip chipping occurs when cutting high-tensile materials.
- Bur condition is increased.
- Entire cutting edge is engaged at finish of thread, causing increased tendency to chatter.

Disadvantage —

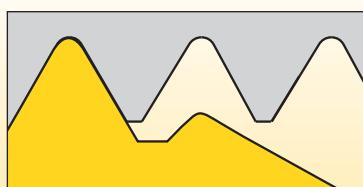
- Similar disadvantages as with 0° infeed, although reduced somewhat in magnitude as cutting forces are better equalised and chip flow is much less of a problem.

Disadvantage —

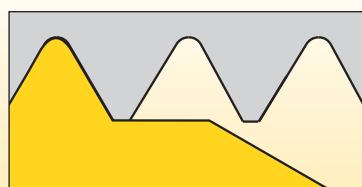
- Difficult to cut on conventional machinery.

Disadvantage —

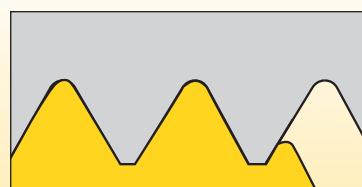
- Programming needs to be done line by line.

Partial Profile**Tooth profile with universal profile shape:**

- Reduced inventory.
- For various pitches in a limited range.
- Major/minor diameters must be accurately pre-turned.

Full Profile**Tooth profile with full profile shape including tooth height:**

- For bur-free, precise threads in the specified pitch.
- General application.
- Machining allowance for outside/core diameter around .004-.006".

Multi-Tooth Profile**Multi-tooth full profile generally with 2-3 teeth:**

- Highly productive threading with fewer passes and longer tool life.
- Requires a rigid setup and long thread pass through.

Formulas**Metric Formula**

| to find | given | formula |
|---------|-----------------|--|
| m/min | D (mm) RPM | $m/min = \frac{\pi \times D}{1000} \times RPM$ |
| RPM | D (mm) m/min | $RPM = \frac{m/min \times 1000}{D \times \pi}$ |

Legend

| | | |
|-------|---|------------------------|
| m/min | = | metres per minute |
| RPM | = | revolutions per minute |
| D | = | part diameter |
| π | = | 3.1416 |

Maximum Cutting Speeds

On older machines cutting speed is often limited by the maximum travel speed (IPM or mm/min) of the tool allowed by the machine. Check your maximum speed with the following formulas:

metric formula: maximum cutting speed (m/min) =
part diameter (mm) x 3.14 x (1/pitch) x $\frac{\text{max mm/min}}{1000\text{mm}}$

Flank clearance

| | | |
|----------|---|---|
| γ | = | $\arctan (\sin (\beta/2) * \tan(\alpha))$ |
| γ | = | side (flank) clearance |
| β | = | included angle of thread form |
| α | = | radial inclination angle |

| Thread | Angle | External | Internal |
|----------|-------|----------|----------|
| UN & ISO | 60 | 5.3 | 8 |
| BSW | 55 | 4.8 | 7.3 |
| TR | 30 | 2.6 | 4 |
| ACME | 29 | 2.6 | 3.9 |
| AMBUT | 7 | .6 | .9 |
| AMBUT | 45 | 4 | 6 |

Recommendation for Threading Infeed Passes

| | | | | | | | | |
|---|-----------|--------|----------|--------|--------|-------|-------|-------|
| TPI | 48–32 | 28–24 | 20–16 | 14–12 | 11.5–9 | 8–6 | 5–4 | 3–2 |
| metric pitch (mm) | 0,50–0,75 | 0,80–1 | 1,25–1,5 | 1,75–2 | 2,5–3 | 3,5–4 | 4,5–6 | 8,0 |
| Thread Type | | | | | | | | |
| Common V-thread forms ISO, UN, UNJ, NPT, Whitworth, BSPT, API Rotary Shoulder | 4–5 | 5–6 | 6–8 | 8–10 | 9–12 | 12–15 | 14–16 | 15–25 |
| Acme, Trapez, Round, API Round | — | — | 5–6 | 7–8 | 10–11 | 12–13 | 13–15 | 18–20 |
| Stub Acme, API Buttress | — | — | 5 | 5–6 | 7–8 | 8–10 | 10–12 | 14–16 |
| American Buttress | — | — | 7–8 | 9–10 | 11–12 | 13–15 | 17–19 | 22–24 |

NOTE: Maintain minimum .05mm infeed on last passes to avoid work hardening and excessive abrasion of the threading tool.

Constant Volume Infeed Values for Threading Operations

In most applications, use of CNC canned cycles produces only marginally successful results. For example, an 8-pitch external thread has a depth of 2mm (.0789").

$$\Delta ap_x = \frac{ap}{\sqrt{nap-1}} * \sqrt{\phi}$$

Formula for constant chip load infeed

Δap = radial infeed
 x = actual pass (from 1 to the nap)
 nap = number of passes
 ϕ = 1st pass, 0.3
 2nd pass, 1
 3rd pass and up, $x-1$

Using Radial Infeed

Bending stress on the cutting edge caused by V-shaped chips from long-chipping steel workpiece materials.

High cutting forces with small cutting thicknesses require sharp edges with high strength.

Using Flank Infeed

Lower bending stress and stabilised cutting edges produce more favourable chip shapes and larger cutting thicknesses.

Carbides with high hardness, good wear resistance, and temperature stability are advantageous.

Guidelines for Infeeds —

How to Determine the Number and the Size of Passes

The number of passes "s" per thread is decisive for successful threading and crest turning. The following tables give standard values for the application condition when machining steel. The proper number of passes must be determined empirically.

If insert breakage occurs, the number of passes must be increased. With increased wear, we recommend decreasing the number of passes. The chip thickness should not be less than 0,05mm. The allowance at the diameter should not exceed 0,2mm.

Metric ISO, External Thread Cutting

| thread pitch P (mm) | 0,50 | 0,75 | 1,00 | 1,25 | 1,50 | 1,75 | 2,00 | 2,50 | 3,00 | 3,50 | 4,00 | 4,50 | 5,00 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| T Ap (mm) | 0,305 | 0,457 | 0,610 | 0,762 | 0,914 | 1,067 | 1,219 | 1,524 | 1,829 | 2,159 | 2,464 | 2,769 | 3,073 |
| N Ap | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 12 | 14 | 15 | 15 | 16 |
| values for flank infeed (X/Z) | | | | | | | | | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,096 | 0,145 | 0,167 | 0,187 | 0,224 | 0,221 | 0,252 | 0,278 | 0,302 | 0,328 | 0,361 | 0,405 | 0,435 |
| 2 | 0,080 | 0,119 | 0,138 | 0,154 | 0,185 | 0,182 | 0,208 | 0,230 | 0,249 | 0,271 | 0,298 | 0,335 | 0,359 |
| 3 | 0,073 | 0,109 | 0,126 | 0,141 | 0,169 | 0,167 | 0,191 | 0,210 | 0,228 | 0,248 | 0,273 | 0,306 | 0,329 |
| 4 | 0,056 | 0,084 | 0,097 | 0,108 | 0,130 | 0,128 | 0,146 | 0,161 | 0,175 | 0,190 | 0,209 | 0,235 | 0,252 |
| 5 | | | 0,082 | 0,091 | 0,110 | 0,108 | 0,123 | 0,136 | 0,148 | 0,160 | 0,176 | 0,198 | 0,213 |
| 6 | | | | 0,080 | 0,097 | 0,095 | 0,109 | 0,120 | 0,130 | 0,141 | 0,155 | 0,175 | 0,187 |
| 7 | | | | | | 0,086 | 0,098 | 0,108 | 0,118 | 0,128 | 0,141 | 0,158 | 0,169 |
| 8 | | | | | | 0,079 | 0,090 | 0,100 | 0,108 | 0,118 | 0,129 | 0,145 | 0,156 |
| 9 | | | | | | | | 0,093 | 0,101 | 0,109 | 0,120 | 0,135 | 0,145 |
| 10 | | | | | | | | 0,087 | 0,095 | 0,103 | 0,113 | 0,127 | 0,136 |
| 11 | | | | | | | | | 0,089 | 0,097 | 0,107 | 0,120 | 0,129 |
| 12 | | | | | | | | | | 0,085 | 0,092 | 0,102 | 0,114 |
| 13 | | | | | | | | | | | 0,088 | 0,097 | 0,109 |
| 14 | | | | | | | | | | | 0,085 | 0,093 | 0,105 |
| 15 | | | | | | | | | | | | 0,090 | 0,101 |
| 16 | | | | | | | | | | | | | 0,104 |
| T Ap (mm) | 0,305 | 0,457 | 0,610 | 0,762 | 0,914 | 1,067 | 1,219 | 1,524 | 1,829 | 2,159 | 2,464 | 2,769 | 3,073 |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

Metric ISO, Internal Thread Cutting

| thread pitch P (mm) | 0,50 | 0,75 | 1,00 | 1,25 | 1,50 | 1,75 | 2,00 | 2,50 | 3,00 | 3,50 | 4,00 | 4,50 | 5,00 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| T Ap (mm) | 0,279 | 0,406 | 0,533 | 0,686 | 0,813 | 0,940 | 1,092 | 1,346 | 1,626 | 1,905 | 2,159 | 2,438 | 2,718 |
| N Ap | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 11 | 12 | 14 | 15 | 16 |
| values for flank infeed (X/Z) | | | | | | | | | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,088 | 0,129 | 0,146 | 0,168 | 0,199 | 0,195 | 0,226 | 0,246 | 0,282 | 0,315 | 0,328 | 0,357 | 0,384 |
| 2 | 0,073 | 0,106 | 0,121 | 0,139 | 0,164 | 0,161 | 0,187 | 0,203 | 0,232 | 0,260 | 0,271 | 0,295 | 0,317 |
| 3 | 0,067 | 0,097 | 0,110 | 0,127 | 0,151 | 0,147 | 0,171 | 0,186 | 0,213 | 0,238 | 0,248 | 0,270 | 0,291 |
| 4 | 0,051 | 0,075 | 0,085 | 0,097 | 0,116 | 0,113 | 0,131 | 0,143 | 0,163 | 0,183 | 0,190 | 0,207 | 0,223 |
| 5 | | | 0,071 | 0,082 | 0,097 | 0,095 | 0,111 | 0,120 | 0,138 | 0,154 | 0,160 | 0,175 | 0,188 |
| 6 | | | | 0,072 | 0,086 | 0,084 | 0,097 | 0,106 | 0,121 | 0,136 | 0,141 | 0,154 | 0,166 |
| 7 | | | | | | 0,076 | 0,088 | 0,096 | 0,110 | 0,123 | 0,128 | 0,139 | 0,150 |
| 8 | | | | | | 0,070 | 0,081 | 0,088 | 0,101 | 0,113 | 0,118 | 0,128 | 0,138 |
| 9 | | | | | | | | 0,082 | 0,094 | 0,105 | 0,109 | 0,119 | 0,128 |
| 10 | | | | | | | | | 0,077 | 0,088 | 0,099 | 0,103 | 0,112 |
| 11 | | | | | | | | | | 0,083 | 0,093 | 0,097 | 0,106 |
| 12 | | | | | | | | | | | 0,000 | 0,089 | 0,092 |
| 13 | | | | | | | | | | | | 0,000 | 0,088 |
| 14 | | | | | | | | | | | | 0,000 | 0,085 |
| 15 | | | | | | | | | | | | 0,000 | 0,089 |
| 16 | | | | | | | | | | | | | 0,092 |
| T Ap (mm) | 0,279 | 0,406 | 0,533 | 0,686 | 0,813 | 0,940 | 1,092 | 1,346 | 1,626 | 1,905 | 2,159 | 2,438 | 2,718 |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

UN Thread, External Thread Cutting

| TPI | 24 | 20 | 18 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| T Ap (mm) | 0,660 | 0,787 | 0,864 | 0,965 | 0,914 | 1,067 | 1,219 | 1,524 | 1,829 | 2,159 | 2,464 | 2,769 | 3,073 |
| N Ap | 5 | 6 | 6 | 7 | 9 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| values for flank infeed (X/Z) | | | | | | | | | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,181 | 0,193 | 0,212 | 0,216 | 0,177 | 0,207 | 0,223 | 0,264 | 0,302 | 0,341 | 0,374 | 0,405 | 0,435 |
| 2 | 0,149 | 0,159 | 0,175 | 0,178 | 0,146 | 0,171 | 0,184 | 0,218 | 0,249 | 0,282 | 0,309 | 0,335 | 0,359 |
| 3 | 0,137 | 0,146 | 0,160 | 0,163 | 0,134 | 0,156 | 0,168 | 0,200 | 0,228 | 0,258 | 0,283 | 0,306 | 0,329 |
| 4 | 0,105 | 0,112 | 0,123 | 0,125 | 0,103 | 0,120 | 0,129 | 0,153 | 0,175 | 0,198 | 0,217 | 0,235 | 0,252 |
| 5 | 0,088 | 0,094 | 0,103 | 0,106 | 0,087 | 0,101 | 0,109 | 0,129 | 0,148 | 0,167 | 0,183 | 0,198 | 0,213 |
| 6 | | 0,083 | 0,091 | 0,093 | 0,076 | 0,089 | 0,096 | 0,114 | 0,130 | 0,147 | 0,161 | 0,175 | 0,187 |
| 7 | | | | | 0,084 | 0,069 | 0,080 | 0,087 | 0,103 | 0,118 | 0,133 | 0,146 | 0,158 |
| 8 | | | | | | 0,063 | 0,074 | 0,080 | 0,095 | 0,108 | 0,122 | 0,134 | 0,145 |
| 9 | | | | | | 0,059 | 0,069 | 0,074 | 0,088 | 0,101 | 0,114 | 0,125 | 0,135 |
| 10 | | | | | | | 0,070 | 0,083 | 0,095 | 0,107 | 0,117 | 0,127 | 0,136 |
| 11 | | | | | | | | 0,078 | 0,089 | 0,101 | 0,111 | 0,120 | 0,129 |
| 12 | | | | | | | | | 0,085 | 0,096 | 0,105 | 0,114 | 0,122 |
| 13 | | | | | | | | | | 0,092 | 0,101 | 0,109 | 0,117 |
| 14 | | | | | | | | | | | 0,097 | 0,105 | 0,112 |
| 15 | | | | | | | | | | | | 0,101 | 0,108 |
| 16 | | | | | | | | | | | | | 0,104 |
| T Ap (mm) | 0,660 | 0,787 | 0,864 | 0,965 | 0,914 | 1,067 | 1,219 | 1,524 | 1,829 | 2,159 | 2,464 | 2,769 | 3,073 |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

UN Thread, Internal Thread Cutting

| TPI | 24 | 20 | 18 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| T Ap (mm) | 0,584 | 0,686 | 0,762 | 0,864 | 0,991 | 1,143 | 1,245 | 1,372 | 1,524 | 1,727 | 1,956 | 2,286 | 2,743 |
| N Ap | 5 | 6 | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| values for flank infeed (X/Z) | | | | | | | | | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,160 | 0,168 | 0,187 | 0,193 | 0,205 | 0,221 | 0,241 | 0,250 | 0,264 | 0,285 | 0,309 | 0,347 | 0,402 |
| 2 | 0,132 | 0,139 | 0,154 | 0,159 | 0,169 | 0,183 | 0,199 | 0,207 | 0,218 | 0,236 | 0,255 | 0,287 | 0,332 |
| 3 | 0,121 | 0,127 | 0,141 | 0,146 | 0,155 | 0,167 | 0,182 | 0,189 | 0,200 | 0,216 | 0,234 | 0,263 | 0,304 |
| 4 | 0,093 | 0,097 | 0,108 | 0,112 | 0,119 | 0,128 | 0,140 | 0,145 | 0,153 | 0,166 | 0,179 | 0,202 | 0,233 |
| 5 | 0,078 | 0,082 | 0,091 | 0,094 | 0,100 | 0,108 | 0,118 | 0,123 | 0,129 | 0,140 | 0,151 | 0,170 | 0,196 |
| 6 | | 0,072 | 0,080 | 0,083 | 0,088 | 0,095 | 0,104 | 0,108 | 0,114 | 0,123 | 0,133 | 0,150 | 0,173 |
| 7 | | | | 0,075 | 0,080 | 0,086 | 0,094 | 0,098 | 0,103 | 0,111 | 0,120 | 0,135 | 0,156 |
| 8 | | | | | 0,073 | 0,079 | 0,086 | 0,090 | 0,095 | 0,102 | 0,111 | 0,124 | 0,144 |
| 9 | | | | | | 0,074 | 0,080 | 0,084 | 0,088 | 0,095 | 0,103 | 0,116 | 0,134 |
| 10 | | | | | | | | 0,078 | 0,083 | 0,089 | 0,097 | 0,109 | 0,126 |
| 11 | | | | | | | | | 0,078 | 0,085 | 0,092 | 0,103 | 0,119 |
| 12 | | | | | | | | | | 0,080 | 0,087 | 0,098 | 0,113 |
| 13 | | | | | | | | | | | 0,083 | 0,094 | 0,108 |
| 14 | | | | | | | | | | | 0,080 | 0,090 | 0,104 |
| 15 | | | | | | | | | | | | | 0,100 |
| 16 | | | | | | | | | | | | | |
| T Ap (mm) | 0,584 | 0,686 | 0,762 | 0,864 | 0,991 | 1,143 | 1,245 | 1,372 | 1,524 | 1,727 | 2,036 | 2,286 | 2,743 |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

NPT Thread, External, and Internal Machining

| TPI | 27 | 18 | 14 | 11.5 | 8 |
|-------------------------------|-------|-------|-------|-------|-------|
| T Ap (mm) | 0,762 | 1,118 | 1,422 | 1,727 | 2,489 |
| N Ap | 6 | 8 | 10 | 12 | 14 |
| values for flank infeed (X/Z) | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,187 | 0,231 | 0,260 | 0,285 | 0,378 |
| 2 | 0,154 | 0,191 | 0,214 | 0,236 | 0,312 |
| 3 | 0,141 | 0,175 | 0,196 | 0,216 | 0,286 |
| 4 | 0,108 | 0,134 | 0,151 | 0,166 | 0,219 |
| 5 | 0,091 | 0,113 | 0,127 | 0,140 | 0,185 |
| 6 | 0,080 | 0,100 | 0,112 | 0,123 | 0,163 |
| 7 | | 0,090 | 0,101 | 0,111 | 0,147 |
| 8 | | 0,083 | 0,093 | 0,102 | 0,135 |
| 9 | | | 0,087 | 0,095 | 0,126 |
| 10 | | | 0,081 | 0,089 | 0,118 |
| 11 | | | | 0,085 | 0,112 |
| 12 | | | | 0,080 | 0,107 |
| 13 | | | | | 0,102 |
| 14 | | | | | 0,098 |
| 15 | | | | | |
| 16 | | | | | |
| T Ap (mm) | 0,762 | 1,118 | 1,422 | 1,727 | 2,489 |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

Trapezoid Thread to DIN 103, External, and Internal Machining

| pitch | 1,5 | 2 | 3 | 4 | 5 |
|-------------------------------|-------|-------|-------|-------|-------|
| T Ap (mm) | 1,016 | 1,245 | 1,753 | 2,261 | 2,743 |
| N Ap | 6 | 8 | 10 | 12 | 14 |
| values for flank infeed (X/Z) | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,249 | 0,258 | 0,320 | 0,373 | 0,417 |
| 2 | 0,206 | 0,213 | 0,264 | 0,308 | 0,344 |
| 3 | 0,188 | 0,195 | 0,242 | 0,282 | 0,315 |
| 4 | 0,144 | 0,150 | 0,186 | 0,217 | 0,242 |
| 5 | 0,122 | 0,126 | 0,157 | 0,183 | 0,204 |
| 6 | 0,107 | 0,111 | 0,138 | 0,161 | 0,180 |
| 7 | | 0,100 | 0,125 | 0,145 | 0,162 |
| 8 | | 0,092 | 0,115 | 0,134 | 0,149 |
| 9 | | | 0,107 | 0,125 | 0,139 |
| 10 | | | 0,100 | 0,117 | 0,131 |
| 11 | | | | 0,111 | 0,123 |
| 12 | | | | 0,105 | 0,117 |
| 13 | | | | | 0,112 |
| 14 | | | | | 0,108 |
| 15 | | | | | |
| 16 | | | | | |
| T Ap (mm) | 1,016 | 1,245 | 1,753 | 2,261 | 2,743 |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

BSPT Thread, External, and Internal Machining

| TPI | 28 | 19 | 14 | 11 |
|-------------------------------|-------|-------|-------|-------|
| T Ap (mm) | 0,584 | 0,864 | 1,168 | 1,448 |
| N Ap | 5 | 8 | 10 | 12 |
| values for flank infeed (X/Z) | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,160 | 0,179 | 0,213 | 0,239 |
| 2 | 0,132 | 0,148 | 0,176 | 0,197 |
| 3 | 0,121 | 0,135 | 0,161 | 0,181 |
| 4 | 0,093 | 0,104 | 0,124 | 0,139 |
| 5 | 0,078 | 0,087 | 0,104 | 0,117 |
| 6 | | 0,077 | 0,092 | 0,103 |
| 7 | | 0,070 | 0,083 | 0,093 |
| 8 | | 0,064 | 0,076 | 0,086 |
| 9 | | | 0,071 | 0,080 |
| 10 | | | 0,067 | 0,075 |
| 11 | | | | 0,071 |
| 12 | | | | 0,067 |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| T Ap (mm) | 0,584 | 0,864 | 1,168 | 1,448 |

Round Thread to DIN 405, External, and Internal Machining

| pitch | 10 | 8 | 6 |
|-------------------------------|-------|-------|-------|
| T Ap (mm) | 1,321 | 1,626 | 2,159 |
| N Ap | 8 | 10 | 12 |
| values for flank infeed (X/Z) | | | |
| order of passes | X/Z | X/Z | X/Z |
| 1 | 0,273 | 0,297 | 0,357 |
| 2 | 0,226 | 0,245 | 0,294 |
| 3 | 0,207 | 0,224 | 0,270 |
| 4 | 0,159 | 0,172 | 0,207 |
| 5 | 0,134 | 0,145 | 0,174 |
| 6 | 0,118 | 0,128 | 0,154 |
| 7 | 0,107 | 0,116 | 0,139 |
| 8 | 0,098 | 0,106 | 0,128 |
| 9 | | 0,099 | 0,119 |
| 10 | | 0,093 | 0,112 |
| 11 | | | 0,106 |
| 12 | | | 0,100 |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| T Ap (mm) | 1,321 | 1,626 | 2,159 |

Whitworth, External, and Internal Thread Cutting

| TPI | 28 | 20 | 19 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| T Ap (mm) | 0,584 | 0,813 | 0,813 | 0,864 | 1,016 | 1,346 | 1,473 | 1,626 | 1,803 | 2,032 | 2,311 | 2,718 | 3,251 |
| N Ap | 5 | 6 | 6 | 8 | 8 | 9 | 9 | 10 | 11 | 12 | 14 | 15 | 16 |
| values for flank infeed (X/Z) | | | | | | | | | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | 0,160 | 0,199 | 0,199 | 0,179 | 0,210 | 0,261 | 0,285 | 0,297 | 0,312 | 0,336 | 0,351 | 0,398 | 0,460 |
| 2 | 0,132 | 0,164 | 0,164 | 0,148 | 0,174 | 0,215 | 0,236 | 0,245 | 0,258 | 0,277 | 0,290 | 0,329 | 0,380 |
| 3 | 0,121 | 0,151 | 0,151 | 0,135 | 0,159 | 0,197 | 0,216 | 0,224 | 0,236 | 0,254 | 0,266 | 0,301 | 0,348 |
| 4 | 0,093 | 0,116 | 0,116 | 0,104 | 0,122 | 0,151 | 0,166 | 0,172 | 0,181 | 0,195 | 0,204 | 0,231 | 0,267 |
| 5 | 0,078 | 0,097 | 0,097 | 0,087 | 0,103 | 0,128 | 0,140 | 0,145 | 0,153 | 0,164 | 0,172 | 0,195 | 0,225 |
| 6 | | 0,086 | 0,086 | 0,077 | 0,091 | 0,112 | 0,123 | 0,128 | 0,135 | 0,145 | 0,151 | 0,171 | 0,198 |
| 7 | | | | 0,070 | 0,082 | 0,102 | 0,111 | 0,116 | 0,122 | 0,131 | 0,137 | 0,155 | 0,179 |
| 8 | | | | | 0,064 | 0,075 | 0,093 | 0,102 | 0,106 | 0,112 | 0,120 | 0,126 | 0,143 |
| 9 | | | | | | | 0,087 | 0,095 | 0,099 | 0,104 | 0,112 | 0,117 | 0,133 |
| 10 | | | | | | | | | 0,093 | 0,098 | 0,105 | 0,110 | 0,125 |
| 11 | | | | | | | | | | 0,093 | 0,099 | 0,104 | 0,118 |
| 12 | | | | | | | | | | | 0,095 | 0,099 | 0,112 |
| 13 | | | | | | | | | | | | 0,095 | 0,107 |
| 14 | | | | | | | | | | | | 0,091 | 0,103 |
| 15 | | | | | | | | | | | | | 0,099 |
| 16 | | | | | | | | | | | | | 0,110 |
| T Ap (mm) | 0,584 | 0,813 | 0,813 | 0,864 | 1,016 | 1,346 | 1,473 | 1,626 | 1,803 | 2,032 | 2,311 | 2,718 | 3,251 |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

Multi-Tooth Threads, Internal

| type | ISO metric | | | | | | ISO UN | | | | | | Whitworth | NPT | | |
|--------------------|------------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-----------|--------|-------|----|
| | 3M | 2M | 3M | 2M | 3M | 2M | 2M | 3M | 2M | 3M | 2M | 2M | | 2M | 3M | 2M |
| pitch (mm) | 1,0 | 1,5 | 1,5 | 2,0 | 2,0 | 3,0 | — | — | — | — | — | — | — | — | — | — |
| TPI | — | — | — | — | — | — | 16 | 16 | 12 | 12 | 8 | 11 | 11,5 | 11,5 | 8 | |
| total depth | 0,609 | 0,838 | 0,838 | 1,168 | 1,168 | 1,778 | 0,939 | 0,939 | 1,245 | 1,245 | 1,880 | 1,575 | 1,753 | 1,753 | 2,540 | |
| 1 | 0,330 | 0,381 | 0,508 | 0,508 | 0,711 | 0,558 | 0,431 | 0,558 | 0,558 | 0,762 | 0,584 | 0,736 | 0,584 | 0,812 | 0,889 | |
| 2 | 0,279 | 0,254 | 0,330 | 0,381 | 0,457 | 0,482 | 0,304 | 0,381 | 0,406 | 0,482 | 0,508 | 0,482 | 0,508 | 0,558 | 0,635 | |
| 3 | — | 0,203 | — | 0,279 | — | 0,431 | 0,203 | — | 0,279 | — | 0,431 | 0,355 | 0,355 | 0,3815 | 0,558 | |
| 4 | — | — | — | — | — | 0,304 | — | — | — | — | 0,355 | — | 0,304 | — | 0,457 | |

Recommendations for Steel Workpieces (<300 BHN)

| catalogue number | insert size | TPI profile | total depth — on radius | | | | | | |
|-------------------------|-------------|-------------|-------------------------|----------|----------|--|--|--|--|
| | | | 1st pass | 2nd pass | 3rd pass | | | | |
| NTC-8R/L8EM | 8 | 8 UN | 1,21 | 1,63 | 2,00 | | | | |
| NTC-8R/L8IM | 8 | 8 UN | 1,19 | 1,55 | 1,88 | | | | |
| NTC-8R/L10EM | 8 | 10 UN | 0,92 | 1,27 | 1,60 | | | | |
| NTC-8R/L10IM | 8 | 10 UN | 0,90 | 1,22 | 1,52 | | | | |
| NTC-8R/L12EM | 8 | 12 UN | 0,76 | 1,04 | 1,32 | | | | |
| NTC-8R/L12IM | 8 | 12 UN | 0,76 | 0,93 | 1,20 | | | | |
| NTC-8R/L14EM | 8 | 14 UN | 0,68 | 0,95 | 1,12 | | | | |
| NTC-8R/L14IM | 8 | 14 UN | 0,60 | 0,78 | 1,04 | | | | |
| NTC-8R/L16EM 8 | 8 | 16 UN | 0,58 | 0,81 | 0,96 | | | | |
| NTC-8R/L16IM | 8 | 16 UN | 0,50 | 0,68 | 0,93 | | | | |
| NTC-8R/L18EM | 8 | 18 UN | 0,48 | 0,66 | 0,86 | | | | |
| NTC-8R/L18IM | 8 | 18 UN | 0,48 | 0,60 | 0,83 | | | | |
| NDC-68RDR/L-75M | 8 | 8 round | 1,47 | 1,65 | 1,85 | | | | |
| NDC-61RDR/L-75M | 8 | 10 round | 1,11 | 1,29 | 1,45 | | | | |
| NDC-88RDRD/L-75M | 8 | 8 round | 1,29 | 1,75 | 1,85 | | | | |
| NDC-88VR/L-75M | 8 | 8 NPT | 1,01 | 1,72 | 2,45 | | | | |
| NDC-8115VR/L-75M | 8 | 11.5 NPT | 0,96 | 1,37 | 1,70 | | | | |
| NDN-814VR/L-75M | 8 | 14 NPT | 0,96 | 1,22 | 1,36 | | | | |

NOTE: Always allow 0,08–0,13mm extra stock for full profile inserts.

ACME, External

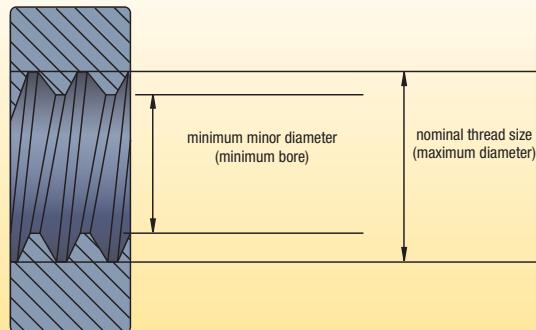
| pitch, TPI | 28 | 20 | 19 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|-----------|-----------|-----------|
| depth | .028 | .032 | .032 | .034 | .040 | .053 | .058 | .064 | .071 | .080 | .091 | .107 | .128 |
| number of passes | 5 | 6 | 6 | 8 | 8 | 9 | 9 | 10 | 11 | 12 | 14 | 15 | 16 |
| values for flank infeed (X/Z) | | | | | | | | | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | .039 | .041 | .050 | .063 | .074 | .095 | .112 | .138 | .180 | .256 | .008/- | .008/- | .008/- |
| 2 | .009 | .008 | .009 | .010 | .010 | .011 | .012 | .013 | .019 | .028 | .013/.007 | .014/.007 | .017/.009 |
| 3 | .009 | .008 | .009 | .009 | .010 | .011 | .011 | .012 | .018 | .026 | .01/.005 | .011/.006 | .013/.007 |
| 4 | .007 | .007 | .007 | .009 | .009 | .010 | .010 | .011 | .016 | .023 | .008/.004 | .009/.005 | .011/.006 |
| 5 | .006 | .006 | .007 | .007 | .007 | .009 | .010 | .011 | .015 | .022 | .007/.004 | .008/.004 | .009/.005 |
| 6 | .005 | .005 | .005 | .006 | .006 | .008 | .009 | .010 | .013 | .019 | .007/.003 | .007/.004 | .009/.004 |
| 7 | .003 | .004 | .005 | .005 | .005 | .007 | .008 | .010 | .011 | .017 | .006/.003 | .007/.004 | .008/.004 |
| 8 | | .003 | .004 | .005 | .005 | .006 | .007 | .009 | .011 | .015 | .006/.003 | .006/.003 | .007/.004 |
| 9 | | | .004 | .004 | .005 | .006 | .007 | .008 | .009 | .013 | .005/.003 | .006/.003 | .007/.004 |
| 10 | | | | .004 | .005 | .006 | .007 | .008 | .009 | .013 | .005/.003 | .005/.003 | .006/.003 |
| 11 | | | | | .004 | .006 | .006 | .007 | .009 | .011 | .005/.002 | .005/.003 | .006/.003 |
| 12 | | | | | | .004 | .006 | .006 | .007 | .011 | .004/.002 | .005/.003 | .006/.003 |
| 13 | | | | | | | .004 | .005 | .006 | .010 | .004/.002 | .005/.003 | .006/.003 |
| 14 | | | | | | | .004 | .005 | .006 | .007 | .009 | .004/.002 | .005/.002 |
| 15 | | | | | | | | .004 | .006 | .007 | .009 | | .005/.002 |
| 16 | | | | | | | | | .004 | .006 | .006 | .008 | |
| 17 | | | | | | | | | | .004 | .005 | .007 | .004/.002 |
| 18 | | | | | | | | | | .004 | .005 | .007 | .004/.002 |
| 19 | | | | | | | | | | | .005 | .006 | |
| 20 | | | | | | | | | | | .006 | | .005/.003 |

NOTE: Always allow 0.08–0.13mm extra stock for full profile inserts.

ACME, Internal

| pitch, TPI | 28 | 20 | 19 | 16 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|-----------|-----------|-----------|
| depth | .028 | .032 | .032 | .034 | .040 | .053 | .058 | .064 | .071 | .080 | .091 | .107 | .128 |
| number of passes | 5 | 6 | 6 | 8 | 8 | 9 | 9 | 10 | 11 | 12 | 14 | 15 | 16 |
| values for flank infeed (X/Z) | | | | | | | | | | | | | |
| order of passes | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z | X/Z |
| 1 | .039 | .041 | .050 | .063 | .074 | .095 | .112 | .138 | .180 | .256 | .008/- | .008/- | .008/- |
| 2 | .009 | .008 | .009 | .010 | .010 | .011 | .012 | .013 | .019 | .028 | .013/.007 | .014/.007 | .017/.009 |
| 3 | .009 | .008 | .009 | .009 | .010 | .011 | .011 | .012 | .018 | .026 | .01/.005 | .011/.006 | .013/.007 |
| 4 | .007 | .007 | .007 | .009 | .009 | .010 | .010 | .011 | .016 | .023 | .008/.004 | .009/.005 | .011/.006 |
| 5 | .006 | .006 | .007 | .007 | .007 | .009 | .010 | .011 | .015 | .022 | .007/.004 | .008/.004 | .009/.005 |
| 6 | .005 | .005 | .005 | .006 | .006 | .008 | .009 | .010 | .013 | .019 | .007/.003 | .007/.004 | .009/.004 |
| 7 | .003 | .004 | .005 | .005 | .005 | .007 | .008 | .010 | .011 | .017 | .006/.003 | .007/.004 | .008/.004 |
| 8 | | .003 | .004 | .005 | .005 | .006 | .007 | .009 | .011 | .015 | .006/.003 | .006/.003 | .007/.004 |
| 9 | | | .004 | .004 | .005 | .006 | .007 | .008 | .009 | .013 | .005/.003 | .006/.003 | .007/.004 |
| 10 | | | | .004 | .005 | .006 | .007 | .008 | .009 | .013 | .005/.003 | .005/.003 | .006/.003 |
| 11 | | | | | .004 | .004 | .006 | .006 | .007 | .009 | .011 | .005/.002 | .005/.003 |
| 12 | | | | | | .004 | .006 | .006 | .007 | .008 | .011 | .004/.002 | .005/.003 |
| 13 | | | | | | | .004 | .005 | .006 | .006 | .007 | .010 | .004/.002 |
| 14 | | | | | | | .004 | .005 | .006 | .007 | .009 | .004/.002 | .005/.003 |
| 15 | | | | | | | | .004 | .006 | .007 | .009 | | .005/.002 |
| 16 | | | | | | | | | .004 | .006 | .006 | .008 | |
| 17 | | | | | | | | | | .004 | .005 | .007 | .004/.002 |
| 18 | | | | | | | | | | .004 | .005 | .007 | .004/.002 |
| 19 | | | | | | | | | | | .005 | .006 | |
| 20 | | | | | | | | | | | .006 | | .005/.003 |

The following charts list the largest thread pitch that can be applied on internal applications using Top Notch threading inserts for 60° V-threading and Acme threading.



Metric-sized 60° V-Threading Limits
internal threading limitations NT-1, NT-2 60°
V-threading inserts

| TPI | nominal thread size | | minimum thread diameter (mm) | |
|-------|------------------------|------------|---------------------------------|-------|
| | NT-1 | NT-2 | NT-1 | NT-2 |
| 4,00 | M48 x 4.00 | — | 43,67 | — |
| 3,00 | M42 x 3.00 | — | 38,75 | — |
| 2,50 | M39 x 2.50 | M24 x 2,50 | 36,29 | 21,29 |
| 2,00 | M33 x 2.00 | M15 x 2,00 | 30,84 | 12,84 |
| 1,75 | M32 x 1.75 | M15 x 1,75 | 30,11 | 13,11 |
| 1,50 | M32 x 1.50 | M15 x 1,50 | 30,38 | 13,38 |
| 1,25 | M29 x 1.29 | M14 x 1,25 | 27,65 | 12,65 |
| 1,00* | M27 x 1.00 | M14 x 1,00 | 25,92 | 12,92 |
| 0,75 | M22 x 0.75 | M12 x 0,75 | 21,19 | 11,19 |

*Thread pitch of 1mm and less can be cut with an NT-2 insert provided the core thread diameter is 25mm or larger (11mm or larger with NT-1).

internal threading limitations NT-3 and NT-4 60° V-threading
inserts

| TPI | nominal thread size | minimum thread diameter (mm) |
|--------|------------------------|---------------------------------|
| 6,00** | M76 x 6.00 | 69,50 |
| 5,50** | M73 x 5.50 | 67,05 |
| 5,00 | M70 x 5.00 | 64,59 |
| 4,00 | M64 x 4.00 | 59,67 |
| 3,00 | M52 x 3.00 | 48,75 |
| 2,50 | M48 x 2.50 | 45,29 |
| 2,00 | M42 x 2.00 | 39,84 |
| 1,75 | M40 x 1.75 | 38,11 |
| 1,50* | M38 x 1.50 | 36,38 |

*Thread pitch of 1,5mm and less can be cut provided core thread diameter is 35mm or larger.

**NT-4-insert only.

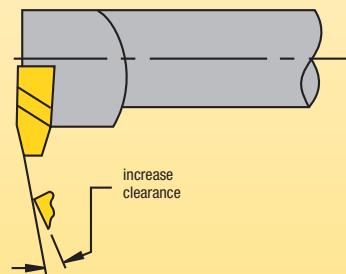
Acme Threading Limits

internal threading limitations NA and NAS-2, -3, -4, and -6 Acme
threading inserts

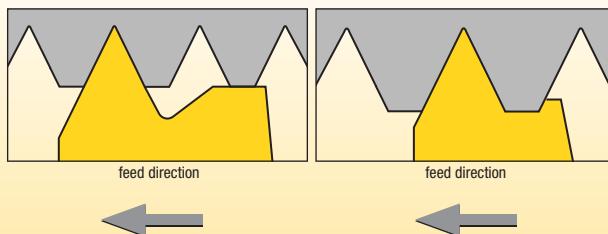
| TPI | nominal thread size | minimum thread diameter (mm) | |
|---------|------------------------|---------------------------------|-------|
| | | NT-1 | NT-2 |
| 2** | 5 | 4.500 | 114.3 |
| 2-1/2** | 4-1/2 | 4.100 | 104.1 |
| 3** | 4 | 3.665 | 93.1 |
| 4 | 3-1/2 | 3.250 | 82.6 |
| 5 | 3 | 2.800 | 71.1 |
| 6 | 2-1/2 | 2.333 | 59.3 |
| 8 | 2-1/4 | 2.125 | 54.0 |
| 10 | 2 | 1.900 | 48.3 |
| 12 | 1-3/4 | 1.667 | 42.4 |
| 14 | 1-5/8 | 1.554 | 39.5 |
| 16* | 1-1/2 | 1.438 | 36.5 |

*Sixteen threads per inch and finer can be cut provided minor diameter is 36,5mm (1.438") or larger.

**NA-6 insert only.



Additional secondary clearance can be ground on leading edge of insert to provide sufficient helical clearance for machining coarser threads and multiple start threads. Modified standard inserts may be furnished for machining threads outside of the limits shown.

60° V-Thread Crest Turning Application Data


NTC crest turning insert for ($P \leq 2\text{mm}$) and finer.

NOTE: NTC inserts automatically control root to crest dimensions. Therefore, in setting up threading operations with NTC inserts, check the O.D. or I.D. at the thread crest for correct dimensions.

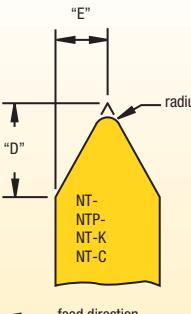
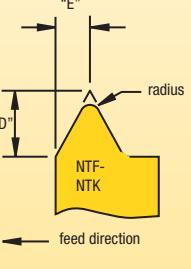
60° V-Thread Crest Turning Application Data

| insert catalogue number | nose radius on insert (mm) | thread radius per MIL-S-8879A (mm) |
|-------------------------|----------------------------|------------------------------------|
| NJ-3014R/L12 | 0,317/0,342 | 0,317/0,381 |
| NJK-3008R/L20 | 0,190/0,215 | 0,190/0,0228 |

"J" thread note for catalogue

The controlled root radius thread form (SAE8879C) is defined for the external thread only. To machine the corresponding internal thread, choose any insert that will cut a unified class 2B thread, then bore the minor diameter to size. Refer to SAE8879C and MIL-S-8879C and SAEAS8879D for the correct "J" thread minor diameter values.

60° V-Thread Application Data

| insert description | insert | D (mm) | E (mm) | recommended TPI* | | recommended TD* | |
|---|---------|--------|--------|------------------|----------|-----------------|-------------|
| | | | | external | internal | external | internal |
|   | NT-1 | 1,90 | 1,11 | — | 24–12 | — | 1,00–2,00 |
| | NT-2 | 28,70 | 1,90 | 36–8 | 20–7 | 0,70–3,00 | 1,25–3,50 |
| | NT-2-K | 28,70 | 1,90 | 36–8 | 20–7 | 0,70–3,00 | 1,25–3,50 |
| | NTF-2 | 15,75 | 1,01 | 44–14 | 24–12 | 0,60–1,75 | 1,00–2,00 |
| | NTK-2 | 15,75 | 1,01 | 44–14 | 24–12 | 0,60–1,75 | 1,00–2,00 |
| | NTP-2 | 28,70 | 1,90 | 36–8 | 20–7 | 0,70–3,0 | 1,25–3,50 |
| | NT-3 | 37,59 | 2,46 | 20–6 | 12–5 | 1,25–4,00 | 2,00–5,00 |
| | NT-3-K | 37,59 | 2,46 | 20–6 | 12–5 | 1,25–4,00 | 2,00–5,00 |
| | NT-3-C | 37,59 | 2,46 | 11–6 | 6 (only) | 2,50–4,00 | 4,00 (only) |
| | NT-3-CK | 37,59 | 2,46 | 11–6 | 6 (only) | 2,50–4,00 | 4,00 (only) |
| | NTF-3 | 21,08 | 1,37 | 44–10 | 24–9 | 0,60–2,50 | 1,00–2,50 |
| | NTK-3 | 21,08 | 1,37 | 44–10 | 24–9 | 0,60–2,50 | 1,00–2,50 |
| | NTP-3 | 37,59 | 2,46 | 20–6 | 12–5 | 1,25–4,00 | 2,00–5,00 |
| | NT-4 | 49,78 | 3,22 | 20–4 | 12–4 | 1,25–6,25 | 2,00–6,25 |
| | NT-4-K | 49,78 | 3,22 | 20–4 | 12–4 | 1,25–6,25 | 2,00–6,25 |
| | NT-4-C | 49,78 | 3,22 | 11–4 1/2 | 6–4 1/2 | 2,50–5,50 | 4,00–5,50 |
| | NT-4-CK | 49,78 | 3,22 | 11–4 1/2 | 6–4 1/2 | 2,50–5,50 | 4,00–5,50 |
| | NTF-4 | 21,08 | 1,37 | 44–10 | 24–9 | 0,60–2,50 | 1,00–2,50 |
| | NTK-4 | 21,08 | 1,37 | 44–10 | 24–9 | 0,60–2,50 | 1,00–2,50 |
| | NTP-4 | 49,78 | 3,22 | 20–4 | 12–4 | 1,25–6,25 | 2,00–6,25 |

*Based on maximum insert radius size and class 2A and 2B thread specifications.

API Thread Forms • Insert Applications Chart for API Rotary Shouldered Connections

| thread form | Kennametal insert | | tool joint application | minimum box size* |
|----------------------------|---|--------------------------|--|---------------------|
| | cresting | non-cresting | | |
| V-.038R 2" TPF 4 TPI | NDC-4038R/L2 4-E/IR4API382 | ND-3038R/L | 2-3/8 API internal flush 2-7/8 API internal flush 3-1/2 API internal flush 4 API internal flush 4-1/2 API internal flush 5-1/2 API internal flush 6-5/8 API internal flush 4 API full hole API #23, API #26, API #31, API #35, API #38, API #40, API #44, API #46, API #50 | API #31 2-7/8 IF |
| V-.038R 3" TPF 4 TPI | NDC-4038R/L3 4-E/IR4API383 | ND-3038R/L | API #56 API #61 API #70 API #77 | API #56 |
| V-.050 2" TPF 4 TPI | NDC-4050R/L2 4-E/IR4API502 | ND-4050R/L | 5-1/2 API full hole 6-5/8 API regular 6-5/8 API full hole | 5-1/2 API full hole |
| V-.050 3" TPF 4 TPI | NDC-4050R/L3 4-E/IR4API503 | ND-4050R/L | 5-1/2 API regular 7-5/8 API regular 8-5/8 API regular | 5-1/2 API regular |
| V-.040 3" TPF 5 TPI | NDC-3040R/L3 NDC-4040R/L3 4-E/IR5API403 | ND-3040R/L ND-4040R/L | 2-3/8 API regular 2-7/8 API regular 3-1/2 API regular 4-1/2 API regular | 3-1/2 API regular |

*Minimum box size that can be threaded with a standard Top Notch insert due to minimum bore equipment.

API Thread Forms

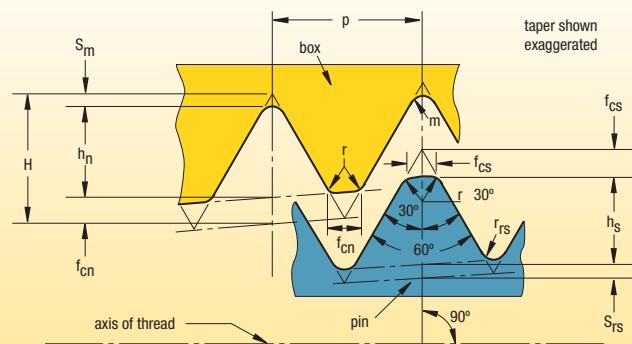
Product Thread Dimensions • Rotary Shouldered Connections (Inch)

| thread form | taper inch per ft. | thread height, not truncated H | thread height, truncated $h_n = h_s$ | root truncation $S_m = S_{rs}$ $f_m = f_{rs}$ | crest truncation $f_{cn} = f_{cs}$ | width of flat | | root radius $r_m = r_{rs}$ | radius at thread corners r | pitch p |
|-------------|--------------------|--------------------------------|--------------------------------------|--|------------------------------------|-------------------------|----------------------|----------------------------|----------------------------|---------|
| | | | | | | crest $f_{cn} = f_{cs}$ | crest $f_m = f_{rs}$ | | | |
| V-.038R | 2 | .216005 | .121844 | .038000 | .056161 | .065 | — | .038 | .015 | .250 |
| V-.038R | 3 | .215379 | .121381 | .038000 | .055998 | .065 | — | .038 | .015 | .250 |
| V-.040 | 3 | .172303 | .117842 | .020000 | .034461 | .040 | — | .020 | .015 | .250 |
| V-.050 | 3 | .215379 | .147303 | .025000 | .043076 | .050 | — | .025 | .015 | .250 |
| V-.050 | 2 | .216005 | .147804 | .025000 | .043201 | .050 | — | .025 | .015 | .250 |

NOTE: All dimensions in inches.

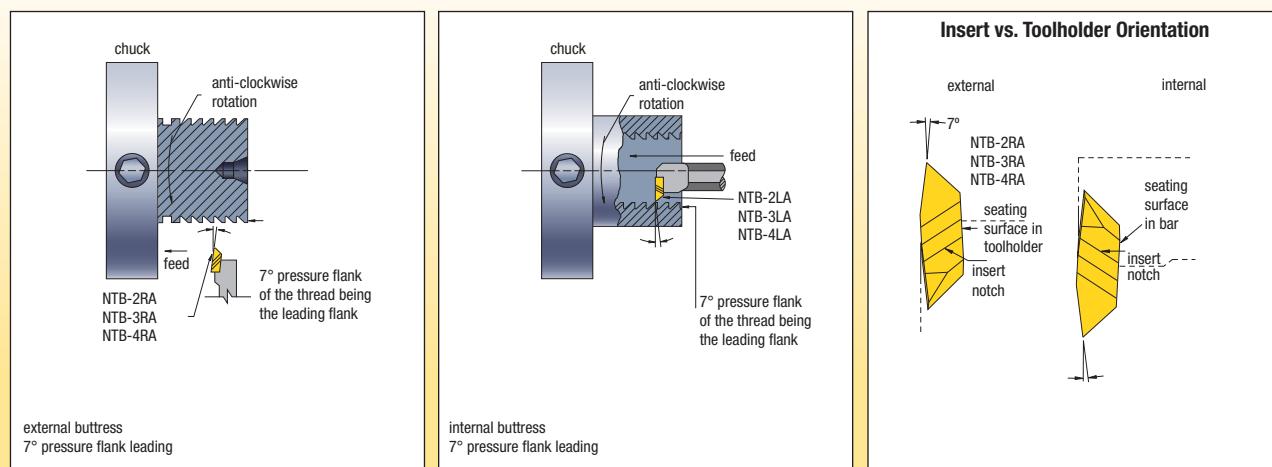
V-.040 and V-.050 Product Thread Form

Casing and Tubing Round Thread (Height Dimensions)

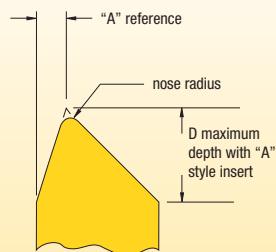


| thread element | 10 TPI p = .1000 | 8 TPI p = .1250 |
|----------------------------------|---------------------|--------------------|
| $H = .866p$ | .08660 | .10825 |
| $H_s = h_n = .626p - .007$ | .05560 | .07125 |
| $S_{rs} = S_m = .120p + .002$ | .01400 | .01700 |
| $S_{cs} = S_{cn} = .120p + .005$ | .01700 | .02000 |

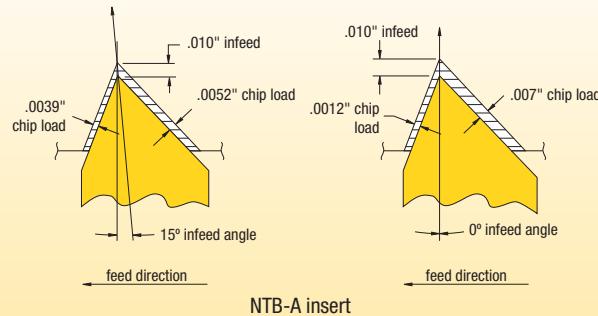
American Buttress (7° Pressure Flank Leading) NTB-A Inserts • Push Type



Reference Dimensions



Infeed Angle vs. Chip Load: 7° Pressure Flank Leading



| insert | D (inch) | "A" ref. (inch) | nose radius (inch) | pitch based on maximum radius |
|--------|----------|-----------------|--------------------|-------------------------------|
| NTB-2A | .133 | .024 | .002-.004 | 16–20 TPI |
| NTB-3A | .171 | .031 | .005-.008 | 8–16 TPI |
| NTB-4A | .218 | .049 | .008–.012 | 4–6 TPI |

NOTE: For balanced chip load, 15° infeed angle is suggested.

Internal Threading Limitations

internal threading limitations NTB-2A Buttress threading inserts

| TPI | nominal thread size | minimum minor diameter (inch) |
|-----|---------------------|-------------------------------|
| 8 | 1-3/4 | 1.600 |
| 10 | 1-5/8 | 1.505 |
| 12 | 1-1/2 | 1.400 |
| 16 | 1-1/4 | 1.175 |
| 20 | 1-1/16 | 1.002 |

internal threading limitations NTB-3 and NTB-4A Buttress threading inserts

| TPI | nominal thread size | minimum minor diameter (inch) |
|------|---------------------|-------------------------------|
| 4* | 2-1/2 | 2.200 |
| 5 | 2-1/4 | 2.010 |
| 6 | 2 | 1.800 |
| 8 | 1-3/4 | 1.600 |
| 10 | 1-5/8 | 1.505 |
| 12** | 1-1/2 | 1.400 |

*NTB-4A insert only.

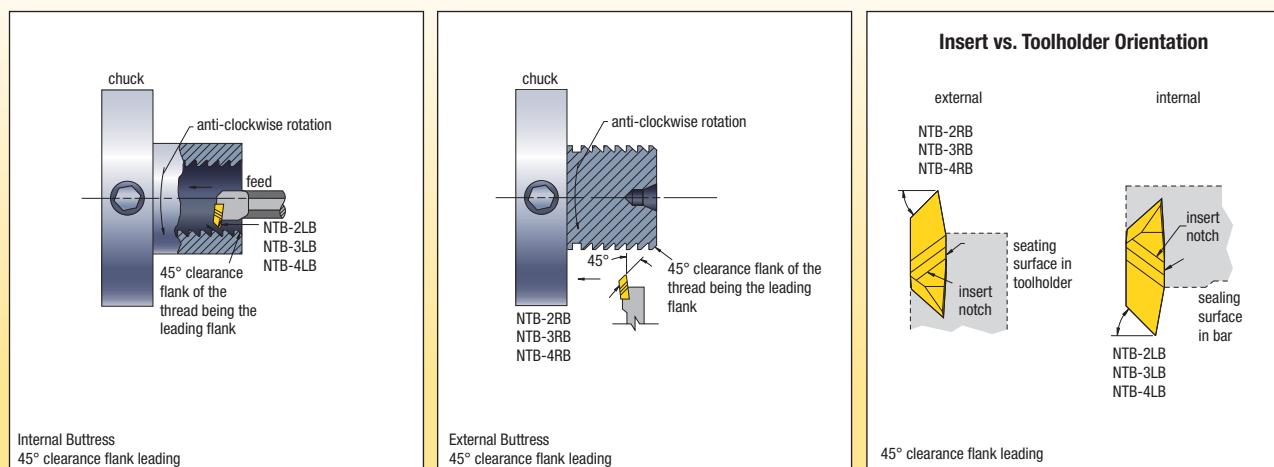
**Can cut 16 or 20 threads per inch provided minor diameter is 1.375" or larger.

Threads per Inch vs. Maximum Root Radius Chart (Inch)

| TPI | 20 | 16 | 12 | 10 | 8 | 6 | 5 | 4 | 3 | 2-1/2 | 2 | 1-1/2 | 1-1/4 | 1 |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| maximum root radius | .0036 | .0045 | .0059 | .0071 | .0089 | .0119 | .0143 | .0179 | .0238 | .0268 | .0375 | .0476 | .0572 | .0714 |

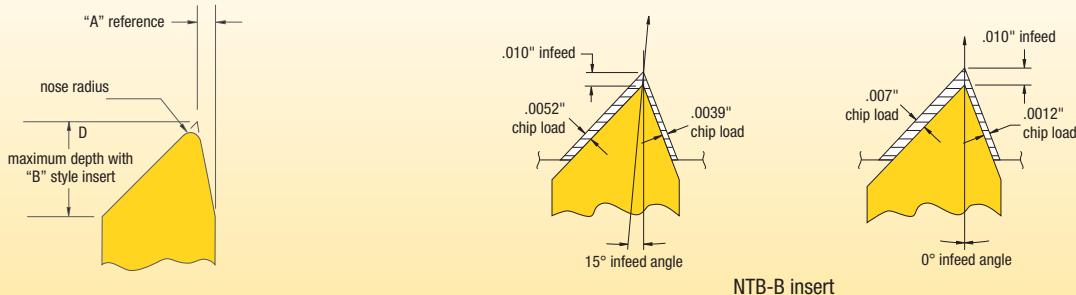
NOTE: Special Buttress forms are available upon request.

American Buttress (45° Clearance Flank Leading): NTB-B Inserts • PULL-type



Reference Dimensions

Infeed Angle vs. Chip Load: 45° Clearance Flank Leading



| insert | D (inch) | "A" reference (inch) | nose radius (inch) | pitch based on maximum radius |
|--------|----------|----------------------|--------------------|-------------------------------|
| NTB-3B | .171 | .031 | .005-.004 | 8–16 TPI |

NOTE: For balanced chip load, a reverse 15° infeed angle is suggested.

Internal Threading Limitations

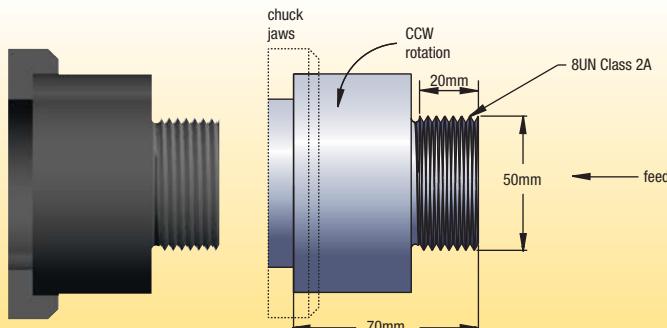
| internal threading limitations NTB-2B Buttress threading inserts | | | internal threading limitations NTB-3 and NTB-4B Buttress threading inserts | | |
|---|---------------------|-------------------------------|---|---------------------|-------------------------------|
| TPI | nominal thread size | minimum minor diameter (inch) | TPI | nominal thread size | minimum minor diameter (inch) |
| 8 | 1-3/4 | 1.600 | 4* | 2-7/8 | 2.575 |
| 10 | 1-5/8 | 1.505 | 5 | 2-3/4 | 2.510 |
| 12 | 1-1/2 | 1.400 | 6 | 2-3/8 | 2.175 |
| 16 | 1-1/4 | 1.175 | 8 | 2-1/8 | 1.975 |
| 20 | 1-1/16 | 1.002 | 10 | 1-7/8 | 1.755 |
| | | | 12 | 1-5/8 | 1.525 |
| | | | 16 | 1-1/2 | 1.407 |
| | | | 20 | 1-7/16 | 1.378 |

*NTB-4B insert only.

Required Information

From Part Drawing:

material: 316SS, 200 HB
 thread form: 8UN
 tolerance: class 2A
 operation: external threading
 pitch diameter: 50mm x 25mm deep



From Machine Setup Data:

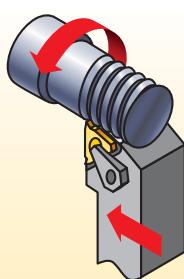
tooling: 20mm x 20mm
 spindle rotation: anti-clockwise
 feed: toward chuck

Steps for a Successful Threading Operation

Step 1 • Determine Threading Method

Need to Know:

- Operation (external).
- Spindle rotation (CCW). *Anti-clockwise rotation.*
- Feed direction (toward chuck).
- Right-hand toolholder.
- Right-hand insert (ER).
- Standard helix method.



Step 2 • Select Insert



Need to Know:

- Thread form (ISO R262 1mm pitch).
- Hand of insert (right hand — ER).

Choose the High-Performance Solution

| catalogue number | insert size | KCU25/ KC5025 |
|------------------|-------------|------------------|
| 3ER10ISO | 3 | • |

High-Performance Selection

NOTE: Use insert with largest insert size available.

insert: 3ER10ISO
 grade: KCU25/KC5025
 speed: 150 m/min

Step 3 • Select the Grade and Speed

Need to Know:

- Workpiece material (316SS-200HB).
- Operation (external).

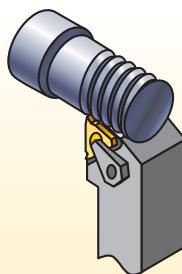
Options: Grade and Speed Selection Guidelines

| threading operation | stainless steel |
|---------------------|--------------------------------------|
| external | general purpose and high performance |
| | KC5025 |
| | 50–360 m/min |

Step 4 • Select Toolholder

Need to Know:

- External or internal operation (external).
- Pitch diameter to determine minimum bore diameter (N/A).
- Type of tooling — toolholder, boring bar (toolholder).
- Hand of tool (right hand).
- Insert size (16).



Options:

| catalogue number | insert size | shim |
|------------------|-------------|--------|
| AL203R | 3 | SM-YE3 |

First choice: LSASR-123 holder

Step 5 • Select Shim

Need to Know:

- Thread form — TPI or pitch (8 TPI).
- Pitch diameter (50mm).
- Helix method (standard). See Laydown Threading (LT) shim selection chart.

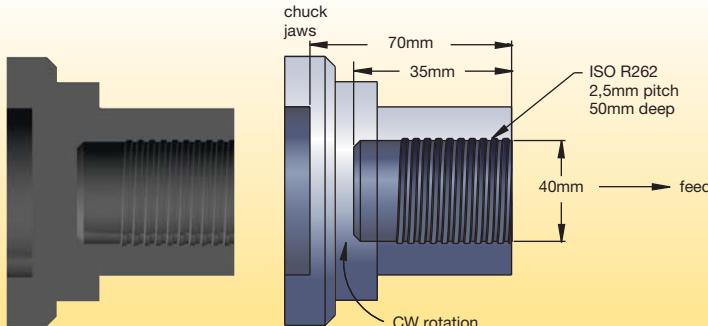
Select SM-YE3 shim

NOTE: The SM-YE3 shim is supplied with the selected toolholder.

Required Information

From Part Drawing:

material: 4140 steel
 thread form: ISO R262 2,5mm pitch
 tolerance: ISO Metric Class 6G/6H
 operation: internal threading
 pitch diameter: 40mm x 35mm deep



From Machine Setup Data:

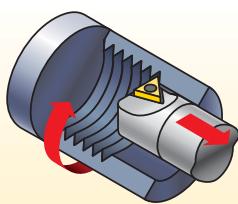
tooling: 20mm boring bar
 spindle rotation: clockwise
 feed: away from chuck

Steps for a Successful Threading Operation

Step 1 • Determine Threading Method

Need to Know:

- Operation (internal).
- Spindle rotation (CW). *Clockwise rotation.*
- Feed direction (away from chuck).
- Left-hand toolholder.
- Left-hand insert (NL).
- Reverse helix method.



Step 2 • Select Insert



Need to Know:

- Thread form (ISO Metric Class 6G/6H).
- Hand of insert (left hand — NL).

Choose the High-Performance Solution

| catalogue number | insert size | KCU25/ KC5025 |
|------------------|-------------|------------------|
| 3IL25ISO | 3 | • |

High-Performance Selection

NOTE: Use insert with largest possible insert size to go into the bore.

insert: 3IL25ISO
 grade: KCU25/KC5025
 speed: 130 m/min

Step 3 • Select the Grade and Speed

Need to Know:

- Workpiece material (4010 steel).
- Operation (internal).

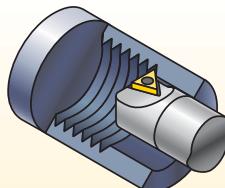
Options: Grade and Speed
 Selection Guidelines

| threading operation | steel |
|---------------------|--------------------------------------|
| internal | general purpose and high performance |
| | KC5025 |
| | 40–200 m/min |

Step 4 • Select Toolholder

Need to Know:

- External or internal operation (internal).
- Pitch diameter to determine minimum bore diameter for internal operations (40mm).
- Type of tooling — toolholder, boring bar (boring bar).
- Hand of tool (left hand).
- Insert size (16).



Options:

| catalogue number | insert size | shim |
|------------------|-------------|--------|
| AVR32D3R | 3 | SM-YE3 |

First choice: LSASR-123 holder

Step 5 • Select Shim

Need to Know:

- Thread form — TPI or pitch (2,5mm pitch).
- Pitch diameter (50mm).
- Helix method (standard). See Laydown Threading (LT) shim selection chart.

Select SM-YE3 shim

NOTE: For this application, the standard shim supplied should be replaced with the recommended shim, SM-YE3.

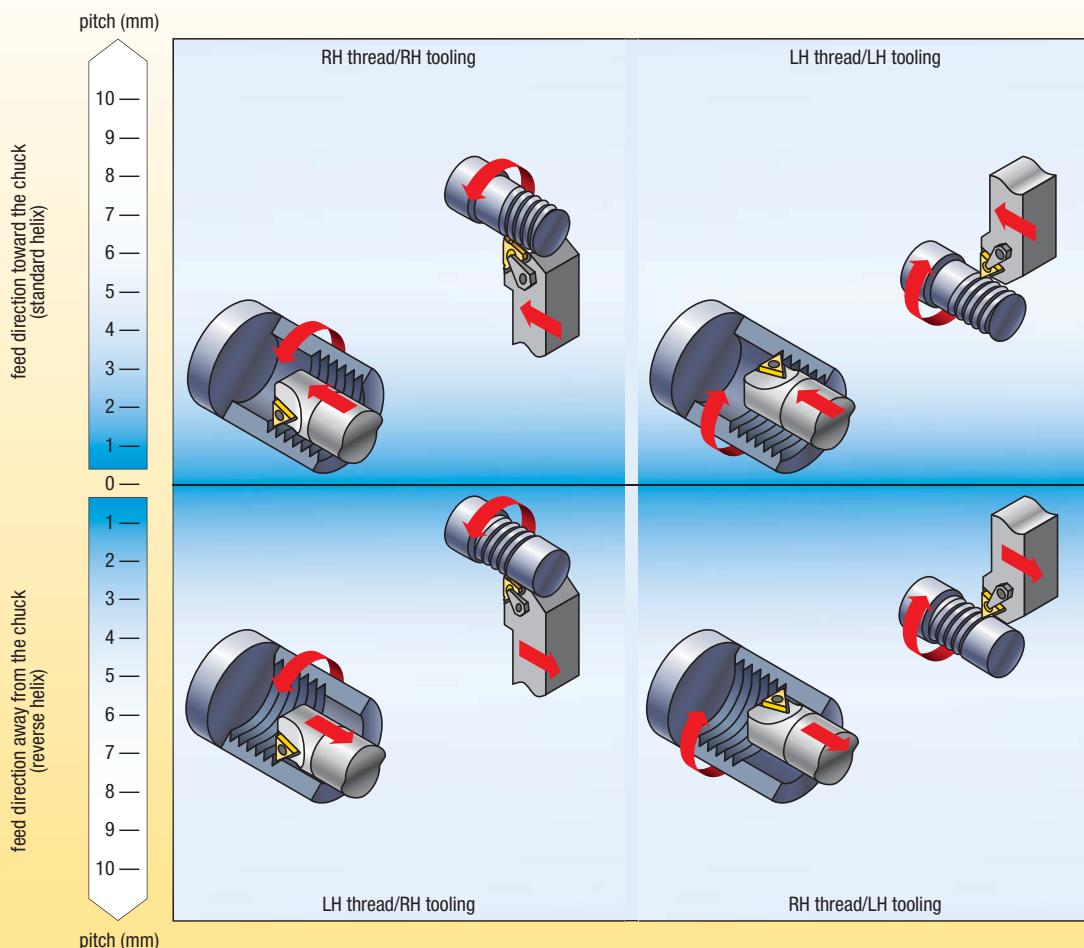
Laydown Threading Shim Selection Guidelines

It is essential to select the correct shim to ensure thread quality and maximum tool life. These parameters are needed:

- Pitch
- Pitch diameter
- Number of starts
- Feed direction

NOTE: When considering method of thread cutting, the part's shape and stability and the flow of chips are determining factors in your decision.

Laydown Selection Chart



NOTE: For multi-start threads, use the lead value instead of the pitch.

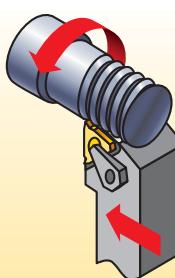
Diagram of Thread Lead Angles

To calculate the lead angle of a given thread, use this formula:

$$\beta = \text{Arctan} \frac{P \cdot S}{\pi D_e}$$

β = thread lead angle
 D_e = effective pitch diameter of thread wear
 P = 1/TPI
 TPI = threads per inch
 S = number of starts
 single-start, lead = pitch
 multiple-start, lead = pitch (x) number of starts

All toolholders are designed with an inclination angle = 1.5°. When turning standard threads with a lead angle of 1–2°, this guarantees adequate clearance at the flanks of the insert's thread tooth. The thread lead angle and the required inclination angle of the insert are given by β . Cutting edge height is constant at every shim and insert combination. All toolholders are supplied with 1-1/2° lead angle.



■ Laydown Threading Shim Selection Table • Metric

| insert size | toolholder | | shim ordering code (mm) | | | | | | | | | |
|-------------------|------------|----------|---|-----------|-----------|------------|-------------|-------------|---|------------|--|--|
| | external | internal | | | | standard | | | | | | |
| 3 (9,52) | RH | LH | SM-YE3-3P | SM-YE3-2P | SM-YE3-1P | SM-YE3 | SM-YE3-1N | SM-YE3-1.5N | SM-YE3-2N | SM-YE3-3N | | |
| 3 (9,52) | LH | RH | SM-YI3-3P | SM-YI3-2P | SM-YI3-1P | SM-YI3 | SM-YI3-1N | SM-YI3-1.5N | SM-YI3-2N | SM-YI3-3N | | |
| 4 (12,7) | RH | LH | SM-YE4-3P | SM-YE4-2P | SM-YE4-1P | SM-YE4 | SM-YE4-1N | SM-YE4-1.5N | SM-YE4-2N | SM-YE4-3N | | |
| 4 (12,7) | LH | RH | SM-YI4-3P | SM-YI4-2P | SM-YI4-1P | SM-YI4 | SM-YI4-1N | SM-YI4-1.5N | SM-YI4-2N | SM-YI4-3N | | |
| TPI | pitch (mm) | | pitch diameter (mm) | | | | | | | | | |
| 72 | — | | — | — | — | 3,1–8 | 8–21,4 | >21,4 | 21,4–8 | 8–3,1 | | |
| — | 0,35 | | — | — | — | 3,0–8 | 8–21,3 | >21,3 | 21,3–8 | 3–8 | | |
| 64 | — | | — | — | — | 3,4–9 | 9–24,1 | >24,1 | 24,1–9 | 9–3,4 | | |
| — | 0,40 | | — | — | — | 3,5–9,1 | 9,1–24,3 | >24,3 | 24,3–9,1 | 9,1–3,5 | | |
| 56 | 0,45 | | — | — | — | 3,9–10,3 | 10,3–27,6 | >27,6 | 27,6–10,3 | 10,3–3,9 | | |
| — | 0,50 | | — | — | 2,8–4,3 | 4,3–11,4 | 11,4–30,4 | >30,4 | 30,4–11,4 | 11,4–4,3 | | |
| 48 | — | | — | — | 3–4,6 | 4,6–12,1 | 12,1–32,2 | >32,2 | 32,2–12,1 | 12,1–4,6 | | |
| 44 | — | | — | — | 3,3–5 | 5–13,2 | 13,2–35,1 | >35,1 | 35,1–13,2 | 13,2–5 | | |
| — | 0,60 | | — | 2,6–3,4 | 3,4–5,2 | 5,2–13,7 | 13,7–36,5 | >36,5 | 36,5–13,7 | 13,7–5,2 | | |
| 40 | — | | — | 2,8–3,6 | 3,6–5,5 | 5,5–14,5 | 14,5–38,6 | >38,6 | 38,6–14,5 | 14,5–5,5 | | |
| — | 0,70 | | — | 3,0–4 | 4–6,1 | 6,1–16 | 16–42,6 | >42,6 | 42,6–16 | 16–6,1 | | |
| 36 | — | | — | 3,1–4 | 4–6,1 | 6,1–16,1 | 16,1–42,9 | >42,9 | 42,9–16,1 | 16,1–6,1 | | |
| — | 0,75 | | 2,8–3,2 | 3,3–4,3 | 4,3–6,5 | 6,5–17,1 | 17,1–45,6 | >45,6 | 45,6–17,1 | 17,1–6,5 | | |
| 32 | — | | 3–3,4 | 3,4–4,5 | 4,5–6,9 | 6,9–18,1 | 18,1–48,3 | >48,3 | 48,3–18,1 | 18,1–6,9 | | |
| — | 0,80 | | 3–3,5 | 3,5–4,6 | 4,6–6,9 | 6,9–18,2 | 18,2–48,6 | >48,6 | 48,6–18,2 | 18,2–6,9 | | |
| 28 | — | | 3,4–3,9 | 3,9–5,2 | 5,2–7,9 | 7,9–20,7 | 20,7–55,1 | >55,1 | 55,1–20,7 | 20,7–7,9 | | |
| 27 | — | | 3,6–4,1 | 4,1–5,4 | 5,4–8,2 | 8,2–21,4 | 21,4–57,2 | >57,2 | 57,2–21,4 | 21,4–8,2 | | |
| — | 1,00 | | 3,8–4,3 | 4,3–5,7 | 5,7–8,7 | 8,7–22,8 | 22,8–60,8 | >60,8 | 60,8–22,8 | 22,8–8,7 | | |
| 24 | — | | 4–4,6 | 4,6–6 | 6–9,2 | 9,2–24,1 | 24,1–64,3 | >64,3 | 64,3–24,1 | 24,1–9,2 | | |
| — | 1,25 | | 4,7–5,4 | 5,4–7,1 | 7,1–10,8 | 10,9–28,5 | 28,5–76 | >76,0 | 76–28,5 | 28,5–10,8 | | |
| 20 | — | | 4,8–5,5 | 5,5–7,2 | 7,2–11 | 11–28,9 | 29–77,2 | >77,2 | 77,2–28,9 | 29–11 | | |
| 18 | — | | 5,3–6,1 | 6,1–8 | 8–12,2 | 12,2–32,2 | 32,2–85,8 | >85,8 | 85,8–32,2 | 32,2–12,2 | | |
| — | 1,50 | | 5,7–6,5 | 6,5–8,5 | 8,5–13 | 13–34,2 | 34,2–91,2 | >91,2 | 91,2–34,2 | 34,2–13 | | |
| 16 | — | | 6–6,9 | 6,9–9 | 9–13,8 | 13,8–36,2 | 36,2–96,5 | >96,5 | 96,5–36,2 | 36,2–13,8 | | |
| — | 1,75 | | 6,6–7,96 | 7,6–10 | 10–15,2 | 15,2–39,9 | 39,9–106,4 | >106,4 | 106,4–39,9 | 39,9–15,2 | | |
| 14 | — | | 6,9–7,9 | 7,9–10,3 | 10,3–15,7 | 15,7–41,4 | 41,4–110,3 | >110,3 | 110,3–41,4 | 41,4–15,7 | | |
| 13 | — | | 7,4–8,5 | 8,5–11,1 | 11,1–17 | 17–44,5 | 44,5–118,8 | >118,8 | 118,8–44,5 | 44,5–17 | | |
| — | 2,00 | | 7,6–8,7 | 8,7–11,4 | 11,4–17,4 | 17,4–45,6 | 45,6–121,6 | >121,6 | 121,6–45,6 | 45,6–17,4 | | |
| 12 | — | | 8–9,2 | 9,2–12 | 12,1–18,4 | 18,4–48,2 | 48,3–128,7 | >128,7 | 128,7–48,2 | 48,2–18,4 | | |
| 11.5 | — | | 8,4–9,6 | 9,6–12,6 | 12,6–19,2 | 19,2–50,3 | 50,3–134,3 | >134,3 | 134,3–50,3 | 50,3–19,2 | | |
| 11 | — | | 8,8–10 | 10–13,1 | 13,1–20 | 20–52,6 | 52,6–140,4 | >140,4 | 140,4–52,6 | 52,6–20 | | |
| — | 2,50 | | 9,5–10,8 | 10,8–14,2 | 14,2–21,7 | 21,7–57 | 57–152 | >152,0 | 152–57 | 57–21,7 | | |
| 10 | — | | 9,6–11 | 11–14,5 | 14,5–22 | 22–57,9 | 57,9–154,4 | >154,4 | 154,4–57,9 | 57,9–22 | | |
| 9 | — | | 10,7–12,2 | 12,2–16,1 | 16,1–24,5 | 24,5–64,3 | 64,3–171,6 | >171,6 | 171,6–64,3 | 64,3–24,5 | | |
| — | 3,00 | | 11,4–13 | 13–17,1 | 17,1–26 | 26–68,4 | 68,4–182,4 | >182,4 | 182,4–68,4 | 68,4–26 | | |
| 8 | — | | 12–13,8 | 13,8–18,1 | 18,1–27,6 | 27,6–72,4 | 72,4–193 | >193,0 | 193–72,4 | 72,4–27,6 | | |
| — | 3,50 | | 13,3–15,2 | 15,2–19,9 | 19,9–30,4 | 30,4–79,8 | 79,8–212,8 | >212,8 | 212,8–79,8 | 79,8–30,4 | | |
| 7 | — | | 13,8–15,7 | 15,7–20,7 | 20,7–31,5 | 31,5–82,7 | 82,7–220,6 | >220,6 | 220,6–82,7 | 82,7–31,5 | | |
| — | 4,00 | | 15,2–17,3 | 17,3–22,8 | 22,8–34,7 | 34,7–91,2 | 91,2–243,2 | >243,2 | 243,2–91,2 | 91,2–34,7 | | |
| 6 | — | | 16–18,3 | 18,3–24,1 | 24,1–36,7 | 36,7–96,5 | 96,5–257,4 | >257,4 | 257,4–96,5 | 96,5–36,7 | | |
| — | 5,00 | | 19–21,7 | 21,7–28,5 | 28,5–43,4 | 43,4–114 | 114–304 | >304,0 | 304–114 | 114–43,4 | | |
| 5 | — | | 19,3–22 | 22–28,9 | 28,9–44,1 | 44,1–115,8 | 115,8–308,8 | >308,8 | 308,8–115,8 | 115,8–44,1 | | |
| 4,5 | — | | 21,4–24,5 | 24,5–32,1 | 32,1–49 | 49–128,7 | 128,7–343,1 | >343,1 | 343,1–128,7 | 128,7–49 | | |
| — | 6,00 | | 22,7–26 | 26–34,2 | 34,2–52,1 | 52,1–136,8 | 136,8–364,8 | >364,8 | 364,8–136,8 | 136,8–52,1 | | |
| 4 | — | | 24,1–27,5 | 27,5–36,2 | 36,2–55,1 | 55,1–144,8 | 144,8–386 | >386 | 386–144,8 | 144,8–55,1 | | |
| inclination angle | | | 4.5 | 3.5 | 2.5 | 1.5 | 0.5 | 0.0 | -0.5 | -1.5 | | |
| | | | standard helix (feed toward the chuck) | | | | | | reverse helix (feed away from the chuck) | | | |

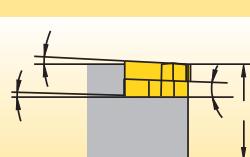
1. Select TPI or pitch from the left-hand columns.

2. Follow row to specified pitch diameter and the correct feed direction.

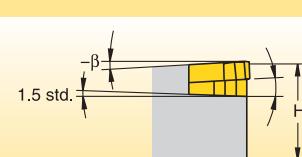
3. Follow the column to the top for the required shim based on the toolholder and insert size.

standard helix method:

Used when RH thread is cut with RH tool or LH thread with LH tool.

**reverse helix method:**

Used when RH thread is cut with LH tool or when LH thread is cut with RH tool.



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



Application Specific

| | |
|---------------------------|---------|
| Fix-Perfect | E2–E18 |
| Top Notch Profiling | E20–E43 |
| Railroad Machining | E44–E61 |
| K-Lock Inserts | E62–E65 |

➤ Fix-Perfect™

Precision Ground Insert Programme Goes Above and Beyond!

The breakthrough performance characteristics of these precision ground inserts enable outstanding indexing accuracy and excellent chip flow when machining steel, cast iron, and stainless steel workpiece materials.

Fix-Perfect Beyond™ inserts are the ideal solution to machining operations in a multitude of industries, including fluid power, energy, automotive, heavy equipment, and general engineering applications.

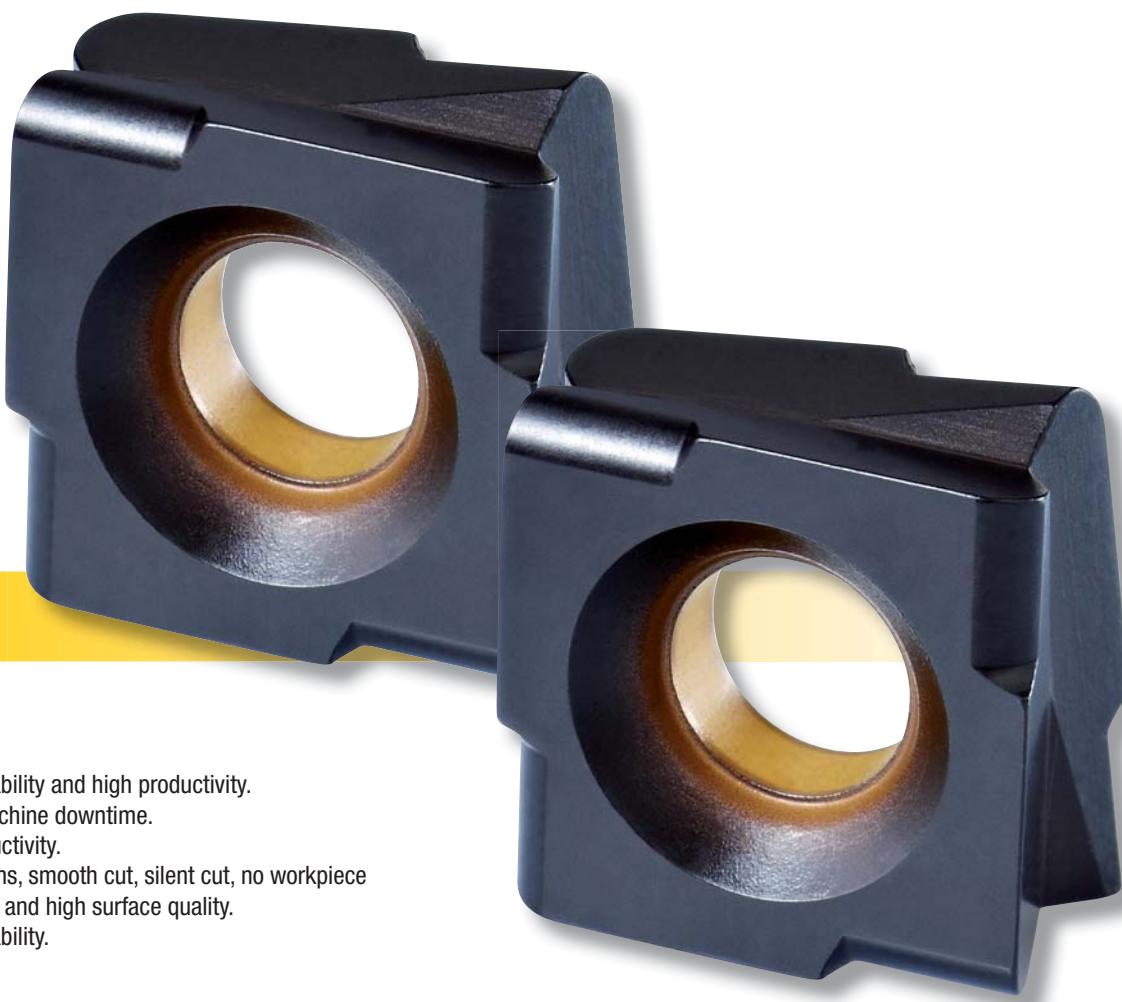
Features, Functions, and Benefits

Features

- Tangential design.
- Rigid clamping system.
- Up to eight cutting edges (protected by pocket seat).
- Positive geometry.
- Precision ground insert.

Functions

- Stable system.
- Very stable clamping system and quick and easy cutting edge switch.
- Use up to eight edges per insert.
- Very low cutting forces and excellent chip control.
- Better indexing accuracy.

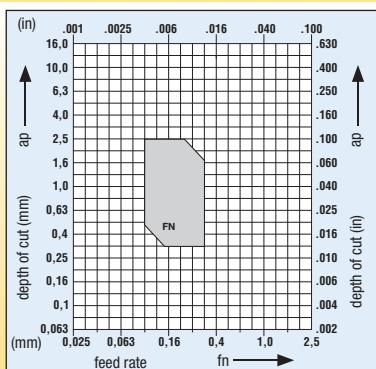
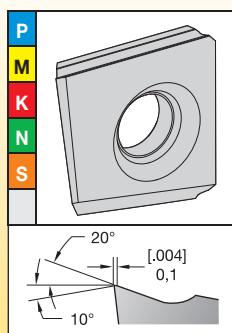


Benefits

- Process reliability and high productivity.
- Reduced machine downtime.
- Higher productivity.
- Low vibrations, smooth cut, silent cut, no workpiece deformation, and high surface quality.
- Process reliability.

Finishing

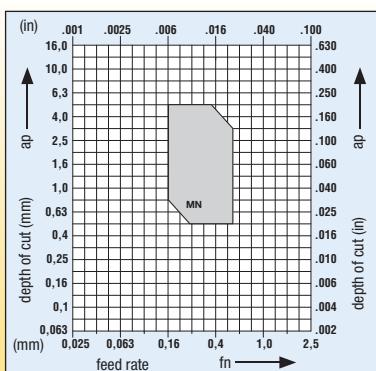
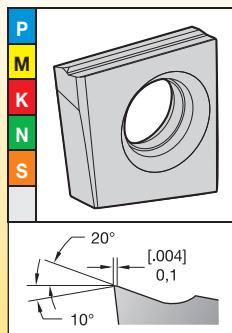
D2FIX-FN



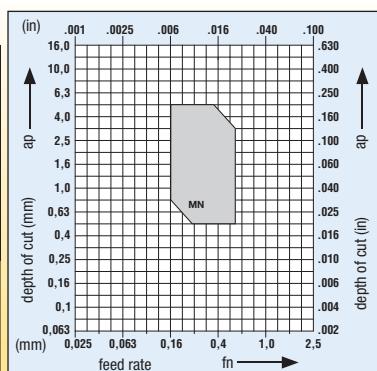
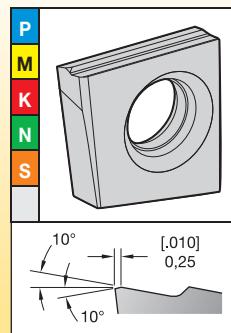
| | |
|---|-----------------------|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

Medium Machining

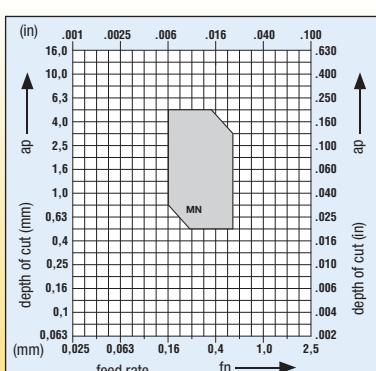
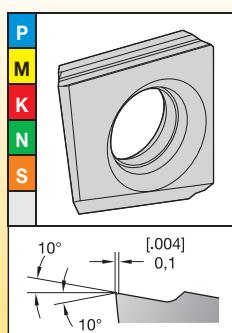
C2FIX-MN



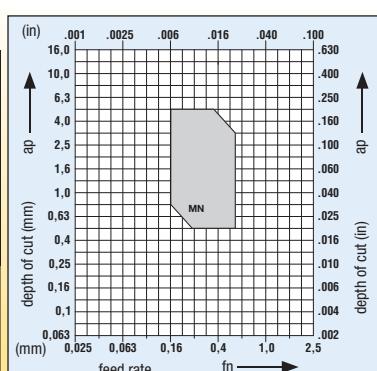
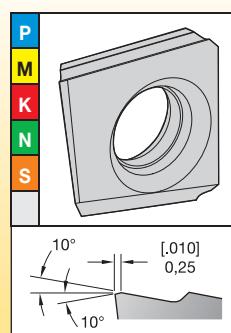
C2FIX18-MN



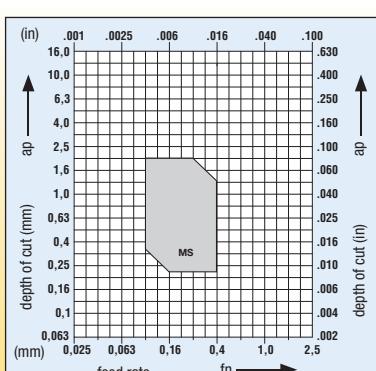
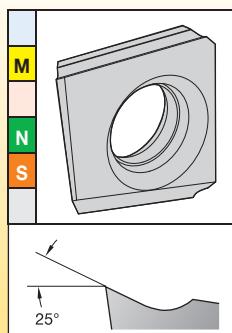
D2FIX15-MN



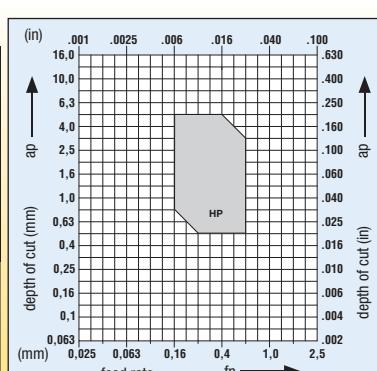
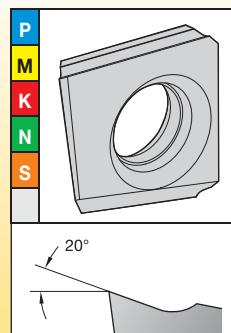
K2FIX-MN



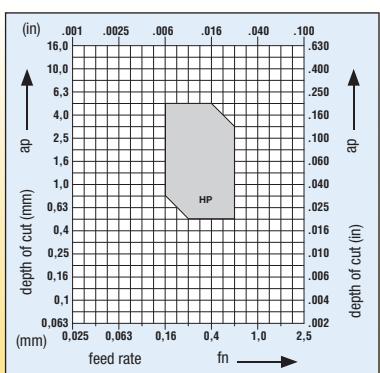
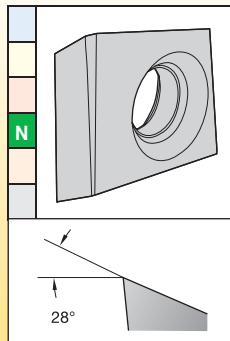
D2FIX-MS



D2FIX-HP



Medium Machining

E2FIX-HP

P

Steel

M

Stainless Steel

K

Cast Iron

N

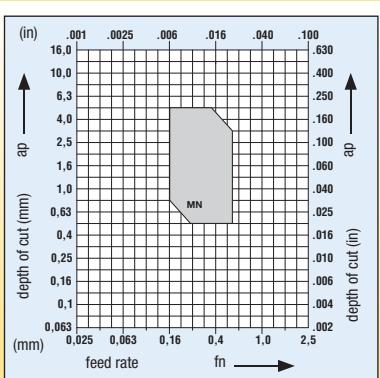
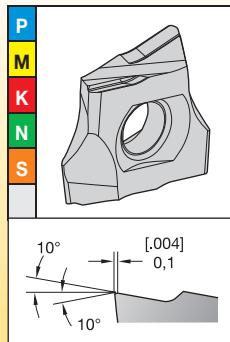
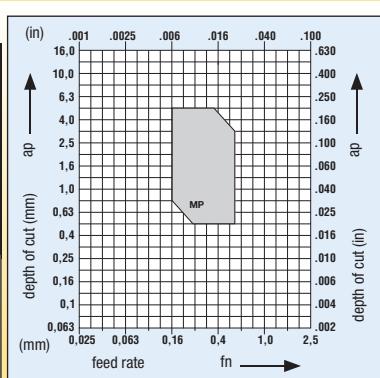
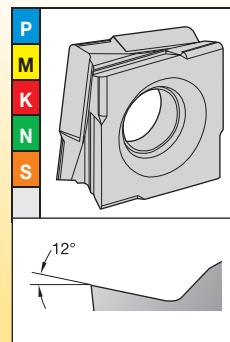
Non-Ferrous Materials

S

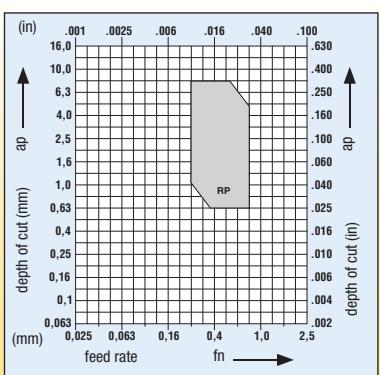
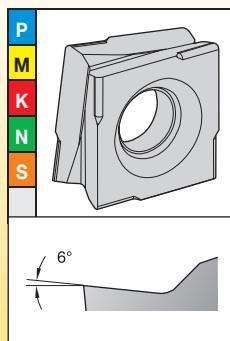
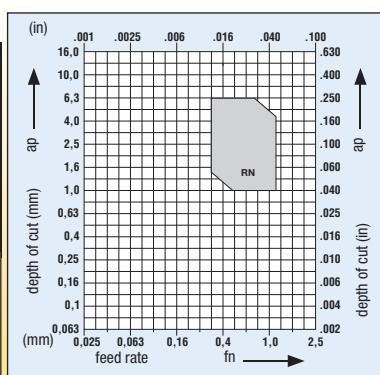
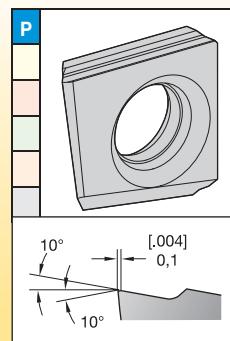
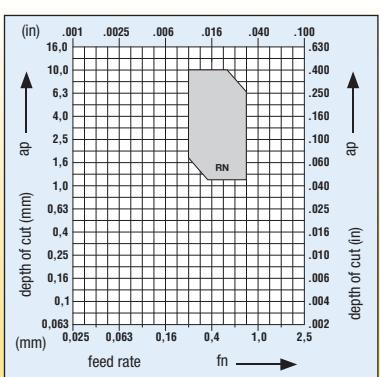
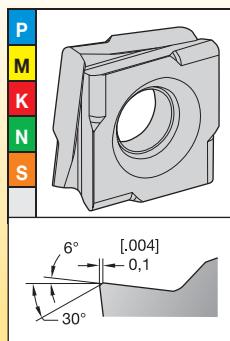
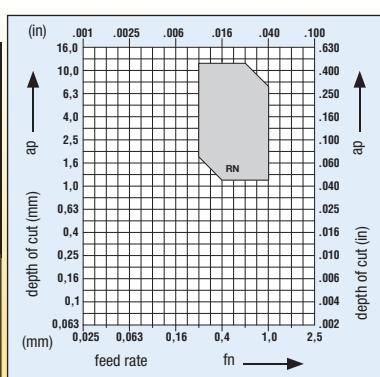
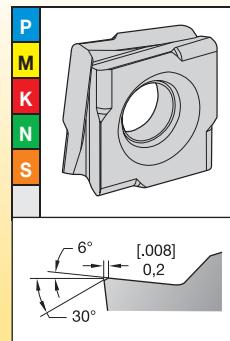
High-Temp Alloys

H

Hardened Materials

D4FIX-MN

C8FIX-MP


Roughing

C8FIX-RP

D2FIX-RN

C8FIX15-RN

C8FIX18-RN


Select the Insert Geometry

8-Edged Inserts

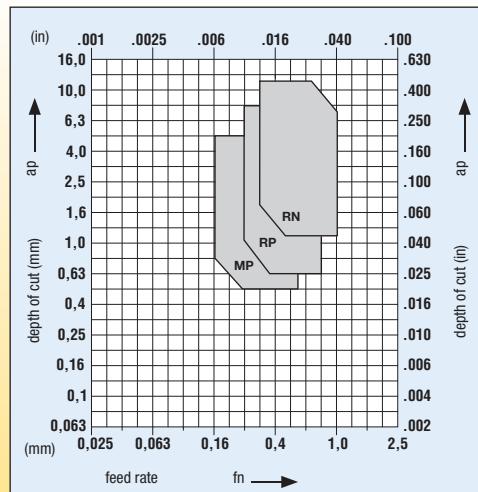
Roughing

Interrupted cut and/or heavy scale
USE: -RP OR -RN



Medium Turning

Slightly interrupted cut and/or slight scale
USE: -MP



2- and 4-Edged Inserts

Roughing

Interrupted cut and/or heavy scale
USE: -RN



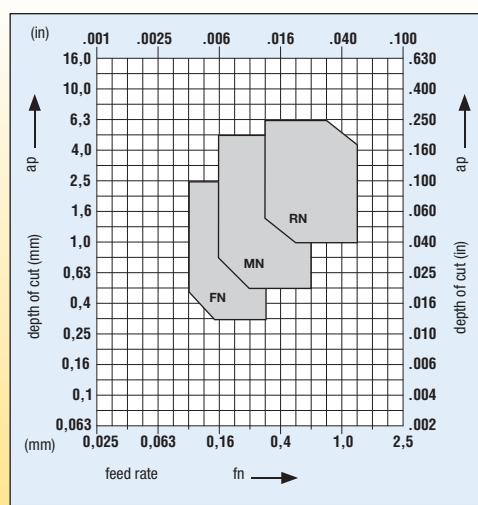
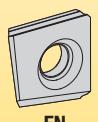
Medium Turning

Slightly interrupted cut and/or slight scale
USE: -MN



Finishing

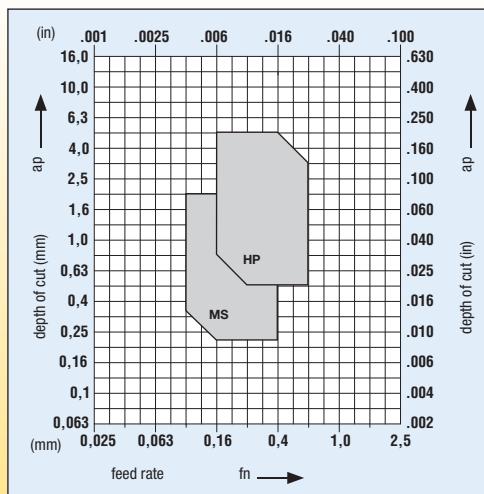
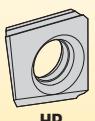
Non-interrupted cut, no scale
USE: FN



2-Edged Inserts, High Positive

Medium Turning

Slightly interrupted cut and/or slight scale
USE: -HP OR -MS

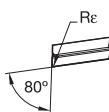
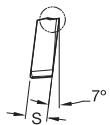
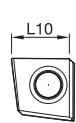
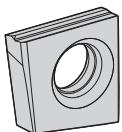


■ Select the grade

| | P | M | K | N | S | H |
|-----------------------|-------------|-------------|-------------|-------|-------|-------|
| heavily interrupted | KCP40/KCU25 | KCU25/KCP40 | KCP25/KCU25 | KCU25 | KCU25 | — |
| lightly interrupted | KCP25/KCU25 | KCU25/KCP40 | KCP25/KCU25 | KCU25 | KCU25 | — |
| varying depths of cut | KCP10/KCU10 | KCU10/KCM15 | KCP10/KCU10 | KCU10 | KCU10 | KCU10 |
| smooth | KCP10/KCU10 | KCU10/KCM15 | KCP10/KCU10 | KCU10 | KCU10 | KCU10 |

■ Select the cutting speed

| Steel | | speed — m/min (SFM) | | | | | | | | | starting conditions ◇◇ | |
|-------------------------|-------|---------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------------|------|
| material group | grade | 60 (200) | 90 (300) | 120 (400) | 105 (500) | 185 (617) | 215 (717) | 245 (800) | 275 (900) | 300 (1000) | m/min | SFM |
| P | KCP40 | | | | ◇◇ | | | | | | 150 | 500 |
| | KCU10 | | | | | ◇◇ | | | | | 200 | 650 |
| | KCP25 | | | | | ◇◇ | | | | | 200 | 650 |
| | KCP10 | | | | | | ◇◇ | | | | 250 | 180 |
| Stainless Steel | | speed — m/min (SFM) | | | | | | | | | starting conditions ◇◇ | |
| material group | grade | 45 (150) | 70 (233) | 90 (300) | 115 (383) | 140 (467) | 165 (550) | 185 (617) | 210 (700) | 230 (767) | m/min | SFM |
| M | KCP40 | | | | ◇◇ | | | | | | 140 | 450 |
| | KCM15 | | | | | ◇◇ | | | | | 165 | 550 |
| | KCU25 | | | | | ◇◇ | | | | | 165 | 550 |
| | KCU10 | | | | | | ◇◇ | | | | 185 | 600 |
| Cast Iron | | speed — m/min (SFM) | | | | | | | | | starting conditions ◇◇ | |
| material group | grade | 90 (300) | 135 (450) | 180 (600) | 225 (750) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 460 (1500) | m/min | SFM |
| K | KCU25 | | | ◇◇ | | | | | | | 140 | 450 |
| | KCU10 | | | | ◇◇ | | | | | | 165 | 550 |
| | KCP25 | | | | ◇◇ | | | | | | 165 | 550 |
| | KCP10 | | | | | ◇◇ | | | | | 185 | 600 |
| Non-Ferrous | | speed — m/min (SFM) | | | | | | | | | starting conditions ◇◇ | |
| material group | grade | 150 (500) | 225 (750) | 300 (1000) | 380 (1267) | 460 (1533) | 535 (1783) | 610 (2033) | 685 (2283) | 760 (2533) | m/min | SFM |
| N | KCU10 | | | | ◇◇ | | | | | | 460 | 1500 |
| High-Temperature Alloys | | speed — m/min (SFM) | | | | | | | | | starting conditions ◇◇ | |
| material group | grade | 35 (117) | 45 (150) | 55 (183) | 65 (217) | 75 (250) | 85 (283) | 95 (317) | 120 (400) | 140 (467) | m/min | SFM |
| S | KCU25 | | | ◇◇ | | | | | | | 45 | 150 |
| | KCU10 | | | | ◇◇ | | | | | | 60 | 200 |
| Hardened Steel | | speed — m/min (SFM) | | | | | | | | | starting conditions ◇◇ | |
| material group | grade | 5 (17) | 15 (50) | 25 (83) | 35 (117) | 45 (150) | 55 (183) | 65 (217) | 75 (250) | 85 (283) | m/min | SFM |
| H | KCU10 | | | | ◇◇ | | | | | | 30 | 100 |

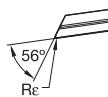
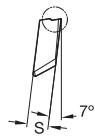
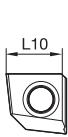
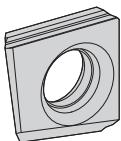



● first choice
○ alternate choice

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

■ C2FIX-MN

| catalogue number | L10 | S | Re | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|-------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| C2FIX110404RMN | 10,70 | 4,00 | 0,40 | - | - | - | - | ● | - |
| C2FIX110405RMN | 10,70 | 4,00 | 0,50 | - | ● | ● | - | - | - |
| C2FIX150510RMN | 14,50 | 5,00 | 1,00 | - | ● | - | - | - | - |
| C2FIX150512RMN | 14,50 | 5,00 | 1,20 | - | - | - | - | - | ● |
| C2FIX150505RMN | 14,70 | 5,00 | 0,50 | - | ● | - | - | - | - |
| left hand | | | | | | | | | |
| C2FIX110404LMN | 10,70 | 4,00 | 0,40 | - | - | - | - | - | ● |
| C2FIX110405LMN | 10,70 | 4,00 | 0,50 | - | ● | ● | - | ● | - |
| C2FIX110408LMN | 10,70 | 4,00 | 0,80 | - | ● | - | - | - | - |
| C2FIX150510LMN | 14,50 | 5,00 | 1,00 | - | ● | ● | - | - | - |
| C2FIX150508LMN | 14,60 | 5,00 | 0,80 | - | ● | - | - | ● | ● |
| C2FIX150504LMN | 14,70 | 5,00 | 0,40 | - | - | ● | - | - | ● |
| C2FIX150505LMN | 14,70 | 5,00 | 0,50 | - | ● | ● | - | ● | - |
| C2FIX180610LMN | 17,50 | 6,00 | 1,00 | - | ● | ● | - | ● | - |

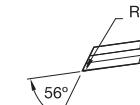
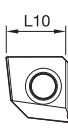
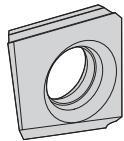


● first choice
○ alternate choice

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

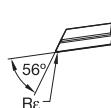
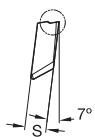
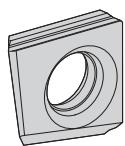
■ D2FIX-MN

| catalogue number | L10 | S | Re | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|-------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| D2FIX110405RMN | 10,50 | 4,00 | 0,50 | - | ● | ● | - | - | - |
| D2FIX150508RMN | 14,20 | 5,00 | 0,80 | - | ● | - | - | - | - |
| D2FIX150505RMN | 14,50 | 5,00 | 0,50 | ● | ● | ● | - | - | - |
| D2FIX150504RMN | 14,60 | 5,00 | 0,40 | - | ● | - | - | - | - |
| D2FIX150503RMN | 14,70 | 5,00 | 0,30 | - | ● | - | - | - | - |
| left hand | | | | | | | | | |
| D2FIX110405LMN | 10,50 | 4,00 | 0,50 | - | ● | ● | - | - | - |
| D2FIX150508LMN | 14,20 | 5,00 | 0,80 | - | ● | - | - | - | - |
| D2FIX150505LMN | 14,50 | 5,00 | 0,50 | - | ● | - | - | - | - |



■ D2FIX-HP

| catalogue number | L10 | S | Re | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|-------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| D2FIX110404RHP | 10,00 | 4,00 | 0,40 | - | - | - | - | - | ● |
| D2FIX110403RHP | 10,10 | 4,00 | 0,30 | - | ● | - | - | ● | - |
| D2FIX150508RHP | 13,60 | 5,00 | 0,80 | - | - | - | ● | ● | ● |
| D2FIX150504RHP | 14,00 | 5,00 | 0,40 | - | - | - | ● | ● | ● |
| D2FIX150503RHP | 14,10 | 5,00 | 0,30 | - | ● | - | ● | ● | - |
| left hand | | | | | | | | | |
| D2FIX110403LHP | 10,10 | 4,00 | 0,30 | - | - | - | ● | - | - |
| D2FIX150508LHP | 13,60 | 5,00 | 0,80 | - | - | - | ● | - | - |
| D2FIX150503LHP | 14,10 | 5,00 | 0,30 | - | - | - | ● | ● | - |

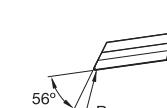
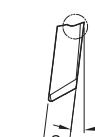
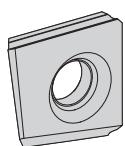



D2FIX-MS

| catalogue number | L10 | S | Rε | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| D2FIX150505RMS | 13,90 | 5,00 | 0,50 | - | - | - | - | ● | - |
| D2FIX150503RMS | 14,10 | 5,00 | 0,30 | - | - | - | - | ● | - |
| left hand | | | | | | | | | |
| D2FIX150505LMS | 13,90 | 5,00 | 0,50 | - | - | - | - | ● | - |
| D2FIX150503LMS | 14,10 | 5,00 | 0,30 | - | - | - | - | ● | - |

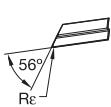
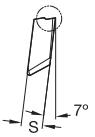
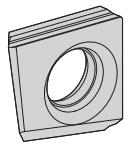
- first choice
- alternate choice

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



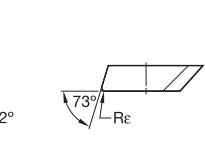
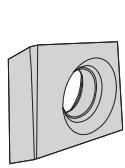
D2FIX-FN

| catalogue number | L10 | S | Rε | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| D2FIX150505RFN | 13,90 | 5,00 | 0,50 | - | ● | - | - | ● | - |



D2FIX-RN

| catalogue number | L10 | S | Rε | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| D2FIX150505RRN | 14,50 | 5,00 | 0,50 | ● | - | ● | - | - | - |

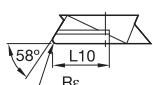
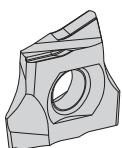


E2FIX-HP

| catalogue number | L10 | S | Rε | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| E2FIX100505RHP | 10,50 | 5,00 | 0,50 | - | - | - | - | ● | - |

E2FIX-HP

E10

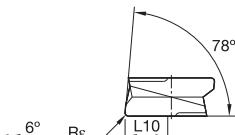
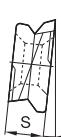
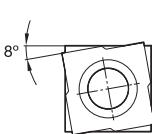
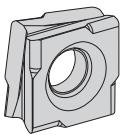


- first choice
- alternate choice

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

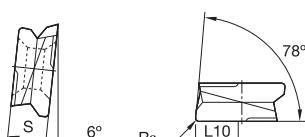
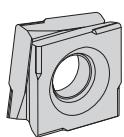
D4FIX-MN

| catalogue number | L10 | S | Rε | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|------------------|------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| D4FIX140608RMN | 6,70 | 5,90 | 0,80 | ● | ● | - | - | ● | ● |
| D4FIX140605RMN | 7,00 | 5,90 | 0,50 | ● | ● | - | - | - | - |
| D4FIX140604RMN | 7,10 | 5,90 | 0,40 | - | - | ● | - | - | ● |
| D4FIX140603RMN | 7,20 | 5,90 | 0,30 | ● | ● | - | - | - | - |
| left hand | | | | | | | | | |
| D4FIX140608LMN | 6,70 | 5,90 | 0,80 | - | ● | - | - | - | - |



C8FIX-RN

| catalogue number | L10 | S | Rε | KGP0 | KGP25 | KGP40 | KCM15 | KCU10 | KCU25 |
|------------------|-------|------|------|------|-------|-------|-------|-------|-------|
| right hand | | | | - | ● | - | - | - | - |
| C8FIX150612RRN | 8,60 | 6,60 | 1,20 | - | ● | - | - | - | - |
| C8FIX150608RRN | 8,90 | 6,60 | 0,80 | ● | ● | ● | - | - | ● |
| C8FIX150605RRN | 9,10 | 6,60 | 0,50 | ● | ● | ● | - | ● | ● |
| C8FIX180812RRN | 10,60 | 7,90 | 1,20 | - | ● | ● | - | - | ● |
| C8FIX180808RRN | 10,90 | 7,90 | 0,80 | - | ● | ● | - | - | - |
| left hand | | | | - | ● | - | - | - | - |
| C8FIX150612LRN | 8,60 | 6,60 | 1,20 | - | ● | - | - | - | - |
| C8FIX150608LRN | 8,90 | 6,60 | 0,80 | - | ● | - | - | - | ● |
| C8FIX150605LRN | 9,10 | 6,60 | 0,50 | - | ● | ● | - | - | ● |
| C8FIX180812LRN | 10,60 | 7,90 | 1,20 | - | ● | - | - | - | - |

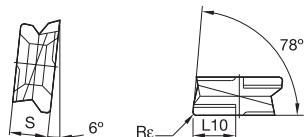
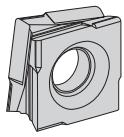



- first choice
- alternate choice

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

■ C8FIX-RP

| catalogue number | L10 | S | Rε | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|-------------------|------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| C8FIX120508RRP | 6,90 | 5,50 | 0,80 | ● | ● | - | - | - | - |
| C8FIX120505RRP | 7,10 | 5,50 | 0,50 | - | ● | - | - | - | ● |
| C8FIX120504RRP | 7,20 | 5,50 | 0,40 | ● | ● | - | - | - | - |
| C8FIX120503RRP | 7,30 | 5,50 | 0,30 | - | ● | ● | - | - | - |
| left hand | | | | | | | | | |
| C8FIX120508LRP | 6,90 | 5,50 | 0,80 | - | ● | ● | - | - | - |
| C8FIX150612LRP | 7,80 | 6,60 | 1,20 | - | ● | - | - | - | - |
| C8FIX150608LRP | 8,80 | 6,60 | 0,80 | - | - | - | - | - | ● |

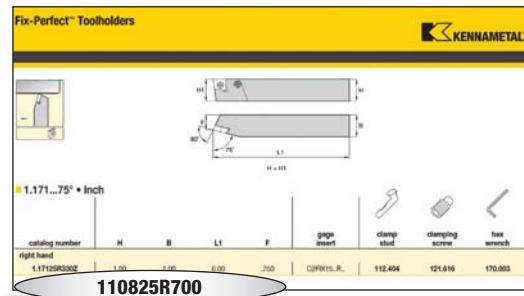


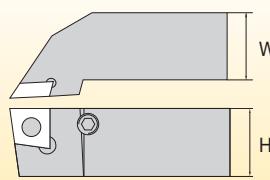
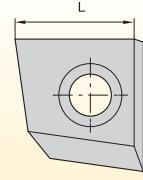
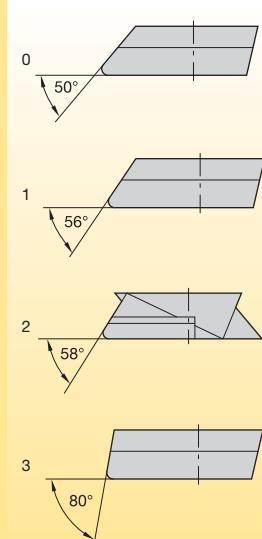
■ C8FIX-MP

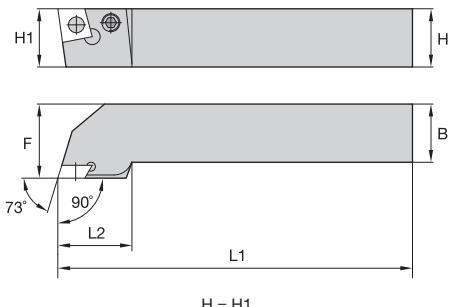
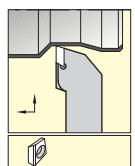
| catalogue number | L10 | S | Rε | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|-------------------|-------|------|------|-------|-------|-------|-------|-------|-------|
| right hand | | | | | | | | | |
| C8FIX120503RMP | 7,30 | 5,50 | 0,30 | - | ● | - | - | ● | ● |
| C8FIX150603RMP | 9,30 | 6,60 | 0,30 | ● | ● | ● | - | ● | ● |
| C8FIX180805RMP | 11,10 | 7,90 | 0,50 | - | ● | - | - | ● | - |
| left hand | | | | | | | | | |
| C8FIX120503LMP | 7,30 | 5,50 | 0,30 | ● | ● | - | - | ● | - |
| C8FIX150603LMP | 9,30 | 6,60 | 0,30 | - | ● | - | - | - | - |

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 image to easily identify which attributes apply.



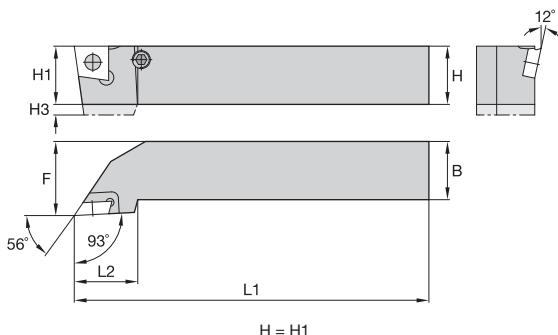
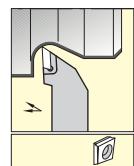
| 1 | 1 | 08 | 25 | R | 7 | 0 | 0 | | | | | | | | | | | | | | | | | | | | |
|---|--|------------------------|------------------------|---|------------------------|------------------------|--|---|---------------|---|---------------------|-------------|---|----------------|--------|---|----------------|--------|---|----------------|--------|---|----------------|--------|---|--------|-------|
| Turning Programme | Number of Cutters | Version | Shaft Dimensions | Direction of Working | Insert Size and Type | Insert Shape | Clamping Screw Support | | | | | | | | | | | | | | | | | | | | |
| 1 = Fix-Perfect | 1 = Inserts with 2 cutting edges 3 = Inserts with 4 cutting edges 7 = Inserts with 8 cutting edges | | | R = Right L = Left | | | 0 = Activated from main cutting edge 1 = Minor cutting edge 2 = Above 5 = Main cutting edge with sharp-edged full cartridge 6 = Minor cutting edge with sharp-edged full cartridge | | | | | | | | | | | | | | | | | | | | |
| 08 = 90° or 93° setting, for machining aluminium | 30 = 75° setting angle | 16 = 92° setting angle | 20 = 92° setting angle | 22 = 92° setting angle | 71 = 75° setting angle | 72 = 45° setting angle | 77 = 90° setting angle | | | | | | | | | | | | | | | | | | | | |
| Toolholder  10 = 10 x 10mm 11 = 40 x 40mm 16 = 16 x 16mm 20 = 20 x 20mm 21 = 50 x 50mm 25 = 25 x 25mm 32 = 32 x 25mm 32 = 32 x 32mm 40 = 40 x 32mm | | | |  <table border="1"> <thead> <tr> <th>L</th> <th>cutting edges</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>8mm 20mm 25mm</td> <td>4 4 4</td> </tr> <tr> <td>1</td> <td>10,5mm 12mm</td> <td>2 8</td> </tr> <tr> <td>3</td> <td>14,5mm 15mm</td> <td>2 8</td> </tr> <tr> <td>4</td> <td>17,5mm 18mm</td> <td>2 8</td> </tr> <tr> <td>5</td> <td>23,5mm 21mm</td> <td>2 8</td> </tr> <tr> <td>7</td> <td>10,5mm</td> <td>2 Alu</td> </tr> </tbody> </table>  | | | | L | cutting edges | 0 | 8mm 20mm 25mm | 4 4 4 | 1 | 10,5mm 12mm | 2 8 | 3 | 14,5mm 15mm | 2 8 | 4 | 17,5mm 18mm | 2 8 | 5 | 23,5mm 21mm | 2 8 | 7 | 10,5mm | 2 Alu |
| L | cutting edges | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 8mm 20mm 25mm | 4 4 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 10,5mm 12mm | 2 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 14,5mm 15mm | 2 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 17,5mm 18mm | 2 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 23,5mm 21mm | 2 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 10,5mm | 2 Alu | | | | | | | | | | | | | | | | | | | | | | | | | |



■ 1.108...90° • Metric

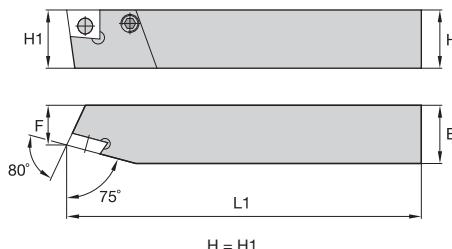
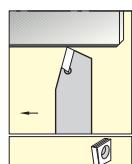
Application Specific

| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---------------------------|----|----|-------|------|--------------|------------|----------------|------------|
| right hand 1.10825R700 | 25 | 25 | 150,0 | 32,0 | E2FIX10..R.. | 410.081 | 121.616 | 170.003 |



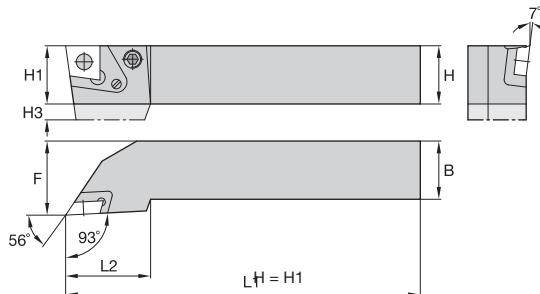
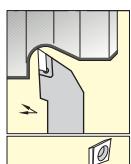
■ 1.108...93° • Metric

| catalogue number | H | H3 | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---------------------------|----|----|----|-------|------|--------------------|------------|----------------|------------|
| right hand 1.10820R310 | 20 | 5 | 20 | 125,0 | 25,0 | D2FIX15..RHP/FN/MS | 112.403 | 121.612 | 170.003 |
| 1.10825R310 | 25 | — | 25 | 150,0 | 32,0 | D2FIX15..RHP/FN/MS | 112.404 | 121.616 | 170.003 |
| left hand 1.10825L310 | 25 | 5 | 25 | 150,0 | 32,0 | D2FIX15..LHP/FN/MS | 112.404 | 121.616 | 170.003 |



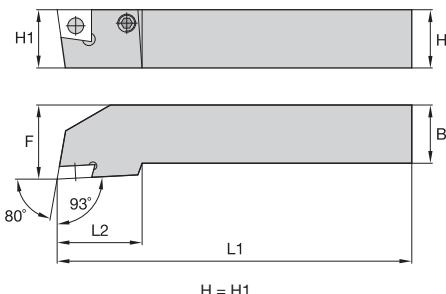
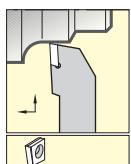
■ 1.171...75° • Metric

| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|--------------------------|----|----|-------|------|--------------|------------|----------------|------------|
| left hand 1.17125L330 | 25 | 25 | 150,0 | 17,0 | C2FIX15..L.. | 112.404 | 121.616 | 170.003 |



■ 1.18 • Metric

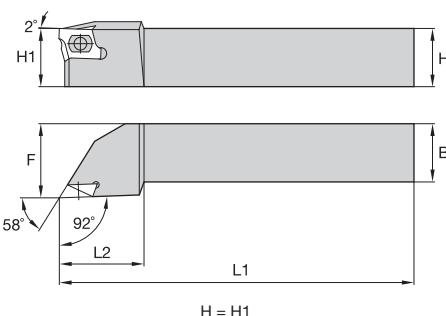
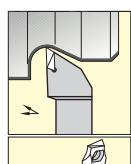
| catalogue number | H | H3 | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench | steel nest assembly |
|---------------------------|----|----|----|-------|------|--------------|------------|----------------|------------|---------------------|
| right hand 1.18016R110 | 16 | 4 | 16 | 100,0 | 24,0 | D2FIX11..R.. | 112.244 | 121.612 | 170.003 | — |
| 1.18020R110 | 20 | — | 20 | 125,0 | 25,0 | D2FIX11..R.. | 112.244 | 121.612 | 170.003 | — |
| 1.18020R310 | 20 | 5 | 20 | 125,0 | 26,0 | D2FIX15..R.. | 112.403 | 121.612 | 170.003 | — |
| 1.18025R110 | 25 | — | 25 | 150,0 | 32,0 | D2FIX11..R.. | 112.244 | 121.612 | 170.003 | — |
| 1.18025R310 | 25 | — | 25 | 150,0 | 32,0 | D2FIX15..R.. | 112.404 | 121.616 | 170.003 | — |
| 1.18025R315 | 25 | 7 | 25 | 150,0 | 32,0 | D2FIX15..R.. | 112.505 | 121.616 | 170.003 | 132.151 |
| 1.18032R315 | 32 | — | 25 | 170,0 | 32,0 | D2FIX15..R.. | 112.505 | 121.616 | 170.003 | 132.151 |
| left hand 1.18016L110 | 16 | 4 | 16 | 100,0 | 24,0 | D2FIX11..L.. | 112.244 | 121.612 | 170.003 | — |
| 1.18020L110 | 20 | — | 20 | 125,0 | 25,0 | D2FIX11..L.. | 112.244 | 121.612 | 170.003 | — |
| 1.18025L310 | 25 | — | 25 | 150,0 | 32,0 | D2FIX15..L.. | 112.404 | 121.616 | 170.003 | — |
| 1.18025L315 | 25 | 7 | 25 | 150,0 | 32,0 | D2FIX15..L.. | 112.505 | 121.616 | 170.003 | 132.156 |
| 1.18032L315 | 32 | — | 25 | 170,0 | 32,0 | D2FIX15..L.. | 112.505 | 121.616 | 170.003 | 132.156 |



■ 1.180...93° • Metric

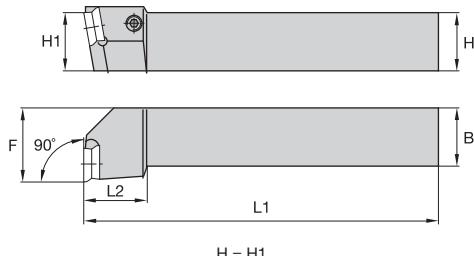
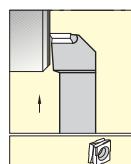
Application Specific

| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|--------------------------|----|----|-------|------|--------------|------------|----------------|------------|
| left hand 1.18025L330 | 25 | 25 | 150,0 | 32,0 | C2FIX15..L.. | 112.404 | 121.616 | 170.003 |



■ 1.380...92° • Metric

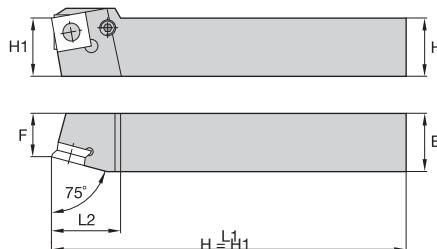
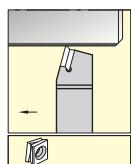
| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---------------------------|----|----|-------|------|-------------|------------|----------------|------------|
| right hand 1.38020R021 | 20 | 20 | 125,0 | 25,0 | D4FIX.R.. | 114.111 | 121.812 | 170.004 |
| 1.38025R021 | 25 | 25 | 150,0 | 32,0 | D4FIX.R.. | 114.114 | 121.816 | 170.004 |
| left hand 1.38025L021 | 25 | 25 | 150,0 | 32,0 | D4FIX..L.. | 114.114 | 121.816 | 170.004 |



■ 1.777...90° • Metric

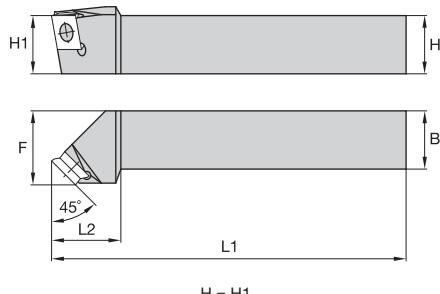
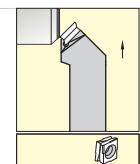
| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|----|----|-------|------|--------------|------------|----------------|------------|
| right hand 1.77725R301 | 25 | 25 | 150,0 | 32,0 | C8FIX15..L.. | 118.314 | 121.816 | 170.004 |

NOTE: Right-hand tool requires left-hand insert.



■ 1.771...75° • Metric

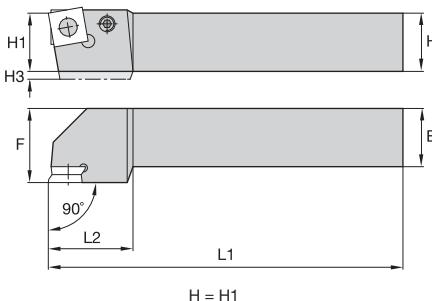
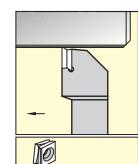
| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|--------------------|----|----|-------|------|--------------|------------|----------------|------------|
| right hand | | | | | | | | |
| 1.77120R100 | 20 | 20 | 125,0 | 17,0 | C8FIX12..R.. | 118.204 | 121.612 | 170.003 |
| 1.77125R300 | 25 | 25 | 150,0 | 21,0 | C8FIX15..R.. | 410.084 | 121.816 | 170.004 |
| 1.77132R400 | 32 | 32 | 170,0 | 27,0 | C8FIX18..R.. | 410.091 | — | — |
| left hand | | | | | | | | |
| 1.77120L100 | 20 | 20 | 125,0 | 17,0 | C8FIX12..L.. | 118.204 | 121.612 | 170.003 |



■ 1.772...45° • Metric

| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---------------------------|----|----|-------|------|--------------|------------|----------------|------------|
| right hand 1.77225R301 | 25 | 25 | 150,0 | 32,0 | C8FIX15..L.. | 118.314 | 121.816 | 170.004 |

NOTE: C8FIX15..L.. is usable for plunging only.
For both plunging and turning, C4FIX15..L.. has to be used.



■ 1.780...90° • Metric

| catalogue number | H | H3 | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|------------------|----|----|----|-------|------|--------------|------------|----------------|------------|
| right hand | | | | | | | | | |
| 1.78012R103 | 12 | — | 12 | 80,0 | 14,0 | C8FIX12..R.. | — | — | 170.003 |
| 1.78016R100 | 16 | 4 | 16 | 100,0 | 25,0 | C8FIX12..R.. | 118.204 | 121.616 | 170.003 |
| 1.78020R100 | 20 | — | 20 | 125,0 | 25,0 | C8FIX12..R.. | 118.204 | 121.616 | 170.003 |
| 1.78025R100 | 25 | — | 25 | 150,0 | 32,0 | 1.81201R... | 118.204 | 121.616 | 170.003 |
| 1.78025R300 | 25 | — | 25 | 150,0 | 32,0 | C8FIX15..R.. | 410.084 | 121.816 | 170.004 |
| 1.78032R400 | 32 | — | 32 | 170,0 | 40,0 | C8FIX18..R.. | 410.091 | 121.825 | 170.004 |
| left hand | | | | | | | | | |
| 1.78025L100 | 25 | — | 25 | 150,0 | 32,0 | 1.81202L... | 118.204 | 121.616 | 170.003 |
| 1.78025L300 | 25 | — | 25 | 150,0 | 32,0 | C8FIX15..L.. | 410.084 | 121.816 | 170.004 |

Grooving Tools and **Beyond**TM

Inserts for Your Shallow Groove and Turn Operations

Top NotchTM



Top Notch Grooving Tools and Beyond Inserts are the proven solution for high productivity. The Top Notch system provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finishing and superior tool life.

FEATURES AND BENEFITS

- The Beyond PVD coated grades are designed to cut a variety of workpiece materials.
- Rigid clamping securely locks insert in place through the toughest cuts.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.

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➤ Beyond™ Top Notch™ Profiling

The Top Notch system is the proven solution for high productivity. The Top Notch system provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finishing and superior tool life.

Features and Benefits

Beyond™ Grades

Higher Productivity and Profitability

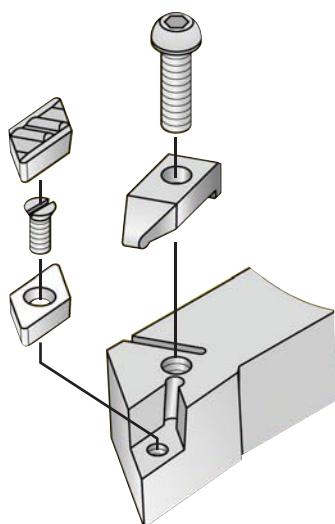
- Lower cutting forces increase speeds and reduce cycle time.
- Extended tool life.

Reliability

- Predictable tool life/uniform wear.
- Resists chip flow damage.
- Consistent surface finish.

Versatility

- Products can be applied across a wide range of applications.
- Use in low- to high-speed applications.
- Complete portfolio of products.
- For finish to rough turning of steel, cast iron, stainless steel, and high-temp alloys.



FP Geometry

- Higher metal removal rate.
- Versatility.
- Long tool life.
- Optimum chip control over wide range of cutting conditions and workpiece materials.
- Improved surface finish.
- Better indexability.
- Less adjustment during insert change.

UF Geometry

- Reduces cutting forces.
- Long tool life.
- Optimum chip control over wide range of cutting conditions.
- Chip control in finishing applications.

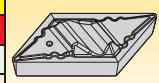
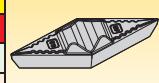
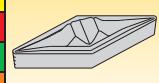
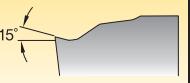
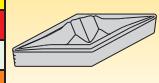
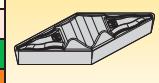
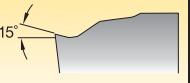
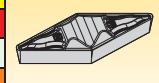
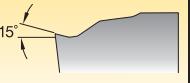
HP Geometry

- Reduces cutting forces.
- Long tool life.
- Interference is avoided to improve surface finish of the workpiece.
- Better indexability.
- Good control over job dimensions.
- Reduces workpiece material sticking.



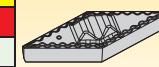
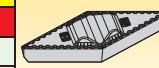
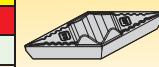
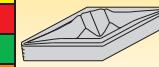
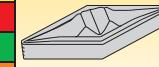
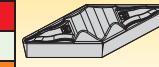
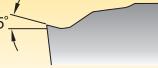
■ Select the geometry –
based on feed rate and depth of cut

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

| operation | insert style application | insert geometry | profile | feed rate — mm | | | | | | | | | | | | | | | | | | |
|-------------------|--------------------------|---|---|----------------|----------|------|------|------|-----|------|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|------|
| | | | | 0,04 | 0,063 | 0,01 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 | | | | | | | | |
| depth of cut — mm | | | | | | | | | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 |
| fine finishing | DCGR-UF |  |  | 0,1–0,3 | 0,1–1,3 | | | | | | | | | | | | | | | | | |
| | KCGR-UF |  |  | 0,1–0,3 | 0,1–1,3 | | | | | | | | | | | | | | | | | |
| finishing | DCGR |  |  | 0,1–0,3 | 0,1–1,3 | | | | | | | | | | | | | | | | | |
| | KCGR |  |  | 0,1–0,4 | 0,3–2,0 | | | | | | | | | | | | | | | | | |
| | DCGR-FP |  |  | 0,063–0,25 | 0,16–1,6 | | | | | | | | | | | | | | | | | |
| | DCGR-HP |  |  | 0,1–0,4 | 0,3–2,0 | | | | | | | | | | | | | | | | | |
| | KCGR-FP |  |  | 0,063–0,25 | 0,16–1,6 | | | | | | | | | | | | | | | | | |
| | KCGR-HP |  |  | 0,063–0,25 | 0,16–1,6 | | | | | | | | | | | | | | | | | |

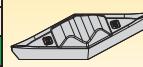
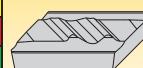
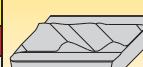
■ Select the geometry –
based on feed rate and depth of cut

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

| operation | insert style application | insert geometry | profile | feed rate — mm | | | | | | | | | | | | | |
|-------------------|--------------------------|---|---|----------------|-------|------|------|------|-----|------|-----|-----|-----|------|--|--|--|
| | | | | 0,04 | 0,063 | 0,01 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 | | | |
| | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 | | | |
| depth of cut — mm | | | | | | | | | | | | | | | | | |
| fine finishing | VBMR-UF |  |  | 0,1–0,3 | | | | | | | | | | | | | |
| | VCMR-UF |  |  | 0,1–0,3 | | | | | | | | | | | | | |
| | VPGR-UF |  |  | 0,1–0,3 | | | | | | | | | | | | | |
| finishing | VBMR |  |  | 0,1–0,4 | | | | | | | | | | | | | |
| | VBMR-FP |  |  | 0,063–0,25 | | | | | | | | | | | | | |
| | VCGR |  |  | 0,1–0,4 | | | | | | | | | | | | | |
| | VCMR-FP |  |  | 0,063–0,25 | | | | | | | | | | | | | |
| | VPGR-FP |  |  | 0,16–1,6 | | | | | | | | | | | | | |

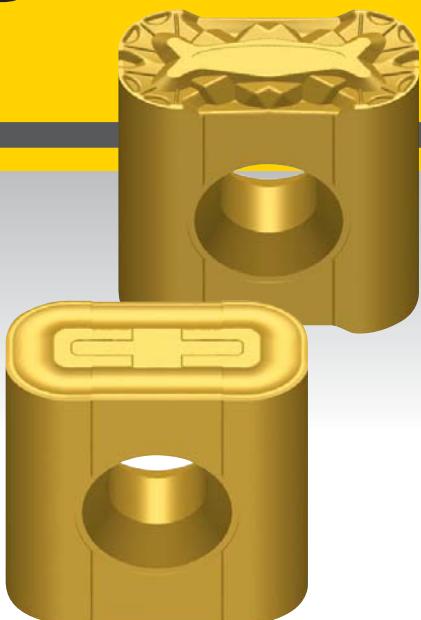
■ Select the geometry —
based on feed rate and depth of cut

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

| operation | insert style application | insert geometry | profile | feed rate — mm | | | | | | | | | | | | | | | | | | | |
|-------------------|--------------------------|---|---|----------------|-------|------|------|------|-----|------|-----|---------|------|------|-----|------|-----|-----|-----|-----|---------|------|--|
| | | | | 0,04 | 0,063 | 0,01 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 5,0 | | | | | | | | | |
| depth of cut — mm | | | | | | | | | | | | 0,1 | 0,16 | 0,25 | 0,4 | 0,63 | 1,0 | 1,6 | 2,5 | 4,0 | 6,3 | 10,0 | |
| finishing | VPGP-HP |  |  | 15° | | | | | | | | 0,2–0,4 | | | | | | | | | | | |
| finishing | KNGX-15 |  |  | 10° | | | | | | | | 0,2–0,4 | | | | | | | | | 0,8–2,8 | | |
| finishing | KNGX-20 |  |  | 10° | | | | | | | | 0,2–0,5 | | | | | | | | | 1,0–3,0 | | |
| finishing | KNGX-25 |  |  | 10° | | | | | | | | 0,3–0,6 | | | | | | | | | 1,1–3,6 | | |
| finishing | KNGX-32 |  |  | 10° | | | | | | | | 0,3–0,7 | | | | | | | | | 1,5–5,1 | | |

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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■ Step 1 • Select the insert geometry

Negative Inserts



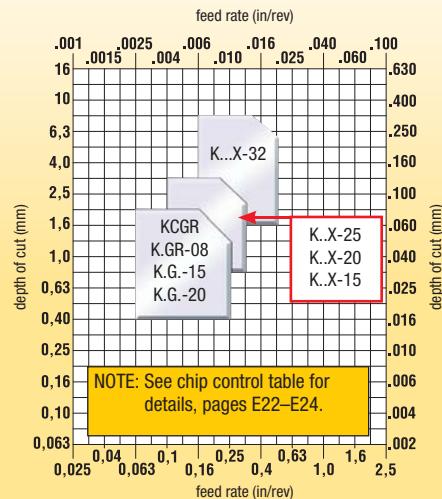
-K...X-32
Roughing



-K...X-25-K...X-15,
Medium Machining



-K.GR-08, K.G.-15,
K.G.-20
Finishing



Positive Inserts



-VCMR
Medium Machining



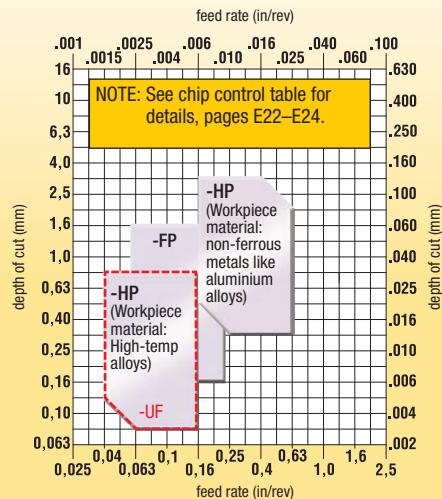
-.CGR, VBMR
Finishing



-VCNN
Finishing



-KCGR
Finishing



Chip Control Range

- UF: feed 0.08–0.3 mm/rev; DOC 0.1–1.3mm
- FP: feed 0.1–0.3 mm/rev; DOC 0.1–1.3mm
- HP: feed 0.28–0.4 mm/rev; DOC 0.6–2.3mm

■ Step 2 • Select the grade

| cutting condition | Steel | | | Stainless Steel | | |
|--|-----------|------------------|-------------|-----------------|------------------|--------------|
| | Finishing | Medium Machining | Roughing | Finishing | Medium Machining | Roughing |
| heavily interrupted cut | | KCP25 | KCM25 | KCM25 | KCM25 | KCM25 |
| lightly interrupted cut | | KCP10 | KCP25 | KCP25 | KC5010/KCU10 | KC5025/KCU25 |
| varying depth of cut, casting, or forging skin | | KT315 | KCP25 | KCP25 | KT315 | KCM25 |
| smooth cut, pre-turned surface | | KT315 | KCP05/KCP10 | KCP10 | KT315 | KC5010/KCU10 |

| cutting condition | Cast Iron | | | Non-Ferrous | | |
|--|-----------|------------------|--------------|--------------|------------------|------------------|
| | Finishing | Medium Machining | Roughing | Finishing | Medium Machining | Roughing |
| heavily interrupted cut | | KCP10 | KCP10 | KCP10 | KC5010/KCU10 | KC5010/313/KCU10 |
| lightly interrupted cut | | KCP05 | KCP05 | KCP05 | KC5410/KD1425 | KC5010/KCU10 |
| varying depth of cut, casting, or forging skin | | KCK05 | KCK05 | KCK05 | KD1425 | KC5410 |
| smooth cut, pre-turned surface | | KC5010/KCU10 | KC5010/KCU10 | KC5010/KCU10 | KC5410 | KC5410 |

| cutting condition | High-Temperature Alloys | | | |
|--|-------------------------|-------------------|--------------|--------|
| | Finishing | Medium Machining | Roughing | |
| heavily interrupted cut | | KC5025/KUC25 | K68 | K68 |
| lightly interrupted cut | | KC5010 | KC5010 | KCM25 |
| varying depth of cut, casting, or forging skin | | KC5010 | KC5010 | KC5010 |
| smooth cut, pre-turned surface | | KC5010/KCU10/K313 | KC5010/KCU10 | KC5010 |

■ Select the cutting speed

Steel

| material group | grade | speed — m/min (SFM) | | | | | | | | starting conditions ◇◇ | |
|----------------|-------------|---------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------------|-----|
| | | 50 (170) | 100 (330) | 150 (490) | 200 (655) | 250 (820) | 300 (980) | 350 (1150) | 400 (1300) | m/min | SFM |
| P | KT315 | | | | | ◇◇ | | | | 260 | 850 |
| | KCP05/KCP10 | | | | ◇◇ | | | | | 340 | 800 |
| | KCP25 | | | ◇◇ | | | | | | 180 | 600 |
| | KCM25 | | ◇◇ | | | | | | | 165 | 550 |

Stainless Steel

| material group | grade | speed — m/min (SFM) | | | | | | | | starting conditions ◇◇ | |
|----------------|--------------|---------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------------|-----|
| | | 50 (170) | 100 (330) | 150 (490) | 200 (655) | 250 (820) | 300 (980) | 350 (1150) | 400 (1300) | m/min | SFM |
| M | KT315 | | ◇◇ | | | | | | | 230 | 750 |
| | KC5010/KCU10 | | | ◇◇ | | | | | | 180 | 600 |
| | KC5025/KCU25 | ◇◇ | | | | | | | | 120 | 400 |
| | KCM25 | | ◇◇ | | | | | | | 150 | 500 |

Cast Iron

| material group | grade | speed — m/min (SFM) | | | | | | | | starting conditions ◇◇ | |
|----------------|--------------|---------------------|-----------|-----------|-----------|------------|------------|------------|------------|------------------------|------|
| | | 150 (490) | 200 (655) | 250 (820) | 300 (980) | 350 (1150) | 400 (1300) | 500 (1600) | 750 (2400) | m/min | SFM |
| K | KB1345 | | | | | | | | ◇◇ | 760 | 2520 |
| | KT315 | | ◇◇ | | | | | | | 275 | 900 |
| | KC5010/KCU10 | | ◇◇ | | | | | | | 245 | 800 |
| | KCK20 | | ◇◇ | | | | | | | 245 | 800 |
| | KCP25 | ◇◇ | | | | | | | | 230 | 750 |

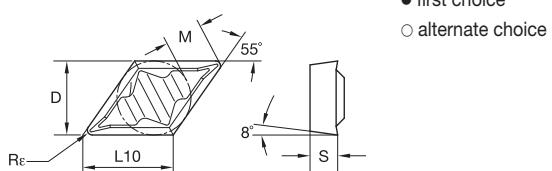
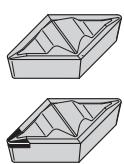
Non-Ferrous

| material group | grade | speed — m/min (SFM) | | | | | | | | starting conditions ◇◇ | |
|----------------|--------------|---------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|------------------------|------|
| | | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | 1250 (4000) | 1500 (4800) | 1750 (5600) | 2000 (6400) | m/min | SFM |
| N | KO1425 | | ◇◇ | | | | | | | 765 | 2500 |
| | KC5410 | ◇◇ | | | | | | | | 550 | 1800 |
| | KC5010/KCU10 | ◇◇ | | | | | | | | 460 | 1500 |
| | K68/K313 | ◇◇ | | | | | | | | 150 | 500 |

High-Temperature Alloys

| material group | grade | speed — m/min (SFM) | | | | | | | | starting conditions ◇◇ | |
|----------------|--------------|---------------------|----------|----------|----------|-----------|-----------|-----------|-----------|------------------------|-----|
| | | 15 (50) | 40 (120) | 55 (180) | 80 (250) | 100 (330) | 170 (550) | 200 (655) | 120 (400) | m/min | SFM |
| S | KC5010/KCU10 | | ◇◇ | | | | | | | 60 | 200 |
| | KC5025/KCU25 | ◇◇ | | | | | | | | 50 | 170 |
| | KCM25 | ◇◇ | | | | | | | | 70 | 230 |
| | K68/K313 | ◇◇ | | | | | | | | 30 | 100 |

◇◇ Represents the recommended starting conditions. Optimise for your specific application.

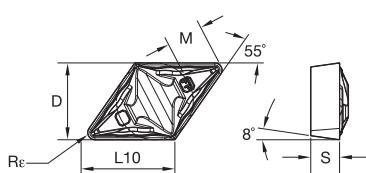


● first choice
○ alternate choice

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

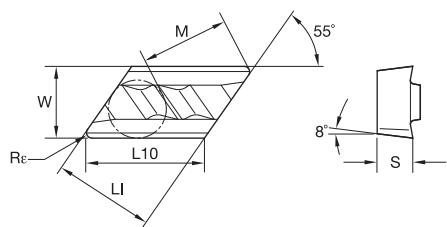
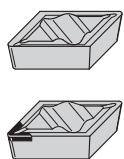
■ DCGR • DPGR

| ISO catalogue number | D | L10 | S | M | R _E | K68 | K313 | KU10 | KCP10 | KCP25B | KCK05 | KCM15B | KCM25B | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|-------|-------|------|------|----------------|-----|------|------|-------|--------|-------|--------|--------|-------|-------|--------|--------|--------|-------|--------|
| DCGR150404 | 12,70 | 15,50 | 4,76 | 6,94 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| DCGR150408 | 12,70 | 15,50 | 4,76 | 6,48 | 0,8 | ● | - | - | - | - | - | - | - | - | ● | ● | - | - | - | |
| DCGR150412 | 12,70 | 15,50 | 4,76 | 6,01 | 1,2 | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | |



■ DCGR-FP • DPGR-FP

| ISO catalogue number | D | L10 | S | M | R _E | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|-------|-------|------|------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|--------|--------|--------|-------|--------|
| DCGR150404FP | 12,70 | 15,50 | 4,76 | 6,94 | 0,4 | - | - | - | - | ● | - | ● | - | - | - | - | - | - | - | - | |
| DCGR150408FP | 12,70 | 15,50 | 4,76 | 6,48 | 0,8 | - | - | ● | - | - | - | ● | - | - | ● | - | - | - | - | - | |

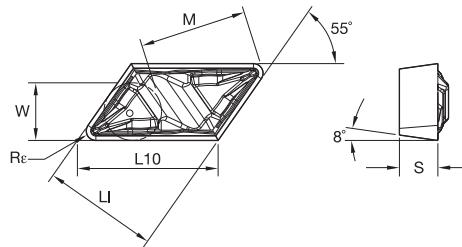


- first choice
- alternate choice

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

■ KCGR • NPGR

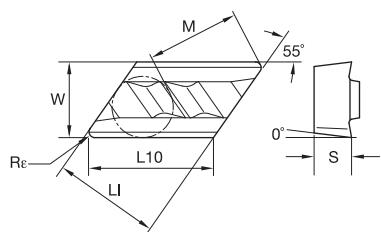
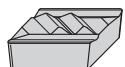
| ISO catalogue number | LI | L10 | W | S | M | R _e | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|------|------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| right hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCGR110304R08 | 9,53 | 11,60 | 6,35 | 3,18 | 9,10 | 0,4 | ● | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | |
| KCGR110308R08 | 9,53 | 11,60 | 6,35 | 3,18 | 8,66 | 0,8 | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | ● | - | |
| left hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCGR110308L08 | 9,53 | 11,60 | 6,35 | 3,18 | 8,66 | 0,8 | - | - | - | - | - | - | ● | - | - | - | ● | ● | ● | ● | - | ● | |
| KCGR110304L08 | 9,53 | 11,60 | 6,35 | 3,18 | 9,10 | 0,4 | ● | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | - | ● | |



- first choice
- alternate choice

■ KCGR-FP • NPGR-FP

| ISO catalogue number | LI | L10 | W | S | M | R _e | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|------|------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| right hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCGR110304R08FP | 9,52 | 11,60 | 6,35 | 3,18 | 9,13 | 0,4 | - | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| KCGR110308R08FP | 9,52 | 11,63 | 6,35 | 3,18 | 8,73 | 0,8 | - | - | - | ● | - | - | - | - | - | - | - | ● | - | - | - | - | - |
| left hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCGR110308L08FP | 9,52 | 11,63 | 6,35 | 3,18 | 8,73 | 0,8 | - | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | - |
| KCGR110304L08FP | 9,52 | 11,60 | 6,35 | 3,18 | 9,13 | 0,4 | - | - | - | ● | - | ● | - | - | - | - | ● | ● | ● | ● | - | ● | - |

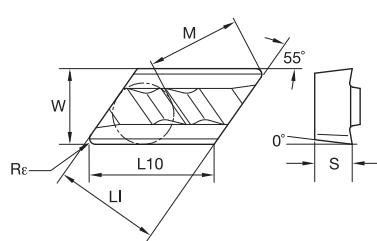
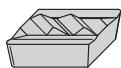


● first choice
○ alternate choice

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

■ KNGX • NPR/L

| ISO catalogue number | LI | L10 | W | S | M | Re | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 | |
|----------------------|-------|-------|------|------|-------|-----|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|---|
| right hand | | | | | | | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | |
| KNGX150404R20 | 12,68 | 15,44 | 9,47 | 4,76 | 13,46 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| KNGX150408R20 | 12,68 | 15,44 | 9,47 | 4,76 | 12,99 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - |
| KNGX150401R15 | 12,70 | 15,44 | 9,53 | 4,76 | 13,76 | 0,1 | ● | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - |
| KNGX150402R15 | 12,70 | 15,44 | 9,53 | 4,76 | 13,67 | 0,2 | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - |
| KNGX220404R25 | 18,62 | 22,73 | 9,53 | 4,76 | 19,91 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - |
| KNGX220408R32 | 18,62 | 22,73 | 9,53 | 4,76 | 19,47 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - |
| left hand | | | | | | | | | | | | | | | | | | | | | | | | |
| KNGX150408L20 | 12,68 | 15,44 | 9,47 | 4,76 | 12,99 | 0,8 | ● | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - |
| KNGX150404L20 | 12,68 | 15,44 | 9,47 | 4,76 | 13,46 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - |
| KNGX220408L20 | 18,62 | 22,73 | 9,53 | 4,76 | 19,47 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - |

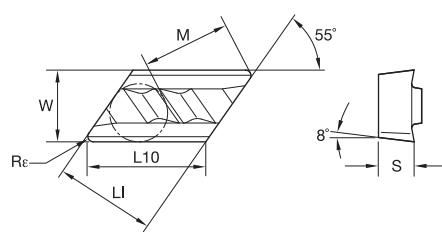
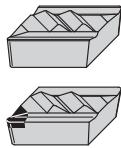


● first choice
○ alternate choice

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

■ KNUX • NPR/L

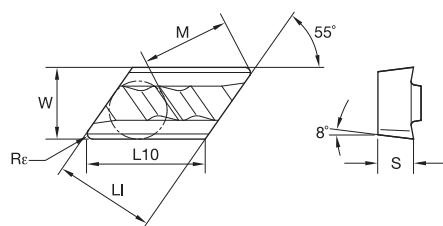
| ISO catalogue number | LI | L10 | W | S | M | R _ε | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|-------|-------|------|------|-------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| right hand | | | | | | | | | | | | | | | | | | | | | | | |
| KNUX150405R20 | 12,70 | 15,44 | 9,53 | 4,76 | 13,32 | 0,5 | - | - | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | |
| KNUX150405R25 | 12,70 | 15,44 | 9,53 | 4,76 | 13,32 | 0,5 | ● | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | |
| KNUX150410R25 | 12,70 | 15,44 | 9,53 | 4,76 | 12,74 | 1,0 | ● | - | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | |
| KNUX160405R1 | 16,15 | 17,51 | 9,52 | 4,76 | - | 0,5 | - | - | - | - | - | - | - | - | - | ● | ● | - | ● | - | - | - | |
| KNUX160405R2 | 16,15 | 17,51 | 9,52 | 4,76 | - | 0,5 | - | - | - | - | - | - | - | - | - | ● | ● | - | ● | - | - | - | |
| KNUX160410R1 | 16,15 | 17,51 | 9,52 | 4,76 | - | 1,0 | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | |
| KNUX160410R2 | 16,15 | 17,51 | 9,52 | 4,76 | - | 1,0 | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | |
| left hand | | | | | | | | | | | | | | | | | | | | | | | |
| KNUX150410L25 | 12,70 | 15,44 | 9,53 | 4,76 | 12,74 | 1,0 | ● | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | - | - |
| KNUX150405L25 | 12,70 | 15,44 | 9,53 | 4,76 | 13,32 | 0,5 | ● | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - |
| KNUX160405L1 | 16,15 | 17,51 | 9,52 | 4,76 | - | 0,5 | - | - | - | - | - | - | - | - | - | ● | ● | - | - | - | - | - | |
| KNUX160405L2 | 16,15 | 17,51 | 9,52 | 4,76 | - | 0,5 | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | |



● first choice
○ alternate choice

■ KCGX • NPR/L

| ISO catalogue number | LI | L10 | W | S | M | R _ε | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|------|------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| right hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCGX110301R15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,43 | 0,1 | ● | ● | - | - | - | - | - | - | - | - | ● | - | ● | ● | - | ● | |
| KCGX110302R15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,34 | 0,2 | - | ● | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | |
| KCGX110304R15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,11 | 0,4 | ● | ● | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | |
| KCGX110308R15 | 9,57 | - | 6,33 | 3,18 | 8,69 | 0,8 | ● | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | - | |
| left hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCGX110304L15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,11 | 0,4 | ● | ● | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | |
| KCGX110302L15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,34 | 0,2 | - | ● | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | |
| KCGX110301L15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,43 | 0,1 | ● | ● | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | |
| KCGX110308L15 | 9,57 | - | 6,33 | 3,18 | 8,69 | 0,8 | ● | ● | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | - | |

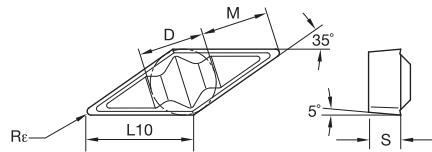
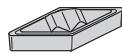


● first choice
○ alternate choice

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

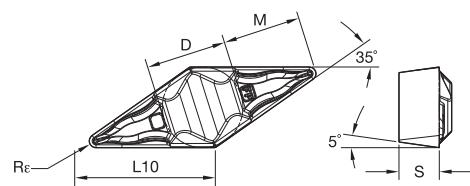
■ KCUX • NPR/L

| ISO catalogue number | LI | L10 | W | S | M | Re | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|-------|-------|------|------|-------|-----|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| right hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCUX110302R15 | 9,50 | 11,60 | 6,33 | 3,18 | 9,40 | 0,2 | ● | - | - | - | - | - | - | - | - | - | ● | - | - | - | - | | |
| KCUX110305R15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,06 | 0,5 | ● | - | - | - | ● | - | - | - | - | - | ● | - | ● | - | - | | |
| KNUX150405R20 | 12,70 | 15,44 | 9,53 | 4,76 | 13,32 | 0,5 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | | |
| left hand | | | | | | | | | | | | | | | | | | | | | | | |
| KCUX110302L15 | 9,46 | 11,60 | 6,33 | 3,18 | 9,40 | 0,2 | ● | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | | |
| KCUX110305L15 | 9,53 | 11,60 | 6,35 | 3,18 | 9,06 | 0,5 | ● | - | - | - | - | - | - | - | - | - | ● | - | ● | - | - | | |



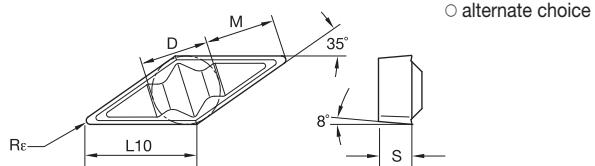
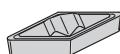
■ VBMR

| ISO catalogue number | D | L10 | S | M | Re | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|------|-----|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VBMR110304 | 6,35 | 11,07 | 3,18 | 6,46 | 0,4 | - | - | - | - | - | - | - | - | - | - | ● | ● | - | ● | - | - | |



■ VBMR-FP

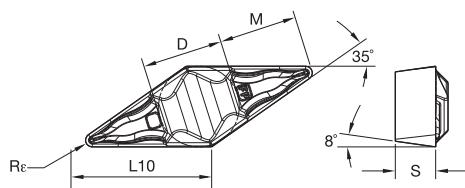
| ISO catalogue number | D | L10 | S | M | Re | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|------|-----|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VBMR110302FP | 6,35 | 11,04 | 3,18 | 6,91 | 0,2 | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | |
| VBMR110304FP | 6,35 | 11,07 | 3,18 | 6,46 | 0,4 | - | - | - | ● | - | ● | - | - | - | - | ● | - | ● | - | - | - | |
| VBMR110308FP | 6,35 | 11,07 | 3,18 | 5,54 | 0,8 | - | - | - | ● | - | - | - | - | - | - | ● | - | ● | - | - | - | |



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

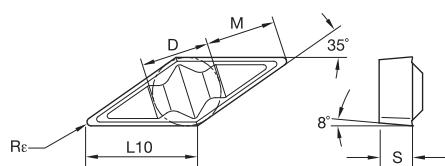
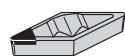
■ VCMR

| ISO catalogue number | D | L10 | S | M | R _ε | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|-------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VCMR160404 | 9,53 | 16,61 | 4,76 | 10,15 | 0,4 | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | |
| VCMR160408 | 9,53 | 16,61 | 4,76 | 9,23 | 0,8 | - | - | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | |



■ VCMR-FP

| ISO catalogue number | D | L10 | S | M | R _ε | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|-------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VCMR160404FP | 9,52 | 16,61 | 4,76 | 10,15 | 0,4 | - | - | - | ● | - | ● | - | - | - | - | - | - | - | - | - | - | |
| VCMR160408FP | 9,52 | 16,61 | 4,76 | 9,23 | 0,8 | - | - | - | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | |

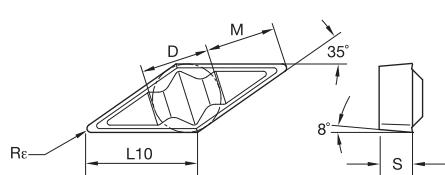
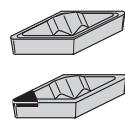


● first choice
○ alternate choice

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

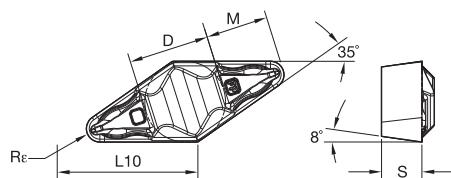
■ VPGN

| ISO catalogue number | D | L10 | S | M | Rε | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|-------|-----|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VCGN160404 | 9,53 | 16,61 | 4,76 | 10,15 | 0,4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | |
| VCGN160408 | 9,53 | 16,61 | 4,76 | 9,23 | 0,8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ● | |



■ VCGR • VPGR

| ISO catalogue number | D | L10 | S | M | Rε | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|-------|-----|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VCGR160402 | 9,53 | 16,61 | 4,76 | 10,60 | 0,2 | ● | - | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | - | - |
| VCGR160404 | 9,53 | 16,61 | 4,76 | 10,15 | 0,4 | ● | ● | - | - | - | - | ● | - | - | - | - | ● | ● | ● | ● | ● | ● |
| VCGR160408 | 9,52 | 16,61 | 4,76 | 9,23 | 0,8 | ● | ● | - | - | ● | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● |
| VCGR160412 | 9,53 | 16,61 | 4,76 | 8,31 | 1,2 | ● | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | ● | ● |
| VCGR160416 | 9,53 | 16,61 | 4,76 | 7,38 | 1,6 | - | - | - | - | - | - | - | - | - | - | ● | ● | ● | ● | ● | - | - |

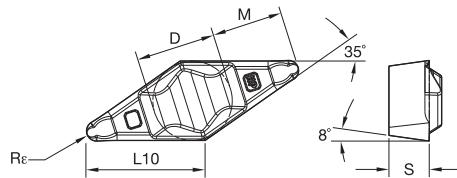


● first choice
○ alternate choice

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

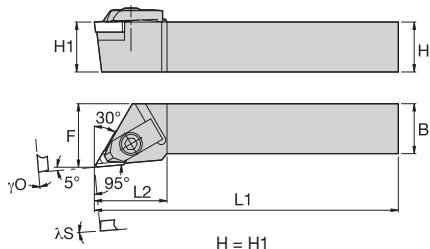
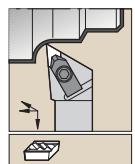
■ VCGR-FP • VPGR-FP

| ISO catalogue number | D | L10 | S | M | R _e | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|-------|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VCGR160402FP | 9,52 | 16,61 | 4,76 | 10,60 | 0,2 | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | |
| VCGR160404FP | 9,52 | 16,61 | 4,76 | 10,15 | 0,4 | - | - | - | ● | - | ● | - | - | - | - | ● | ● | - | - | - | - | - |
| VCGR160408FP | 9,52 | 16,61 | 4,76 | 9,23 | 0,8 | - | - | - | ● | - | ● | ● | - | - | ● | - | - | - | - | - | - | - |
| VCGR160412FP | 9,52 | 16,61 | 4,76 | 8,31 | 1,2 | - | - | - | ● | - | ● | ● | - | - | - | - | - | - | - | - | - | - |
| VCGR160416FP | 9,52 | 16,61 | 4,76 | 7,38 | 1,6 | - | - | - | - | - | ● | - | - | - | - | - | - | - | - | - | - | - |



■ VCGR-HP • VPGR-HP

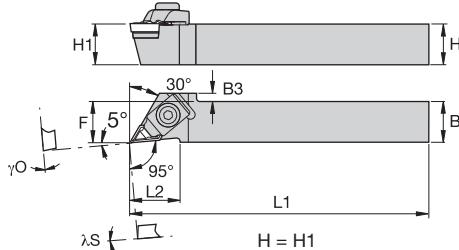
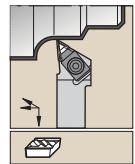
| ISO catalogue number | D | L10 | S | M | R _e | K68 | K313 | KU10 | KCP10 | KCP25B | KCP25 | KCK05 | KCM15B | KCM25B | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KD1425 |
|----------------------|------|-------|------|---|----------------|-----|------|------|-------|--------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|-------|--------|
| VCGR160404HP | 9,52 | 16,61 | 4,76 | - | 0,4 | - | ● | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



■ **NKLC 95°**

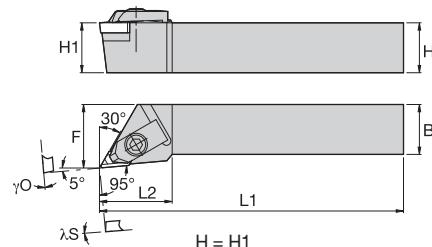
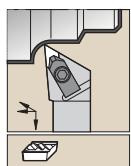
Application Specific

| catalogue number | H | B | F | L1 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---------------------|----|----|------|-----|-------------------|------------------|-------------|--------------|--------------|----------|-------------|--------------|----------|
| right hand | | | | | | | | | | | | | |
| NKLCR1616H11 | 16 | 16 | 20,0 | 100 | 0.0 | 0.0 | KC..110305R | SM885 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| NKLCR2020K11 | 20 | 20 | 25,0 | 125 | 0.0 | 0.0 | KC..110305R | SM885 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| NKLCR2525M11 | 25 | 25 | 32,0 | 150 | 0.0 | 0.0 | KC..110305R | SM885 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| left hand | | | | | | | | | | | | | |
| NKLCL2020K11 | 20 | 20 | 25,0 | 125 | 0.0 | 0.0 | KC..110305L | SM886 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| NKLCL2525M11 | 25 | 25 | 32,0 | 150 | 0.0 | 0.0 | KC..110305L | SM886 | MS959 | 3 mm | CM68 | MS524 | 3 mm |



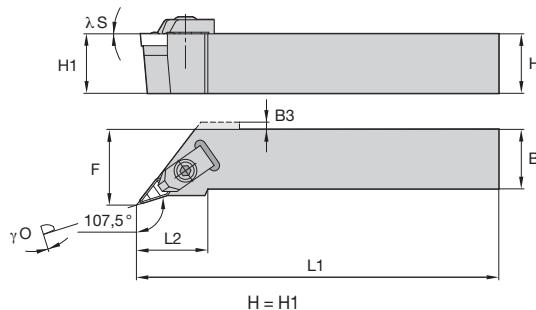
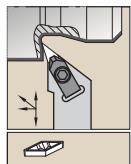
■ **NKLC-F 95°**

| catalogue number | H | B | F | L1 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|-----------------------|----|----|------|-----|-------------------|------------------|-------------|--------------|--------------|----------|--------------|--------------|----------|
| right hand | | | | | | | | | | | | | |
| NKLCRF1212M11Q | 12 | 12 | 12,0 | 150 | 0.0 | 0.0 | KC..110305R | SM885 | MS959 | 3 mm | CM180 | MS524 | 3 mm |



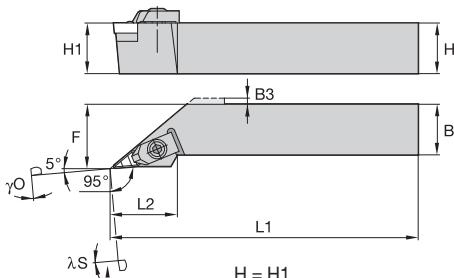
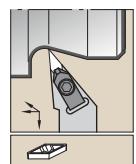
■ NKLN 95°

| catalogue number | H | B | F | L1 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|-------------------|----|----|------|-----|-------------------|------------------|-------------|-------|------------|----------|-------|-------------|----------|
| | | | | | | | | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
| right hand | | | | | | | | | | | | | |
| NKLN2020K15 | 20 | 20 | 25,0 | 125 | -2.0 | -5.0 | KN..150410R | SM872 | MS111 | 2 mm | CM66 | MS625 | 4 mm |
| NKLN2525M15 | 25 | 25 | 32,0 | 150 | -2.0 | -5.0 | KN..150410R | SM872 | MS111 | 2 mm | CM66 | MS625 | 4 mm |
| left hand | | | | | | | | | | | | | |
| NKLN2020K15 | 20 | 20 | 25,0 | 125 | -2.0 | -5.0 | KN..150410L | SM871 | MS111 | 2 mm | CM66 | MS625 | 4 mm |
| NKLN2525M15 | 25 | 25 | 32,0 | 150 | -2.0 | -5.0 | KN..150410L | SM871 | MS111 | 2 mm | CM66 | MS625 | 4 mm |



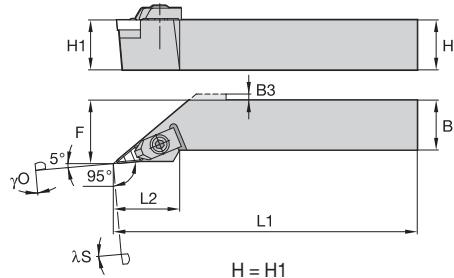
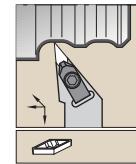
■ NVHB 107,5°

| catalogue number | H | B | F | L1 | LH | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|-------------------|----|----|------|-----|------|-------------------|------------------|-------------|-------|------------|----------|-------|-------------|----------|
| | | | | | | | | | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
| right hand | | | | | | | | | | | | | | |
| NVHBR2020K11 | 20 | 20 | 25,0 | 125 | 30,0 | 0.0 | 0.0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM158 | MS518 | 2.5 mm |
| NVHBR2525M11 | 25 | 25 | 32,0 | 150 | 30,0 | 0.0 | 0.0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM158 | MS518 | 2.5 mm |
| left hand | | | | | | | | | | | | | | |
| NVHBL2020K11 | 20 | 20 | 25,0 | 125 | 30,0 | 0.0 | 0.0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM159 | MS518 | 2.5 mm |
| NVHBL2525M11 | 25 | 25 | 32,0 | 150 | 30,0 | 0.0 | 0.0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM159 | MS518 | 2.5 mm |



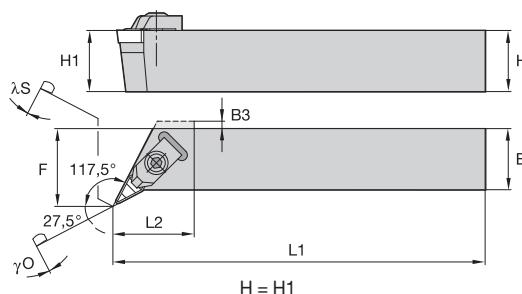
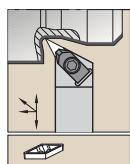
■ NVLB 95°

| catalogue number | H | B | F | L1 | LH | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|-------------------|----|----|------|-----|------|-------------------|------------------|-------------|-------|------------|----------|-------|-------------|----------|
| | | | | | | | | | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
| right hand | | | | | | | | | | | | | | |
| NVLBR2020K11 | 20 | 20 | 25,0 | 125 | 30,0 | 0,0 | 0,0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM158 | MS518 | 2.5 mm |
| NVLBR2525M11 | 25 | 25 | 32,0 | 150 | 32,0 | 0,0 | 0,0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM158 | MS518 | 2.5 mm |
| left hand | | | | | | | | | | | | | | |
| NVLBL2020K11 | 20 | 20 | 25,0 | 125 | 30,0 | 0,0 | 0,0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM159 | MS518 | 2.5 mm |
| NVLBL2525M11 | 25 | 25 | 32,0 | 150 | 32,0 | 0,0 | 0,0 | VB..110304 | SM813 | MS959 | 2.5 mm | CM159 | MS518 | 2.5 mm |

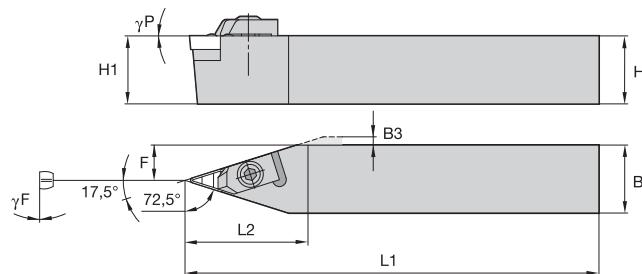
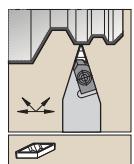


■ NVLC 95°

| catalogue number | H | B | F | L1 | LH | B3 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|-------------------|----|----|------|-----|------|-----|-------------------|------------------|-------------|-------|------------|----------|-------|-------------|----------|
| | | | | | | | | | | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
| right hand | | | | | | | | | | | | | | | |
| NVLCR1616H16 | 16 | 16 | 20,0 | 100 | 37,0 | 5,0 | 0,0 | 0,0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| NVLCR2020K16 | 20 | 20 | 25,0 | 125 | 37,0 | — | 0,0 | 0,0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| NVLCR2525M16 | 25 | 25 | 32,0 | 150 | 37,0 | — | 0,0 | 0,0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| NVLCR3225P16 | 32 | 25 | 32,0 | 170 | 37,0 | — | 0,0 | 0,0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| left hand | | | | | | | | | | | | | | | |
| NVLCL2020K16 | 20 | 20 | 25,0 | 125 | 37,0 | — | 0,0 | 0,0 | VC..160408 | SM812 | MS959 | 4 mm | CM114 | MS412 | 4 mm |
| NVLCL2525M16 | 25 | 25 | 32,0 | 150 | 37,0 | — | 0,0 | 0,0 | VC..160408 | SM812 | MS959 | 4 mm | CM114 | MS412 | 4 mm |
| NVLCL3225P16 | 32 | 25 | 32,0 | 170 | 37,0 | — | 0,0 | 0,0 | VC..160408 | SM812 | MS959 | 4 mm | CM114 | MS412 | 4 mm |


■ NVOC 117,5°

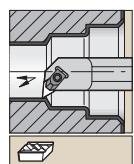

| catalogue number | H | B | F | L1 | LH | B3 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|-------------------|----|----|------|-----|------|-----|-------------------|------------------|-------------|-------|------------|----------|-------|-------------|----------|
| right hand | | | | | | | | | | | | | | | |
| NVOCR2020K16 | 20 | 20 | 32,0 | 125 | 29,0 | 3,0 | 0.0 | 0.0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| NVOCR2525M16 | 25 | 25 | 32,0 | 150 | 29,0 | 3,0 | 0.0 | 0.0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| left hand | | | | | | | | | | | | | | | |
| NVOCL2020K16 | 20 | 20 | 32,0 | 125 | 29,0 | 3,0 | 0.0 | 0.0 | VC..160408 | SM812 | MS959 | 4 mm | CM114 | MS412 | 4 mm |
| NVOCL2525M16 | 25 | 25 | 32,0 | 150 | 29,0 | 3,0 | 0.0 | 0.0 | VC..160408 | SM812 | MS959 | 4 mm | CM114 | MS412 | 4 mm |



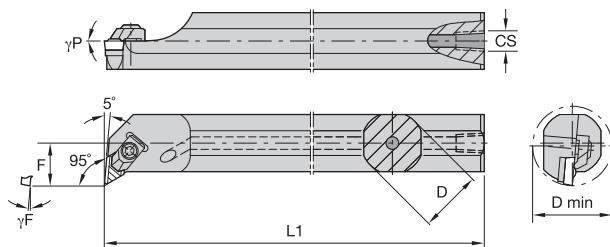
■ NVVC 72,5°

Application Specific

| catalogue number | H | B | F | L1 | LH | B3 | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|------------------|----|----|------|-----|------|-----|-----|-----|-------------|-------|------------|----------|-------|-------------|----------|
| NVVCN2020K16 | 20 | 20 | 10,0 | 125 | 42,0 | 2,0 | 0.0 | 0.0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| NVVCN2525M16 | 25 | 25 | 12,5 | 150 | 42,0 | — | 0.0 | 0.0 | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |

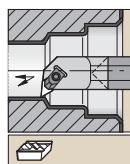
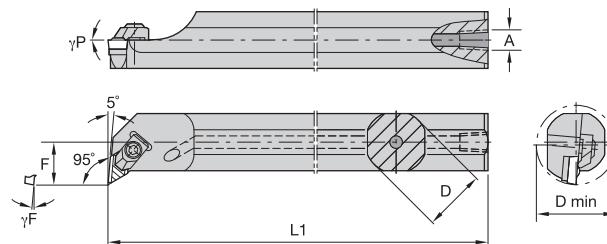


Steel shank with through coolant.

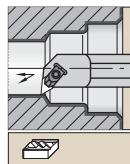
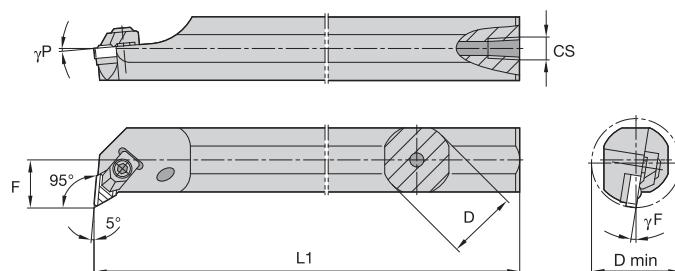


■ A-NKLC 95°

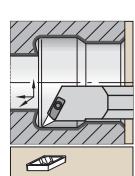
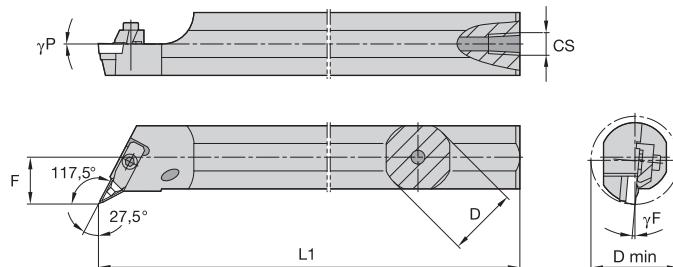
| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-------------------|----|-------|------|-----|-------------|-------|------|-------------|-------|------------|--------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | | |
| A12MNKLCR11 | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -5,0° | 0,0° | KC..110305R | — | — | 2.5 mm | CM106 | MS518 | 2.5 mm |
| A16MNKLCR11 | 16 | 20,0 | 11,0 | 150 | 1/8-27 NPT | -7,0° | 0,0° | KC..110305L | SM886 | MS959 | 2.5 mm | CM106 | MS518 | 2.5 mm |
| A20QNKLCL11 | 20 | 25,0 | 13,0 | 180 | 1/8-27 NPT | -5,0° | 0,0° | KC..110305L | SM886 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| A25RNKLCL11 | 25 | 32,0 | 16,0 | 200 | 1/4-18 NPT | -5,0° | 0,0° | KC..110305L | SM886 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| A32SNKLCL11 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -5,0° | 0,0° | KC..110305L | SM886 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| left hand | | | | | | | | | | | | | | |
| A12MNKLCL11 | 16 | 20,0 | 11,0 | 150 | 1/8-27 NPT | -7,0° | 0,0° | KC..110305L | — | — | 2.5 mm | CM106 | MS518 | 2.5 mm |
| A16MNKLCL11 | 16 | 20,0 | 11,0 | 150 | 1/8-27 NPT | -7,0° | 0,0° | KC..110305R | SM885 | MS959 | 2.5 mm | CM105 | MS518 | 2.5 mm |
| A20QNKLCL11 | 20 | 25,0 | 13,0 | 180 | 1/8-27 NPT | -5,0° | 0,0° | KC..110305R | SM885 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| A25RNKLCL11 | 25 | 32,0 | 16,0 | 200 | 1/4-18 NPT | -5,0° | 0,0° | KC..110305R | SM885 | MS959 | 3 mm | CM68 | MS524 | 3 mm |


Carbide shank
with through
coolant.

E-NKLC 95°

| catalogue number | D | D min | F | L1 | A | γF° | γP° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|---------------------|----|-------|------|-----|-----|------------------|------------------|-------------|--------------|--------------|--------|--------------|--------------|--------|
| right hand | | | | | | | | | | | | | | |
| E12QNKLRCR11 | 12 | 16,0 | 9,0 | 180 | 4,8 | -5,0° | 0,0° | KC..110308L | — | — | 2,5 mm | CM106 | MS518 | 2,5 mm |
| E16RNKLCR11 | 16 | 20,0 | 11,0 | 200 | 5,5 | -5,0° | 0,0° | KC..110308L | SM886 | MS959 | 2,5 mm | CM106 | MS518 | 2,5 mm |
| left hand | | | | | | | | | | | | | | |
| E12QNKLCL11 | 12 | 16,0 | 9,0 | 180 | 4,8 | -5,0° | 0,0° | KC..110308R | — | — | 2,5 mm | CM105 | MS518 | 2,5 mm |

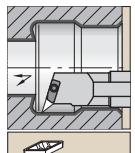
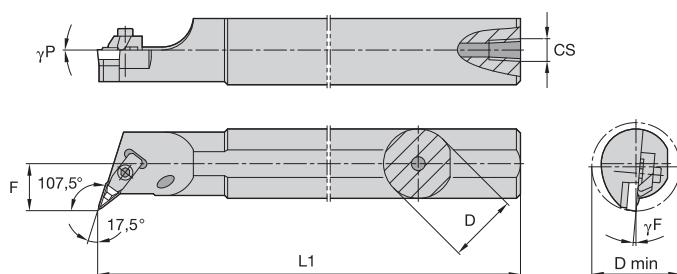

Steel shank with
through coolant.

A-NKLN 95°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|--------------------|----|-------|------|-----|------------|------------------|------------------|-------------|--------------|--------------|------|-------------|--------------|------|
| right hand | | | | | | | | | | | | | | |
| A40TNKLNR15 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -5,0° | -5,0° | KN..150410L | SM871 | MS111 | 4 mm | CM66 | MS624 | 4 mm |

Steel shank with
through coolant.

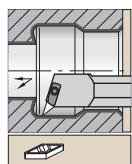
■ A-NVOC 117,5°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-------------------|----|-------|------|-----|------------|------------------|------------------|-------------|-------|------------|------|-------|-------------|------|
| right hand | | | | | | | | | | | | | | |
| A32SNVOCR16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -2,0° | 0,0° | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| A50UNVOCR16 | 50 | 63,0 | 35,0 | 350 | 1/4-18 NPT | -2,0° | 0,0° | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |
| left hand | | | | | | | | | | | | | | |
| A32SNVOCL16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -2,0° | 0,0° | VC..160408 | SM812 | MS959 | 4 mm | CM114 | MS412 | 4 mm |
| A40TNVOC16 | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -2,0° | 0,0° | VC..160408 | SM812 | MS959 | 4 mm | CM114 | MS412 | 4 mm |

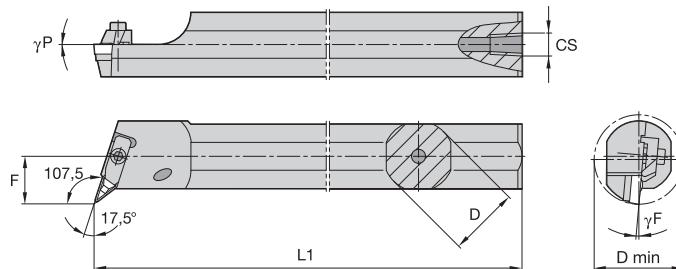
Steel shank with
through coolant.

■ A-NVQB 107,5°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|-------------------|----|-------|------|-----|------------|------------------|------------------|-------------|-------|------------|--------|-------|-------------|--------|
| right hand | | | | | | | | | | | | | | |
| A25TNVQBR11 | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | -5,0° | 0,0° | VB..110304 | SM813 | MS959 | 2.5 mm | CM159 | MS518 | 2.5 mm |



Steel shank with
through coolant.



■ A-NVQC 107,5°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex | clamp | clamp screw | hex |
|----------------------------------|----|-------|------|-----|------------|------------------|------------------|----------------|--------------|---------------|------|--------------|----------------|------|
| right hand A32SNVQCR16 | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -2,0° | 0,0° | VC..160408 | SM812 | MS959 | 4 mm | CM113 | MS412 | 4 mm |

> Railroad

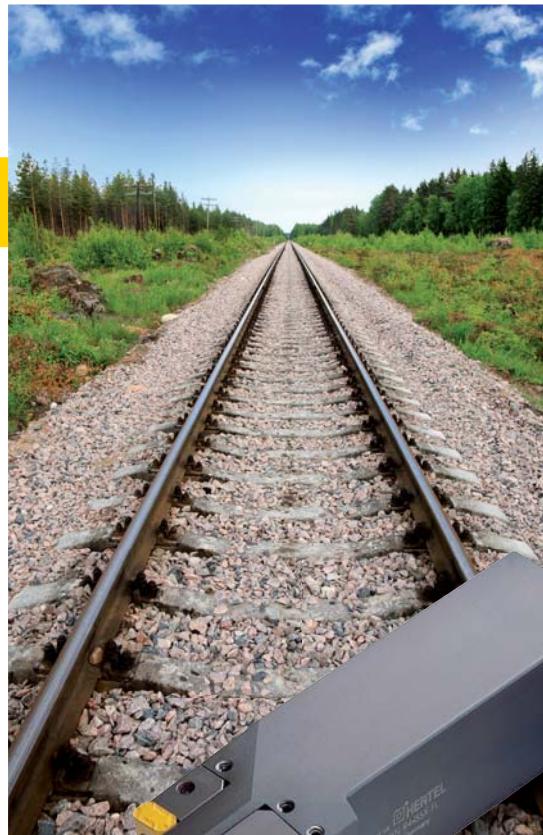
The intimate understanding Kennametal provides of the economics of the railroad value chain enables us to offer unparalleled custom solutions tailored to your needs. We deliver superior value because we listen closely to you, our customer, and innovate based on your feedback. Our goal is to help you be more competitive — both locally and on a global scale.

Best Practices in Productivity

As your trusted partner for optimised production, Kennametal offers customers a unique commitment to research and development excellence, leading to continued delivery of highly innovative ways to enhance your productivity. Certification to ISO 9001, QS 9000 TES, and VDA 6.4 guarantees the highest possible quality standards.

Best Performance, Less Environmental Impact

With technology, we can do both. Kennametal helps customers focus on the root causes of unsustainable behaviour in highly complex manufacturing systems, while at the same time improving cost structure, quality, and performance. In addition to offering the latest in metalcutting tools and technology, our Advanced Engineering Team will analyse your existing production processes and help you identify new methods to improve your overall performance.



Wheel Lathe Tooling

Kennametal railroad tooling incorporates a unique locking unit design developed through years of testing on all types of wheel lathes and machining wheels with all types of tread surfaces.

This heavy-duty, rugged design has proven to be effective in reducing machining costs on tread turning applications, the most severe machining operation encountered in wheel and axle shops.

Strong inserts, with raised chipbreaker land and honed cutting edges, offer more effective chip control and a stronger cutting edge. Combining this tool geometry with the Kennametal grade selection delivers higher wheel turning productivity.



Wheelset

Advantages of Kennametal Wheel Lathe Tools:

- No top clamp to wear out or interfere with chip flow.
- Insert locks against two walls in the toolholder to prevent insert movement under heavy cutting loads.
- Hardened steel locking unit provides positive insert seating and holder protection.
- Fast, trouble-free insert indexing — just unlock one screw to release the insert.
- Quick removal of the steel locking unit and insert for cleaning or replacement.
- Heavy-duty steel locking unit design ensures longer life and helps reduce operating costs.
- Fewer parts to inventory.
- Toolholders and steel locking units, made from heat-treated alloy steel, provide support to withstand severe roughing cuts on work-hardened wheels.



LNUX-RRF Full Radius



LNUX-RRP Full Radius



LNUX-RRH



LNUX-RRP



KRR6586-71



KRR6586-75



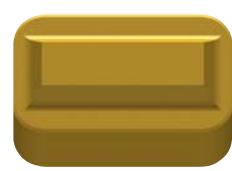
LNUX-RRSM



KRR6586-65



KRR6586-52



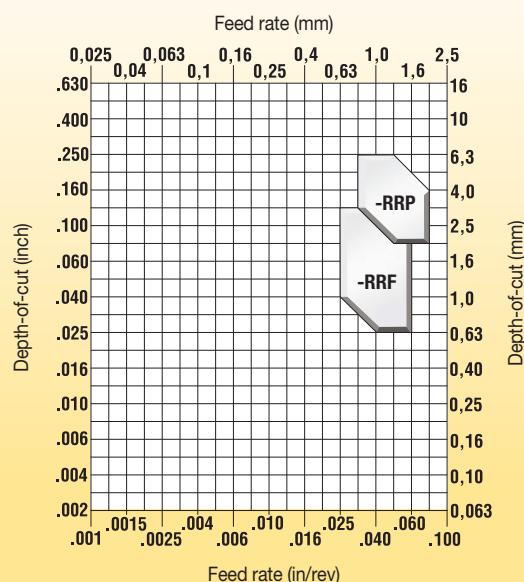
KRR6586-50

LNUX

Full-Radius Design

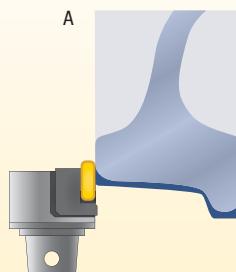
Our well-performed chipbreaking geometry RRF and RRP

- One insert can be applied in profiling and facing.
- Chip control even at smaller DOC will be improved!

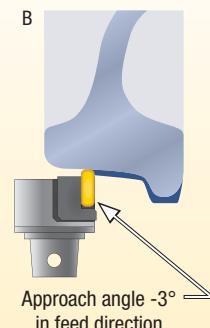


Application Recommendation

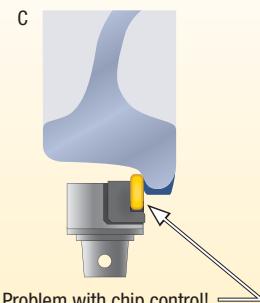
A: At the beginning of the process, the DOC is higher because most of the bigger bur needs to be removed.



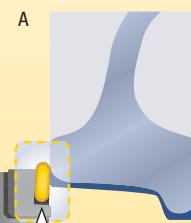
B: The DOC is smaller, but sometimes it has "hot spots" or brake spots.



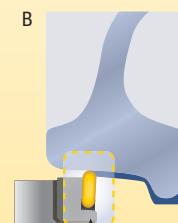
C: Most critical area in regards to chip control because the thickness of the chip is quite thin and very difficult to manage.



A, B, & C: One insert can be applied in profiling and facing.



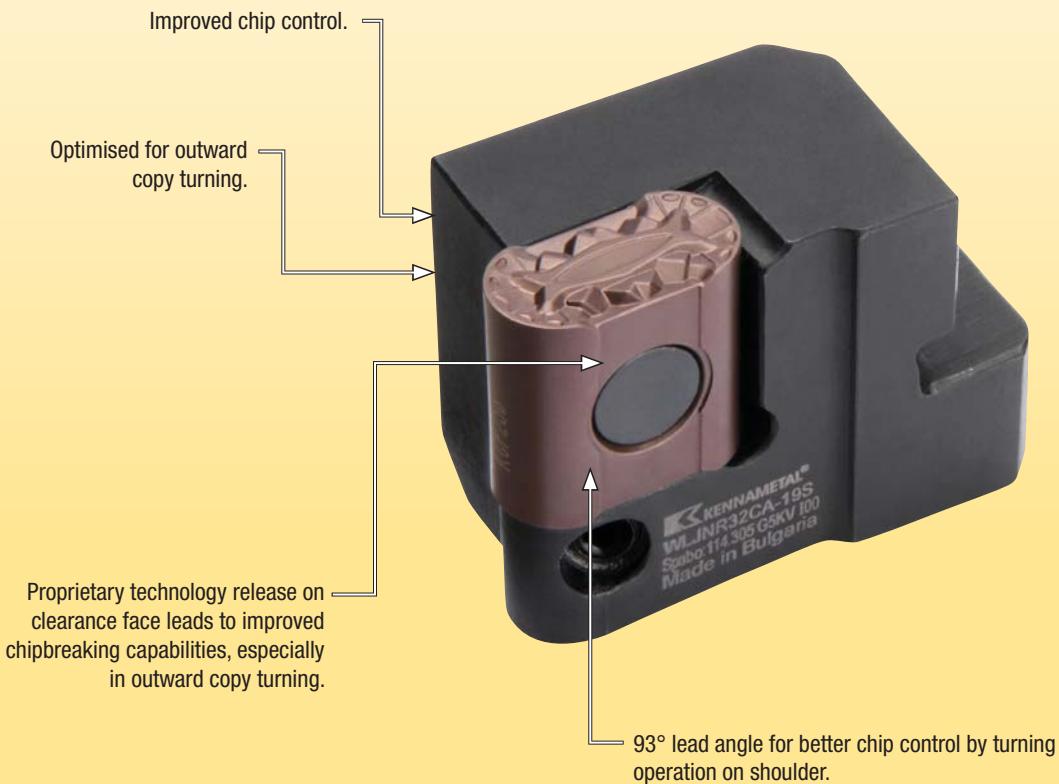
A & C: Chip control, even at a smaller DOC, will be improved.



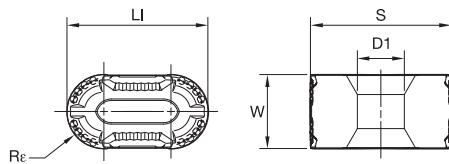
Modified cartridge with approach angle of 93° (difference of 6°)



Improved chip control capabilities

■ Features and Benefits

- The well performed RRF and RRP chipbreaker geometry with a full-radius design offers better chip control even at smaller DOC.

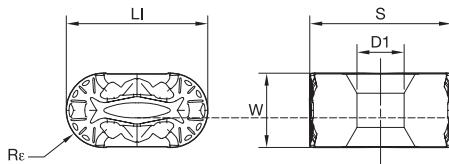


● first choice
○ alternate choice

| | | |
|---|---|---|
| P | ● | ● |
| M | ● | |
| K | ● | |
| N | ● | |
| S | ● | |
| H | ● | |

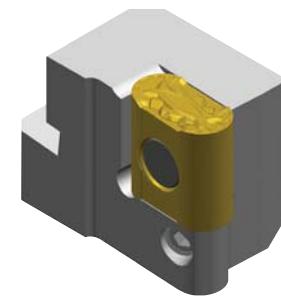
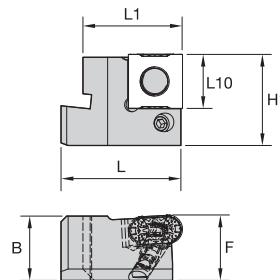
■ LNUX-RRF Full-Radius

| ISO catalogue number | W | LI | S | Re | D1 | KCP10B | KCP25B |
|----------------------|-------|-------|-------|------|------|--------|--------|
| LNUX191950RRF | 10,00 | 19,05 | 19,05 | 5,00 | 6,35 | ● | ● |



■ LNUX-RRP Full-Radius

| ISO catalogue number | W | LI | S | Re | D1 | KCP10B | KCP25B |
|----------------------|-------|-------|-------|------|------|--------|--------|
| LNUX191950RRP | 10,00 | 19,05 | 19,05 | 5,00 | 6,35 | ● | ● |
| LNUX301960RRP | 12,00 | 30,00 | 19,05 | 6,00 | 6,35 | ● | ● |



■ Cartridge WLJN

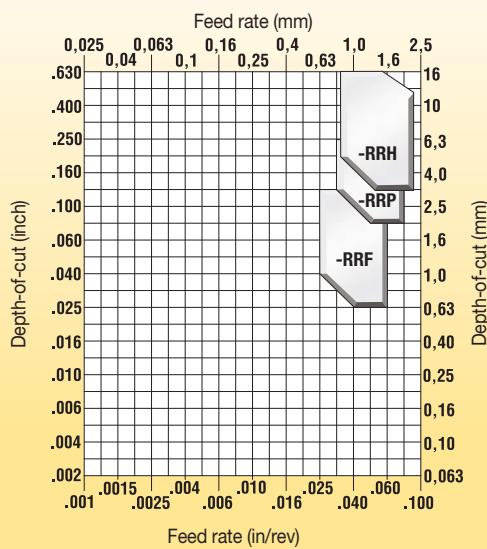
| order number | catalogue number | H1 | B | F | L10 | L1 | L | gage insert |
|--------------|------------------|-------|------|------|-------|------|-------|---------------|
| 6049016 | WLJNL32CA19S | 1.260 | .890 | .906 | .750 | 1.38 | 1.681 | LNUX191950RRP |
| 6049018 | WLJNL32CA30S | 1.260 | .890 | .925 | 1.181 | 1.38 | 1.772 | LNUX301960RRP |
| 6049015 | WLJNR32CA19S | 1.260 | .890 | .906 | .750 | 1.38 | 1.681 | LNUX191950RRP |
| 6049017 | WLJNR32CA30S | 1.260 | .890 | .925 | 1.181 | 1.38 | 1.772 | LNUX301960RRP |

■ Spare Parts

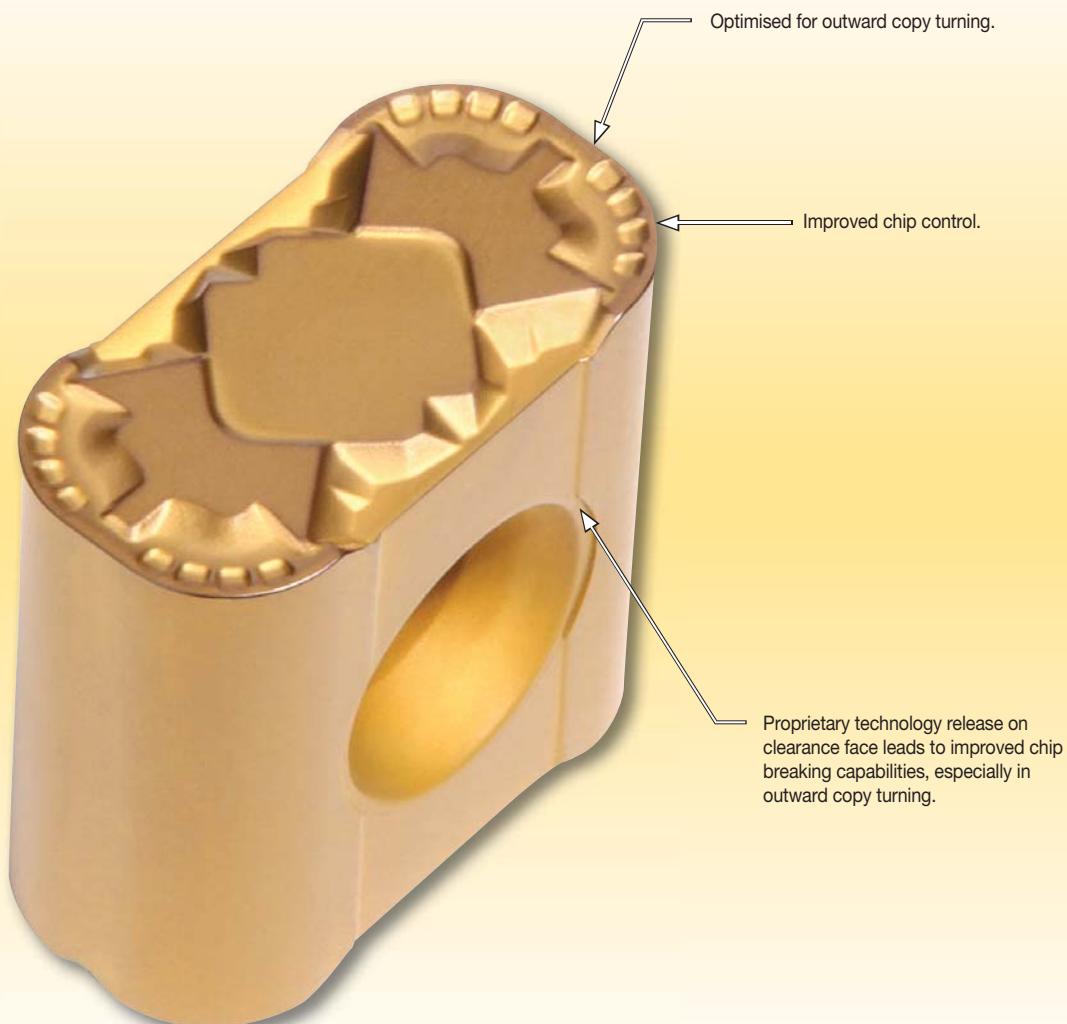
|  |  |  | |
|---|--|---|------------|
| catalogue number | clamp stud | clamp screw | hex wrench |
| WLJNL32CA19S | 114.305 | 121.616 | 170.003 |
| WLJNL32CA30S | 114.305 | 121.616 | 170.003 |
| WLJNR32CA19S | 114.305 | 121.616 | 170.003 |
| WLJNR32CA30S | 114.305 | 121.616 | 170.003 |

■ New Chipbreaking Geometry

For Rail Wheel Machining — RRF

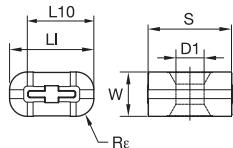


■ Small DOC Re-Profiling



Kennametal stocks a complete line of standard inserts for wheel and axle machining. Inserts are available in various styles, sizes, and grades.

- **Wheel boring** — moulded chipbreaker inserts in round, square, octagon, and regrindable inserts.
- **Axle turning** — triangle- and diamond-shaped inserts with chipbreakers.
- **Wheel turning** — rectangular and square styles, with or without moulded chipbreakers.
- **Wheel truing** — round buttons with centre hole for locking.



● first choice
○ alternate choice

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

■ LNUX-RRF

| ISO catalogue number | W | LI | L10 | S | Re | D1 | KCP10B | KCP10 | KCP25B | KCP25 |
|----------------------|-------|-------|-------|-------|------|------|--------|-------|--------|-------|
| LNUX191940RRF | 10,00 | 19,00 | 19,00 | 19,05 | 4,00 | 6,35 | - | ● | - | ● |
| LNUX301940RRF | 12,00 | 30,00 | 30,00 | 19,05 | 4,00 | 6,35 | - | ● | - | - |

NOTE: Also available in KC9105™.

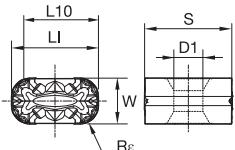
■ LNUX-RRH

| ISO catalogue number | W | LI | L10 | S | Re | D1 | KCP10B | KCP10 | KCP25B | KCP25 |
|----------------------|-------|-------|-------|-------|------|------|--------|-------|--------|-------|
| LNUX191940RRH | 10,00 | 19,00 | 19,00 | 19,05 | 4,00 | 6,35 | - | ● | - | ● |
| LNUX301940RRH | 12,00 | 30,00 | 30,00 | 19,05 | 4,00 | 6,35 | ● | - | - | ● |

NOTE: Also available in KC9105.

Kennametal stocks a complete line of standard inserts for wheel and axle machining. Inserts are available in various styles, sizes, and grades.

- **Wheel boring** — moulded chipbreaker inserts in round, square, octagon, and regrindable inserts.
- **Axle turning** — triangle- and diamond-shaped inserts with chipbreakers.
- **Wheel turning** — rectangular and square styles, with or without moulded chipbreakers.
- **Wheel truing** — round buttons with centre hole for locking.

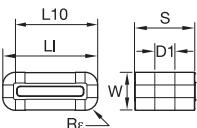
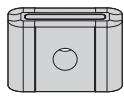


- first choice
- alternate choice

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

■ LINUX-RRP

| ISO catalogue number | W | LI | L10 | S | R _e | D1 | KCP10B | KCP10 | KCP25B | KCP25 |
|----------------------|-------|-------|-------|-------|----------------|------|--------|-------|--------|-------|
| LINUX191940RRP | 10,00 | 19,00 | 19,00 | 19,05 | 4,00 | 6,35 | - | ● | - | ● |
| LINUX301940RRP | 12,00 | 30,00 | 30,00 | 19,05 | 4,00 | 6,35 | - | - | - | ● |



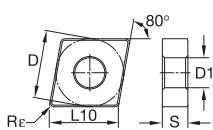
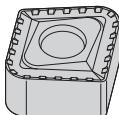
■ LINUX-RRSM

| ISO catalogue number | W | LI | L10 | S | R _e | D1 | KCP10B | KCP10 | KCP25B | KCP25 |
|----------------------|-------|-------|-------|-------|----------------|------|--------|-------|--------|-------|
| LINUX191940RRSM | 10,00 | 19,00 | 19,00 | 19,05 | 4,00 | 6,35 | - | - | ● | - |
| LINUX301940RRSM | 12,00 | 30,00 | 30,00 | 19,05 | 4,00 | 6,35 | ● | - | - | - |

NOTE: Also available in KC9105™.

Kennametal stocks a complete line of standard inserts for wheel and axle machining. Inserts are available in various styles, sizes, and grades.

- **Wheel boring** — moulded chipbreaker inserts in round, square, octagon, and regrindable inserts.
- **Axle turning** — triangle- and diamond-shaped inserts with chipbreakers.
- **Wheel turning** — rectangular and square styles, with or without moulded chipbreakers.
- **Wheel truing** — round buttons with centre hole for locking.

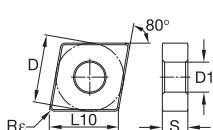
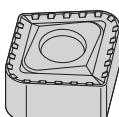


● first choice
○ alternate choice

| | | | | |
|---|---|---|---|---|
| P | ● | ● | ● | ● |
| M | ● | ● | ● | ● |
| K | ● | ● | ● | ● |
| N | ● | ● | ● | ● |
| S | ● | ● | ● | ● |
| H | ● | ● | ● | ● |

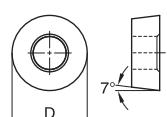
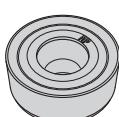
■ CNMM-RRP

| ISO catalogue number | L10 | S | Re | D1 | KCP10B | KCP10 | KCP25B | KCP25 |
|----------------------|-------|------|------|------|--------|-------|--------|-------|
| CNMM190740RRP | 19,34 | 7,94 | 4,00 | 7,93 | ● | - | - | - |



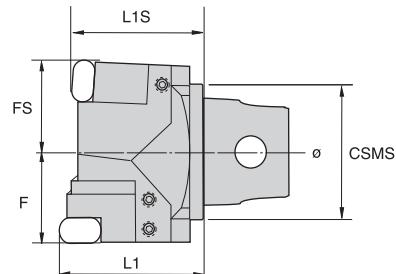
■ LNUX-WT5

| ISO catalogue number | L10 | S | Re | D1 | KCP10B | KCP10 | KCP25B | KCP25 |
|----------------------|-------|-------|------|------|--------|-------|--------|-------|
| LNUX191940S-WT5 | 19,05 | 19,05 | 4,00 | 6,35 | - | - | ● | - |
| SNMX190640S-WT5 | 19,05 | 6,35 | 4,00 | 6,35 | - | - | ● | - |



■ RCMX

| ISO catalogue number | L10 | S | Re | D1 | KCP10B | KCP10 | KCP25B | KCP25 |
|----------------------|-----|------|----|------|--------|-------|--------|-------|
| RCMX2507M076 | - | 7,94 | - | 7,40 | - | - | ● | - |



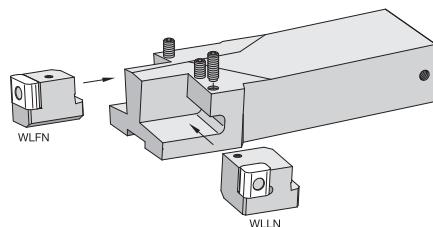
■ TK

Application Specific

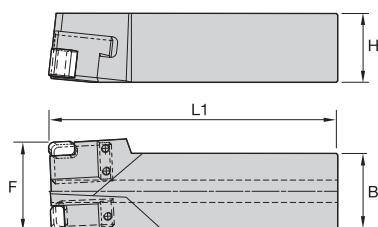
| order number | catalogue number | CSMS system size | F | FS | L1 | L1S |
|--------------|------------------|------------------|-------|-------|-------|-------|
| 1781755 | TK01338D | KM63 | 42,50 | 42,50 | 66,00 | 60,00 |
| 1781756 | TK01339D | KM63 | 42,50 | 42,50 | 66,00 | 60,00 |

Assembly Instructions

| basic/KM shank | cartridge WLLN.. | cartridge WLFN.. |
|----------------|------------------|------------------|
| right | right | left |
| left | left | right |

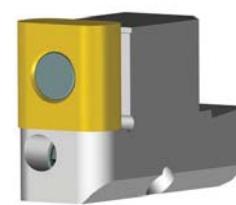
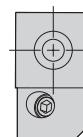
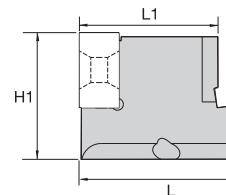


Assembly of complete tool



■ Basic Shank WXXN

| order number | catalogue number | H | | B | | F assembly | | L1 assy | | clamp screw |
|--------------|------------------|-------|-------|-------|-------|------------|-------|---------|-------|-------------|
| | | mm | in | mm | in | mm | in | mm | in | |
| 1251261 | WXXNL4455X-FL | 50,00 | 1.969 | 55,00 | 2.165 | 65,00 | 2.559 | 210,00 | 8.268 | PT00163 |
| 1251262 | WXXNR4455X-FL | 50,00 | 1.969 | 55,00 | 2.165 | 65,00 | 2.559 | 210,00 | 8.268 | PT00163 |



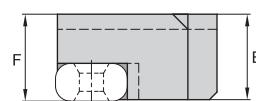
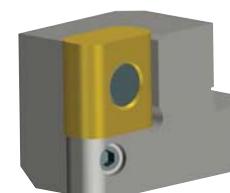
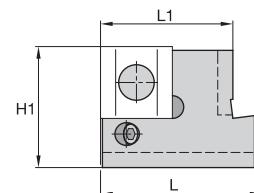
■ Cartridge WLFN

| order number | catalogue number | H1 | B | F | L1 | L | insert 1 |
|--------------|------------------|-------|-------|-------|-------|-------|---------------|
| 2435188 | WLFNL32CA19S | 32,00 | 18,60 | 19,00 | 35,00 | 42,70 | LNUX191940... |
| 2435187 | WLFNR32CA19S | 32,00 | 18,60 | 19,00 | 35,00 | 42,70 | LNUX191940... |

■ Spare Parts



| catalogue number | clamp stud | clamp screw | hex wrench |
|------------------|------------|-------------|------------|
| WLFNL32CA19S | 114.305 | 121.616 | 170.003 |
| WLFNR32CA19S | 114.305 | 121.616 | 170.003 |



■ Cartridge WLLN

| order number | catalogue number | H1 | B | F | L1 | L | insert 1 |
|--------------|------------------|-------|-------|-------|-------|-------|---------------|
| 2435184 | WLLNL32CA19S | 32,00 | 22,60 | 23,00 | 35,00 | 42,70 | LNUX191940... |
| 2435186 | WLLNL32CA30S | 32,00 | 22,60 | 23,00 | 35,00 | 42,70 | LNUX301940... |
| 2435183 | WLLNR32CA19S | 32,00 | 22,60 | 23,00 | 35,00 | 42,70 | LNUX191940... |
| 2435185 | WLLNR32CA30S | 32,00 | 22,60 | 23,00 | 35,00 | 42,70 | LNUX301940... |

■ Spare Parts



| catalogue number | clamp stud | clamp screw | hex wrench |
|------------------|------------|-------------|------------|
| WLLNL32CA19S | 114.305 | 121.616 | 170.003 |
| WLLNL32CA30S | 114.305 | 121.616 | 170.003 |
| WLLNR32CA19S | 114.305 | 121.616 | 170.003 |
| WLLNR32CA30S | 114.305 | 121.616 | 170.003 |

➤ Wheel and Wheelset Truing with Beyond™ RU and UP Geometries

Kennametal tooling incorporates the latest technology for maximum metal removal and higher productivity. Standard off-the-shelf inserts and fewer pieces of hardware reduce inventory and operating costs. These tools are for reconditioning mounted wheel sets, wheel boring, wheel truing, axle turning, and journal burnishing.



Features and Benefits

Advantages of Kennametal Wheel Lathe Tools

- Heavy-duty steel locking unit.
- No top clamp to wear out or interfere with chip flow.
- Hardened-steel locking unit prevents insert movement.
- Quick removal of the steel locking unit.
- Fast trouble-free insert indexing.
- Withstand severe roughing cuts on work-hardened wheels.

Achieve superior results while lowering production time and maintenance costs in these tough conditions:

- Skid flat areas.
- Accidental torch burns.
- Overheating of spinning wheels.
- Excessive mushroom and rollovers that are hardened by unusual hump retarder pressure.
- Mismatched wheels that cause excessive wear on the flange side.

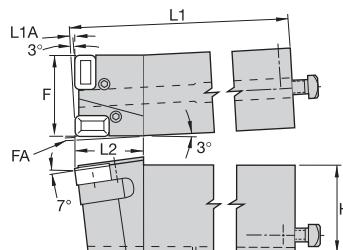
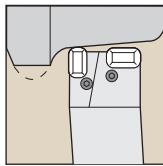


RU—Roughing Universal



UP—Universal Positive

- Fully automatic, heavy-duty wheel lathe with integrated measuring device to determine wheel set profile wear.
- Portal-type machine bed enables roll-through operation.
- Suitable for machining wheel sets for locomotives, transit, passenger, and freight cars.

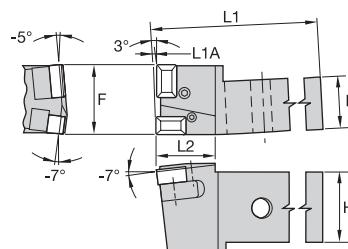
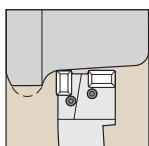


■ Tread Profile Truing

| order number | catalogue number | H | F | L1 | L2 | FA | L1A | insert 1 |
|--------------|------------------|-------|-------|--------|-------|------|------|----------|
| 1015754 | HUWTCL | 80,00 | 76,20 | 275,00 | 63,50 | 3,00 | 3,00 | KRR6586_ |
| 1015723 | HUWTCR | 80,00 | 76,20 | 275,00 | 63,50 | 3,00 | 3,00 | KRR6586_ |

NOTE: Requires two inserts.

- Maximum productivity at minimum operating costs.
- Fast insert indexing while tool is mounted in the tool block.
- Individual steel locking units make it easy to index and lock each insert.
- Gage location on tool, over insert, is held to +/- 0,08mm.
- No top clamp to wear out or interfere with chip flow.
- Replaceable steel locking unit protects toolholder from damage.
- Improved inserts with chip control.

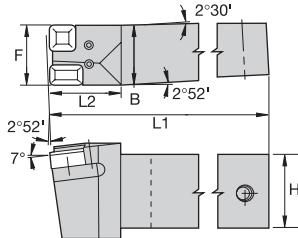
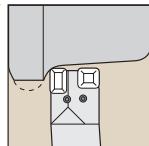


■ Wheel Tread Contouring

| order number | catalogue number | H | B | F | L1 | L2 | L1A | insert 1 |
|--------------|------------------|-------|-------|-------|--------|-------|------|----------|
| 1015688 | FUWTCL | 76,20 | 57,15 | 76,20 | 254,00 | 66,55 | 3,05 | KRR6586_ |
| 1015687 | FUWTCR | 76,20 | 57,15 | 76,20 | 254,00 | 66,55 | 3,05 | KRR6586_ |

NOTE: Requires two inserts.

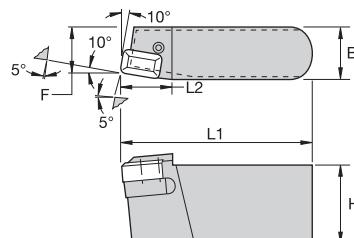
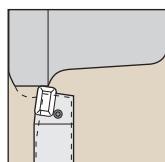
- Maximum productivity at minimum operating costs.
- Fast insert indexing tool mounted in tool block.
- Individual steel locking units make it easy to index and lock each insert.
- Minimum parts for lower inventory.
- No top clamp to wear out or interfere with chip flow.
- Replaceable steel locking unit protects toolholder from damage.
- Indexable inserts with pre-formed chipbreakers deliver chip control at optimum feeds and speeds.



■ Wheel Tread Contouring

| order number | catalogue number | H | B | F | L1 | L2 | insert 1 |
|--------------|------------------|-------|-------|-------|--------|-------|----------|
| 1015659 | SUWTCL | 76,20 | 57,15 | 57,15 | 254,00 | 66,55 | KRR6586_ |
| 1015658 | SUWTCR | 76,20 | 57,15 | 57,15 | 254,00 | 66,55 | KRR6586_ |

NOTE: Requires two inserts.



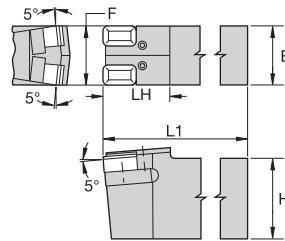
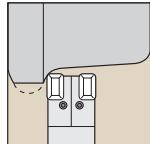
■ Wheel Flange Topping

| order number | catalogue number | H | B | F | L1 | L2 | insert 1 |
|--------------|------------------|-------|-------|-------|--------|-------|----------|
| 1015690 | NUFRL | 63,50 | 41,28 | 36,53 | 152,40 | 39,62 | KRR6586_ |
| 1015689 | NUFRR | 63,50 | 41,28 | 36,53 | 152,40 | 39,62 | KRR6586_ |

- Maximum productivity at minimum operating costs.
- Fast insert indexing tool mounted in tool block.
- Individual steel locking units make it easy to index and lock each insert.
- Gage location on tool, over insert, is held to +/- 0,08mm.
- No top clamp to wear out or interfere with chip flow.
- Replaceable steel locking unit protects toolholder from damage.
- Indexable inserts with pre-formed chipbreakers deliver chip control at optimum feeds and speeds.



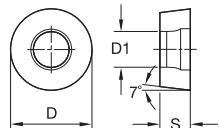
Simmons-Niles Wheel Turning Lathe



■ Wheel Tread Contouring

| order number | catalogue number | H | B | F | L1 | LH | insert 1 | steel locking unit | lock screw |
|--------------|------------------|-------|-------|-------|--------|-------|----------|--------------------|------------|
| 1015684 | NUWTC | 76,20 | 57,15 | 57,15 | 412,75 | 95,25 | KRR6586_ | SU3 | S1006PKG |

NOTE: Requires two inserts.

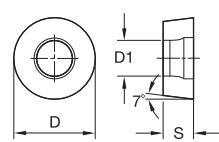


● first choice
○ alternate choice

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

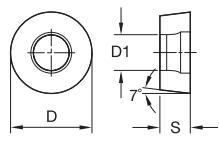
■ RCMH-UPG

| ISO catalogue number | D | D1 | S | KCK15B | KCK20 | KCP10 | KCP10B | KCP25 | KCP25B | KCPK05 | KCU10 |
|----------------------|----|-------|------|--------|-------|-------|--------|-------|--------|--------|-------|
| RCMH2507M0TUPG | 25 | 7,55 | 7,94 | - | - | - | ● | - | ● | - | - |
| RCMH3209M0TUPG | 32 | 10,35 | 9,52 | - | - | - | ● | - | ● | - | - |



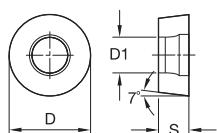
■ RCMH-RU

| ISO catalogue number | D | D1 | S | KCK15B | KCK20 | KCP10 | KCP10B | KCP25 | KCP25B | KCPK05 | KCU10 |
|----------------------|----|-------|------|--------|-------|-------|--------|-------|--------|--------|-------|
| RCMH2507M0RU | 25 | 7,55 | 7,94 | - | - | - | ● | - | ● | - | - |
| RCMH3209M0RU | 32 | 10,35 | 9,53 | - | - | - | ● | - | ● | - | - |



■ RCMT-UPG

| ISO catalogue number | D | D1 | S | KCK15B | KCK20 | KCP10 | KCP10B | KCP25 | KCP25B | KCPK05 | KCU10 |
|----------------------|----|------|------|--------|-------|-------|--------|-------|--------|--------|-------|
| RCMT1606M0UPG | 16 | 5,50 | 6,35 | ● | - | - | ● | - | ● | ● | - |
| RCMT2006M0UPG | 20 | 6,50 | 6,35 | ● | - | - | ● | - | ● | ● | - |

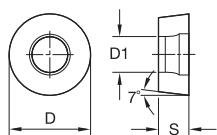


● first choice
○ alternate choice

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

■ RCMX-UPG

| ISO catalogue number | D | D1 | S | KCK15B | KCK20 | KCP10 | KCP10B | KCP25 | KCP25B | KCPK05 | KCU10 |
|----------------------|----|------|------|--------|-------|-------|--------|-------|--------|--------|-------|
| RCMX2507M0TUPG | 25 | 7,19 | 7,94 | - | - | - | ● | - | ● | - | - |
| RCMX3209M0TUPG | 32 | 9,78 | 9,52 | - | - | - | ● | - | ● | - | - |



■ RCMX-RU

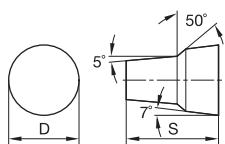
| ISO catalogue number | D | D1 | S | KCK15B | KCK20 | KCP10 | KCP10B | KCP25 | KCP25B | KCPK05 | KCU10 |
|----------------------|----|------|------|--------|-------|-------|--------|-------|--------|--------|-------|
| RCMX2507M0RU | 25 | 7,19 | 7,94 | - | ● | - | ● | - | - | - | - |
| RCMX3209M0RU | 32 | 9,78 | 9,53 | - | ● | ● | - | - | - | - | - |

➤ K-Lock™ Inserts



Features and Benefits

- K-Lock inserts are ideal for deep grooving and profiling.
- A unique insert clamping system enables unimpeded chip flow.
- Available in moulded and ground peripheries.

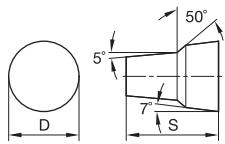

• first choice
○ alternate choice

| | | | | | | | | |
|---|---|-----------|--|--|--|--|--|--|
| P | | ○ ○ ○ ○ ○ | | | | | | |
| M | ■ | ● ● ● ● | | | | | | |
| K | ■ | ○ | | | | | | |
| N | ■ | ● ○ | | | | | | |
| S | ■ | ● ● ● ● | | | | | | |
| H | | | | | | | | |

■ RCGK-FS

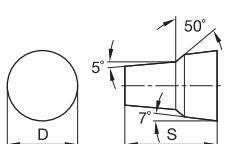
| ISO catalogue number | D | S | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|--------|
| RCGK040300FS | 4,76 | 6,38 | - | ● | - | - | - | - |
| RCGK060400FS | 6,35 | 9,09 | - | ● - | ● - | - | - | - |
| RCGK090700FS | 9,53 | 13,23 | - | ● - | ● - | ● ● | - | - |
| RCGK120800FS | 12,70 | 16,61 | - | ● - | - | - | - | - |

Application Specific



■ RCGK-HP

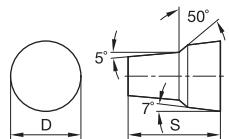
| ISO catalogue number | D | S | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|--------|
| RCGK040300HP | 4,76 | 6,38 | - | ● | - | - | - | - |
| RCGK060400HP | 6,35 | 9,09 | - | ● | - | ● | - | ● |
| RCGK090700HP | 9,53 | 13,23 | - | ● - | - | - | - | ● |
| RCGK120800HP | 12,70 | 16,61 | - | ● - | - | - | - | ● |



■ RCMK

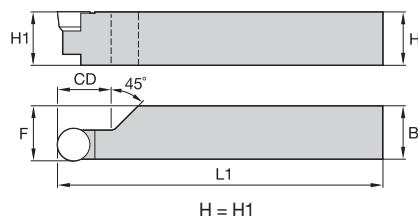
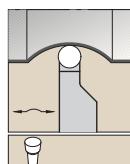
| ISO catalogue number | D | S | K68 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 |
|----------------------|-------|-------|-----|-------|-------|--------|--------|--------|
| RCMK040300 | 4,76 | 6,38 | - | ● | - | ● | - | - |
| RCMK060400 | 6,35 | 9,09 | - | ● | - | ● | - | - |
| RCMK090700 | 9,53 | 13,23 | - | - | - | ● | - | - |
| RCMK120800 | 12,70 | 16,61 | - | - | - | ● | - | - |

- Medium geometry with positive rake face for chip control in difficult materials.



- first choice
- alternate choice

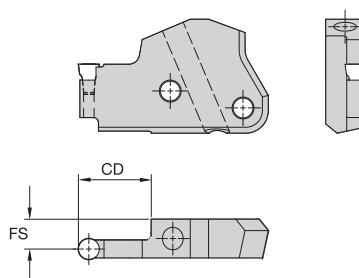
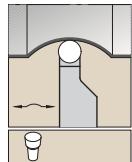
RCMK-MP



■ TRAO

| catalogue number | H1 | B | F | L1 | CD | gage insert |
|-------------------|----|----|------|-----|----|-------------|
| right hand | | | | | | |
| TRAOR2525M04 | 25 | 25 | 25,4 | 150 | 20 | RC..040300 |
| TRAOR2525M06 | 25 | 25 | 25,5 | 150 | 20 | RC..060400 |
| TRAOR3225P06 | 32 | 25 | 25,5 | 170 | 20 | RC..060400 |
| left hand | | | | | | |
| TRAOL2525M06 | 25 | 25 | 25,5 | 150 | 20 | RC..060400 |

Modular Blades



■ TRM

| catalogue number | CD | FS | cartridge size | gage insert |
|-------------------|----|------|----------------|-------------|
| right hand | | | | |
| TRM50R0432M | 32 | 9,62 | 50 | RCMK152 |
| TRM50R0620M | 19 | 8,98 | 50 | RCMK23 |
| TRM50R0632M | 32 | 8,98 | 50 | RCMK-23 |
| TRM50R0640M | 38 | 8,98 | 50 | RCGK23 |
| TRM50R0720M | 19 | 8,42 | 50 | RCMK-2.55 |
| TRM50R0920M | 19 | 7,64 | 50 | RC_K35 |
| TRM50R0932M | 32 | 7,65 | 50 | RCMK-35 |
| TRM50R0940M | 38 | 7,64 | 50 | RC_K35 |
| TRM50R0950M | 50 | 7,65 | 50 | RCMK-35 |
| left hand | | | | |
| TRM50L0432M | 32 | 9,62 | 50 | RCMK152 |
| TRM50L0620M | 19 | 8,98 | 50 | RCMK23 |
| TRM50L0632M | 32 | 8,98 | 50 | RCMK-23 |
| TRM50L0640M | 38 | 8,98 | 50 | RCGK23 |
| TRM50L0920M | 19 | 7,64 | 50 | RC_K35 |
| TRM50L0932M | 32 | 7,65 | 50 | RCMK-35 |
| TRM50L0950M | 50 | 7,65 | 50 | RCMK-35 |

| Order No. | Catalogue No. | Page(s) | Order No. | Catalogue No. | Page(s) | Order No. | Catalogue No. | Page(s) | Order No. | Catalogue No. | Page(s) |
|-----------------------------|---|---|--|-------------------------|--|------------------------------|--|---------|-----------|---------------|---------|
| 1015658.....SUWTCR..... | E58 | 1020657.....CKM41..... | B72, B92 | 1021375.....MS1158..... | B180, B182-183, B209-211, B213, B233-234 | 1067614.....CM75..... | C166, C168-171, D28-31, D33, D36-37, D39, D41-42 | | | | |
| 1015659.....SUWTCI..... | E58 | 1020787.....KUAM20...B199-205, B229, B260-262 | | | | 1067630.....CM146..... | C169, D36, D39-40 | | | | |
| 1015684.....NUWTC..... | E59 | 1020789.....KUAM22...B70-72, B92, B115-119, B139-141, B375, B378 | | 1021415.....MS1282..... | U17-18 | 1067631.....CM147..... | C169, D36, D39-40 | | | | |
| 1015687.....FUWTCR..... | E57 | 1020791.....KUAM23...B73, B183, B229, B235-237, B260-263, C171, D41-42 | | 1021417.....MS1284..... | U17 | 1082671.....SCFPR08CA06..... | B199 | | | | |
| 1015688.....FUWTCI..... | E57 | | | | | 1086536.....SCSPR08CA06..... | B204 | | | | |
| 1015689.....NUFR..... | E58 | 1020805.....KUAM26..... | B72, C171, D41-42 | 1021421.....STCM9..... | B70-72, B92-93, B109, B115-117, B119, B139-141, B172-174, B355, B371 | 1093271.....75HC060M..... | G85 | | | | |
| 1015690.....NUFRL..... | E58 | 1020807.....KUAM27..... | B72, B115, B119, T81 | | | 1093272.....75HC080M..... | G85 | | | | |
| 1015723.....HUWTCR..... | E57 | 1020809.....KUAM28..... | B70, B73, B115-121, B142, B199, B202, B220-221, B240-242, B260-263, B376-378 | 1021423.....STCM11..... | B67, B90, B134, B164, U27-35, U40-49 | 1093273.....75HC100M..... | G85 | | | | |
| 1015754.....HUWTCI..... | E57 | 1020811.....KUAM30..... | B70, B115-119, B199, B202, B220-221, B240-242, B260-263, B376-378 | 1021451.....STCM4..... | B108-110, B114, B133-134, B151-152, B170, B172-173, B353-355 | 1093524.....75HC120M..... | G85 | | | | |
| 1016536.....SM812 K9..... | E38-40, E42-43 | 1020813.....KUAM31..... | B70-73, B92, B115-121, B139-142, B183, B229, B235-237, B260-263, B375, B378, C171, D41-42 | 1021453.....STCM5..... | B62, B67, B86, B90, B151, B162, B164, B172, B354 | 1093525.....75HC140M..... | G85 | | | | |
| 1016544.....SM837 K9..... | B172, B354, B378 | | | 1021455.....STCM8..... | B72, B115, B119, B170, B173-174, B353-355, | 1093526.....75HC160M..... | G85 | | | | |
| 1016546.....SM840 K9..... | B170, B353-354 | 1020835.....KUAM32..... | B70-73, B92-93, B115-117, B119, B139-141, B183, B235, B378 | 1021463.....STCM20.... | B61-63, B67-68, B72, B86, B90-91, B95, B108-110, B114, B133-134, B137, B151-153, B164 | 1094300.....MS1595..... | C36-37, C39-40, C43-44, C46-47, C112-115, C118-119 | | | | |
| 1016548.....SM841 K9..... | B172-174, B354-355, B371 | 1020839.....KUAM34..... | B199-205, B229, B260-262 | 1021497.....STCM26..... | | 1095216.....H16LSER3..... | D82 | | | | |
| 1016552.....SM871 K9..... | E37, E41 | 1020841.....KUAM35..... | B199, B202, B204-205 | 1021505.....STCM37..... | B139-141 | 1095218.....H20LSER3..... | D82 | | | | |
| 1016574.....SM872 K9..... | E37 | 1020843.....KUAM25..... | B70-72, B92-93, B115-117, B119, B139-141, B183, B235, B378 | 1021507.....STCM38..... | B70-72, B92, B115-119, B139-141, B375-378 | 1095220.....H24LSER3..... | D82 | | | | |
| 1016576.....SM885 K9..... | E36, E40 | 1020917.....SRS3..... | B179-181, B209-211, B227-228, B233-234, B247-248, B257, B266-268, B271, S41, T102 | 1020919.....SRS4..... | B180, B182, B209-211, B213, B233-234 | 1095222.....H24LSER4..... | D82 | | | | |
| 1016578.....SM886 K9..... | E36, E40-41 | 1020923.....SSY3T..... | D78-79, B81-86 | 1020943.....SSA3T..... | D78-79, B81-86 | 1095224.....H32LSER4..... | D82 | | | | |
| 1016582.....SM449 K9..... | T102 | 1020935.....SSY4T..... | D78-79, B81-86 | 1020943.....SSN2T..... | D81, D86 | 1095226.....H32LSER4..... | D82 | | | | |
| 1016602.....SKTP343 K9..... | B247-248, B257 | 1020939.....MS1374..... | T79-81 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095228.....H32LSER4..... | D82 | | | | |
| 1016624.....SKCP343 K9..... | B179-181 | 1020941.....SSN2T..... | D81, D86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095230.....H32LSER4..... | D82 | | | | |
| 1016626.....SKDP343 K9..... | B209-211 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095232.....H32LSER4..... | D82 | | | | |
| 1016628.....SKCP453 K9..... | B180, B182 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095234.....H32LSER4..... | D82 | | | | |
| 1016644.....IWSN433 K9..... | B161-164 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095236.....H32LSER4..... | D82 | | | | |
| 1016648.....ITSN323 K9..... | B132, B137 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095238.....H32LSER4..... | D82 | | | | |
| 1016674.....ISSN433 K9..... | B105, B107-108, B110 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095240.....H32LSER4..... | D82 | | | | |
| 1016678.....ISSN433 K9..... | B58-60, B66 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095242.....H32LSER4..... | D82 | | | | |
| 1016680.....IDSN433 K9..... | B85, B89-90 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095244.....H32LSER4..... | D82 | | | | |
| 1016694.....IDSN533 K9..... | B91 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095246.....H32LSER4..... | D82 | | | | |
| 1017174.....SMYE3 K9..... | D78-79, D81, D83-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095248.....H32LSER4..... | D82 | | | | |
| 1017176.....SMYE3 K9..... | D78-79, D81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095250.....H32LSER4..... | D82 | | | | |
| 1017178.....SMYE4 K9..... | D78-79, D81, D83-84, D86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095252.....H32LSER4..... | D82 | | | | |
| 1017180.....SMYE4 K9..... | D78-79, D81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095254.....H32LSER4..... | D82 | | | | |
| 1017220.....ITSN322 K9..... | B133-134, B137, B139-141 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095256.....H32LSER4..... | D82 | | | | |
| 1017222.....ISSN322 K9..... | B109 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095258.....H32LSER4..... | D82 | | | | |
| 1017226.....IVSN322 K9..... | B149-153 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095260.....H32LSER4..... | D82 | | | | |
| 1017228.....SKVN343 K9..... | B266-268 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095262.....H32LSER4..... | D82 | | | | |
| 1017230.....IDSN432 K9..... | B86, B90-93 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095264.....H32LSER4..... | D82 | | | | |
| 1017246.....IRSNN43 K9..... | B95 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095266.....H32LSER4..... | D82 | | | | |
| 1017252.....ICSN432 K9..... | B61-63, B67-68, B70-72 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095268.....H32LSER4..... | D82 | | | | |
| 1017276.....ITSN433 K9..... | B133-134, B139-141 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095270.....H32LSER4..... | D82 | | | | |
| 1017278.....ISSN432 K9..... | B109-110, B114-117, B119 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095272.....H32LSER4..... | D82 | | | | |
| 1017282.....IVSN432 K9..... | B151-152 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095274.....H32LSER4..... | D82 | | | | |
| 1017296.....ISSN533 K9..... | B108-109 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095276.....H32LSER4..... | D82 | | | | |
| 1017298.....ICSN533 K9..... | B61-63, B66-67, B72 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095278.....H32LSER4..... | D82 | | | | |
| 1017300.....ISSN633 K9..... | B108-110, B114-115, B119 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095280.....H32LSER4..... | D82 | | | | |
| 1017334.....ICSN633 K9..... | B61-63, B67-68, B72 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095282.....H32LSER4..... | D82 | | | | |
| 1018407.....CM105..... | E40-41 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095284.....H32LSER4..... | D82 | | | | |
| 1018409.....CM106..... | E40-41 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095286.....H32LSER4..... | D82 | | | | |
| 1018413.....CM109..... | C170, D37 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095288.....H32LSER4..... | D82 | | | | |
| 1018525.....CM66..... | E37, E41 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095290.....H32LSER4..... | D82 | | | | |
| 1018527.....CM68..... | E36, E40 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095292.....H32LSER4..... | D82 | | | | |
| 1018531.....CM77..... | D31-33, D39 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095294.....H32LSER4..... | D82 | | | | |
| 1018533.....CM73..... | D31-33, D39 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095296.....H32LSER4..... | D82 | | | | |
| 1018569.....CM80..... | D32 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095298.....H32LSER4..... | D82 | | | | |
| 1018571.....CM81..... | D32 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095300.....H32LSER4..... | D82 | | | | |
| 1018647.....MW25..... | U27-35, V146-147 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095302.....H32LSER4..... | D82 | | | | |
| 1018649.....MW3..... | U40-49 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095304.....H32LSER4..... | D82 | | | | |
| 1019821.....MS1241..... | T109 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095306.....H32LSER4..... | D82 | | | | |
| 1020545.....MS1861..... | H76 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095308.....H32LSER4..... | D82 | | | | |
| 1020575.....CKM6..... | B62, B67, B151, B162, B164 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095310.....H32LSER4..... | D82 | | | | |
| 1020577.....CKM7..... | B86, B90, B162, B172, B354 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095312.....H32LSER4..... | D82 | | | | |
| 1020577.....CKM7..... | B86, B90, B162, B172, B354 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095314.....H32LSER4..... | D82 | | | | |
| 1020581.....CKM9..... | B133-134, B170, B173, B353-355 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095316.....H32LSER4..... | D82 | | | | |
| 1020583.....CKM10..... | B170, B173-174, B353-355, B371 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095318.....H32LSER4..... | D82 | | | | |
| 1020583.....CKM10..... | B170, B173-174, B353-355, B371 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095320.....H32LSER4..... | D82 | | | | |
| 1020595.....CKM12..... | B61-63, B67-68, B95, B91, B108-110, B114, B119 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095322.....H32LSER4..... | D82 | | | | |
| 1020597.....CKM13..... | B172, B354 | 1020943.....SSA4T..... | D78-79, B81-86 | 1020943.....SSA4T..... | D78-79, B81-86 | 1095324.....H32LSER4..... | D82 | | | | |
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| 1279882....KSEM235R7WN25M | H61 | 1310880.....DGT11T302HP KC5010.....B206 | 1504931.....CCLN12525M12-MF7.....B358 | 15431381.....TFT280R2WD32M.....J44 | | | | | | | |
| 1279889....KSEM245R7WN32M | H61 | 1310881.....DGT11T304HP KC5010.....B206 | 1504935.....CCLN12525M12-MF7.....B358 | 15431382.....TFT300R2WD32M.....J44 | | | | | | | |
| 1279892....KSEM255R7WN32M | H61 | 1310883.....VNGP160404K KC5010.....B144 | 1504937.....CCLN1225P12-MN4.....B358 | 15431383.....TFT310R2WD32M.....J44 | | | | | | | |
| 1279893....KSEM260R7WN32M | H62 | 1310885.....DGMT102040LF KC5010.....B207 | 1504968.....CDJN12525M15M7.....B360 | 15431384.....TFT320R2WD32M.....J44 | | | | | | | |
| 1279894....KSEM265R7WN32M | H62 | 1310887.....DGMT11T302LF KC5010.....B207 | 1504969.....CDJN12525M15M7.....B360 | 15431385.....TFT330R2WD32M.....J44 | | | | | | | |
| 1279895....KSEM270R7WN32M | H62 | 1310888.....VNGP160408K KC5010.....B144 | 1504976.....SPHX1205ZCERGP4SKY3500.....S77 | 15431386.....TFT340R2WD32M.....J44 | | | | | | | |
| 1279896....KSEM275R7WN32M | H62 | 1310890.....DMCT11T304LF KC5010.....B207 | 1505370.....SPHX1205PCTRGPKB KY3500.....S77 | 15431387.....TFT350R2WD32M.....J44 | | | | | | | |
| 1279898....KSEM280R7WN32M | H62 | 1310939....TPGT1102040K KC5010.....B254 | 1505394.....SPHX1205PCTRGPK4SKB KY3500.....S77 | 15431388.....TFT360R2WD32M.....J44 | </td | | | | | | |

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| 1541855 | DFT330R2WD40M | J44 | 1551849 | KSEM300R10WN32M | H62 | 1600249 | KGMSR2525M50 | C129 | 1611445 | KSEM295R10WN32M | H62 |
| 1541856 | DFT340R2WD40M | J44 | 1551850 | KSEM310R10WN32M | H62 | 1600250 | KGMSL2525M50 | C129 | 1611446 | KSEM301R10WN32M | H62 |
| 1541857 | DFT350R2WD40M | J44 | 1551861 | KSEM320R10WN32M | H62 | 1600270 | KGMER2525M50 | C130 | 1611931 | LSASR323P22 | D78 |
| 1541858 | DFT360R2WD40M | J44 | 1553521 | SPIK1205ZCTLGPX KY3500 | S73 | 1600271 | KGML2525M50 | C130 | 1611933 | LSSR323P16Q | D79 |
| 1541859 | DFT370R2WD40M | J44 | 1556483 | LNEQ1245R04 KC520M | U20 | 1601557 | CNMG120404FF KC5010 | B48 | 1611934 | LSSL323P16Q | D79 |
| 1541860 | DFT480R2WD40M | J44 | 1556531 | LNEU1245R04 KC520M | U19 | 1601631 | CNMG120404FF KT315 | B48 | 1611935 | LSSR323P22Q | D79 |
| 1541871 | DFT380R2WD40M | J44 | 1556533 | LNEU1245R08 KC520M | U19 | 1601632 | CNMG120408FF KC5010 | B48 | 1611938 | LSSRDH2525M16 | D79 |
| 1541872 | DFT390R2WD40M | J44 | 1556535 | LNEU1245R16 KC520M | U19 | 1601636 | CNMG120408FF KT315 | B48 | 1611939 | LSSLDH2525M16 | D79 |
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| 1541874 | DFT410R2WD40M | J44 | 1556542 | LNEU1250R08 KC520M | U19 | 1601651 | DNMG160608FF KT315 | B76 | 1612565 | DNMG150404FF KT315 | B76 |
| 1541875 | DFT420R2WD40M | J44 | 1560389 | CCGT060204HP KC5410 | B175 | 1601652 | WNMG080408FF KC5010 | B155 | 1612581 | A1320LSE16 | D81 |
| 1541876 | DFT430R2WD40M | J44 | 1560390 | CCGT097302HP KC5410 | B175 | 1601656 | TNMG160408FF KC5010 | B124 | 1612584 | A2020LSE22 | D81 |
| 1541877 | DFT440R2WD40M | J44 | 1560600 | CCGT060202HP KC5410 | B175 | 1601886 | TNMG160408FF KT315 | B124 | 1612585 | A2020LSE22 | D81 |
| 1541878 | DFT450R2WD40M | J44 | 1560651 | CCGT097304HP KC5410 | B175 | 1601888 | VNMG160404FF KC5010 | B145 | 1612586 | A2532LSE16 | D81 |
| 1541879 | DFT460R2WD40M | J44 | 1560653 | CCGT120404HP KC5410 | B175 | 1601890 | VNMG160408FF KC5010 | B145 | 1612587 | A3232LSE22 | D81 |
| 1541880 | DFT470R2WD40M | J44 | 1560655 | CCGT120408HP KC5410 | B175 | 1601953 | VNMG160408FF KT315 | B145 | 1612588 | A3232LSE22 | D81 |
| 1541901 | DFT490R2WD40M | J44 | 1560692 | CPGT060204LP KC5410 | B189 | 1602247 | VNMG160404FF KT315 | B145 | 1612950 | DNMG150404FN KT315 | B77 |
| 1541902 | DFT500R2WD40M | J44 | 1560693 | CPGT097302HP KC5410 | B188 | 1602250 | VNMG060408FF KC5010 | B155 | 1617589 | DNMG150412FN KT315 | B77 |
| 1541903 | DFT510R2WD40M | J44 | 1560694 | CPGT097304HP KC5410 | B188 | 1602304 | VNMG060408FF KT315 | B155 | 1620372 | KCGR110304R08 KT315 | E29 |
| 1541904 | DFT520R2WD40M | J44 | 1560698 | CPGT097304LF KC5410 | B189 | 1602579 | TNMG160404FF KT315 | B124 | 1620373 | TPMT110204LF KT315 | B255 |
| 1541905 | DFT530R2WD40M | J44 | 1560699 | DCGT11T302HP KC5410 | B206 | 1602604 | TNMG160404FF KC5010 | B124 | 1620374 | CPMT060208LF KT315 | B190 |
| 1541906 | DFT540R2WD40M | J44 | 1560714 | DCGT11T304HP KC5410 | B206 | 1604705 | DNMG150408FF KT315 | B76 | 1621083 | KGMSR323P50 | C129 |
| 1541931 | DFT450R2WD50M | J44 | 1560715 | DCGT11T308HP KC5410 | B206 | 1604706 | DNMG150408FF KC5010 | B76 | 1621084 | KGMSL323P50 | C129 |
| 1541932 | DFT460R2WD50M | J44 | 1560717 | DNGP150402 KC5410 | B74 | 1605207 | CNMG120404FN KT315 | B49 | 1621085 | KGMER323P50 | C130 |
| 1541933 | DFT470R2WD50M | J44 | 1560721 | DPGT070204HP KC5410 | B214 | 1605242 | CNMG120408FF KT315 | B49 | 1621086 | KGMEL323P50 | C130 |
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| 1541951 | DFT510R2WD50M | J44 | 1560753 | RCGK120800HP KC5410 | E63 | 1606050 | 50HC040M | G85 | 1623194 | CCGT097304HP KC5410 | B175 |
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| 1541953 | DFT530R2WD50M | J44 | 1560757 | TPGT16T304HP KC5410 | B254 | 1606062 | 50HC080M | G85 | 1623271 | DCGT070204HP KC5410 | B206 |
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| 1542043 | DFT540R2WD50M | J44 | 1560781 | VGR160404 KC5410 | E34 | 1606360 | SNMG120408FN KT315 | B97 | 1623273 | TCGT110204HP KC5410 | B243 |
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| 1542074 | DFT570R2WD50M | J44 | 1560790 | CNMP120404 KC5410 | B56 | 1608363 | DFR125R2WD20M | J10 | 1623278 | VBGT160404HP KC5410 | B264 |
| 1542076 | DFT580R2WD50M | J44 | 1560795 | CNMP120408 KC5410 | B56 | 1608364 | DFR127R2WD20M | J10 | 1623279 | VBGT160408HP KC5410 | B264 |
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| 1542107 | DFT700R2WD50M | J45 | 1582600 | KR50V5U65110MCLB | K84 | 1608394 | DFR130R3WD20M | J11 | 1624878 | EBURF1975PKG | K141 |
| 1542781 | DFT710R2WD50M | J45 | 1582734 | .376180R110 | J72-73 | 1608395 | DFR135R3WD20M | J11 | 1679773 | .LT11NR460CB KC5025 | D67 |
| 1542782 | DFT720R2WD50M | J45 | 1582739 | .376195R110 | J72-73 | 1608396 | DFR140R3WD20M | J11 | 1679775 | .LT11NR075ISOCB KC5025 | D71 |
| 1543235 | DFT730R2WD50M | J45 | 1582742 | .376213R125 | J72-73 | 1608397 | DFR145R3WD20M | J11 | 1679776 | .LT11NR10ISOCB KC5025 | D71 |
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| 1543238 | DFT760R2WD50M | J45 | 1592413 | KSEM160R1WN20M | H58 | 1608400 | DFR160R3WD20M | J11 | 1679779 | .LT16ERA600CB KC5010 | D53 |
| 1543239 | DFT770R2WD50M | J45 | 1592414 | KSEM181R1WN25M | H58 | 1608497 | DNMG110404FF KC5010 | B76 | 1679780 | .LT16ERA600CB KC5025 | D53 |
| 1543240 | DFT780R2WD50M | J45 | 1592416 | KSEM200R1WN25M | H58 | 1608500 | DNMG110404FF KT315 | B76 | 1690871 | .LT16ER05ISOCB KC5010 | D58 |
| 1543311 | DFT790R2WD50M | J45 | 1592417 | KSEM221R1WN25M | H58 | 1608944 | DNMG110408FF KT315 | B76 | 1690872 | .LT16ER05ISOCB KC5025 | D58 |
| 1543312 | DFT800R2WD50M | J45 | 1592418 | KSEM241R1WN32M | H58 | 1608949 | TNMG160404FN KT315 | B124 | 1690873 | .LT16ER075ISOCB KC5010 | D58 |
| 1543313 | DFT810R2WD50M | J45 | 1592419 | KSEM261R1WN32M | H58 | 1610085 | TNMG160412FN KT315 | B124 | 1690874 | .LT16ER075ISOCB KC5025 | D58 |
| 1543314 | DFT820R2WD50M | J45 | 1592420 | KSEM281R1WN32M | H58 | 1610089 | DNMG1280404FN KT315 | B77 | 1690875 | .LT16ER10ISOCB KC5010 | D58 |
| 1544364 | DFT590R2WD50M | J44 | 1592461 | KSEM301R1WN32M | H58 | 1610905 | VGR160408 KT315 | E34 | 1690876 | .LT16ER10ISOCB KC5025 | D58 |
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| 1551610 | KSEM165R1WN20M | H61 | 1592467 | KSEM221R5WN32M | H60 | 1611325 | DNMG150612FN KT315 | B77 | 1692101 | .LT16ER175ISOCB KC5010 | D58 |
| 1551831 | KSEM170R1WN20M | H61 | 1592468 | KSEM261R5WN32M | H60 | 1611330 | WNMG060404FN KT315 | B155 | 1692102 | .LT16ER175ISOCB KC5025 | D58 |
| 1551833 | KSEM175R1WN20M | H61 | 1592469 | KSEM281R5WN32M | H60 | 1611335 | WNMG060408FN KT315 | B155 | 1692103 | .LT16ER20ISOCB KC5010 | D58 |
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| 1758498 | 160C10RP90BG15C2WPM.....S144 | | 1783141 | WNMG060404FW KT315 | B156 | 1795787 | NT3RK KC5025 | D24 | 1796393 | NJP3008L20 KC5010 | D17 |
| 1758499 | 200C12RP90BG15C3WPM.....S144 | | 1783142 | WNMG060408FW KT315 | B156 | 1795788 | NT3LK KC5025 | D24 | 1796395 | NJP3007R24 KC5010 | D17 |
| 1758500 | 250C16RP90BG15C4WPM.....S144 | | 1783143 | WNMG080404FW KT315 | B156 | 1795789 | NT4RK KC5025 | D24 | 1796396 | NJP3007R24 KC5025 | D17 |
| 1758572 | 80A06RP90BG15C2WPM.....S144 | | 1783144 | WNMG080408FW KT315 | B156 | 1795790 | NT4LK KC5025 | D24 | 1796397 | | |

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| 1796556.....NJ3014R12 KC5010..... | D17 | 1799439.....NA4R6 KC5025..... | D12 | 1802893.....SPHX15T6PCERGP1W KCK15..... | S84 | 1810370.....DFR205R3WD32M..... | J11 | | | | |
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| 1796558.....NJ3014L12 KC5010..... | D17 | 1799443.....NA4R5 KC5025..... | D12 | 1802983.....CCMT09T304FW KT315..... | B176 | 1810372.....DFR230R3WD32M..... | J11 | | | | |
| 1796559.....NJ3014L12 KC5025..... | D17 | 1799445.....NA4L5 KC5025..... | D12 | 1802984.....CCMT09T304FW KT315..... | B189 | 1810373.....DFR240R3WD32M..... | J11 | | | | |
| 1796561.....NJ3014R16 KC5025..... | D17 | 1799446.....NA4R4 KC5010..... | D12 | 1802986.....CCMT09T308FW KT315..... | B176 | 1816891.....LT11NR14UNJ KC5025..... | D75 | | | | |
| 1796563.....NJ3010L16 KC5025..... | D17 | 1799447.....NA4R4 KC5025..... | D12 | 1802991.....CCMT09T308FW KT315..... | B189 | 1816983.....LT11NR16UNJ KC5025..... | D75 | | | | |
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| 1796711.....470.236.....S21, S25 | | 1799471.....NA6R2 KC5025..... | D12 | 1803016.....CCMT060208FW KC5010..... | B176 | 1817512.....LT22ER4API502 KCK5010..... | D55 | | | | |
| 1797157.....KSEM125R7WN16M..... | H61 | 1799474.....NA6L2 KC5010..... | D12 | 1803018.....CCMT060208FW KC5010..... | B189 | 1817533.....LT22ER4API503 KCK5010..... | D55 | | | | |
| 1797158.....KSEM130R7WN16M..... | H61 | 1799475.....NA6L2 KC5025..... | D12 | 1803020.....CCMT09T304FW KC5010..... | B176 | 1817570.....NF3125LK KC5025..... | C159 | | | | |
| 1797159.....KSEM135R7WN16M..... | H61 | 1799495.....NA6L25 KC5025..... | D12 | 1803021.....CCMT09T304FW KC5010..... | B189 | 1817571.....NF3125RK KC5025..... | C159 | | | | |
| 1797160.....KSEM136R7WN16M..... | H61 | 1799497.....NTU4R KC5025..... | D24 | 1803022.....CCMT09T308FW KC5010..... | B176 | 1817572.....CMMG120404FP KC5010..... | B49 | | | | |
| 1797161.....KSEM140R7WN16M..... | H61 | 1799498.....NTU4R KC5025..... | D24 | 1803023.....CPMT09T308FW KC5010..... | B189 | 1817588.....NFD3125LK KC5025..... | C160 | | | | |
| 1797162.....KSEM145R7WN20M..... | H61 | 1799499.....ND3038R KC5025..... | D14 | 1803284.....NTC3MR150E KC5010..... | D21 | 1817614.....CMMG120408FP KC5010..... | B49 | | | | |
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| 1797207.....KSEM130R10WN16M.....H61 | | 1799527.....NDCA038L2 KC5025..... | D14 | 1803999.....H50LSER22..... | D82 | 1817623.....NG3M120LK KC5025..... | C148 | | | | |
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| 1797209.....KSEM136R10WN16M.....H61 | | 1799553.....NDCA050R2 KC5025..... | D14 | 1804638.....NG2062L KC5010..... | C155 | 1817627.....NG3M150LK KC5025..... | C148 | | | | |
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| 1817680 | NG3M275RK KC5025 | C147 | 1818359 | NGD4189LK KC5010 | C149 | 1818862 | NRD3062L KC5010 | C159 | 1832322 | DNMG150604MP KC5010 | B79 |
| 1817681 | NG3M300LK KC5010 | C148 | 1818360 | NGD4189LK KC5025 | C149 | 1818863 | NRD3062L KC5025 | C159 | 1832323 | DNMG150608MP KC5010 | B79 |
| 1817682 | NG3M300LK KC5025 | C148 | 1818361 | NGD4189RK KC5010 | C149 | 1818864 | NRD3062R KC5010 | C159 | 1832324 | DNMG150612MP KC5010 | B79 |
| 1817699 | NG1047L KC5025 | C155 | 1818362 | NGD4189RK KC5025 | C149 | 1818865 | NRD3062R KC5025 | C159 | 1832325 | SNMG120408MP KC5010 | B98 |
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| 1817707 | NG3M325LK KC5025 | C148 | 1818374 | NGD4250LK KC5025 | C149 | 1818892 | NG3156LK KC5025 | C148 | 1832357 | TNMG220408MP KC5010 | B125 |
| 1817708 | NG3M325RK KC5025 | C147 | 1818375 | NGD4250RK KC5010 | C149 | 1818913 | NG3156RK KC5010 | C147 | 1832358 | TNMG220412MP KC5010 | B125 |
| 1817709 | NG3M350LK KC5025 | C148 | 1818376 | NGD4250RK KC5025 | C149 | 1818914 | NG3156RK KC5025 | C147 | 1832359 | TNMG220416MP KC5010 | B125 |
| 1817710 | NG3M350RK KC5025 | C147 | 1818425 | NR2031L KC5025 | C158 | 1818916 | NG3178R KC5025 | C154 | 1832360 | VNMG160404MP KC5010 | B146 |
| 1817713 | NG2031LK KC5010 | C147 | 1818426 | NR2031R KC5025 | C158 | 1818917 | NG3185L KC5025 | C155 | 1832361 | VNMG160408MP KC5010 | B146 |
| 1817718 | NG2031LK KC5025 | C147 | 1818434 | NP2002RK KC5010 | C151 | 1818919 | NG3189LK KC5010 | C148 | 1832373 | VNMG160412MP KC5010 | B146 |
| 1817719 | NG2031RK KC5025 | C146 | 1818435 | NP2002RK KC5025 | C151 | 1818920 | NG3189LK KC5025 | C148 | 1832374 | WNMG060404MP KC5010 | B157 |
| 1817720 | NG2041L KC5025 | C155 | 1818437 | NP3002RK KC5010 | C151 | 1818921 | NG3189RK KC5010 | C147 | 1832376 | WNMG060408MP KC5010 | B157 |
| 1817721 | NG2041R KC5025 | C154 | 1818439 | NP3012RK KC5025 | C151 | 1819108 | SPHX156ZCTRGP4SK KY3500 | .S80 | 1832378 | WNMG080408MP KC5010 | B157 |
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| 1817993 | NG4189LK KC5025 | C148 | 1818462 | NR3031RK KC5025 | C150 | 1819354 | TNMG160404FP KT315 | .B124 | 1840501 | KCGX110304R15 KC5410 | E31 |
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| 1864825 |SNHX12L5PZTNGP K725M.....U15 | | 1866676 |DCCG11T303LF KC5025 | B264 | 1867373 |TPMT110204LF KC5010 | B132, B161, B163 | 1871042 |WCMTO40204LF KC5010 | B270 |
| 1864829 |SNHX11T3PZTNGE K510M.....U14 | | 1866677 |DCCG11T303LF KC5025 | B264 | 1867374 |TPMT110204LF KC5010 | B132, B161, B163 | 1871083 |SCMT120404LF KC5010 | B230 |
| 1864830 |SNHX1203PZTFNGE K510M.....U14 | | 1866678 |DCCG11T304LF KC5025 | B264 | 1867375 |TPMT110204LF KC5010 | B132, B161, B163 | 1871084 |SCMT120408LF KC5010 | B230 |
| 1864831 |SNHX12L5PZTNGE K510M.....U14 | | 1866679 |DCCG11T304LF KC5025 | B264 | 1867376 |TPMT110204LF KC5010 | B132, B161, B163</td | | | |

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| 1871170 | DCMT11T302UF KC5010 | B208 | 1881199 | KCUX110302R15 KC5010 | E32 | 1881447 | TPUN110304T00520 KY1615 | B321 | 1913482 | B966A06800 KC7315 | G133 | |
| 1871171 | DCMT11T304UF KC5010 | B208 | 1881200 | KCUX110305R15 KC5010 | E32 | 1881448 | TPUN110308T00520 KY1615 | B321 | 1913483 | B966A07000 KC7315 | G133 | |
| 1871172 | DCMT11T308UF KC5010 | B208 | 1881201 | KCUX110302L15 KC5010 | E32 | 1881449 | TPUN160304T00520 KY1615 | B321 | 1913484 | B966A07400 KC7315 | G133 | |
| 1871193 | DPMT070204UF KC5010 | B216 | 1881202 | KCUX110305L15 KC5010 | E32 | 1881450 | TPUN160308T00520 KY1615 | B321 | 1913485 | B966A07500 KC7315 | G133 | |
| 1871196 | SCMT09T308UF KC5010 | B231 | 1881203 | KNUX150405R20 KC5010 | E31 | 1881451 | TPUN160312T00520 KY1615 | B321 | 1913486 | B966A07800 KC7315 | G133 | |
| 1871197 | SPMT09T304UF KC5010 | B239 | 1881243 | CNGA120412T02020 KY1615 | B309 | 1881452 | VNGA160404T02020 KY1615 | B322 | 1913487 | B966A08000 KC7315 | G133 | |
| 1871198 | TCMT110204UF KC5010 | B245 | 1881244 | CNGA120416T02020 KY1615 | B309 | 1881453 | VNGA160408T02020 KY1615 | B322 | 1913488 | B966A08500 KC7315 | G133 | |
| 1871199 | TCMT110208UF KC5010 | B245 | 1881246 | CNGA160612T02020 KY1615 | B309 | 1881454 | VNGA160412T02020 KY1615 | B322 | 1913489 | B966A08800 KC7315 | G133 | |
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| 1871202 | TPMT110204UF KC5010 | B256 | 1881250 | CNGA190616T02020 KY1615 | B309 | 1882046 | CNMV120708T02020 KY3500 | B295 | 1913491 | B966A09300 KC7315 | G133 | |
| 1871286 | TNGG160404LF KC5010 | B122 | 1881251 | CNGN120404T02020 KY1615 | B309 | 1886327 | 80A09P00MD10CF | S68 | 1913492 | B966A09500 KC7315 | G133 | |
| 1871287 | TNGG160408LF KC5010 | B122 | 1881252 | CNGN120408T02020 KY1615 | B309 | 1886328 | 100B12RP00MD10CF | S68 | 1913493 | B966A09800 KC7315 | G133 | |
| 1871288 | VNGG160402LF KC5010 | B143 | 1881253 | CNGN120412T02020 KY1615 | B309 | 1886329 | 125B16RP00MD10CF | S68 | 1913494 | B966A10000 KC7315 | G133 | |
| 1871289 | VNGG160404LF KC5010 | B143 | 1881255 | CNGN120708T02020 KY1615 | B309 | 1886330 | 160C20RP00MD10CF | S68 | 1913495 | B966A10200 KC7315 | G133 | |
| 1871313 | VNGG160408LF KC5010 | B143 | 1881257 | CNGN120712T02020 KY1615 | B309 | 1886331 | 200C24RP00MD10CF | S68 | 1913496 | B966A10500 KC7315 | G133 | |
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| 1871318 | WNGG080401LF KC5010 | B154 | 1881266 | CNGN160716T02020 KY1615 | B309 | 1886492 | A16RCTPR11 | B174, B371 | 1913498 | B966A11000 KC7315 | G133 | |
| 1871319 | WNGG080402LF KC5010 | B154 | 1881267 | CNGN160716T05015 KY1615 | B309 | 1886494 | A40VCTPR16 | B174, B371 | 1913499 | B966A11200 KC7315 | G133 | |
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| 1872409 | ICSN543 K9 | B58-60 | 1881273 | CNGX120712T02020 KY1615 | B311 | 1886501 | A16RSCPL06 | B196 | 1913501 | B966A11700 KC7315 | G134 | |
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| 1873227 | CWLNL3225P08-MX7 | B369 | 1881279 | DNGA150408T02020 KY1615 | B313 | 1886504 | A20SSCLPR06 | B196 | 1913503 | B966A12500 KC7315 | G134 | |
| 1873496 | S40T-CWSNL8-MX7 | B374 | 1881280 | DNGA150412T02020 KY1615 | B313 | 1886505 | A10KSDUCL07 | B213 | 1913504 | B966A12700 KC7315 | G134 | |
| 1873498 | S40T-CSSNL12-MX7 | B373 | 1881281 | DNGA150416T02020 KY1615 | B313 | 1886506 | A10KSDUCR07 | B213 | 1913505 | B966A13000 KC7315 | G134 | |
| 1873499 | S40T-CSSLNL12-MX7 | B373 | 1881282 | DNGA150604T02020 KY1615 | B313 | 1886507 | A16RSDUCL11 | B213 | 1913506 | B966A13500 KC7315 | G134 | |
| 1874234 | SPHX1205PCTLGPBK KY3500 | S77 | 1881283 | DNGA150608T02020 KY1615 | B313 | 1886508 | A16RSDUCR11 | B213 | 1913507 | B966A13700 KC7315 | G134 | |
| 1874248 | MDHX1004ZDFRDG4W K110M | S69 | 1881285 | DNGA150612T02020 KY1615 | B313 | 1886510 | A16RSKCR09 | B235 | 1913508 | B966A14000 KC7315 | G134 | |
| 1874250 | MDHX1004ZDFRDG4W KC520M | S69 | 1881297 | DNGX150708T02020 KY1615 | B315 | 1887100 | 50A05RP70SP12CCP | S72 | 1913509 | B966A14500 KC7315 | G134 | |
| 1875191 | DDJNR2525M15KC06 | B85 | 1881305 | RCGW120404T01020 KY1615 | B316 | 1887101 | 63B07RP70SP12CCP | S72 | 1913510 | B966A14700 KC7315 | G134 | |
| 1875192 | DDJNL2525M15KC06 | B85 | 1881310 | RCGX090700T01020 KY1615 | B315 | 1887102 | 80B08RP70SP12C2WP | S72 | 1913511 | B966A15000 KC7315 | G134 | |
| 1875193 | DCLNR2525M12KC04 | B59 | 1881311 | RCGX120707T02020 KY1615 | B315 | 1887173 | 100B12RP70SP12C3WP | S72 | 1913512 | B966A15500 KC7315 | G134 | |
| 1875194 | DCLNL2020K12KC04 | B59 | 1881313 | RCGX090700T01020 KY1615 | B315 | 1887175 | 160C18RP70SP12C3WP | S72 | 1913513 | B966A15700 KC7315 | G134 | |
| 1875195 | DSNR2525M12KC04 | B107 | 1881314 | RCGX090700T02020 KY1615 | B315 | 1887178 | 63A07RP90SP12CCP | S76 | 1913514 | B966A16000 KC7315 | G134 | |
| 1875196 | DCLNL2525M12KC04 | B59 | 1881316 | RCGX120707T02020 KY1615 | B315 | 1887179 | 80A08RP90SP12C2WP | S76 | 1913515 | B976A04000 KC7315 | G138 | |
| 1875197 | DDJNR2020K15KC06 | B85 | 1881318 | RCGX120707T02020 KY1615 | B315 | 1887180 | 100B12RP90SP12C3WP | S76 | 1913516 | B976A04200 KC7315 | G138 | |
| 1875198 | DDJNL2020K15KC06 | B85 | 1881319 | RCGX120707T02020 KY1615 | B315 | 1887181 | 125B15RP90SP12C3WP | S76 | 1913517 | B976A04500 KC7315 | G139 | |
| 1875199 | DCLNL2020K12KC04 | B59 | 1881320 | RCGLX150007T02020 KY1615 | B315 | 1887193 | 160C18RP90SP12C3WP | S76 | 1913518 | B976A04600 KC7315 | G139 | |
| 1875200 | DCKNR2525M12KC04 | B58 | 1881321 | RCGX191000T02020 KY1615 | B315 | 1887194 | 200C24RP90SP12C4WP | S76 | 1913519 | B976A04800 KC7315 | G139 | |
| 1875201 | DCRNRL2525M12KC04 | B60 | 1881322 | RCGX125200T02020 KY1615 | B315 | 1887616 | N63094L KC5010 | C155 | 1913520 | B976A05000 KC7315 | G139 | |
| 1875202 | DSSNR2020K12KC04 | B107 | 1881325 | RNGA090300T02020 KY1615 | B316 | 1893753 | 80A06RP00MD10CF | S68 | 1913521 | B976A05500 KC7315 | G139 | |
| 1875203 | DSSNL2525M12KC04 | B107 | 1881326 | RNGA120404T02020 KY1615 | B316 | 1893754 | 100B08RP00MD10CF | S68 | 1913522 | B976A05700 KC7315 | G139 | |
| 1875204 | DCKNL2525M12KC04 | B58 | 1881327 | RNGN090300T02020 KY1615 | B316 | 1893755 | 125B10RP00MD10CF | S68 | 1913523 | B976A05800 KC7315 | G139 | |
| 1875205 | DCLNL2525M16KC06 | B59 | 1881328 | RNGN090400T02020 KY1615 | B316 | 1893756 | 160C12RP00MD10CF | S68 | 1913524 | B976A06000 KC7315 | G139 | |
| 1875206 | DCLNL2525M12KC04 | B60 | 1881329 | RNGN120300T02020 KY1615 | B316 | 1893757 | 200C14RP00MD10CF | S68 | 1913525 | B976A06500 KC7315 | G139 | |
| 1875207 | DDJNL3225P15KC06 | B85 | 1881330 | RNGN120400T02020 KY1615 | B316 | 1893758 | 250C18RP00MD10CF | S68 | 1913526 | B976A06800 KC7315 | G139 | |
| 1875208 | DDJNR3225P15KC06 | B85 | 1881332 | RNGN190700T02020 KY1615 | B316 | 1895492 | SPHX1205PCFLGN1WB KCK15 | S78 | 1913527 | B976A07000 KC7315 | G139 | |
| 1875209 | DDJNL3232P15KC06 | B85 | 1881347 | SNGA120408T02020 KY1615 | B317 | 1897239 | 410.085 | S68 | 1913528 | B976A07400 KC7315 | G140 | |
| 1875210 | DSDNN2020K12KC04 | B105 | 1881348 | SNGA120412T02020 KY1615 | B317 | 1897657 | TPGX0902ZPRGD | KC7015 | H63 | 1913529 | B976A07500 KC7315 | G140 |
| 1875211 | DSDNN2525M12KC04 | B105 | 1881351 | SNGN090308T02020 KY1615 | B317 | 1897658 | TPGX1102ZPRGD | KC7015 | H63 | 1913530 | B976A07800 KC7315 | G140 |
| 1875212 | DCLNR2525M16KC06 | B59 | 1881355 | SNGN120408T05020 KY1615 | B317 | 1897659 | TPGX1302ZPRGD | KC7015 | H63 | 1913531 | B976A08000 KC7315 | G140 |
| 1875215 | DSBNL2525M12KC04 | B105 | 1881356 | SNGN120408T02020 KY1615 | B317 | 1897660 | TPGX1603ZPRGD | KC7015 | H63 | 1913532 | B976A08500 KC7315 | G140 |
| 1875216 | DSDDN2525M15KC06 | B105 | 1881357 | SNGN120412T02020 KY1615 | B317 | 1897830 | BGHX15L50BPCFRGG | KC510M | S149 | 1913533 | B976A08800 KC7315 | G140 |
| 1875219 | DSKNR2525M12KC04 | B106 | 1881358 | SNGN120416T02020 KY1615 | B317 | 1905695 | CNMG190612RP KC5010 | B53 | 1913534 | B976A09000 KC7315 | G140 | |
| 1875220 | DSKNR2525M12KC04 | B106 | 1881361 | SNGN120704T02020 KY1615 | B317 | 1897616 | MS1294 | B168, B370 | 1913535 | B976A09300 KC7315 | G140 | |
| 1875222 | DTGNR2525M22KC04 | B132 | 1881362 | SNGN120708T02020 KY1615 | B317 | 1897617 | S48, T50, V49, V64, V72 | 1913536 | B976A09500 KC7315 | G140 | | |
| 1875223 | DLNRL3225P16KC06 | B59 | 1881365 | SNGN120712T02020 KY1615 | B317 | 1906272 | MCFNL12CA12 | B70 | 1913538 | B976A10000 KC7315 | G140 | |
| 1875225 | DCLNL3225P16KC06 | B59 | 1881366 | SNGN120720T02020 KY1615 | B317 | 1908860 | DWLNRL2525M08KC04 | B161 | 1913539 | B976A10200 KC7315 | G140 | |
| 1875226 | DCRNL2020K12KC04 | B60 | 1881367 | SNGN120720T01015 KY1615 | B317 | 1908861 | DWLNRL2525M08KC04 | B161 | 1913540 | B976A10500 KC7315 | G140 | |
| 1875227 | DDJNR3225P15KC06 | B85 | 1881368 | SNGN120720T02020 KY1615 | B317 | 1908862 | DWLNRL3232P08KC04 | B161 | 1913541 | B976A10700 KC7315 | G141 | |
| 1875228 | DSLRN2525M12KC04 | B106 | 1881371 | SNGN150716T02020 KY1615 | B317 | 1908893 | DWLNRL3232P08KC04 | B161 | 1913542 | B976A11000 KC7315 | G141 | |
| 1875230 | DCLNL3225P16KC06 | B59 | 1881396 | SNGN120712T02020 KY1615 | B318 | 1909790 | CGPT0620BLF KC5010 | B189 | 1913543 | B976A11200 KC7315 | G141 | |
| 1875231 | DCLNL3225P12KC04 | B59 | 1881402 | SPGN090308T0120 KY1615 | B318 | 1909791 | TPGT110202LF KC5010 | B254 | 1913544 | B976A11500 KC7315 | G141 | |
| 1875232 | DLNRL3225P16KC06 | B59 | 1881405 | SPGN120308T0120 KY1615 | B318 | 1910043 | VGBT110302HP KC5410 | B264 | 1913545 | B976A11700 KC7315 | G141 | |
| 1875233 | DTFLN2525M22KC04 | B132 | 1881413 | TNGA160408T02020 KY1615 | B319 | 1910044 | VGBT110304HP KC5410 | B264 | 1913546 | B976A12000 KC7315 | G141 | |
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| 1913610 | B977A16500 KC7315 | G142 | 1913717 | B976F08500 KC7315 | G144 | 1918651 | KDMB12R026M08SN | V111 | 1926836 | 160C08RS90SD12DG | T102 |
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| 2499886.....KSEM3572HPGM KC7315..... | H43 | 2542546.....A4M50L0519A080136..... | C126 | 2599515.....NRP3062L KC5010 | C153 | 2625713.....F3BA0600ADL40E180 K600..... | P125 | | | | |
| 2499887.....KSEM3612HPGM KC7315..... | H43 | 2542547.....A4M50L0519A120300..... | C126 | 2599516.....NRP3094R KC5010 | C153 | 2625714.....F3BA0800ADL40E240 K600..... | P125 | | | | |
| 2499888.....KSEM3651HPGM KC7315..... | H43 | 2542548.....A4M50L0519A250999..... | C126 | 2599518.....NRP3094L KC5010 | C153 | 2625715.....F3BA1000ADL40E300 K600..... | P125 | | | | |
| 2499889.....KSEM3731HPGM KC7315..... | H43 | 2542822.....KSEM2500PCM KC7135 | H56, H87 | 2599519.....NG3047R KC5025 | C154 | 2625716.....F3BA1200ADL40E360 K600..... | P125 | | | | |
| 2499890.....KSEM3810HPGM KC7315..... | H43 | 2542849.....KSEM3000PCM KC7135 | H56, H87 | 2599521.....NG3062R KC5025 | C154 | 2625717.....F3BA1600ADL40E480 K600..... | P125 | | | | |
| 2499891.....KSEM3846HPGM KC7315..... | H43 | 2542338.....B977F04650 KC7315 | G143 | 2599522.....NG3062L KC5025 | C155 | 2625718.....F3BA2000ADL40E600 K600..... | P125 | | | | |
| 2499960.....B977F03800 KC7315..... | G143 | 2544200.....SPCT10T3PPERLD2 KC520M | T100, | 2599523.....NG3094R KC5025 | C154 | 2625743.....B256A08000 KC7315 | G63 | | | | |
| 2500741.....50A03R80A25KE25..... | T79 | 2544251.....B977F03500 KC7315 | G143 | 2599524.....NG3094L KC5025 | C155 | 2627240.....B967A12000 KC7315 | G134 | | | | |
| 2500876.....LT16ERAG60K KU25T..... | D54 | 2544413.....SDCT1204PDERLD2 KC520M | T104, | 2599525.....NG3125L KC5025 | C155 | 2627513.....F4AW0400AWL38W040 KC633M..... | P22 | | | | |
| 2500931.....LT16NRAG60K KU25T..... | D67 | 2544413.....SDCT1204PDERLD2 KC520M | T104, | 2599526.....NG3156R KC5025 | C154 | 2627514.....F4AW0500AWL38W040 KC633M..... | P22 | | | | |
| 2503543.....A4ENN2020K0611..... | C118 | 2544413.....SDCT1204PDERLD2 KC520M | T111, | 2599527.....NG3156L KC5025 | C155 | 2627515.....F4AW0600AWL38W040 KC633M..... | P22 | | | | |
| 2503544.....A4ENN2525PM0611..... | C118 | 2544413.....SDCT1204PDERLD2 KC520M | T111, | 2599528.....NG3189R KC5025 | C154 | 2627516.....F4AW0800AWL38W040 KC633M..... | P22 | | | | |
| 2503545.....A4ENN3232P0611..... | C118 | 25445095.....OKFT07L6AFENLB KCPK30 | S54 | 2599529.....NG3189L KC5025 | C155 | 2627517.....F4AW1000AWX38W040 KC633M..... | P22 | | | | |
| 2503550.....A4NSMR2020K0317..... | C113 | 25445097.....OKFT07L6AFNLB KCPK30 | S54 | 2599530.....NG3031R KC5025 | C158 | 2627518.....F4AW0400AWL38W060 KC633M..... | P22 | | | | |
| 2503551.....A4NSMR2020K0317..... | C112 | 2546816.....BGHX15L5PCSRLET KD1410 | S148 | 2599531.....NR3031L KC5025 | C158 | 2627519.....F4AW0500AWL38W060 KC633M..... | P22 | | | | |
| 2503552.....A4NSMR2020K0417..... | C113 | 2548776.....KTIP080R8SS10M | H31 | 2599534.....NR3062R KC5025 | C158 | 2627520.....F4AW0600AWL38W060 KC633M..... | P22 | | | | |
| 2503553.....A4NSMR2020K0417..... | C112 | 2548777.....KTIP090R8SS10M | H31 | 2599535.....NR3062L KC5025 | C158 | 2627521.....F4AW0800AWL38W060 KC633M..... | P22 | | | | |
| 2503554.....A4NSMR2020K0620..... | C113 | 2548778.....KTIP095R8SS10M | H31 | 2599536.....NR4062R KC5010 | C159 | 2627522.....F4AW1000AWX38W060 KC633M..... | P22 | | | | |
| 2503555.....A4NSMR2020K0620..... | C112 | 2548779.....KTIP100R8SS12M | H31 | 2599537.....NRD4062L KC5010 | C159 | 2628928.....B707A11570FBG KC7315 | G115 | | | | |
| 2503556.....A4NSMR2016K0317..... | C113 | 2548780.....KTIP105R8SS12M | H31 | 2599538.....NRD4094R KC5010 | C159 | 2629032.....B707A04900FBG KC7315 | G114 | | | | |
| 2503557.....A4NSMR2016K0317..... | C112 | 2548781.....KTIP110R8SS12M | H31 | 2599539.....NRD4094L KC5010 | C159 | 2629368.....B707A12000FBG KC7315 | G115 | | | | |
| 2503559.....A4NSMR2016K0417..... | C112 | 2548782.....KTIP115R8SS12M | H31 | 2599540.....NRD4125L KC5010 | C159 | 2633016.....B707A18000FBG KC7315 | G115 | | | | |
| 2504223.....KSEM1970HPGM KC7315..... | H42 | 2548913.....KTIP120R8SS14M | H31 | 2599550.....NR4125L KC5010 | C158 | 2633730.....KTIP080R3B0F08..... | J11 | | | | |
| 2506705.....B977A15200 KC7315..... | G141 | 2548914.....KTIP125R8SS14M | H31 | 2599551.....NG2031R KC5010 | C154 | 2633731.....KTIP090R5BF10M..... | J13 | | | | |
| 2507899.....KSEM2560HPM KC7315..... | H40 | 2548915.....KTIP130R8SS14M | H31 | 2599552.....NG2031L KC5010 | C155 | 2633732.....KTIP16R3BF17M..... | J11 | | | | |
| 2509326.....EDPT180508PDSRGD KCPK30..... | T75 | 2548916.....KTIP135R8SS14M | H31 | 2599743.....NG2041R KC5010 | C154 | 2634374.....3.77000R224V..... | J75 | | | | |
| 2509327.....EDPT180508PDSRGD KCPK30..... | T75 | 2548917.....KTIP140R8SS16M | H31 | 2599744.....NG2041L KC5010 | C155 | 2634375.....3.77000R227V..... | J75 | | | | |
| 2509328.....EDPT180508PDSRGD KCK15..... | T75 | 2548918.....KTIP145R8SS16M | H31 | 2599745.....NG2047R KC5010 | C154 | 2634376.....3.77000R229V..... | J75 | | | | |
| 2509387.....EDPT180516PDSRGD KCK25M..... | T75 | 2548919.....KTIP150R8SS16M | H31 | 2599746.....NG2047L KC5010 | C155 | 2634377.....3.77000R231V..... | J75 | | | | |
| 2509388.....EDPT180516PDSRGD KCPK30..... | T75 | 2548920.....KTIP080R8SCF12M | H32 | 2599748.....NG2094R KC5010 | C154 | 2634378.....4.00000R239V..... | J75 | | | | |
| 2509408.....EDPT180532PDSRGD KCK25M..... | T75 | 2548921.....KTIP085R8SCF12M | H32 | 2599749.....NG2094L KC5010 | C155 | 2634379.....3.77000R249V..... | J75 | | | | |
| 2509410.....EDPT180532PDSRGD KCPK30..... | T75 | 2548922.....KTIP090R8SCF12M | H32 | 2599750.....NG2125R KC5010 | C154 | 2634380.....3.77000R251V..... | J75 | | | | |
| 2510390.....125B09RS90ED140..... | T50 | 2548923.....KTIP095R8SCF12M | H32 | 2599751.....NG2125L KC5010 | C155 | 2634381.....3.77000R253V..... | J75 | | | | |
| 2526351.....KEGT25L531PEERLDJ KC410M | T82 | 2548924.....KTIP100R8SCF16M | H32 | 2599752.....NG2023R KC5010 | C152 | 2634382.....3.77000R274V..... | J75 | | | | |
| 2526385.....KEGT25L508PEERLDJ KC410M | T82 | 2548925.....KTIP105R8SCF16M | H32 | 2599757.....NR2031R KC5010 | C158 | 2634413.....3.77000R276V..... | J75 | | | | |
| 2526387.....KEGT25L564PEERLDJ KC410M | T82 | 2548926.....KTIP110R8SCF16M | H32 | 2599758.....NR2031L KC5010 | C158 | 2634414.....3.77000R278V..... | J75 | | | | |
| 2526391.....KMSF825IP..... | B105-106 | 2548927.....KTIP115R8SCF16M | H32 | 2599759.....NR2062R KC5010 | C158 | 2634415.....3.77000R280V..... | J75 | | | | |
| 2526442.....KLM81025IP..... | B105-106 | 2548928.....KTIP120R8SCF16M | H32 | 2599760.....NR2062L KC5010 | C158 | 2634446.....3.77000R282V..... | J75 | | | | |
| 2526757.....KEGT25L516PEERLDJ KC410M | T82 | 2548929.....KTIP125R8SCF16M | H32 | 2599761.....NG2031R KC5025 | C154 | 2634447.....3.77000R284V..... | J75 | | | | |
| 2539334.....CM184LP..... | C167, D27 | 2548930.....KTIP130R8SCF16M | H32 | 2599765.....NG2062R KC5025 | C154 | 2634448.....3.77000R286V..... | J75 | | | | |
| 2539335.....CM185LP..... | C167, D27 | 2548931.....KTIP135R8SCF16M | H32 | 2599887.....B976A04100 KC7315..... | G138 | 2634449.....3.77000R288V..... | J75 | | | | |
| 2541010.....KSEM1800PCM KC7135..... | H56, H87 | 2548932.....KTIP140R8SCF16M | H32 | 2603030.....KSEM2430HPGM KC7315..... | H43 | 2624568.....B707A07500FBG KC7315 | G114 | | | | |
| 2541019.....KSEM1850PCM KC7135..... | H56 | 2548933.....KTIP145R8SCF16M | H32 | 2603045.....RNMG120400RN KC5010 | B94 | 2635436.....B977A15300 KC7315 | G141 | | | | |
| 2541020.....KSEM2300PCM KC7135..... | H56, H87 | 2548934.....KTIP150R8SCF20M | H32 | 2605709.....B977F03000 KC7315..... | G143 | 2636514.....B707A12800FBG KC7315 | G115 | | | | |
| 2541133.....B707A07000FBG KC7315..... | G114 | 2548935.....KTIP160R8SCF20M | H32 | 2607377.....B707A10000FBG KC7315 | G115 | 2636741.....S2160 | V82 | | | | |
| 2541200.....KRDEA046AM..... | K75 | 2549023.....NG3047L KC5010 | C155 | 2613737.....B707A12500FBG KC7315 | G115 | 2636814.....MS1235CG | T80 | | | | |
| 2541201.....KRDEA051AM..... | K75 | 2549978.....OPT07L6AFENGK KC520M | S55 | 2613786.....32A03R050A32SED18-200 | T71 | 2637756.....MS2060 | S34 | | | | |
| 2541202.....KRDEA012AM..... | K75 | 2579622.....B976A06900 KC7315 | G139 | 2613787.....40A04050A32SED18-200 | T71 | 2637805.....F7IP | T29, T38 | | | | |
| 2541213.....KRDE025010M..... | K76 | 2582207.....CTFP20CA22 | B378 | 2613788.....32A02R050A32SED18-200 | T71 | 2639052.....B707A11800FBG KC7315 | G115 | | | | |
| 2541214.....KRDE03010M..... | K76 | 2582790.....B707A17000FBG KC7315 | G115 | 2613789.....40A03R050A32SED18-200 | T71 | 2639144.....B707A15250FBG KC7315 | G115 | | | | |
| 2541215.....KRDE043010M..... | K76 | 2594894.....B707A12000FBG KC7315 | G115 | 2613790.....3.41020R904 KC7315 | I16 | 2639491.....KSEM3900PCM KC7135 | H56, H87 | | | | |
| 2541216.....KRDE065012M..... | K76 | 2598759.....NG3072R KC5010 | C154 | 2613791.....3.41020R901 KC7315 | I15 | 2641904.....B966A16500 KC7315 | G134 | | | | |
| 2541217.....KRCW032A..... | K76 | 2598760.....NG3072L KC5010 | C155 | 2613792.....3.41020R902 KC7315 | I15 | 2643468.....B977F03400 KC7315 | G143 | | | | |
| 2541511.....KSEM1300PCM KC7135..... | H56, H87 | 2598761.....NG3078R KC5010 | C154 | 2613858.....B967A14000 KC7315 | G134 | 2646000.....B707A15000FBG KC7315 | G115 | | | | |
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| 2646078 | KSEM1560PCM KC7135 | H56 | 2646389 | B343S14200HPG KC7315 | I10 | 2651015 | B343S08300HPG KC7315 | I9 | 2657426 | F2AL0200AWM30E160 KC637M... | P167 |
| 2646080 | KSEM1580PCM KC7135 | H56 | 2646390 | B343S14280HPG KC7315 | I10 | 2651016 | B343S08334HPG KC7315 | I9 | 2657427 | F2AL0200AWM30E0200 KC637M... | P167 |
| 2646081 | KSEM1600PCM KC7135 | H56, H87 | 2646391 | B343S15000HPG KC7315 | I10 | 2651017 | B343S08400HPG KC7315 | I9 | 2657432 | F2AL0400AWM30E060 KC637M... | P167 |
| 2646082 | KSEM1620PCM KC7135 | H56 | 2646392 | B343S15500HPG KC7315 | I10 | 2651018 | B343S08433HPG KC7315 | I9 | 2657435 | F2AL0400AWM30E160 KC637M... | P167 |
| 2646083 | KSEM1650PCM KC7135 | H56 | 2646393 | B343S15870HPG KC7315 | I10 | 2651019 | B343S08500HPG KC7315 | I9 | 2657439 | F2AT1000AWL20R010 KC637M... | P142 |
| 2646084 | KSEM1700PCM KC7135 | H56, H87 | 2646394 | B343S16000HPG KC7315 | I10 | 2651020 | B343S08600HPG KC7315 | I9 | 2657440 | F2AT1200AWX20R005 KC637M... | P142 |
| 2646085 | KSEM1900PCM KC7135 | H56, H87 | 2646395 | B343S16500HPG KC7315 | I10 | 2651021 | B343S08700HPG KC7315 | I9 | 2657441 | F2AT1200AWX20R010 KC637M... | P142 |
| 2646086 | KSEM1950PCM KC7135 | H56 | 2646396 | B343S16670HPG KC7315 | I10 | 2651022 | B343S08733HPG KC7315 | I9 | 2657603 | B707A1170FBG KC7315 | G115 |
| 2646087 | KSEM2050PCM KC7135 | H56 | 2646397 | B343S17000HPG KC7315 | I10 | 2651023 | B343S08800HPG KC7315 | I9 | 2658030 | B707A08800FBG KC7315 | G115 |
| 2646088 | KSEM2100PCM KC7135 | H56, H87 | 2646399 | B343S17500HPG KC7315 | I10 | 2651025 | B343S09000HPG KC7315 | I9 | 2658054 | B256A08400 KC7315... | G63 |
| 2646089 | KSEM2150PCM KC7135 | H56 | 2646400 | B343S19000HPG KC7315 | I10 | 2651026 | B343S09100HPG KC7315 | I9 | 2658075 | B967A10700 KC7315... | G133 |
| 2646090 | KSEM2200PCM KC7135 | H56, H87 | 2646401 | B343S18000HPG KC7315 | I10 | 2651028 | B343S09347HPG KC7315 | I9 | 2658213 | B977A06528 KC7315... | G139 |
| 2646091 | KSEM2250PCM KC7135 | H56 | 2646402 | B343S10100HPG KC7315 | I9 | 2651029 | B343S09400HPG KC7315 | I9 | 2658214 | B977A09746 KC7315... | G140 |
| 2646092 | KSEM2350PCM KC7135 | H56 | 2646423 | B343S10200HPG KC7315 | I9 | 2651030 | B343S09500HPG KC7315 | I9 | 2658215 | B977A06909 KC7315... | G139 |
| 2646093 | KSEM2400PCM KC7135 | H56, H87 | 2646424 | B343S10300HPG KC7315 | I9 | 2651031 | B343S09525HPG KC7315... | I9 | 2658216 | B977A07145 KC7315... | G139 |
| 2646094 | KSEM2450PCM KC7135 | H56 | 2646425 | B343S10320HPG KC7315 | I9 | 2651033 | B343S09700HPG KC7315... | I9 | 2658217 | B977A07541 KC7315... | G140 |
| 2646095 | KSEM2550PCM KC7135 | H56 | 2646426 | B343S10400HPG KC7315 | I9 | 2651034 | B343S09800HPG KC7315... | I9 | 2658218 | B977A07938 KC7315... | G140 |
| 2646096 | KSEM2650PCM KC7135 | H56 | 2646427 | B343S10500HPG KC7315 | I9 | 2651035 | B343S09921HPG KC7315... | I9 | 2658219 | B977A08334 KC7315... | G140 |
| 2646097 | KSEM2700PCM KC7135 | H56, H87 | 2646428 | B343S10600HPG KC7315 | I9 | 2651036 | B343S10000HPG KC7315... | I9 | 2658220 | B977A08433 KC7315... | G140 |
| 2646099 | KSEM2800PCM KC7135 | H56, H87 | 2646429 | B343S10700HPG KC7315... | I9 | 2651037 | HSK3FBH0165... | K124 | 2658221 | B977A08733 KC7315... | G140 |
| 2646100 | KSEM2850PCM KC7135 | H56 | 2646430 | B343S10710HPG KC7315 | I9 | 2651038 | AFB38115SCFPR09 | K130 | 2658222 | B977A09129 KC7315... | G140 |
| 2646101 | KSEM2900PCM KC7135 | H56, H87 | 2646431 | B343S10800HPG KC7315 | I9 | 2651039 | AFB42115SCFPR09 | K130 | 2658223 | B977A09347 KC7315... | G140 |
| 2646102 | KSEM2950PCM KC7135 | H56 | 2646432 | B343S11000HPG KC7315 | I9 | 2651040 | AFB47115SCFPR09 | K130 | 2658224 | B977A09525 KC7315... | G140 |
| 2646103 | KSEM3050PCM KC7135 | H56 | 2646433 | B343S11100HPG KC7315 | I9 | 2651042 | RS1605... | K125 | 2658226 | B977A09921 KC7315... | G140 |
| 2646104 | KSEM3100PCM KC7135 | H56, H87 | 2646434 | B343S11110HPG KC7315 | I9 | 2651163 | CFB10082... | K131 | 2658227 | B977A10320 KC7315... | G140 |
| 2646106 | B343S12200HPG KC7315 | I10 | 2646435 | B343S11200HPG KC7315 | I9 | 2651164 | CFB12096... | K131 | 2658228 | B977A10716 KC7315... | G141 |
| 2646108 | B343S12500HPG KC7315 | I10 | 2646436 | B343S11300HPG KC7315 | I9 | 2651165 | CFB14110... | K131 | 2658229 | B977A11113 KC7315... | G141 |
| 2646109 | B343S12700HPG KC7315 | I10 | 2646437 | B343S11500HPG KC7315 | I9 | 2651166 | CFB16120... | K131 | 2658230 | B977A11509 KC7315... | G141 |
| 2646110 | B343S12800HPG KC7315 | I10 | 2646438 | B343S11508HPG KC7315 | I9 | 2651167 | CFB18140... | K131 | 2658231 | B977A11908 KC7315... | G141 |
| 2646111 | B343S13000HPG KC7315 | I10 | 2646439 | B343S11700HPG KC7315 | I9 | 2651168 | HFB1023SCFPR06 | K126 | 2658232 | B977A12304 KC7315... | G141 |
| 2646112 | B343S06100HPG KC7315 | I8 | 2646440 | B343S11800HPG KC7315 | I10 | 2651169 | HFB1223SCFPR06 | K126 | 2658234 | B977A13096 KC7315... | G141 |
| 2646253 | B343S06200HPG KC7315 | I8 | 2646441 | B343S11900HPG KC7315 | I10 | 2651170 | HFB1672SCFPR06 | K126 | 2658235 | B977A14288 KC7315... | G141 |
| 2646254 | B343S06300HPG KC7315 | I8 | 2646442 | B343S12000HPG KC7315 | I10 | 2651171 | HFB2127SCFPR06 | K126 | 2658236 | B977A15875 KC7315... | G142 |
| 2646255 | B343S06350HPG KC7315 | I8 | 2647585 | B977F03900 KC7315... | G143 | 2651172 | HFB2427SCFPR06 | K126 | 2658237 | B977A16078 KC7315... | G142 |
| 2646256 | B343S06400HPG KC7315 | I8 | 2649363 | B976A03970 KC7315... | G138 | 2651173 | HFB2727SCFPR06 | K126 | 2658239 | B977A17463 KC7315... | G142 |
| 2646257 | B343S06500HPG KC7315 | I8 | 2649364 | B976A04763 KC7315... | G139 | 2651174 | HFB3127SCFPR06 | K126 | 2658240 | B977A19050 KC7315... | G142 |
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| 2646259 | B343S06600HPG KC7315 | I8 | 2649366 | B976A06350 KC7315... | G139 | 2651176 | HFB14FBHS1440 | K126 | 2658242 | B977A19446 KC7315... | G142 |
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| 2646261 | B343S06746HPG KC7315 | I9 | 2649368 | B976A07145 KC7315... | G139 | 2651178 | HFB19FBHS1840 | K126 | 2658394 | B978A04763 KC7315... | G146 |
| 2646262 | B343S06800HPG KC7315 | I9 | 2649369 | B976A07541 KC7315... | G140 | 2652755 | B707A09000FBG KC7315... | G115 | 2658395 | B978A05558 KC7315... | G146 |
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| 2646265 | B343S07000HPG KC7315 | I9 | 2649371 | B976A08334 KC7315... | G140 | 2652967 | SYB30RBHT06F... | K121 | 2658397 | B978A06746 KC7315... | G146 |
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| 2646267 | B343S07200HPG KC7315 | I9 | 2649373 | B976A09129 KC7315... | G140 | 2652969 | SYB50RBHT09F... | K121 | 2658399 | B978A07541 KC7315... | G147 |
| 2646268 | B343S07300HPG KC7315 | I9 | 2649374 | B976A09525 KC7315... | G140 | 2652970 | SYB66RBHT12F... | K121 | 2658400 | B978A07938 KC7315... | G147 |
| 2646269 | B343S07500HPG KC7315 | I9 | 2649375 | B976A09921 KC7315... | G140 | 2652971 | SYB66RBHT12LF... | K121 | 2658401 | B978A08334 KC7315... | G147 |
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| 2646273 | B343S07900HPG KC7315 | I9 | 2649378 | B976A11113 KC7315... | G141 | 2652984 | SYB115RBHT16LF... | K121 | 2658404 | B978A09525 KC7315... | G147 |
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| 3388407 | NR2M100L KC5025 | C158 | | | | 3524475 | UCDE0700B5ARA KC643M | P30 | 3528128 | B976A06530 KC7315 | G139 |
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| 3388460 | NR2M050R KC5025 | C158 | 3482960 | T331NF2500-28R3BX KC7542 | M22 | 3524479 | UCDE1200B5ARA KC643M | P30 | 3547022 | XNGJ0905ANSNGD3W KC725M | S22 |
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| 3388466 | NR3M100R KC5025 | C158 | 3483057 | T331M060X100R6HX KC7542 | M23 | 3524484 | UCDE2500B5ARA KC643M | P30 | 3553431 | KGMSR3232P65 | C129 |
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| 3388470 | NR3M200R KC5025 | C158 | 3483059 | T331M100X150R6HX KC7542 | M23 | 3524486 | UDDE0600A5ARB KC643M | P31 | 3553453 | KGMR2525M65 | C130 |
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| 3397226 | NGD3M300LUK KC5010 | C149 | 3483073 | T331M140X200R6HX KC7542 | M23 | 3524490 | UDDE0800A5ARA KC643M | P31 | 3553503 | B976A07600 KC7315 | G140 |
| 3397243 | NGD2M150R KC5010 | C149 | 3483074 | T331MF140X150R6HX KC7542 | M23 | 3524491 | UDDE0800A5ARB KC643M | P31 | 3554366 | CV40BKR32157 | K86 |
| 3397244 | NGD2M200RK KC5010 | C149 | 3483075 | T331M160X200R6HX KC7542 | M23 | 3524492 | UDDE0800A5ARC KC643M | P31 | 3554367 | CV40BKR50236 | K86 |
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| 3397248 | NGD3M300RK KC5010 | C149 | | | | 3524515 | UDDE1000A5ARB KC643M | P31 | 3554370 | CV50BKR63236 | K86 |
| 3397250 | NGD3M400RK KC5010 | C149 | 3492010 | MCC080001 | V82 | 3524516 | UDDE1000A5ARC KC643M | P31 | 3554371 | CV50BKR80275 | K86 |
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| 3397276 | NGD3M250LUK KC5025 | C149 | 3503902 | MS2195C | V56, V60, V72, V78 | 3524521 | UDDE1200A5ARC KC643M | P31 | 3554376 | BT50BKR63060M | K86 |
| 3397277 | NGD3M300LUK KC5025 | C149 | | | | 3524522 | UDDE1200A5ARD KC643M | P31 | 3554377 | BT50BKR80060M | K86 |
| 3397279 | NGD3M350LUK KC5025 | C149 | 3503903 | MS2197C | S62, T17, V60, V78, V80, V139 | 3524523 | UDDE1600A5ASA KC643M | P32 | 3556330 | HNGJ0905ANSNHD KCK15 | S19, S23 |
| 3397280 | NGD3M400LUK KC5025 | C149 | | | | 3524524 | UDDE1600A5ARB KC643M | P32 | 3556331 | HNGJ0905ANSNHD KCK725M | S19, S23 |
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| 3557169 | A4M65R0824A184-999 | C125 | 3586196 | KSEM215SEFM | H64 | 3587723 | .848.720.000 | K120-122 | 3637468 | ABDE1800A3AS K600 | P111 |
| 3557173 | A4M65R1024A200-999 | C125 | 3586197 | KSEM220SEFM | H64 | 3587724 | .848.720.005 | K121 | 3637469 | ABDE2000A3AS K600 | P111 |
| 3557174 | A4M65L1024A200-999 | C126 | 3586198 | KSEM225SEFM | H64 | 3587725 | .844.016.000 | K120-122 | 3637552 | ABDF0150A2AS K600 | P110 |
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| 3557177 | A4M65R0624B100-212 | C127 | 3586201 | KSEM240SEFM | H64 | 3587728 | .847.016.000 | K120-122 | 3637555 | ABDF0300A2AS K600 | P110 |
| 3557178 | A4M65L0624B100-212 | C128 | 3586202 | KSEM245SEFM | H64 | 3587729 | .841.142.940 | K118-119 | 3637556 | ABDF0400A2AS K600 | P110 |
| 3557179 | A4M65R0624B200-999 | C127 | 3586203 | KSEM250SEFM | H64 | 3587730 | .848.90.640 | K120, K122 | 3637557 | ABDF0500A2AS K600 | P110 |
| 3557180 | A4M65L0624B200-999 | C128 | 3586204 | KSEM255SEFM | H64 | 3587732 | KSHR200C16RS45HN09 | S21 | 3637558 | ABDF0600A2AS K600 | P110 |
| 3557181 | A4M65R0824B090-200 | C127 | 3586205 | KSEM260SEFM | H64 | 3587733 | KSHR250C20RS45HN09 | S21 | 3637559 | ABDF0800A2AS K600 | P110 |
| 3557182 | A4M65L0824B090-200 | C128 | 3586206 | KSEM265SEFM | H64 | 3587734 | KSHR315C24RS45HN09 | S21 | 3637560 | ABDF1000A2AS K600 | P110 |
| 3557193 | A4M65R0824B184-999 | C127 | 3586207 | KSEM270SEFM | H64 | 3588387 | KSEM1604HPGM KC7315 | H42 | 3637561 | ABDF1200A2AS K600 | P110 |
| 3557194 | A4M65L0824B184-999 | C128 | 3586208 | KSEM275SEFM | H64 | 3592190 | B978A05600 KC7315 | G146 | 3637562 | ABDF1400A2AS K600 | P110 |
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| 3557198 | A4M65L1024B200-999 | C128 | 3586211 | KSEM290SEFM | H64 | 3593676 | MS2207 | U3 | 3637565 | ABDF2000A2AS K600 | P110 |
| 3557310 | 12147629800 | K111-113 | 3586212 | KSEM295SEFM | H64 | 3593681 | MS2208 | U3 | 3637636 | D40MTTB560KM40 | B387 |
| 3559794 | B967A14500 KC7315 | G134 | 3586213 | KSEM300SEFM | H64 | 3593911 | MS2205 | T29-33, | 3637637 | D50MTTB737KM40 | B387 |
| 3560480 | SDCT120464SNGB KCPK30 | T104, T111, U51 | 3586214 | KSEM305SEFM | H64 | 3594435 | B977F04550 KC7315 | G143 | 3638617 | B256A05000 KC7315 | G63 |
| 3560482 | SDET120464SNGB KCPK30 | T104, T111, U52 | 3586215 | KSEM310SEFM | H64 | 3594438 | B977F03600 KC7315 | G143 | 3638618 | B256A05800 KC7315 | G63 |
| 3563231 | B707A12700FBG KC7315 | G115 | 3586216 | KSEM315SEFM | H64 | 3595785 | MCLNR323P12 | B62 | 3638619 | B256A06000 KC7315 | G63 |
| 3575847 | 193.531 | S25 | 3586217 | KSEM320SEFM | H64 | 3595786 | MCLNR323P12 | B62 | 3638620 | B256A06800 KC7315 | G63 |
| 3577119 | KTMS21S25SD06H | U3 | 3586543 | KM50RBHT66 | K118 | 3595787 | MCLNR323P16 | B62 | 3638621 | B256A07800 KC7315 | G63 |
| 3577121 | KTMS25S25SD06H | U3 | 3586544 | KM50RBHT77 | K118 | 3595788 | MCLNR323P16 | B62 | 3638622 | B256A08500 KC7315 | G63 |
| 3577133 | KTMS32S23SD08H | U3 | 3586545 | KM63UTRBHT87 | K118 | 3595789 | MCLNR323P16 | B62 | 3638623 | B256A09000 KC7315 | G63 |
| 3577135 | KTMS40S32SD12H | U3 | 3586546 | KM63UTRBHT115 | K118 | 3595790 | MS2219 | V38-40 | 3638624 | B256A10000 KC7315 | G63 |
| 3577137 | KTMS50S32SD12H | U3 | 3586547 | HSK63RBHT24 | K118 | 3598160 | B256A10200 KC7315 | G63 | 3638625 | B256A11800 KC7315 | G63 |
| 3579858 | KSEM2070HPGM KC7315 | H42 | 3586548 | HSK63RBHT30 | K118 | 3598188 | B967A06500 KC7315 | G133 | 3638621 | B256A07800 KC7315 | G63 |
| 3583765 | SDMT060304EGG KC730M | U4 | 3586549 | HSK63RBHT40 | K118 | 3609446 | KSEM2325HPGM KC7315 | H43 | 3638622 | B256A08500 KC7315 | G63 |
| 3583766 | SDMT060304EGG KC730M | U4 | 3586550 | HSK63RBHT50 | K118 | 3612090 | H40SCLCR12 | B183 | 3638623 | B256A09000 KC7315 | G63 |
| 3583768 | SDMT080308EGG KC505M | U4 | 3586551 | HSK63RBHT66 | K118 | 3612136 | H40SDUCR11 | B213 | 3638624 | B256A10000 KC7315 | G63 |
| 3583769 | SDMT080308EGG KC730M | U4 | 3586553 | HSK63RBHT77 | K118 | 3612137 | H40SDUCR11 | B213 | 3638625 | B256A11800 KC7315 | G63 |
| 3583770 | SDMT080308EGG KC730M | U4 | 3586554 | SF075RBHT24 | K119 | 3612139 | H40MVUNR16 | B153 | 3638626 | B256A12000 KC7315 | G63 |
| 3583784 | SDMT120408EGG KC505M | U4 | 3586555 | SF100RBHT30 | K119 | 3612156 | H32MCLNR12 | B68 | 3638627 | B256A13000 KC7315 | G63 |
| 3583785 | SDMT120408EGG KC730M | U4 | 3586556 | SF125RBHT40 | K119 | 3612178 | H50MCLNR12 | B68 | 3638628 | B256A15000 KC7315 | G63 |
| 3583786 | SDMT120408EGG KC730M | U4 | 3586557 | SF100RBHT50 | K119 | 3612192 | H50MDUNL19 | B91 | 3639212 | NG3062LEST KD1425 | C163 |
| 3585206 | B531A03300SPF KDF400 | G105 | 3586558 | SF125RBHT66 | K119 | 3612193 | H50MDUNL19 | B153 | 3639213 | NG3062REST KD1425 | C163 |
| 3585207 | B531A03600SPF KDF400 | G105 | 3586559 | SF150RBHT77 | K119 | 3612215 | H40MVUNR16 | B153 | 3639214 | NG3094EST KD1425 | C163 |
| 3585208 | B531A04000SPF KDF400 | G105 | 3586560 | SF100RBHT115 | K119 | 3612259 | MWLNRC323P08 | B162 | 3639215 | NG3094REST KD1425 | C163 |
| 3585209 | B531A04366SPF KDF400 | G105 | 3586562 | KM32FBHS24 | K133 | 3612260 | MWLNLC323P08 | B162 | 3639217 | NG3125REST KD1425 | C163 |
| 3585211 | B531A04851SPF KDF400 | G105 | 3586563 | KM32FBHS31 | K133 | 3612649 | MVJNL323P16 | B151 | 3639219 | NG3189REST KD1425 | C163 |
| 3585212 | B531A04864SPF KDF400 | G105 | 3586565 | KM50FBHS11 | K133 | 3612650 | MVJNL323P16 | B151 | 3639221 | NGP3088R KD1425 | C152 |
| 3585213 | B531A06375SPF KDF400 | G105 | 3586567 | KM50FBHS67 | K133 | 3613695 | MS2072CG | S21, V72, V139 | 3639223 | NGP3125R KD1425 | C152 |
| 3585214 | B531A06400SPF KDF400 | G105 | 35865677 | KM50FBHS67 | K133 | 3613696 | MS2038CG | S21, V64, V72, V139 | 3639344 | NG3062EST KB1630 | C163 |
| 3585215 | B531A07938SPF KDF400 | G105 | 35865678 | KM63UTFBHS87 | K133 | 3615883 | B976A09400 KC7315 | G140 | 3639345 | NG3062REST KB1630 | C163 |
| 3585217 | B531A09550SPF KDF400 | G105 | 35865679 | KM63UTFBHS116 | K133 | 3616778 | KSEM3220HPGM KC7315 | H43 | 3639346 | NG3094EST KB1630 | C163 |
| 3585218 | B531A09563SPF KDF400 | G105 | 3586580 | HSK63FBHS2 | | | | | | | |

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| 3639883 | TCMT16T308MP KCU10 | B245 | 3640788 | B292A12304YPL KC7315 | G96 | 3642194 | EDPT10T312PDSRGD KCK15 | T36 | 3656067 | DNMS150404FST KD1400 | B347 |
| 3640677 | B291A03000YPL KC7315 | G94 | 3640789 | B292A12500YPL KC7315 | G96 | 3642195 | EDPT10T312PDSRGD KCPK30 | T36 | 3656068 | TNMS160404FST KD1400 | B348 |
| 3640678 | B291A04000YPL KC7315 | G94 | 3640790 | B292A13000YPL KC7315 | G96 | 3642196 | EDPT10T316PDSRGD KC725M | T36 | 3656069 | TNMS160404FST KD1400 | B348 |
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| 3640682 | B291A05500YPL KC7315 | G94 | 3640794 | B292A15000YPL KC7315 | G96 | 3642248 | CRDPN2525M09V | B168, B370 | 3656073 | VNMS160404FST KD1400 | B350 |
| 3640703 | B291A06000YPL KC7315 | G94 | 3640795 | B292A15500YPL KC7315 | G96 | 3642249 | CRDPN2322P09V | B168, B370 | 3656449 | CNGA120404FST KD1425 | B344 |
| 3640704 | B291A06350YPL KC7315 | G95 | 3640796 | B292A16000YPL KC7315 | G96 | 3642251 | CRDPN2322P12V | B168, B370 | 3656450 | CNGA120404FST KD1425 | B344 |
| 3640705 | B291A06500YPL KC7315 | G95 | 3640797 | B292A16500YPL KC7315 | G96 | 3642252 | CRDPN2322P15V | B168, B370 | 3656452 | CNMS120404FST KD1425 | B345 |
| 3640706 | B291A06800YPL KC7315 | G95 | 3640798 | B292A17000YPL KC7315 | G96 | 3642276 | CRGPL2525M06V | B168, B370 | 3656463 | DNGA150404FST KD1425 | B347 |
| 3640707 | B291A07000YPL KC7315 | G95 | 3640799 | B292A17500YPL KC7315 | G96 | 3642277 | CRGPL2525M06V | B168, B370 | 3656464 | DNGA150408FST KD1425 | B347 |
| 3640708 | B291A07500YPL KC7315 | G95 | 3640800 | B292A18000YPL KC7315 | G96 | 3642280 | CRGPL3232P09V | B168, B370 | 3656466 | DNMS150404FST KD1425 | B347 |
| 3640709 | B291A08000YPL KC7315 | G95 | 3640801 | B292A18500YPL KC7315 | G96 | 3642276 | CRGPL2525M06V | B168, B370 | 3656467 | TNMS160404FST KD1425 | B348 |
| 3640710 | B291A08334YPL KC7315 | G95 | 3640802 | B292A19000YPL KC7315 | G96 | 3642277 | CRGPL2525M06V | B168, B370 | 3656468 | TNMS160404FST KD1425 | B348 |
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| 3640713 | B291A09500YPL KC7315 | G95 | 3640807 | B292A20500YPL KC7315 | G96 | 3643846 | KCRG110304R08 KD1425 | E29 | 3656472 | VNMS160404FST KD1425 | B350 |
| 3640714 | B291A09525YPL KC7315 | G95 | 3640808 | B292A21000YPL KC7315 | G96 | 3643847 | KCRG110308L08 KD1425 | E29 | 3656474 | WNGA080408FST KD1425 | B351 |
| 3640715 | B291A10000YPL KC7315 | G95 | 3641465 | DTQ3054 | S116, S120, | 3643849 | KCGX110301L15 KD1425 | E31 | 3659002 | KLSSM22-39-CG | S14, S21, S32, S34, V21, V28, V40, V147 |
| 3640716 | B291A10320YPL KC7315 | G95 | | | S121 | 3643850 | KCGX110301R15 KD1425 | E31 | | | |
| 3640717 | B291A10500YPL KC7315 | G95 | 3641473 | BTQT25 | S116, S120, | 3643851 | KCGX110302L15 KD1425 | E31 | | | |
| 3640718 | B291A11000YPL KC7315 | G95 | | | S122 | 3643852 | KCGX110302R15 KD1425 | E31 | | | |
| 3640719 | B291A11500YPL KC7315 | G95 | 3641712 | EDPT10T308PDERHD KC522M | T36 | 3643853 | KCGX110304L15 KD1425 | E31 | 3659963 | CDHBS4T002FST KD1400 | B344 |
| 3640720 | B291A12000YPL KC7315 | G96 | 3640720 | | T43 | 3643854 | KCGX110304R15 KD1425 | E31 | 3659964 | CDHBS4TO0XFST KD1400 | B344 |
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| 3640722 | B291A12700YPL KC7315 | G96 | 3640722 | | T43 | 3643856 | VCGN160408 KD1425 | B351, E34 | 3659966 | CCGW09T304FST KD1400 | B344 |
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| 3640725 | B291A14500YPL KC7315 | G96 | 3641736 | EDPT10T308PDERHD KCPK30 | T36 | 3643860 | VCRG160412 KD1425 | B351, E34 | 3659969 | CPGW060204FST KD1400 | B346 |
| 3640726 | B291A15000YPL KC7315 | G96 | 3640726 | | T43 | 3643862 | DCGR150408 KD1425 | E28 | 3659970 | CPGW060208FST KD1400 | B346 |
| 3640727 | B291A16000YPL KC7315 | G96 | 3641740 | EDPT10T304PDERHD KC522M | T36 | 3644073 | DT7IP | T30-33, | 3659971 | CPGW09T304FST KD1400 | B346 |
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| 3640729 | B291A18000YPL KC7315 | G96 | 3641741 | EDPT10T304PDERHD KC725M | T36 | 3645083 | KSHR40D04R50A25SHN09 | S20 | 3659973 | CPGW060204FST KD1400 | B346 |
| 3640730 | B292A03000YPL KC7315 | G94 | 3640730 | | T43 | 3646911 | SNMG250924RM KC5010... | B100 | 3659976 | CPGW09T308FWST KD1400 | B346 |
| 3640731 | B292A03175YPL KC7315 | G94 | 3640731 | | T43 | 3647201 | KSHR40A04RS45HN09 | S21 | 3659977 | CPGW120408FWST KD1400 | B346 |
| 3640732 | B292A03500YPL KC7315 | G94 | 3640732 | | T43 | 3648330 | CPGN120304F04KD1425 | B345 | 3659978 | DCGW07204FST KD1400 | B346 |
| 3640743 | B292A04000YPL KC7315 | G94 | 3641783 | EDPT10T304PDERHD KCPK30 | T36 | 3648331 | CPGN120308F04KD1425 | B345 | 3659979 | DCGW11T304FST KD1400 | B346 |
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| 3640746 | B292A04500YPL KC7315 | G94 | 3640746 | | T43 | 3648430 | DFT05T308D32MD KC7140... | H89 | 3659982 | DPGW11T304FST KD1400 | B348 |
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| 3640749 | B292A05100YPL KC7315 | G94 | 3642031 | EDPT10T312PDERHD KCPK30 | T36 | 3648478 | DFT090508D56MD KC7140... | H89 | 3659987 | TPGW110204FST KD1400 | B349 |
| 3640750 | B292A05200YPL KC7315 | G94 | 3640750 | | T43 | 3648584 | TPGN160304F04KD1425 | B349 | 3659988 | TPGW110208FST KD1400 | B349 |
| 3640751 | B292A05410YPL KC7315 | G94 | 3642038 | EDPT10T312PDERHD KC522M | T36 | 3648585 | TPGN160308F04KD1425 | B349 | 3659989 | TPGW16T308FST KD1400 | B349 |
| 3640752 | B292A05500YPL KC7315 | G94 | 3640752 | | T43 | 3648588 | TPGN220408F04KD1425 | B349 | 3659991 | VBGW110304FST KD1400 | B350 |
| 3640753 | B292A05558YPL KC7315 | G94 | 3642094 | EDPT10T316PDERHD KC725M | T36 | 3649187 | EDCT10T308PDRLD KC410M... | T35, | 3659992 | VBGW160404FST KD1400 | B350 |
| 3640754 | B292A05600YPL KC7315 | G94 | 3640754 | | T43 | 3649187 | EDCT10T308PDRLD KC410M... | T35, | 3659994 | CDHBS4T002FST KD1425 | B344 |
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| 3640764 | B292A07100YPL KC7315 | G95 | 3640764 | | T43 | 3649193 | EDCT10T308PDRLD KCK15... | T35, | 3660007 | CPGW070204FST KD1425 | B346 |
| 3640765 | B292A07145YPL KC7315 | G95 | 3642134 | D80MTTB1120KM63 | B387 | 3649213 | EDCT10T308PDRLD KCK15... | T35, | 3660008 | CPGW120408FWST KD1425 | B346 |
| 3640766 | B292A07500YPL KC7315 | G95 | 3642135 | D100MTTB1330KM63 | B387 | 3649213 | EDCT10T308PDRLD KCK15... | T35, | 3660009 | DCGW070204FST KD1425 | B346 |
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| 3640768 | B292A08000YPL KC7315 | G95 | 3640768 | | T43 | 3650903 | SCMT120408MP KCP25... | B231 | 3660011 | DPGW070202FST KD1425 | B348 |
| 3640769 | B292A08334YPL KC7315 | G95 | 3642137 | EDPT10T331PDERHD KC725M | T36 | 3654372 | SPET10T304PPERGB2 KC725M... | T100, | 3660012 | DPGW070204FST KD1425 | B348 |
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| 3640771 | B292A08500YPL KC7315 | G95 | 3642138 | EDPT10T331PDERHD KCPK30 | T36 | 3654505 | SPET10T304PPERGB2 KC725M... | T100, | 3660015 | DPGW11T304FWST KD1425 | B348 |
| 3640772 | B292A08733YPL KC7315 | G95 | 3640772 | | T43 | 3654506 | SPET10T304PPERGB2 KCPK30... | T100, | 3660016 | TPGW110204FST KD1425 | B348 |
| 3640773 | B292A08800YPL KC7315 | G95 | 3642141 | EDPT10T304PDSRGD KC725M | T36 | 3654504 | SPET10T304PPERGB2 KCK15... | T100, | 3660018 | TPGW110204FST KD1425 | B349 |
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| 3667061 | ...SIF100HC12090M | K47 | | | T43 | 3743036 | ...M1H50T3R50A22S90ED14C6 | T58 | 3744940 | ...CCMT060204MP KCP10 | B177 |
| 3667062 | ...SIF100HC20100M | K47 | 3682777 | ...EDCT10T316PDERLD KC410M | T35 | 3743037 | ...M1H50T3R65A22S90ED14C9 | T58 | 3744941 | ...CCMT09T304MP KCP10 | B177 |
| 3667918 | ...B707A11305FBG KC7315 | G115 | | | T42 | 3743038 | ...M1H50J3R80B40S90ED14C12 | T57 | 3744942 | ...CCMT09T308MP KCP10 | B177 |
| 3668023 | ...SIF100HC25100M | K47 | 3682778 | ...EDCT10T316PDERLD KC422M | T35 | 3743039 | ...M1H63T3R50A27S90ED14C6 | T58 | 3744943 | ...CCMT120408MP KCP10 | B177 |
| 3668057 | ...B291A07200YPL KC7315 | G95 | | | T43 | 3743040 | ...M1H63T3R65A27S90ED14C9 | T58 | 3744945 | ...CPMT09T308MP KCP10 | B190 |
| 3668058 | ...B292A07200YPL KC7315 | G95 | 3682780 | ...EDCT10T316PDERLD KC522M | T35 | 3743041 | ...M1H63T3R65A27S90ED14C12 | T58 | 3744946 | ...DCMT11T304MP KCP10 | B208 |
| 3668624 | ...RMS05000H7HF K605 | K9 | | | T43 | 3743042 | ...M1H63T3R75A27S90ED14C12 | T58 | 3744947 | ...DCMT11T308MP KCP10 | B208 |
| 3668625 | ...RMS05500H7HF K605 | K9 | 3682781 | ...EDCT10T316PDERLD KC725M | T35 | 3744538 | ...12A01R20A16ED10... | T31 | 3744949 | ...SCMT09T308MP KCP10 | B231 |
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| 3668628 | ...RMS07000H7HF K605 | K9 | | | T43 | 3744541 | ...20A03R028A20ED10... | T31 | 3744955 | ...CCMT09T308MP KCK20 | B177 |
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| 3668631 | ...RMS10000H7HF K605 | K9 | 3684779 | ...EDCT10T302PDERLD KC410M | T35 | 3744614 | ...32A04R040A32ED10... | T31 | 3744958 | ...CPMT09T308MP KCK20 | B190 |
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| 3668888 | ...RMS06000H7SF K605 | K8 | 3690478 | ...KSEMP1400HPGM KC7315 | H87 | 3744621 | ...20A03R032A20ED10-170 | T32 | 3744978 | ...CCMT120408MP KCU10 | B177 |
| 3668889 | ...RMS06500H7SF K605 | K8 | 3690479 | ...KSEMP1500HPGM KC7315 | H87 | 3744622 | ...20A03R032A20ED10R31-170 | T32 | 3744979 | ...CPMT060208MP KCU10 | B190 |
| 3668890 | ...RMS07000H7SF K605 | K8 | 3690480 | ...KSEMP1600HPGM KC7315 | H87 | 3744623 | ...22A03R032A20ED10-170 | T32 | 3744980 | ...CPMT09T308MP KCU10 | B190 |
| 3668891 | ...RMS08000H7SF K605 | K8 | 3690481 | ...KSEMP1700HPGM KC7315 | H87 | 3744624 | ...25A03R040A25ED10-200 | T32 | 3744981 | ...DCMT11T304MP KCU10 | B208 |
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| 3668904 | ...RMS11000H7SF K605 | K8 | 3690714 | ...KSEMP2100HPGM KC7315 | H87 | 3744627 | ...25A04R040A25ED10R31-200 | T32 | 3744984 | ...SCMT09T304MP KCU10 | B231 |
| 3668905 | ...RMS12000H7SF K605 | K8 | 3690715 | ...KSEMP2200HPGM KC7315 | H87 | 3744628 | ...28A04R040A25ED10-200 | T32 | 3744985 | ...SCMT120404MP KCU10 | B231 |
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| 3668908 | ...RMS05000H7HF KC6305 | K9 | 3690718 | ...KSEMP2500HPGM KC7315 | H87 | 3744631 | ...32A05R048A32ED10-200 | T32 | 3744988 | ...SPMT120408MP KCU10 | B239 |
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| 3769130.....VBMT110304FP KCM15..... | B265 | 3769350.....CPMT060204FP KCU10..... | B189 | 3769451.....TCMT110304FP KCU25..... | B244 | 3781283.....A4G0500M05P04GUP KCU10..... | C93 | | | | |
| 3769131.....VBMT110308FP KCM15..... | B265 | 3769352.....CPMT09T302FP KCU10..... | B189 | 3769452.....TCMT110308FP KCU25..... | B244 | 3781284.....A4G0500M05P08GUP KCU10..... | C93 | | | | |
| 3769132.....CPMT060208FP KCP25..... | B189 | 3769353.....CPMT09T304FP KCU10..... | B189 | 3769454.....TCMT16T304FP KCU25..... | B244 | 3781285.....A4G0600M06P04GUP KCU10..... | C93 | | | | |
| 3769133.....VBMT160404FP KCM15..... | B265 | 3769354.....CPMT09T308FP KCU10..... | B189 | 3769455.....TCMT16T308FP KCU25..... | B244 | 3781286.....A4G0600M06P08GUP KCU10..... | C93 | | | | |
| 3769134.....VBMT160408FP KCM15..... | B265 | 3769355.....DCMT070202FP KCU10..... | B207 | 3769456.....TCMT16T312FP KCU25..... | B244 | 3781287.....A4G0800M08P08GUP KCU10..... | C93 | | | | |
| 3769139.....DCMT070204FP KCP25..... | B207 | 3769356.....DCMT070204FP KCU10..... | B207 | 3769457.....TCMT220408FP KCU25..... | B244 | 3781288.....A4G0800M08P12GUP KCU10..... | C93 | | | | |
| 3769140.....DCMT070208FP KCP25..... | B207 | 3769357.....DCMT070208FP KCU10..... | B207 | 3769458.....TPMT090208FP KCU25..... | B254 | 3781289.....A4G1000M10P06GUP KCU10..... | C93 | | | | |
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| 3769155.....SPMT09T304FP KCP25..... | B238 | 3769371.....SCMT09T308FP KCU10..... | B230 | 3773118.....M1H20J02R36B20D1006..... | T39 | 3784328.....170.355..... | H98-99 | | | | |
| 3769157.....SCMT110204FP KCP25..... | B244 | 3769372.....SCMT120404FP KCU10..... | B230 | 3773119.....M1H25J02R46B25E10C8..... | T39 | 3784329.....170.356..... | H98-99 | | | | |
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| 3769163.....TPMT110204FP KCP25..... | B254 | 3769378.....TCMT090208FP KCU10..... | B244 | 3773385.....M1H32J03R54A32E1D015..... | T40 | 3784475.....FBSCFCR09CA06F..... | K111 | | | | |
| 3769165.....TPMT16T304FP KCP25..... | B254 | 3769380.....TCMT110204FP KCU10..... | B244 | 3773386.....M1H20J02R28A20D104..... | T40 | 3784476.....FBSCLCR09CA06F..... | K111 | | | | |
| 3769166.....TPMT16T308FP KCP25..... | B254 | 3769381.....TCMT110208FP KCU10..... | B244 | 3773387.....M1H25J02R28A25E104..... | T40 | 3784477.....FBSCLCR09CA06F..... | K111 | | | | |
| 3769168.....VBMT110302FP KCP25..... | B265 | 3769382.....TCMT130304FP KCU10..... | B244 | 3773808.....M1H32J02R28A32E1D04..... | T40 | 3784741.....RPGX060400MP KCS10..... | B167 | | | | |
| 3769169.....VBMT110304FP KCP25..... | B265 | 3769383.....TCMT110308FP KCU10..... | B244 | 3773809.....M1H32J03R28A32E1D06..... | T40 | 3784742.....RPGX070700MP KCS10..... | B167 | | | | |
| 3769170.....VBMT110308FP KCP25..... | B265 | 3769384.....TCMT110302FP KCU10..... | B244 | 3773810.....M1H20J02R28M10D104..... | T38 | 3784743.....RPGX120700MP KCS10..... | B167 | | | | |
| 3769171.....VBMT160402FP KCP25..... | B265 | 3769386.....TCMT16T304FP KCU10..... | B244 | 3773811.....M1H25J02R32M12E104..... | T38 | 3787484.....RGQX060400MP KCS10..... | B166 | | | | |
| 3769172.....VBMT160404FP KCP25..... | B265 | 3769387.....TCMT16T308FP KCU10..... | B244 | 3773813.....M1H32J03R40M16D106..... | T38 | 3787486.....RGQX120700MP KCS10..... | B166 | | | | |
| 3769173.....VBMT160408FP KCP25..... | B265 | 3769388.....TCMT16T312FP KCU10..... | B244 | 3773814.....M1H40T03R50A16ED10C12..... | T41 | 3787488.....RPGT060400MP KCS10..... | B229 | | | | |
| 3769174.....VBMT160412FP KCP25..... | B265 | 3769389.....TCMT220408FP KCU10..... | B244 | 3773815.....M1H40T05R50A16ED1020..... | T41 | 3787492.....RCMT08030M0MP KCS10..... | B224 | | | | |
| 3769175.....WCMT06T308FP KCP25..... | B270 | 3769390.....TPMT090204FP KCU10..... | B254 | 3773816.....M1H50T03R60A22E1D015..... | T41 | 3787503.....RCMT10T3M00MP KCS10..... | B224 | | | | |
| 3769176.....WPMT040204FP KCP25..... | B272 | 3769391.....TPMT090208FP KCU10..... | B254 | 3773817.....M1H50T05R60A22E1D025..... | T41 | 3787504.....RCMT120400MP KCS10..... | B224 | | | | |
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| 3769203.....CCMT060202FP KCM25..... | B176 | 3769393.....TPMT110204FP KCU10..... | B254 | 3774250.....HNPJ0905ANSNG K522M.....S19, S23 | | 3787507.....RCMK060400MP KCS10..... | E64 | | | | |
| 3769204.....CCMT060204FP KCM25..... | B176 | 3769394.....TPMT110208FP KCU10..... | B254 | 3774251.....HNPJ090543ANSNH K522M.....S19, S24 | | 3787508.....RCMK090700MP KCS10..... | E64 | | | | |
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| 3769206.....CCMT070302FP KCM25..... | B176 | 3769396.....TPMT110308FP KCU10..... | B254 | 3774692.....A4G0405M04U08GUP KCU25.....C92 | | 3787512.....RGHG120400MP KCS10..... | B222 | | | | |
| 3769207.....CCMT070304FP KCM25..... | B176 | 3769397.....TPMT110304FP KCU10..... | B254 | 3774723.....A4G0505M05U08GUP KCU25.....C92 | | 3790401.....KTIP210R3SS25M..... | H31 | | | | |
| 3769208.....CCMT070308FP KCM25..... | B176 | 3769401.....VBMT110302FP KCU10..... | B265 | 3774724.....A4G0805M08U12GUP KCU25.....C92 | | 3790402.....KTIP220R3SS25M..... | H31 | | | | |
| 3769210.....CCMT120408FP KCM25..... | B176 | 3769402.....VBMT110304FP KCU10..... | B265 | 3774906.....SPPX15T508RHP K7140.....J89 | | 3790443.....KTIP230R3SS25M..... | H31 | | | | |
| 3769212.....CCMT060202FP KCM25..... | B189 | 3769403.....VBMT110308FP KCU10..... | B265 | 3774919.....EDPT10316PDSRGE K522M.....T36, T44 | | 3790444.....KTIP240R3SS25M..... | H31 | | | | |
| 3769213.....CCMT070202FP KCM25..... | B207 | 3769404.....VBMT160402FP KCU10..... | B265 | 3774920.....EDPT10316PDSRGE K725M.....T36, T44 | | 3790445.....KTIP250R3SS32M..... | H31 | | | | |
| 3769214.....CCMT070204FP KCM25..... | B207 | 3769405.....VBMT160404FP KCU10..... | B265 | 3774921.....EDPT10316PDSRGE K523M.....T36, T44 | | 3790446.....KTIP210R3SS25M..... | H32 | | | | |
| 3769215.....CCMT070208FP KCM25..... | B207 | 3769406.....VBMT160408FP KCU10..... | B265 | 3775003.....EDPT10312PDSRGE K522M.....T36, T44 | | 3790447.....KTIP220R3SS25M..... | H32 | | | | |
| 3769216.....CCMT11T302FP KCM25..... | B207 | 3769407.....WCMT040204FP KCU10..... | B270 | 3775004.....EDPT10312PDSRGE K725M.....T36, T44 | | 3790448.....KTIP230R3SS25M..... | H32 | | | | |
| 3769217.....CCMT11T304FP KCM25..... | B207 | 3769408.....WCMT060202FP KCU10..... | B270 | 3775005.....EDPT10312PDSRGE K523M.....T36, T44 | | 3790449.....KTIP240R3SS25M..... | H32 | | | | |
| 3769218.....CCMT11T308FP KCM25..... | B207 | 3769409.....WCMT060208FP KCU10..... | B270 | 3775016.....EDPT10308PDSRGE K522M.....T36, T44 | | 3790450.....KTIP250R3SS25M..... | H32 | | | | |
| 3769219.....CCMT11T304FP KCM25..... | B207 | 3769411.....WPMTS3T104FP KCU10..... | B272 | 3775017.....EDPT10312PDSRGE K522M.....T36, T44 | | 3790451.....KTIP210R5SS25M..... | H31 | | | | |
| 3769223.....CCMT11T308FP KCM25..... | B207 | 3769412.....WPMTS3T104FP KCU10..... | B272 | 3775018.....EDPT10308PDSRGE K523M.....T36, T44 | | 3790452.....KTIP220R5SS25M..... | H31 | | | | |
| 3769234.....CCMT11T308FP KCM25..... | B207 | 3769413.....CCMT060202FP KCU25.....B176 | | 3775022.....EDPT10331PDSRGE K522M.....T36, T44 | | 3790453.....KTIP230R5SS25M..... | H31 | | | | |
| 3769235.....CCMT150404FP KCM25..... | B207 | 3769414.....CCMT060204FP KCU25.....B176 | | 3775063.....EDPT10331PDSRGE K725M.....T36, T44 | | 3790454.....KTIP240R5SS25M..... | H31 | | | | |
| 3769236.....CCMT150408FP KCM25..... | B207 | 3769415.....CCMT060208FP KCU25.....B176 | | 3775064.....EDPT10331PDSRGE K523M.....T36, T44 | | 3790455.....KTIP250R5SS32M..... | H31 | | | | |
| 3769237.....CCMT160402FP KCM25..... | B207 | 3769416.....CCMT09T302FP KCU25.....B176 | | 3775065.....EDPT10308PDSRGE K522M.....T36, T44 | | 3790456.....KTIP210R5SSCF25M..... | H32 | | | | |
| 3769240.....SCMT09T304FP KCM25..... | B230 | 3769417.....CCMT09T304FP KCU25.....B176 | | 3775066.....EDPT10308PDSRGE K523M.....T36, T44 | | 3790457.....KTIP220R5SSCF25M..... | H32 | | | | |
| 3769243.....SCMT120408FP KCM25..... | B230 | 3769418.....CCMT09T308FP KCU25.....B176 | | 3775067.....EDPT10312PDSRGE K522M.....T36, T44 | | 3790458.....KTIP230R5SSCF25M..... | H32 | | | | |
| 3769248.....CCMT110204FP KCM25..... | B244 | 3769419.....CCMT110204FP KCU25.....B176 | | 3775068.....EDPT10312PDSRGE K725M.....T36, T44 | | 3790459.....KTIP240R5SSCF25M..... | H32 | | | | |
| 3769251.....CCMT160404FP KCM25..... | B244 | 3769420.....CCMT160404FP KCU25.....B176 | | 3775069.....EDPT10312PDSRGE K523M.....T36, T44 | | 3790460.....KTIP250R5SSCF25M..... | H32 | | | | |
| 3769253.....CCMT160408FP KCM25..... | B244 | 3769421.....CCMT160408FP KCU25.....B176 | | 3775070.....EDPT10308PDSRGE K522M.....T36, T44 | | 3790461.....KTIP210R8SS25M..... | H31 | | | | |
| 3769257.....CCMT16T304FP KCM25..... | B254 | 3769422.....CPMT050204FP KCU25.....B189 | | 3775071.....EDPT10308PDSRGE K523M.....T36, T44 | | 3790462.....KTIP220R8SS25M..... | H31 | | | | |
| 3769260.....VBMT110304FP KCM25..... | B265 | 3769423.....CPMT060202FP KCU25.....B189 | | 3775072.....EDPT10308PDSRGE K522M.....T36, T44 | | 3790463.....KTIP230R8SS25M..... | H31 | | | | |
| 3769262.....VBMT160402FP KCM25..... | B265 | 3769424.....CPMT060204FP KCU25.....B189 | | 3775073.....EDPT10308PDSRGE K523M.....T36, T44 | | 3790464.....KTIP240R8SS25M..... | H31 | | | | |
| 3769263.....VBMT160404FP KCM25..... | B265 | 3769427.....CPMT09T304FP KCU25.....B189 | | 3775074.....EDPT10308PDSRGE K522M.....T36, T44 | | 3790465.....KTIP250R8SS32M..... | H31 | | | | |
| 3769284.....VBMT160408FP KCM25..... | B265 | 3769428.....CPMT09T308FP KCU25.....B189 | | 3775075.....EDPT10308PDSRGE K523M.....T36, T44 | | 379 | | | | | |

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| 3791270 | A4G0505M05U08GUP KCU10 | C92 | 3794427 | KSEMP3750FDS36A1M | H80, H92, H98 | 3855178 | EDPT140416PDSRGE KCPK30 | T53, | 3860366 | RHM21000KST175H7HF KT325 | K31 |
| 3791271 | A4G0605M06U04GUP KCU10 | C92 | 3794428 | WD32FDS32216M | H103 | 3855179 | EDPT140416PDSRGE KCPK30 | T53, | 3860367 | RHM22000KST175H7HF KT325 | K31 |
| 3791272 | A4G0605M06U08GUP KCU10 | C92 | 3794429 | WD32FDS32391M | H103 | 3855180 | EDPT140431PDSRGE KC725M | T53, | 3860368 | RHM22230KST175H7HF KT325 | K31 |
| 3791273 | A4G0605M06U12UP KCU10 | C92 | 3794430 | WD32FDS36244M | H103 | 3855180 | EDPT140431PDSRGE KC725M | T53, | 3860369 | RHM22500KST200H7HF KT325 | K31 |
| 3791275 | A4G0805M08U08GUP KCU10 | C92 | 3794431 | WD32FDS36361M | H103 | 3855180 | EDPT140431PDSRGE KC725M | T53, | 3860370 | RHM23000KST200H7HF KT325 | K31 |
| 3791276 | A4G0805M08U12UP KCU10 | C92 | 3794432 | WD32FDS36439M | H103 | 3855181 | EDPT140431PDSRGE KCPK30 | T53, | 3860371 | RHM23810KST200H7HF KT325 | K31 |
| 3791277 | A4G1005M10U08GUP KCU10 | C92 | 3794443 | WD50FDS40271M | H103 | 3855182 | EDPT140431PDSRGE KCPK30 | T53, | 3860372 | RHM24000KST200H7HF KT325 | K31 |
| 3791279 | A4G0205M02U02UP KCU25 | C92 | 3794444 | WD50FDS40403M | H103 | 3855209 | EDPT140404PDSRGE KC522M | T53, | 3860383 | RHM25000KST200H7HF KT325 | K31 |
| 3791280 | A4G0305M03U02GUP KCU25 | C92 | 3794445 | WD50FDS40491M | H103 | 3855236 | EDPT140408PDSRGE KC522M | T53, | 3860384 | RHM25400KST200H7HF KT325 | K31 |
| 3791281 | A4G0305M03U04GUP KCU25 | C92 | 3794446 | WD50FDS45304M | H103 | 3855210 | EDPT140404PDSRGE KC725M | T53, | 3860385 | RHM26000KST200H7HF KT325 | K31 |
| 3791282 | A4G0505M05U04GUP KCU25 | C92 | 3794447 | WD50FDS45451M | H103 | 3855210 | EDPT140404PDSRGE KC725M | T53, | 3860386 | RHM26900KST200H7HF KT325 | K31 |
| 3791283 | A4G0605M06U04GUP KCU25 | C92 | 3794448 | WD50FDS45549M | H103 | 3855211 | EDPT140404PDSRGE KCPK30 | T53, | 3860387 | RHM27000KST200H7HF KT325 | K31 |
| 3791284 | A4G0605M06U08GUP KCU25 | C92 | 3794449 | WD50FDS50338M | H103 | 3855211 | EDPT140404PDSRGE KCPK30 | T53, | 3860388 | RHM27500KST250H7HF KT325 | K31 |
| 3791285 | A4G0605M06U12UP KCU25 | C92 | 3794450 | WD50FDS50613M | H103 | 3855236 | EDPT140408PDSRGE KC522M | T53, | 3860389 | RHM28000KST250H7HF KT325 | K32 |
| 3791286 | A4G0805M08U08GUP KCU25 | C92 | 3794451 | WD50FDS56383M | H103 | 3855237 | EDPT140408PDSRGE KC725M | T53, | 3860390 | RHM28580KST250H7HF KT325 | K32 |
| 3791287 | A4G1005M10U08GUP KCU25 | C92 | 3794452 | WD50FDS56569M | H103 | 3855237 | EDPT140408PDSRGE KC725M | T53, | 3860391 | RHM29000KST250H7HF KT325 | K32 |
| 3791288 | A4G1005M10U12GUP KCU25 | C92 | 3794453 | WD50FDS56693M | H103 | 3855238 | EDPT140408PDSRGE KCPK30 | T53, | 3860392 | RHM30000KST250H7HF KT325 | K32 |
| 3791289 | A4G0205M02U02UP KCP10 | C92 | 3794454 | WD50FDS63429M | H103 | 3855238 | EDPT140408PDSRGE KCPK30 | T53, | 3860393 | RHM30160KST250H7HF KT325 | K32 |
| 3791290 | A4G0305M03U02GUP KCP10 | C92 | 3794455 | WD50FDS63639M | H103 | 3855238 | EDPT140408PDSRGE KCPK30 | T53, | 3860394 | RHM31000KST250H7HF KT325 | K32 |
| 3791291 | A4G0305M03U04GUP KCP10 | C92 | 3794916 | KSEMP3175FDS32A1M | H80, H91, H98 | 3855240 | EDPT140412PDSRGE KC522M | T53, | 3860395 | RHM31750KST250H7HF KT325 | K32 |
| 3791292 | A4G0405M04U04GUP KCP10 | C92 | 3794917 | KSEMP334FDS32A1M | H80, H91, H98 | 3855240 | EDPT140412PDSRGE KC522M | T53, | 3860396 | RHM32000KST250H7HF KT325 | K32 |
| 3791293 | A4G0405M04U08GUP KCP10 | C92 | 3794918 | KSEMP349FDS32A1M | H80, H91, H98 | 3855241 | EDPT140412PDSRGE KC725M | T53, | 3860397 | RHM32500KST300H7HF KT325 | K32 |
| 3791294 | A4G0505M05U04GUP KCP10 | C92 | 3794919 | KSEMP365FDS36A1M | H80, H92, H98 | 3855241 | EDPT140412PDSRGE KC725M | T53, | 3860398 | RHM33000KST300H7HF KT325 | K32 |
| 3791295 | A4G0505M05U08GUP KCP10 | C92 | 3794920 | KSEMP3810FDS36A1M | H80, H92, H98 | 3855242 | EDPT140412PDSRGE KCPK30 | T53, | 3860399 | RHM33340KST300H7HF KT325 | K32 |
| 3791296 | A4G0605M06U04GUP KCP10 | C92 | 3794921 | KSEMP397FDS36A1M | H80, H92, H98 | 3855242 | EDPT140412PDSRGE KCPK30 | T53, | 3860401 | RHM34930KST300H7HF KT325 | K32 |
| 3791297 | A4G0605M06U08GUP KCP10 | C92 | 3794922 | KSEMP4128FDS40A1M | H80, H92, H98 | 3855383 | B291A04300YPL KC7315 | G94 | 3860402 | RHM35000KST300H7HF KT325 | K32 |
| 3791298 | A4G0605M06U012UP KCP10 | C92 | 3794933 | KSEMP444FDS40A1M | H80, H92, H98 | 3855561 | CNMG120408MP KCP10 | B51 | 3860403 | RHM36000KST300H7HF KT325 | K32 |
| 3791299 | A4G0805M08U08GUP KCP10 | C92 | 3794934 | KSEMP4763FDS45A1M | H81, H92, H98 | 3855796 | CM234R ASSY | B58–60, B66, | 3860404 | RHM36510KST300H7HF KT325 | K32 |
| 3791300 | A4G0805M08U12UP KCP10 | C92 | 3794935 | KSEMP5080FDS50A1M | H81, H92, H98 | 3855796 | CM234R ASSY | B85–89–90, | 3860405 | RHM37000KST300H7HF KT325 | K32 |
| 3791301 | A4G1005M10U08GUP KCP10 | C92 | 3794936 | KSEMP5398FDS50A1M | H81, H92, H98 | 3855796 | CM234R ASSY | B105–107, B132, | 3860406 | RHM37500KST350H7HF KT325 | K32 |
| 3791303 | A4G0205M02U02UP KCP25 | C92 | 3794937 | KSEMP571FDS56A1M | H81, H92, H98 | 3855796 | CM234R ASSY | B137, B152, | 3860408 | RHM38100KST350H7HF KT325 | K32 |
| 3791304 | A4G0305M03U04GUP KCP25 | C92 | 3794938 | KSEMP6033FDS56A1M | H81, H92, H98 | 3855796 | CM234R ASSY | B161, B163 | 3860409 | RHM39000KST350H7HF KT325 | K32 |
| 3791305 | A4G0305M03U04GUP KCP25 | C92 | 3794939 | KSEMP635FDS63A1M | H81, H92, H98 | 3855854 | B291A08800YPL KC7315 | G95 | 3860410 | RHM36900KST350H7HF KT325 | K32 |
| 3791306 | A4G0405M04U04GUP KCP25 | C92 | 3794940 | KSEMP668FDS63A1M | H81, H92, H98 | 3856322 | LT27ER4API502 KC5025 | D55 | 3860411 | RHM40000KST350H7HF KT325 | K32 |
| 3791307 | A4G0405M04U08GUP KCP25 | C92 | 3794941 | KSEMP6985FDS63A1M | H81, H92, H98 | 3856324 | LT27ER4API502 KC5025 | D55 | 3860412 | RHM41000KST350H7HF KT325 | K32 |
| 3791308 | A4G0505M05U04GUP KCP25 | C92 | 3795256 | RMB14000H7F KTC6215 | K18 | 3856327 | LT27NR4API502 KC5025 | D68 | 3860413 | RHM41280KST350H7HF KT325 | K32 |
| 3791309 | A4G0505M05U08GUP KCP25 | C92 | 3795257 | RMB15000H7F KTC6215 | K18 | 3856329 | LT27NR4API502 KC5025 | D68 | 3860414 | RHM42000KST350H7HF KT325 | K32 |
| 3791310 | A4G0605M06U04GUP KCP25 | C92 | 3795258 | RMB16000H7F KTC6215 | K18 | 3856518 | DNGX120712T02020 KYK25 | B296 | 3860476 | RHM20000KST175H7SF KT325 | K29 |
| 3791311 | A4G0605M06U08GUP KCP25 | C92 | 3795260 | RMB18000H7F KTC6215 | K18 | 3856520 | DNGX150712T02020 KYK25 | B296 | 3860477 | RHM20640KST175H7SF KT325 | K29 |
| 3791312 | A4G0605M06U12UP KCP25 | C92 | 3795261 | RMB19000H7F KTC6215 | K18 | 3856521 | SNGX120712T02020 KYK25 | B297 | 3860478 | RHM21000KST175H7SF KT325 | K29 |
| 3791313 | A4G0805M08U08GUP KCP25 | C92 | 3795262 | RMB20000H7F KTC6215 | K18 | 3856522 | SNGX120716T02020 KYK25 | B297 | 3860480 | RHM22300KST175H7SF KT325 | K29 |
| 3791314 | A4G0805M08U12UP KCP25 | C92 | 3795311 | B978F18000YPL KC7315 | G149 | 3856532 | SNGN120408T02020 KYK25 | B297 | 3860481 | RHM22500KST200H7SF KT325 | K29 |
| 3791316 | A4G1005M10U12UP KCP25 | C92 | 3795333 | RMB14000H7F KTC6215 | K17 | 3856553 | SNGN120412T02020 KYK25 | B297 | 3860482 | RHM23000KST200H7SF KT325 | K29 |
| 3791545 | B976A11600 KTC7315 | G141 | 3795334 | RMB15000H7F KTC6215 | K17 | 3856554 | SNGN120712T02020 KYK25 | B297 | 3860513 | RHM23810KST200H7SF KT325 | K29 |
| 3793949 | KSEMP3320FDS32A1M | H80, H91, H98 | 3795335 | RMB16000H7F KTC6215 | K17 | 3856556 | CNGA120408T02020 KYK25 | B297 | 3860514 | RHM41000KST300H7SF KT325 | K29 |
| 3793950 | KSEMP3920FDS36A1M | H80, H92, H98 | 3795336 | RMB17000H7F KTC6215 | K17 | 3856559 | CNGA120412T02020 KYK25 | B297 | 3860515 | RHM25000KST200H7SF KT325 | K29 |
| 3794291 | KSEMP3200FDS32A1M | H80, H91, H98 | 3795337 | RMB18000H7F KTC6215 | K17 | 3856560 | CNGA120416T02020 KYK25 | B297 | 3860516 | RHM25400KST200H7SF KT325 | K29 |
| 3794292 | KSEMP3400FDS32A1M | H80, H91, H98 | 3795338 | RMB19000H7F KTC6215 | K17 | 3856561 | CNGA120408T01020F KYK25 | B293 | 3860517 | RHM26000KST200H7SF KT325 | K29 |
| 3794393 | KSEMP3500FDS32A1M | H80, H91, H98 | 3795339 | RMB20000H7F KTC6215 | K17 | 3856564 | CNGN120412T02020 KYK25 | B297 | 3860518 | RHM26990KST200H7SF KT325 | K29 |
| 3794394 | KSEMP3600FDS36A1M | H80, H91, H98 | 3812186 | DNNMG150612M KCP10 | B79 | 3856604 | CNGA120412T02020 KYK25 | B297 | 3860519 | RHM27000KST200H7SF KT325 | K29 |
| 3794395 | KSEMP3700FDS36A1M | H80, H92, H98 | 3830321 | B976A08020 KC7315 | G140 | 3856607 | DNGA150416T02020 KYK25 | B293 | 3860520 | RHM27500KST250H7SF KT325 | K30 |
| 3794396 | KSEMP3800FDS36A1M | H80, H92, H98 | 3831819 | M1H63T575A27S90E1D4C20 | T59 | 3856608 | SNGA120408T02020 KYK25 | B293 | 3860521 | RHM28000KST250H7SF KT325 | K30 |
| 3794397 | KSEMP3900FDS36A1M | H80, H92, H98 | 3838225 | WNMG080412M KCP10 | B157 | 3856609 | SNGA120412T02020 KYK25 | B293 | 3860522 | RHM28580KST250H7SF KT325 | K30 |
| 3794398 | KSEMP4000FDS40A1M | H80, H92, H98 | 3842812 | B291A13800YPL KC7315 | G96 | 3856611 | SNGA150612T02020 KYK25 | B293 | 3860523 | RHM29000KST250H7SF KT325 | K30 |
| 3794399 | KSEMP4100FDS40A1M | H80, H92, H98 | 3842895 | H32LSER5 | D82 | 3856614 | VNGA220408T02020 KYK25 | B294 | 3860524 | RHM30000KST250H7SF KT325 | K30 |
| 3794400 | KSEMP4200FDS40A1M | H80, H92, H98 | 3842897 | H40LSER5 | D82 | 3856615 | WNGA080408T02020 KYK25 | B294 | 3860525 | RHM30160KST250H7SF KT325 | K30 |
| 3794401 | KSEMP4300FDS40A1M | H80, H92, H98 | 3842905 | H50LSER27 | D82 | 3856616 | WNGA080412T02020 KYK25 | B294 | 3860526 | RHM31000KST250H7SF KT325 | K30 |
| 3794402 | KSEMP4400FDS40A1M | H80, H92, H98 | 3848433 | B967A15500 KC7315 | G134 | 3856618 | WNGA080412T02020 KYK25 | B292 | 3860527 | RHM31750KST250H7SF KT325 | K30 |
| 3794403 | KSEMP4500FDS45A1M | H81, H92, H98 | 3849319 | XNGJ0905ANFNLDJ3W KC410M | S22 | 3856793 | RIR04E1312 KC6005 | K53 | 3860528 | RHM32000KST250H7SF KT325 | K30 |
| 3794404 | KSEMP4600FDS45A1M | H81, H92, H98 | 3849320 | HNGJ0905ANFNLDJ3W KC410M | S18, S22 | 3856806 | RIR02E1312 KC6305 | K53 | 3860529 | RHM32500KST300H7SF KT325 | K30 |
| 3794405 | KSEMP4700FDS45A1M | H81, H92, H98 | 3852200 | RPET1204M04ELE KTC725M | V73 | 3856807 | RIR03E1312 KC6305 | K53 | 3860530 | RHM33000KST200H7SF KT325 | K30 |
| 3794406 | KSEMP4800FDS45A1M | H81, H92, H98 | 3852233 | RPET1204M04GOSGE KCP30 | V74 | 3856827 | RIR04E1312 KC6105 | K54 | 3860531 | RHM33340KST300H7SF KT325 | K30 |
| 3794407 | KSEMP4900FDS45A1M | H81, | | | | | | | | | |

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| 3860630 | RHM22500KST200H7SF KT6215... | K29 | 3861200 | SS20KST175R5M | K39 | 3867815 | B272Z0674HPS KN25 | G76 | 3868825 | T630M030X050R6HX-D1 KM6515... | M24 |
| 3860631 | RHM23000KST200H7SF KT6215... | K29 | 3861201 | SS20KST200R5M | K39 | 3867816 | B272Z0700HPS KN25 | G77 | 3868826 | T630M040X070R6HX-D1 KM6515... | M24 |
| 3860632 | RHM23810KST200H7SF KT6215... | K29 | 3861202 | SS25KST250R5M | K39 | 3867817 | B272Z0714HPS KN25 | G77 | 3868827 | T630M050X080R6HX-D1 KM6515... | M24 |
| 3860643 | RHM24000KST200H7SF KT6215... | K29 | 3861203 | SS32KST300R5M | K39 | 3867818 | B272Z0750HPS KN25 | G77 | 3868828 | T630M060X100R6HX-D1 KM6515... | M24 |
| 3860644 | RHM25000KST200H7SF KT6215... | K29 | 3861204 | SS32KST350R5M | K39 | 3867819 | B272Z0800HPS KN25 | G77 | 3868829 | T630M080X125R6HX-D1 KM6515... | M24 |
| 3860645 | RHM25400KST200H7SF KT6215... | K29 | 3861272 | B977F03100 KC7315 | G143 | 3867820 | B272Z0850HPS KN25 | G77 | 3868830 | T630M100X150R6HX-D1 KM6515... | M24 |
| 3860647 | RHM26990KST250H7SF KT6215... | K29 | 3861630 | KST175200RK | K39 | 3867821 | B272Z0873HPS KN25 | G77 | 3868831 | T630M120X175R6HX-D6 KM6515... | M24 |
| 3860648 | RHM27000KST200H7SF KT6215... | K29 | 3861631 | KST250250RK | K39 | 3867822 | B272Z0900HPS KN25 | G77 | 3868832 | T630M140X200R6HX-D6 KM6515... | M24 |
| 3860649 | RHM27500KST250H7SF KT6215... | K30 | 3861632 | KST300350RK | K39 | 3867823 | B272Z0925HPS KN25 | G77 | 3868843 | T630M160X200R6HX-D6 KM6515... | M24 |
| 3860650 | RHM28000KST250H7SF KT6215... | K30 | 3861774 | DNGA150416T02020 KYK10 | B293 | 3867824 | B272Z0975HPS KN25 | G77 | 3868844 | T630M180X250R6HX-D6 KM6515... | M24 |
| 3860651 | RHM28580KST250H7SF KT6215... | K30 | 3861775 | RNGN120400T02020 KYK10 | B296 | 3867825 | B272Z1000HPS KN25 | G77 | 3868856 | T630MF080X100R6HX-D4 KM6515... | M24 |
| 3860652 | RHM29000KST250H7SF KT6215... | K30 | 3861781 | TPGN160312T02020 KYK10 | B299 | 3867828 | B274Z0300HPS KN25 | G79 | 3868857 | T630MF100X100R6HX-D4 KM6515... | M24 |
| 3860653 | RHM30000KST250H7SF KT6215... | K30 | 3862224 | KST175200AS | K38 | 3867829 | B274Z0317HPS KN25 | G79 | 3868858 | T630MF100X125R6HX-D4 KM6515... | M24 |
| 3860655 | RHM31000KST250H7SF KT6215... | K30 | 3862225 | KST250250AS | K38 | 3867830 | B274Z0350HPS KN25 | G79 | 3868860 | T630MF120X150R6HX-D4 KM6515... | M24 |
| 3860656 | RHM31750KST250H7SF KT6215... | K30 | 3862226 | KST300350AS | K38 | 3867831 | B274Z0400HPS KN25 | G79 | 3868862 | T630MF140X150R6HX-D4 KM6515... | M24 |
| 3860658 | RHM32500KST300H7SF KT6215... | K30 | 3864351 | A292A06200YPL KC7315 | G94 | 3867832 | B274Z0450HPS KN25 | G79 | 3868863 | T630MF160X150R6HX-D4 KM6515... | M24 |
| 3860659 | RHM33000KST300H7SF KT6215... | K30 | 3865920 | A4SBR202K512016020 | C115 | 3867833 | B273Z0300HPS KN25 | G78 | 3868864 | T630MF180X150R6HX-D4 KM6515... | M24 |
| 3860660 | RHM33340KST300H7SF KT6215... | K30 | 3865921 | A4SBR202K521202025 | C115 | 3867834 | B273Z0317HPS KN25 | G78 | 3868893 | T630M050X080R6HX-D1 KP6525... | M24 |
| 3860662 | RHM34930KST300H7SF KT6215... | K30 | 3865922 | A4SBR202K5212025036 | C115 | 3867835 | B273Z0350HPS KN25 | G78 | 3868894 | T630M060X100R6HX-D1 KP6525... | M24 |
| 3860663 | RHM35000KST300H7SF KT6215... | K30 | 3865923 | A4SBR202K531402025 | C115 | 3867836 | B273Z0400HPS KN25 | G78 | 3868895 | T630M080X125R6HX-D1 KP6525... | M24 |
| 3860664 | RHM36000KST300H7SF KT6215... | K30 | 3865924 | A4SBR202K5314020536 | C115 | 3867837 | B273Z0450HPS KN25 | G78 | 3868896 | T630M100X150R6HX-D1 KP6525... | M24 |
| 3860665 | RHM36510KST300H7SF KT6215... | K30 | 3865926 | A4SBR202K5413035048 | C115 | 3867838 | B273Z0500HPS KN25 | G78 | 3868927 | T630M120X175R6HX-D6 KP6525... | M24 |
| 3860667 | RHM37500KST350H7SF KT6215... | K30 | 3865927 | A4SBR2525M5S19028038 | C115 | 3867839 | B273Z0550HPS KN25 | G78 | 3868928 | T630M140X200R6HX-D6 KP6525... | M24 |
| 3860668 | RHM38000KST350H7SF KT6215... | K30 | 3865928 | A4SBR2525M5S19038058 | C115 | 3867840 | B273Z0600HPS KN25 | G78 | 3868929 | T630M160X200R6HX-D6 KP6525... | M24 |
| 3860669 | RHM38100KST350H7SF KT6215... | K30 | 3865929 | A4SBL202K5212016020 | C115 | 3867841 | B273Z0635HPS KN25 | G78 | 3868930 | T630M180X250R6HX-D6 KP6525... | M24 |
| 3860670 | RHM39000KST350H7SF KT6215... | K30 | 3865931 | A4SBL202K5212025036 | C115 | 3867842 | B273Z0650HPS KN25 | G78 | 3868933 | T630M240X300R6HX-D6 KP6525... | M28 |
| 3860671 | RHM39690KST350H7SF KT6215... | K30 | 3865932 | A4SBL202K5314020025 | C115 | 3867843 | B273Z0674HPS KN25 | G78 | 3868942 | T630MF080X100R6HX-D4 KP6525... | M24 |
| 3860672 | RHM40000KST350H7SF KT6215... | K30 | 3865934 | A4SBL202K5414025035 | C115 | 3867844 | B273Z0700HPS KN25 | G78 | 3868943 | T630MF100X100R6HX-D4 KP6525... | M24 |
| 3860673 | RHM41000KST350H7SF KT6215... | K30 | 3865937 | A4SBL2525M5S19038058 | C115 | 3867845 | B273Z0800HPS KN25 | G78 | 3868944 | T630MF100X125R6HX-D4 KP6525... | M24 |
| 3860674 | RHM41280KST350H7SF KT6215... | K30 | 3867457 | A4M50R2S12B016020 | C127 | 3867846 | B273Z0850HPS KN25 | G78 | 3868946 | T630MF120X150R6HX-D4 KP6525... | M24 |
| 3860675 | RHM42000KST350H7SF KT6215... | K30 | 3867458 | A4M50R2S12B020025 | C127 | 3867847 | B273Z0873HPS KN25 | G78 | 3868948 | T630MF140X150R6HX-D4 KP6525... | M24 |
| 3860676 | RHM42500KST350H7SF KT6215... | K31 | 3867459 | A4M50R2S12B025036 | C127 | 3867849 | B273Z0925HPS KN25 | G78 | 3868949 | T630MF160X150R6HX-D4 KP6525... | M24 |
| 3860677 | RHM460KST350H7SF KT6215... | K31 | 3867460 | A4M50R3S14B020025 | C127 | 3867850 | B273Z1000HPS KN25 | G78 | 3868950 | T630MF180X150R6HX-D4 KP6525... | M24 |
| 3860678 | RHM21000KST350H7HF KT6215... | K31 | 3867461 | A4M50R3S14B025036 | C127 | 3867873 | B274Z0500HPS KN25 | G79 | 3868976 | T631M050X080R6HX-D1 KP6525... | M25 |
| 3860685 | RHM22000KST350H7HF KT6215... | K31 | 3867462 | A4M50R4S14B025035 | C127 | 3867874 | B274Z0550HPS KN25 | G79 | 3868977 | T631M060X100R6HX-D1 KP6525... | M25 |
| 3860687 | RHM22230KST350H7HF KT6215... | K31 | 3867464 | A4M50R5S14B028038 | C127 | 3867875 | B274Z0600HPS KN25 | G79 | 3868978 | T631M080X125R6HX-D1 KP6525... | M25 |
| 3860688 | RHM22500KST200H7HF KT6215... | K31 | 3867466 | A4M50L2S12B016020 | C128 | 3867876 | B274Z0635HPS KN25 | G79 | 3868979 | T631M100X150R6HX-D1 KP6525... | M25 |
| 3860689 | RHM23000KST200H7HF KT6215... | K31 | 3867467 | A4M50L2S12B020025 | C128 | 3867877 | B274Z0650HPS KN25 | G79 | 3868980 | T631M120X175R6HX-D6 KP6525... | M25 |
| 3860690 | RHM23810KST200H7HF KT6215... | K31 | 3867468 | A4M50L2S12B025036 | C128 | 3867878 | B274Z0674HPS KN25 | G79 | 3868981 | T631M140X200R6HX-D6 KP6525... | M25 |
| 3860691 | RHM24000KST200H7HF KT6215... | K31 | 3867469 | A4M50L3S14B020025 | C128 | 3867879 | B274Z0700HPS KN25 | G79 | 3868982 | T631M160X200R6HX-D6 KP6525... | M25 |
| 3860692 | RHM25000KST200H7HF KT6215... | K31 | 3867470 | A4M50L3S14B025036 | C128 | 3867880 | B274Z0800HPS KN25 | G80 | 3868993 | T631M180X250R6HX-D6 KP6525... | M25 |
| 3860693 | RHM25400KST200H7HF KT6215... | K31 | 3867472 | A4M50L4S14B035048 | C128 | 3867881 | B274Z0850HPS KN25 | G80 | 3869003 | T631MF080X100R6HX-D4 KP6525... | M25 |
| 3860694 | RHM26990KST200H7HF KT6215... | K31 | 3867474 | A4M50L5S17B028038 | C128 | 3867882 | B274Z0873HPS KN25 | G80 | 3869004 | T631MF100X100R6HX-D4 KP6525... | M25 |
| 3860695 | RHM27000KST200H7HF KT6215... | K31 | 3867715 | B271Z0300HPS KN25 | G74 | 3867883 | B274Z0900HPS KN25 | G80 | 3869005 | T631MF100X125R6HX-D4 KP6525... | M25 |
| 3860696 | RHM27500KST250H7HF KT6215... | K31 | 3867716 | B271Z0317HPS KN25 | G74 | 3867884 | B274Z0925HPS KN25 | G80 | 3869006 | T631MF120X125R6HX-D4 KP6525... | M25 |
| 3860697 | RHM28000KST250H7HF KT6215... | K32 | 3867717 | B271Z03200HPS KN25 | G74 | 3867885 | B274Z1000HPS KN25 | G80 | 3869007 | T631MF120X150R6HX-D4 KP6525... | M25 |
| 3860698 | RHM29000KST250H7HF KT6215... | K32 | 3867718 | B271Z0350HPS KN25 | G74 | 3867887 | B274Z0350HPS KN25 | G80 | 3869008 | T631MF140X150R6HX-D4 KP6525... | M25 |
| 3860699 | RHM30000KST250H7HF KT6215... | K32 | 3867719 | B271Z03970HPS KN25 | G74 | 3867888 | B274Z0700HPS KN25 | G80 | 3869009 | T631MF140X150R6HX-D4 KP6525... | M25 |
| 3860704 | RHM30160KST250H7HF KT6215... | K32 | 3867720 | B271Z04000HPS KN25 | G74 | 3867889 | B274Z0733HPS KN25 | G80 | 3869010 | T631MF160X150R6HX-D4 KP6525... | M25 |
| 3860705 | RHM31000KST250H7HF KT6215... | K32 | 3867721 | B271Z04500HPS KN25 | G74 | 3867890 | B274Z0763HPS KN25 | G80 | 3869011 | T631MF180X150R6HX-D4 KP6525... | M25 |
| 3860706 | RHM31750KST250H7HF KT6215... | K32 | 3867722 | B271Z0473HPS KN25 | G74 | 3867891 | B274Z1000HPS KN25 | G80 | 3869012 | A4G0205M2S0U2GMN KCU10..... | C99 |
| 3860707 | RHM32000KST250H7HF KT6215... | K32 | 3867723 | B271Z10300HPS KN25 | G74 | 3867892 | B274Z10300HPS KN25 | G80 | 3869013 | A16RA4SAL2S12M017021 | C120 |
| 3860708 | RHM32500KST300H7HF KT6215... | K32 | 3867724 | B271Z0500HPS KN25 | G74 | 3867893 | B274Z1074HPS KN25 | G80 | 3869014 | A20RA4SAL2S12M021026 | C120 |
| 3860709 | RHM33000KST300H7HF KT6215... | K32 | 3867725 | B271Z0600HPS KN25 | G74 | 3867894 | B274Z1200HPS KN25 | G80 | 3869015 | A25RA4SAL2S12M026306 | C120 |
| 3860710 | RHM33340KST300H7HF KT6215... | K32 | 3867726 | B271Z06200HPS KN25 | G74 | 3867895 | B274Z1200HPS KN25 | G80 | 3869016 | A25RA4SAL2S12M026306 | C120 |
| 3860711 | RHM34930KST300H7HF KT6215... | K32 | 3867727 | B271Z06500HPS KN25 | G75 | 3867896 | B274Z125R6HX-D4 KM6515..... | M6 | 3869017 | A20RA4SAR2S12M021026 | C120 |
| 3860712 | RHM35000KST300H7HF KT6215... | K32 | 3867728 | B271Z0674HPS KN25 | G75 | 3867897 | B274Z130R6HX-D4 KM6515..... | M6 | 3869018 | A25RA4SAR2S12M026306 | C120 |
| 3860713 | RHM36510KST300H7HF KT6215... | K32 | 3867729 | B271Z0700HPS KN25 | G75 | 3867898 | B274Z135R6HX-D4 KM6515..... | M6 | 3869019 | A20RA4SAR2S12M026306 | C120 |
| 3860714 | RHM37000KST300H7HF KT6215... | K32 | 3867730 | B271Z0714HPS KN25 | G75 | 3867899 | B274Z140R6HX-D4 KM6515..... | M6 | 3869020 | A4G0205M2S0U2GMN KCU10..... | C99 |
| 3860715 | RHM37500KST350H7HF KT6215... | K32 | 3867731 | B271Z07500HPS KN25 | G75 | 3867900 | B274Z145R6HX-D4 KM6515..... | M6 | 3869021 | A4G0205M2S0U2GMN KCU10..... | C99 |
| 3860716 | RHM38000KST350H7HF KT6215... | K32 | 3867732 | B271Z0763HPS KN25 | G75 | 3867901 | B274Z150R6HX-D4 KM6515..... | M6 | 3869022 | A4G0205M2S0U2GMN KCU10..... | C99 |
| 3860717 | RHM39000KST350H7HF KT6215... | K32 | 3867733 | B271Z0800HPS KN25 | G75 | 3867902 | B274Z155R6HX-D4 KM6515..... | M6 | 3869023 | A4G0205M2S0U2GMN KCU10..... | C99 |
| 3860718 | RHM39690KST350H7HF KT6215... | K32 | 3867734 | B271Z0850HPS KN25 | G75 | 3867903 | B274Z160R6HX-D4 KM6515..... | M6 | 3869024 | A4G0205M2S0U2GMN KCU10..... | C99 |
| 3860719 | RHM40000KST350H7HF KT6215... | K32 | 3867735 | B271Z0873HPS KN25 | G75 | 3867904 | B2 | | | | |

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| 3871092 | A4G0300M3SP04GUP KCU25 | C98 | 3884462 | KSEM3100HPCCLM KC7410...H49, H87 | | 3885856 | B707A13500FBL KCMS15 | G115 | 3894828 | B707A07000FBS KN15 | G114 |
| 3871105 | A4G0500M5SP04GUP KCU25 | C98 | 3884463 | KSEM3200HPCCLM KC7410...H49, H87 | | 3885857 | B707A14000FBL KCMS15 | G115 | 3894829 | B707A07500FBS KN15 | G114 |
| 3871107 | A4G0205M2SU02GUP KCU25 | C99 | 3884464 | KSEM1270HPCCLM KC7410 | H48 | 3885858 | B707A14288FBL KCMS15 | G115 | 3894830 | B707A07938FBS KN15 | G114 |
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| 3871109 | A4G0305M3SU04GUP KCU25 | C99 | 3884466 | KSEM1310HPCCLM KC7410 | H48 | 3885860 | B707A15000FBL KCMS15 | G115 | 3894832 | B707A08500FBS KN15 | G114 |
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| 3871112 | A4G0505M5SU04GUP KCU25 | C99 | 3884468 | KSEM1429HPCCLM KC7410 | H48 | 3885862 | B707A15500FBL KCMS15 | G115 | 3894834 | B707A09000FBS KN15 | G115 |
| 3871114 | A4G0505M5SU08GUP KCU25 | C99 | 3884469 | KSEM1468HPCCLM KC7410 | H48 | 3885863 | B707A15875FBL KCMS15 | G115 | 3894835 | B707A09500FBS KN15 | G115 |
| 3871115 | A4R0200M2SP00GMP KCU25 | C99 | 3884470 | KSEM1548HPCCLM KC7410 | H48 | 3885864 | B707A16000FBL KCMS15 | G115 | 3894836 | B707A09525FBS KN15 | G115 |
| 3871116 | A4R0300M3SP00GMP KCU25 | C99 | 3884471 | KSEM1588HPCCLM KC7410 | H48 | 3885865 | B707A16500FBL KCMS15 | G115 | 3894837 | B707A10000FBS KN15 | G115 |
| 3871118 | A4R0500M5SP00GMP KCU25 | C99 | 3884472 | KSEM1609HPCCLM KC7410 | H48 | 3885866 | B707A17000FBL KCMS15 | G115 | 3894838 | B707A10320FBS KN15 | G115 |
| 3872075 | WD50F4DS40183M | H102 | 3884473 | KSEM1627HPCCLM KC7410 | H48 | 3885867 | B707A17500FBL KCMS15 | G115 | 3894839 | B707A10500FBS KN15 | G115 |
| 3872079 | WD50F4DS45206M | H102 | 3884474 | KSEM1667HPCCLM KC7410 | H48 | 3885868 | B707A18000FBL KCMS15 | G115 | 3894840 | B707A11000FBS KN15 | G115 |
| 3872564 | B292A14200YPL KC7315 | G96 | 3884475 | KSEM1707HPCCLM KC7410 | H48 | 3885869 | B707A19000FBL KCMS15 | G115 | 3894841 | B707A11111FBS KN15 | G115 |
| 3873005 | B292A07600YPL KC7315 | G95 | 3884476 | KSEM1746HPCCLM KC7410 | H48 | 3885870 | B707A19050FBL KCMS15 | G115 | 3894842 | B707A11509FBS KN15 | G115 |
| 3873028 | B976A11800 KC7315 | G141 | 3884477 | KSEM1826HPCCLM KC7410 | H48 | 3885871 | B707A20000FBL KCMS15 | G115 | 3894843 | B707A11570FBS KN15 | G115 |
| 3873438 | 50A05RS90SD12PLHF | V139 | 3884478 | KSEM1905HPCCLM KC7410 | H48 | 3885872 | B707A21000FBL KCMS15 | G115 | 3894844 | B707A11700FBS KN15 | G115 |
| 3873464 | 52A05RS90SD12PLHF | V139 | 3884479 | KSEM1927HPCCLM KC7410 | H48 | 3886527 | B292A13900YPL KC7315 | G96 | 3894845 | B707A11800FBS KN15 | G115 |
| 3873467 | 63A06RS90SD12PLHF | V139 | 3884480 | KSEM1945HPCCLM KC7410 | H48 | 3890197 | B967A07500 KC7315 | G133 | 3894846 | B707A12000FBS KN15 | G115 |
| 3873469 | 66A06RS90SD12PLHF | V139 | 3884481 | KSEM1984HPCCLM KC7410 | H48 | 3891349 | B272Z16000HPS KN25 | G77 | 3894847 | B707A12100FBS KN15 | G115 |
| 3873520 | 80A07RS90SD12PLHF | V139 | 3884482 | KSEM2024HPCCLM KC7410 | H48 | 3891648 | RPTE1605MSGE KCPK30 | V79 | 3894848 | B707A12500FBS KN15 | G115 |
| 3873931 | UDDE1400A5KA KC643M | P31 | 3884483 | KSEM2064HPCCLM KC7410 | H48 | 3891649 | RPTE1605MOLE KCPK30 | V79 | 3894849 | B707A12800FBS KN15 | G115 |
| 3873932 | UDDE1400A5RA KC643M | P31 | 3884484 | KSEM2143HPCCLM KC7410 | H48 | 3891661 | B271Z10200HPS KN25 | G75 | 3894850 | B707A13000FBS KN15 | G115 |
| 3874034 | UDDE1400A5ARC KC643M | P31 | 3884485 | KSEM2223HPCCLM KC7410 | H48 | 3891662 | B271Z10500HPS KN25 | G75 | 3894851 | B707A13500FBS KN15 | G115 |
| 3874035 | UDDE1400A5ARD KC643M | P31 | 3884486 | KSEM2244HPCCLM KC7410 | H48 | 3891682 | B271Z13500HPS KN25 | G75 | 3894852 | B707A14000FBS KN15 | G115 |
| 3874037 | UDDE1400B5AB KC643M | P31 | 3884487 | KSEM2342HPCCLM KC7410 | H48 | 3891683 | B271Z17020HPS KN25 | G75 | 3894853 | B707A14288FBS KN15 | G115 |
| 3876021 | B967A08700 KC7315 | G133 | 3884488 | KSEM2381HPCCLM KC7410 | H48 | 3891684 | B271Z11000HPS KN25 | G75 | 3894854 | B707A14500FBS KN15 | G115 |
| 3876314 | CNGN1201716T02020 KYK10 | B295 | 3884489 | KSEM2461HPCCLM KC7410 | H48 | 3891685 | B271Z11500HPS KN25 | G75 | 3894855 | B707A15000FBS KN15 | G115 |
| 3876315 | CNGA120408T02020 KYK10 | B292 | 3884490 | KSEM2540HPCCLM KC7410 | H48 | 3891686 | B271Z12000HPS KN25 | G75 | 3894856 | B707A15250FBS KN15 | G115 |
| 3876316 | CNGA120412T021020W KYK10 | B293 | 3884491 | KSEM2567HPCCLM KC7410 | H48 | 3891687 | B271Z12500HPS KN25 | G75 | 3894857 | B707A15500FBS KN15 | G115 |
| 3876317 | CNGA120412T02020 KYK10 | B292 | 3884492 | KSEM2619HPCCLM KC7410 | H48 | 3891688 | B271Z12700HPS KN25 | G75 | 3894858 | B707A15875FBS KN15 | G115 |
| 3876318 | CNGA120412T02020W KYK10 | B293 | 3884493 | KSEM2659HPCCLM KC7410 | H48 | 3891689 | B271Z13000HPS KN25 | G75 | 3894859 | B707A16000FBS KN15 | G115 |
| 3876319 | CNGA120416T02020 KYK10 | B292 | 3884494 | KSEM2778HPCCLM KC7410 | H48 | 3891690 | B272Z12020HPS KN25 | G77 | 3894860 | B707A16500FBS KN15 | G115 |
| 3876328 | SNGX120716T02020 KYK10 | B297 | 3884495 | KSEM2818HPCCLM KC7410 | H49 | 3891691 | B272Z10500HPS KN25 | G77 | 3894861 | B707A17000FBS KN15 | G115 |
| 3876329 | SNGX120716T02020 KYK10 | B297 | 3884496 | KSEM2858HPCCLM KC7410 | H49 | 3891692 | B272Z10720HPS KN25 | G77 | 3894862 | B707A17500FBS KN15 | G115 |
| 3876331 | TNGA160408T02020 KYK10 | B294 | 3884497 | KSEM2977HPCCLM KC7410 | H49 | 3891693 | B272Z11500HPS KN25 | G77 | 3894863 | B707A18000FBS KN15 | G115 |
| 3876333 | WNGX080712T02020 KYK10 | B298 | 3884498 | KSEM2977HPCCLM KC7410 | H49 | 3891695 | B272Z12000HPS KN25 | G77 | 3894864 | B707A19000FBS KN15 | G115 |
| 3876334 | SNGA120408T02020 KYK10 | B293 | 3884499 | KSEM3016HPCCLM KC7410 | H49 | 3891696 | B272Z12500HPS KN25 | G77 | 3894865 | B707A19500FBS KN15 | G115 |
| 3876843 | CNGF120408 KB1340 | B286 | 3884500 | KSEM3175HPCCLM KC7410 | H49 | 3891697 | B272Z12700HPS KN25 | G77 | 3894866 | B707A20000FBS KN15 | G115 |
| 3877207 | CFM0402R30RHP KCU40 | H34 | 3884540 | B291A06200YPL KC7315 | G94 | 3891698 | B272Z13000HPS KN25 | G77 | 3894867 | B707A21000FBS KN15 | G115 |
| 3877688 | B272Z11000HPS KN25 | G77 | 3884541 | B291A11800YPL KC7315 | G95 | 3891700 | B273Z10500HPS KN25 | G78 | 3895815 | B291A09300YPL KC7315 | G95 |
| 3877827 | B967A11500 KC7315 | G134 | 3884593 | B291A15800YPL KC7315 | G96 | 3891702 | B273Z11000HPS KN25 | G78 | 3899939 | WNMG060408PFP KCP10... | B156 |
| 3878037 | B292A09800YPL KC7315 | G95 | 3884594 | B291A19800YPL KC7315 | G96 | 3891703 | B273Z11500HPS KN25 | G78 | 3901561 | B292A04700YPL KC7315 | G94 |
| 3878347 | HSK63ASIF80063M | K46 | 3884596 | B291A05200YPL KC7315 | G94 | 3891704 | B273Z12000HPS KN25 | G78 | 3902132 | KM40TSNEL2 | D31 |
| 3883100 | RQ0061312 KC6305 | K55 | 3884923 | RCMT12040M0P KCS10 | B224 | 3891705 | B273Z12500HPS KN25 | G78 | 3902167 | B292A07900YPL KC7315 | G95 |
| 3884395 | KSEM1250HPCCLM KC7410 | H48 | 3885689 | B2707A03000FBL KCMS15 | G114 | 3891707 | B273Z13000HPS KN25 | G78 | 3902171 | B291A17900YPL KC7315 | G96 |
| 3884396 | KSEM1300HPCCLM KC7410 | H48, H87 | 3885690 | B2707A03175FBL KCMS15 | G114 | 3891708 | B274Z12000HPS KN25 | G80 | 3902283 | KM40TSNEL3 | D31 |
| 3884397 | KSEM1350HPCCLM KC7410 | H48 | 3885691 | B2707A03500FBL KCMS15 | G114 | 3891711 | B274Z11000HPS KN25 | G80 | 3902284 | KM40TSNEL4 | D31 |
| 3884398 | KSEM1400HPCCLM KC7410 | H48, H87 | 3885692 | B2707A04000FBL KCMS15 | G114 | 3891712 | B274Z11500HPS KN25 | G80 | 3902285 | KM40TSNER2 | D31 |
| 3884399 | KSEM1450HPCCLM KC7410 | H48 | 3885823 | B2707A04400FBL KCMS15 | G114 | 3891713 | B274Z12000HPS KN25 | G80 | 3902286 | KM40TSNER3 | D31 |
| 3884400 | KSEM1500HPCCLM KC7410 | H48, H87 | 3885824 | B2707A04500FBL KCMS15 | G114 | 3891714 | B274Z12500HPS KN25 | G80 | 3902287 | KM40TSNER4 | D31 |
| 3884401 | KSEM1550HPCCLM KC7410 | H48 | 3885825 | B2707A04800FBL KCMS15 | G114 | 3891716 | B274Z13000HPS KN25 | G80 | 3902288 | KM40TSNRL3045M | D33 |
| 3884402 | KSEM1600HPCCLM KC7410 | H48, H87 | 3885826 | B2707A05000FBL KCMS15 | G114 | 3891733 | B271Z14000HPS KN25 | G75 | 3902289 | KM40TSNRL4 | D33 |
| 3884433 | KSEM1650HPCCLM KC7410 | H48 | 3885827 | B2707A05560FBL KCMS15 | G114 | 3891734 | B271Z14290HPS KN25 | G75 | 3902290 | KM40TSNRL2 | D33 |
| 3884434 | KSEM1700HPCCLM KC7410 | H48, H87 | 3885828 | B2707A05900FBL KCMS15 | G114 | 3891737 | B271Z15500HPS KN25 | G75 | 3902291 | KM40TSNRL3 | D33 |
| 3884435 | KSEM1750HPCCLM KC7410 | H48 | 3885829 | B2707A06000FBL KCMS15 | G114 | 3891738 | B271Z15870HPS KN25 | G75 | 3902292 | KM40TSNRL4 | D33 |
| 3884436 | KSEM1800HPCCLM KC7410 | H48, H87 | 3885830 | B2707A06350FBL KCMS15 | G114 | 3891739 | B271Z16000HPS KN25 | G75 | 3902293 | KM40TSNRL2 | D33 |
| 3884437 | KSEM1850HPCCLM KC7410 | H48 | 3885831 | B2707A06500FBL KCMS15 | G114 | 3891741 | B272Z13500HPS KN25 | G77 | 3902294 | KM40TSNRL3 | D33 |
| 3884438 | KSEM1900HPCCLM KC7410 | H48, H87 | 3885832 | B2707A06800FBL KCMS15 | G114 | 3891742 | B272Z14000HPS KN25 | G77 | 3902295 | KM40TSNRL4 | D33 |
| 3884439 | KSEM1950HPCCLM KC7410 | H48 | 3885833 | B2707A07000FBL KCMS15 | G114 | 3891744 | B272Z14500HPS KN25 | G77 | 3902973 | B291A04400YPL KC7315 | G94 |
| 3884440 | KSEM2000HPCCLM KC7410 | H48, H87 | 3885834 | B2707A07500FBL KCMS15 | G114 | 3891745 | B272Z15000HPS KN25 | G77 | 3903498 | B978A03300 KC7315 | G146 |
| 3884441 | KSEM2050HPCCLM KC7410 | H48 | 3885835 | B2707A07938FBL KCMS15 | G114 | 3891746 | B272Z15500HPS KN25 | G77 | 3903995 | B291A08600YPL KC7315 | G95 |
| 3884442 | KSEM2100HPCCLM KC7410 | H48, H87 | 3885836 | B2707A08000FBL KCMS15 | G114 | 3891747 | B272Z15870HPS KN25 | G77 | 3904143 | B291A03454YPL KC7315 | G94 |
| 3884443 | KSEM2150HPCCLM KC7410 | H48 | 3885837 | B2707A08500FBL KCMS15 | G114 | 3891748 | B273Z13100HPS KN25 | G78 | 3904144 | B291A03970YPL KC7315 | G94 |
| 3884444 | KSEM2200HPCCLM KC7410 | H48, H87 | 3885838 | B2707A08800FBL KCMS15 | G115 | 3891750 | B273Z14000HPS KN25 | G78 | 3904146 | B291A04851YPL KC7315 | G94 |
| 3884445 | KSEM2250HPCCLM KC7410 | H48 | 3885839 | B2707A09000FBL KCMS15 | G115 | 3891751 | B273Z14290HPS KN25 | G78 | 3904147 | B291A04915YPL KC7315 | G94 |
| 3884446 | KSEM2300HPCCLM KC7410 | H48, H87 | 3885840 | B2707A09500FBL KCMS15 | G115 | 3891752 | B273Z14500HPS KN25 | G78 | 3904148 | B291A05410YPL KC7315 | G94 |
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| 3904165.....B291A19050YPL KC7315..... | G96 | 3959614.....EDCT180516PDERLDJ KC422M..... | T73 | 3994693.....193.537..... | H102-103 | 4028508.....T621MF100X125R6HX-D4 KP625..... | M7 | | | | |
| 3904168.....B292A03970YPL KC7315..... | G94 | 3959615.....EDCT180532PDERLDU KC422M..... | T73 | 3994709.....B291A04900YPL KC7315..... | G94 | 4028509.....T621MF120X125R6HX-D4 KP625..... | M7 | | | | |
| 3904169.....B292A04763YPL KC7315..... | G94 | 3960806.....CNGX120416S02020 KB1340..... | B287 | 3994711.....B291A09800YPL KC7315..... | G95 | 4028510.....T621MF120X150R6HX-D4 KP625..... | M7 | | | | |
| 3904170.....B292A04851YPL KC7315..... | G94 | 3960807.....CNGX120412S01015 KB1340..... | B287 | 3998775.....KSEM1735HPGM KC7315..... | H42 | 4028511.....T621MF140X125R6HX-D4 KP625..... | M7 | | | | |
| 3904171.....B292A04915YPL KC7315..... | G94 | 3960808.....CNGX120412S01015FW KB1340..... | B287 | 3999270.....TRM50R0720M..... | E65 | 4028512.....T621MF140X150R6HX-D4 KP625..... | M7 | | | | |
| 3904172.....B292A08600YPL KC7315..... | G95 | 3960812.....SNGX120416S02020 KB1340..... | B287 | 3999273.....TRM50L0932M..... | E65 | 4028513.....T621MF160X150R6HX-D4 KP625..... | M7 | | | | |
| 3904173.....B292A08900YPL KC7315..... | G95 | 3964172.....KDMB06MOERGN KC505M..... | V118 | 3999274.....TRM50R0932M..... | E65 | 4028514.....T621MF180X150R6HX-D4 KP625..... | M7 | | | | |
| 3904174.....B292A09130YPL KC7315..... | G95 | 3964191.....KDMB06R150A06HN..... | V114 | 3999275.....TRM50L0632M..... | E65 | 4028861.....B271Z02383KMS KN25..... | G74 | | | | |
| 3904175.....B292A09700YPL KC7315..... | G95 | 3964192.....KDMB06R200A06HN..... | V114 | 3999276.....TRM50R0632M..... | E65 | 4028862.....B271Z02400KMS KN25..... | G74 | | | | |
| 3904176.....B292A15090YPL KC7315..... | G95 | 3964213.....KDMB08MOERGN KC505M..... | V118 | 3999277.....TRM50L0950M..... | E65 | 4028873.....B271Z02439KMS KN25..... | G74 | | | | |
| 3904177.....B292A11908YPL KC7315..... | G95 | 3964214.....KDMB10MOERGN KC505M..... | V118 | 3999278.....TRM50R0950M..... | E65 | 4028874.....B271Z02489KMS KN25..... | G74 | | | | |
| 3904178.....B292A212700YPL KC7315..... | G96 | 3964215.....KDMB12MOERGN KC505M..... | V118 | 4000408.....KSEM2800FDS28A1M....H80, H91, H98 | | 4028875.....B271Z02500KMS KN25..... | G74 | | | | |
| 3904179.....B292A14288YPL KC7315..... | G96 | 3964216.....KDMB16MOERGN KC505M..... | V118 | 4000409.....WD32FDS28128M..... | H102 | 4028876.....B271Z02578KMS KN25..... | G74 | | | | |
| 3904180.....B292A15875YPL KC7315..... | G96 | 3964217.....KDMB20MOERGN KC505M..... | V118 | 4000411.....WD32FDS28345M..... | H103 | 4028877.....B271Z02600KMS KN25..... | G74 | | | | |
| 3904182.....B292A17463YPL KC7315..... | G96 | 3964218.....KDMB25MOERGN KC505M..... | V118 | 4003224.....KSEM265HPGM KC7315..... | H43 | 4028880.....B271Z02779KMS KN25..... | G74 | | | | |
| 3906105.....R82154..... | K74 | 3964219.....KDMB32MOERGN KC505M..... | V118 | 4003518.....RIQ006R0200D1415..... | K54 | 4028881.....B271Z02800KMS KN25..... | G74 | | | | |
| 3949799.....B291A10200YPL KC7315..... | G95 | 3964220.....KDMB06MOERGP KC515M..... | V118 | 4003520.....B966A17000 KC7315..... | G134 | 4028882.....B271Z02820KMS KN25..... | G74 | | | | |
| 3949899.....A4R1005M10U00GMN KCP25..... | C97 | 3964221.....KDMB08MOERGP KC515M..... | V118 | 4003521.....B966A17500 KC7315..... | G134 | 4028883.....B271Z02870KMS KN25..... | G74 | | | | |
| 3950219.....WD32FDS32146M..... | H102 | 3964222.....KDMB10MOERGP KC515M..... | V118 | 4003522.....B966A18000 KC7315..... | G134 | 4028884.....B271Z02900KMS KN25..... | G74 | | | | |
| 3950220.....WD32FDS36166M..... | H102 | 3964223.....KDMB12MOERGP KC515M..... | V118 | 4004710.....CM215R ASSY..... | B149-150, | 4028885.....B271Z02947KMS KN25..... | G74 | | | | |
| 3950221.....WD50FDS50228M..... | H102 | 3964224.....KDMB16MOERGP KC515M..... | V118 | 4004750.....B63A09RF84SN12B1W..... | S103 | 4028886.....B272Z02383KMS KN25..... | G76 | | | | |
| 3950222.....WD50FDS56259M..... | H102 | 3964225.....KDMB20MOERGP KC515M..... | V118 | 4004751.....B63A09RF84SN12B2W..... | S103 | 4028887.....B272Z02400KMS KN25..... | G76 | | | | |
| 3950333.....WD50FDS6289M..... | H102 | 3964226.....KDMB25MOERGP KC515M..... | V118 | 4004752.....100B15RF84SN12B3W..... | S103 | 4028888.....B272Z02439KMS KN25..... | G76 | | | | |
| 3950653.....100A08RS90SD12PL-HF..... | V139 | 3964227.....KDMB32MOERGP KC515M..... | V118 | 4004793.....125B18RF84SN12B3W..... | S103 | 4028889.....B272Z02500KMS KN25..... | G76 | | | | |
| 3950668.....B291A05900YPL KC7315..... | G94 | 3964228.....KDMB06MOERGP KC505M..... | V118 | 4004794.....160C24RF84SN12B3W..... | S103 | 4028890.....B272Z02500KMS KN25..... | G76 | | | | |
| 3950831.....KM40TSLSL16N..... | D85 | 3964229.....KDMB08MOERGP KC505M..... | V118 | 4005063.....66A06R590R12..... | V72 | 4028896.....B272Z02800KMS KN25..... | G76 | | | | |
| 3950832.....KM40TSLSR16N..... | D85 | 3964230.....KDMB10MOERGP KC505M..... | V118 | 4005704.....LNUX191940RRP KCP10..... | E52 | 4028900.....B273Z02383KMS KN25..... | G78 | | | | |
| 3950854.....KM40TSLSR22N..... | D85 | 3964231.....KDMB12MOERGP KC505M..... | V118 | 4005706.....LNUX191940RRP KCP25..... | E52 | 4028901.....B273Z02439KMS KN25..... | G78 | | | | |
| 3950855.....KM40TSLSL16..... | D84 | 3964232.....KDMB16MOERGP KC505M..... | V118 | 4006482.....B976F03000 KC7315..... | G143 | 4028910.....B273Z02779KMS KN25..... | G78 | | | | |
| 3950856.....KM40TSLSL22..... | D84 | 3964233.....KDMB20MOERGP KC505M..... | V118 | 4006503.....B976A19840 KC7315..... | G142 | 4028911.....B273Z02800KMS KN25..... | G78 | | | | |
| 3950857.....KM40TSLSR16..... | D84 | 3964234.....KDMB25MOERGP KC505M..... | V118 | 4006504.....B977A19840 KC7315..... | G142 | 4028912.....B273Z02820KMS KN25..... | G78 | | | | |
| 3950858.....KM40TSLSR22..... | D84 | 3964235.....KDMB32MOERGP KC505M..... | V118 | 4006830.....KTIP270R8SS32M..... | H31 | 4028913.....B273Z02870KMS KN25..... | G78 | | | | |
| 3951835.....KM40TS16JNER2 KWH..... | D40 | 3964236.....KDMB06MOERLD K115M..... | V118 | 4008096.....TNMG160408FP KCP10..... | B124 | 4028915.....B273Z02947KMS KN25..... | G78 | | | | |
| 3951836.....KM40TS1E1JNER2 KWH..... | D40 | 3964237.....KDMB08MOERLD K115M..... | V118 | 4011180.....EDCT180550PDRLDJ KC410M..... | T73 | 4028916.....B274Z02383KMS KN25..... | G79 | | | | |
| 3954092.....SNMG190616RN KCPK05..... | B101 | 3964238.....KDMB10MOERLD K115M..... | V118 | 4011227.....B532A06700SPF KDF400..... | G105 | 4028917.....B274Z02400KMS KN25..... | G79 | | | | |
| 3954298.....G50MTTB1026KMA0..... | S87 | 3964239.....KDMB20MOERLD K115M..... | V118 | 4024763.....80A08RS90R12..... | V72 | 4028918.....B274Z02439KMS KN25..... | G79 | | | | |
| 3954300.....G80MTTB1564KMG63..... | S87 | 3964240.....KDMB16MOERLD K115M..... | V118 | 4025498.....63A07RS90R12..... | V72 | 4028920.....B274Z02500KMS KN25..... | G79 | | | | |
| 3955463.....KM40TSS10DLSEL11..... | D86 | 3964241.....KDMB20MOERLD K115M..... | V118 | 4025911.....B978A04800 KC7315..... | G146 | 4028922.....B274Z02600KMS KN25..... | G79 | | | | |
| 3955464.....KM40TSS10DLSEL11..... | D86 | 3964242.....KDMB25MOERLD K115M..... | V118 | 4026180.....T631M050X080R6HX-D1 KM6515..... | M25 | 4028923.....B274Z02642KMS KN25..... | G79 | | | | |
| 3955465.....KM40TSS12ELSEL11..... | D86 | 3964243.....KDMB32MOERLD K115M..... | V118 | 4026181.....T631M06X0100R6HX-D1 KM6515..... | M25 | 4028925.....B274Z02779KMS KN25..... | G79 | | | | |
| 3955466.....KM40TSS12ELSEL11..... | D86 | 3964244.....KDMB12MOERHD KC530M..... | V118 | 4026182.....T631M08X125R6HX-D1 KM6515..... | M25 | 4028926.....B274Z02800KMS KN25..... | G79 | | | | |
| 3955468.....KM40TS16FSLR16..... | D86 | 3964245.....KDMB16MOERHD KC530M..... | V118 | 4026223.....T631M100X150R6HX-D1 KM6515..... | M25 | 4028928.....B274Z02870KMS KN25..... | G79 | | | | |
| 3955469.....KM40TSS20GLSEL16..... | D86 | 3964246.....KDMB20MOERHD KC530M..... | V118 | 4026224.....T631M21X175R6HX-D6 KM6515..... | M25 | 4028929.....B274Z02900KMS KN25..... | G79 | | | | |
| 3955470.....KM40TSS20GLSEL16..... | D86 | 3964247.....KDMB25MOERHD KC530M..... | V118 | 4026225.....T631M140X200R6HX-D6 KM6515..... | M25 | 4028930.....B274Z02947KMS KN25..... | G79 | | | | |
| 3955471.....KM40TSS25HSLSEL16..... | D86 | 3964248.....KDMB32MOERHD KC530M..... | V118 | 4026226.....T631M160X200R6HX-D6 KM6515..... | M25 | 4029315.....HNUP130720ANSNGD KC725M..... | S26 | | | | |
| 3955472.....KM40TSS25HSLSEL16..... | D86 | 3964249.....KDMB16MOERHD KC530M..... | V118 | 4026227.....T631M180X250R6HX-D6 KM6515..... | M25 | 4029316.....HNJP130720ANSNGD KCPK30..... | S26 | | | | |
| 3955473.....KM40TSS32JLSEL16..... | D86 | 3964250.....KDMB16MOERHD KC530M..... | V118 | 4026231.....T631MF080X100R6HX-D4 KM6515..... | M25 | 4032304.....UEBE0200A3A KC643M..... | P195 | | | | |
| 3955474.....KM40TSS32JLSEL16..... | D86 | 3964251.....KDMB20MOERHD KC530M..... | V118 | 4026232.....T631MF100X100R6HX-D4 KM6515..... | M25 | 4032305.....UEBE0300A3A KC643M..... | P195 | | | | |
| 3955475.....KM40TSS32JLSEL22..... | D86 | 3964252.....KDMB08R100A10HN..... | V115 | 4026233.....T631MF100X125R6HX-D4 KM6515..... | M25 | 4032306.....UEBE0400A3A KC643M..... | P195 | | | | |
| 3955476.....KM40TSS32JLSEL22..... | D86 | 3964253.....KDMB08R150A10HN..... | V115 | 4026234.....T631MF102X150R6HX-D4 KM6515..... | M25 | 4032307.....UEBE0500A3A KC643M..... | P195 | | | | |
| 3955477.....KM40TSS32JLSEL22..... | D86 | 3964254.....KDMT10R120A10HNC..... | V130 | 4026235.....T631MF102X150R6HX-D4 KM6515..... | M25 | 4032308.....UEBE0600A3A KC643M..... | P195 | | | | |
| 3955478.....KM40TSS32JLSEL22..... | D86 | 3964255.....KDMT10R150A12HNC..... | V115 | 4026236.....T631MF120X150R6HX-D4 KM6515..... | M25 | 4032309.....UEBE0800A3A KC643M..... | P195 | | | | |
| 3955479.....KM40TSS32JLSEL22..... | D86 | 3964256.....KDMT12R120A16HNC..... | V115 | 4026237.....T631MF120X150R6HX-D4 KM6515..... | M25 | 4032310.....UEBE1000A3A KC643M..... | P195 | | | | |
| 3955480.....KM40TSS20GENL2..... | D38-39 | 3964257.....KDMB16R140A20HNC..... | V115 | 4026238.....T631MF160X150R6HX-D4 KM6515..... | M25 | 4032311.....UEBE1200A3A KC643M..... | P195 | | | | |
| 3955481.....KM40TSS20GENR2..... | D38-39 | 3964258.....KDMB16R175A20HNC..... | V115 | 4026239.....T631MF161X150R6HX-D4 KM6515..... | M25 | 4032783.....UEDF0200A3S KC643M..... | P192 | | | | |
| 3955482.....KM40TSS25ENEL2..... | D38-39 | 3964259.....KDMT100E080ERGN KC515M..... | V132 | 4027389.....100B09RS90R12..... | V72 | 4032784.....UEDF0300A3S KC643M..... | P192 | | | | |
| 3955483.....KM40TSS16FNL2..... | D38-39 | 3964260.....KDMT120E080ERGN KC515M..... | V132 | 4027886.....T621M050X080R6HX-D1 KM6515..... | M7 | 4032785.....UEDF0400A3S KC643M..... | P192 | | | | |
| 3955484.....KM40TSS25HNER2..... | D38-39 | 3964261.....KDMT120E080ERGN KC515M..... | V132 | 4027887.....T621M060X100R6HX-D1 KM6515..... | M7 | 4032786.....UEDF0500A3S KC643M..... | P192 | | | | |
| 3955485.....KM40TSS25ENEL3..... | D38-39 | 3964262.....KDMT120E080ERGN KC515M..... | V132 | 4027888.....T621M080X125R6HX-D1 KM6515..... | M7 | 4032787.....UEDF0600A3S KC643M..... | P192 | | | | |
| 3955486.....KM40TSS25ENEL3..... | D38-39 | 3964263.....KDMT120E080ERGN KC515M..... | V132 | 4027889.....T621M100X150R6HX-D1 KM6515..... | M7 | 4032788.....UEDF0800A3S KC643M..... | P192 | | | | |
| 3955487.....KM40TSS25ENEL3..... | D38-39 | 3964264.....KDMT120E080ERGN KC515M..... | V132 | 4027890.....T621M120X175R6HX-D1 KM6515..... | M7 | 4032789.....UEDF1000A3S KC643M..... | P192 | | | | |
| 3955488.....KM40TSS25ENEL3..... | D38-39 | 3964265.....KDMT120E080ERGN KC515M..... | V132 | 4027916.....T621M140X200R6HX-D6 KM6515..... | M7 | 4032790.....UEDE1200A3AS KC643M..... | P192 | | | | |
| 3955489.....KM40TSS25ENEL3..... | D38-39 | 3964266.....KDMT120E080ERGN KC515M..... | V132 | 4027917.....T621M160X200R6HX-D6 KM6515..... | M7 | 4032791.....UEDE0200B3AS KC643M..... | P192 | | | | |
| 3955490.....KM40TSS25ENEL3..... | D38-39 | 3964267.....KDMT120E080ERGN KC515M..... | V132 | 4027918.....T621M180X250R6HX-D6 KM6515..... | M7 | 4032792.....UEDE0300B3AS KC643M..... | P192 | | | | |
| 3955491.....KM40TSS25ENEL3..... | D38-39 | 3964268.....KDMT120E080ERGN KC515M..... | V132 | 4027919.....T621M180X250R6HX-D6 KM6515..... | M7 | 4032793.....UEDE0400B3AS KC643M..... | P192 | | | | |
| 3955492.....KM40TSS25ENEL3..... | D38-39 | 3964269.....KDMT120E080ERGN KC515M..... | V132 | 4027920.....T621M100X100R6HX-D4 KM6515..... | M7 | 4032794.....UEDE0500B3AS KC643M..... | P192 | | | | |
| 3955493.....KM40TSS25HNER3..... | D38-39 | 3964270.....KDMT120E080ERGN KC515M..... | V133 | 4027921.....T621M140X200R6HX-D4 KM6515..... | M7 | 4032795.....UEDE0600B3AS KC643M..... | P192 | | | | |
| 3955494.....KM40TSS25HNER3..... | D38-39 | 3964271.....KDMT120E080ERGN KC515M..... | V133 | 4027922.....T621M160X200R6HX-D4 KM6515..... | M7 | 4032796.....UEDE0800B3AS KC643M..... | P192 | | | | |
| 3955495.....KM40TSS25HNER3..... | D38-39 | 3964272.....KDMT120E080ERGN KC515M..... | V133 | 4027923.....T621M180X250R6HX-D6 KM6515..... | M7 | 4032797.....UEDE1000B3AS KC643M..... | P192 | | | | |
| 3955496.....KM40TSS25HNER3..... | D38-39 | 3964273.....KDMT120E080ERGN KC515M..... | V133 | 4027924.....T621M160X125R6HX-D4 KM6515..... | M7 | 4032798.....UEDE1200B3AS KC643M..... | P192 | | | | |
| 3955497.....KM40TSS25HNER3..... | D38-39 | 3964274.....KDMT120E080ERGN KC515 | | | | | | | | | |

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| 4033713 | B707A12700FBS KN15 | G115 | 4034881 | WOEJ090512SHD KCPK30 | .V41 | 4042842 | SPPX09T310HP KCU25 | .J89 | 4045188 | WNMG080412RP KCU10 | .B159 |
| 4033714 | B707A12700FBL KCMIS15 | G115 | 4034882 | WOEJ090512SRGD KC522M | .V41 | 4042887 | SPGX070308FP KCPK10 | .J90 | 4045189 | WNMG080412UP KCU10 | .B160 |
| 4033829 | NA4L8 KCU25 | .D12 | 4034925 | WOEJ090512SRGD KC725M | .V41 | 4042888 | SPGX070308MD KCPK10 | .J89 | 4045193 | CCGT09T301LF KCU10 | .B175 |
| 4033830 | NA4R4 KCU25 | .D12 | 4034927 | WOEJ090512SRGD KCPK30 | .V41 | 4042889 | SPGX070308HP KCPK10 | .J89 | 4045194 | CCGT09T304HP KCU10 | .B175 |
| 4033833 | NA6L2 KCU25 | .D12 | 4035459 | T640M040X07R6HX-D1 KP6525 | .M63 | 4042890 | SPPX09T310FP KCPK10 | .J90 | 4045195 | CCGT09T304LF KCU10 | .B175 |
| 4033834 | NA6L25 KCU25 | .D12 | 4035460 | T640M050X08R6HX-D1 KP6525 | .M63 | 4042891 | SPPX09T310MD KCPK10 | .J89 | 4045196 | CCGT09T308HP KCU10 | .B175 |
| 4033835 | NA6L3 KCU25 | .D12 | 4035461 | T640M060X10R6HX-D1 KP6525 | .M63 | 4042892 | SPPX09T310PH KCPK10 | .J89 | 4045197 | CCGT09T308LF KCU10 | .B175 |
| 4033836 | NA6R2 KCU25 | .D12 | 4035462 | T640M080X125R6HX-D1 KP6525 | .M63 | 4042903 | SPPX120412FP KCPK10 | .J90 | 4045198 | CCGT120402PH KCU10 | .B175 |
| 4033838 | NA6R3 KCU25 | .D12 | 4035463 | T640M100X150R6HX-D1 KP6525 | .M63 | 4042904 | SPPX120412MD KCPK10 | .J89 | 4045199 | CCGT120404HP KCU10 | .B175 |
| 4033841 | ND4050R KCU25 | .D14 | 4035464 | T640M20X175R6HX-D6 KP6525 | .M63 | 4042905 | SPPX120412HP KCPK10 | .J89 | 4045200 | CCGT120408HP KCU10 | .B175 |
| 4033845 | NDC38RDL75 KCU25 | .D15 | 4035465 | T640M140X200R6HX-D6 KP6525 | .M63 | 4042906 | SPPX15T512PF KCPK10 | .J90 | 4045202 | CCMT060204FW KCU10 | .B176 |
| 4033846 | NDC38RDR75 KCU25 | .D15 | 4035466 | T640M160X200R6HX-D6 KP6525 | .M63 | 4042907 | SPPX15T512MD KCPK10 | .J89 | 4045204 | CCMT09T304FW KCU10 | .B176 |
| 4033852 | NG1031L KCU25 | C155 | 4035467 | T640M180X250R6HX-D6 KP6525 | .M63 | 4042908 | SPPX15T512PH KCPK10 | .J89 | 4045205 | CCMT09T304MW KCU10 | .B178 |
| 4033853 | NG1047L KCU25 | C155 | 4035468 | T640M200X250R6HX-D6 KP6525 | .M63 | 4042913 | SPPX120412FP KCU25 | .J90 | 4045206 | CCMT09T308FW KCU10 | .B176 |
| 4033854 | NG1062L KCU25 | C155 | 4035469 | T640M220X250R6HX-D6 KP6525 | .M63 | 4042914 | SPPX15T512PF KCU25 | .J90 | 4045207 | CCMT09T308MW KCU10 | .B178 |
| 4033855 | NG1094L KCU25 | C155 | 4035525 | T641M050X080R6HX-D1 KP6525 | .M64 | 4042915 | SPPX15T512PH KCU25 | .J89 | 4045210 | CPGH09T301 KCU10 | .B188 |
| 4033856 | NG6312R KCU25 | C154 | 4035526 | T641M060X100R6HX-D1 KP6525 | .M64 | 4042933 | SPGX070308FP KCU40 | .J90 | 4045211 | CPGH09T302 KCU10 | .B188 |
| 4033858 | NG6375R KCU25 | C154 | 4035527 | T641M080X125R6HX-D1 KP6525 | .M64 | 4042934 | SPGX070308MD KCU40 | .J89 | 4045212 | CPGH09T304 KCU10 | .B188 |
| 4033859 | NT1L KCU25 | D25 | 4035528 | T641M100X150R6HX-D1 KP6525 | .M64 | 4042935 | SPGX070308HP KCU40 | .J89 | 4045213 | CPGH09T308 KCU10 | .B188 |
| 4033863 | NT3RB KCU25 | D20 | 4035529 | T641M120X175R6HX-D6 KP6525 | .M64 | 4042936 | SPPX09T310FP KCU40 | .J90 | 4045214 | CPGT060202HP KCU10 | .B188 |
| 4033872 | NTC3R12E KCU25 | D22 | 4035530 | T641M140X200R6HX-D6 KP6525 | .M64 | 4042937 | SPPX09T310MD KCU40 | .J89 | 4045215 | CPGT060202LF KCU10 | .B189 |
| 4033877 | NTC3R18E KCU25 | D22 | 4035531 | T641M160X200R6HX-D6 KP6525 | .M64 | 4042938 | SPPX09T310PH KCU40 | .J89 | 4045216 | CPGT060201LF KCU10 | .B189 |
| 4033882 | NTU4R KCU25 | D24 | 4035532 | T641M180X250R6HX-D6 KP6525 | .M64 | 4042939 | SPPX120412FP KCU40 | .J90 | 4045217 | CPGT060204HP KCU10 | .B188 |
| 4033883 | NU3094L KCU25 | C161 | 4035533 | T641M200X250R6HX-D6 KP6525 | .M64 | 4042940 | SPPX120412MD KCU40 | .J89 | 4045218 | CPGT060204LF KCU10 | .B189 |
| 4033886 | NU3125R KCU25 | C161 | 4035585 | RCMX3209MORU KCP10 | .E61 | 4042941 | SPPX120412HP KCU40 | .J89 | 4045220 | CPGT060208LF KCU10 | .B189 |
| 4033887 | NU3R3 KCU25 | C162 | 4035586 | RCMX3209MORU KCK20 | .E61 | 4042942 | SPPX15T512PF KCU40 | .J90 | 4045221 | CPGT09T302HP KCU10 | .B188 |
| 4033888 | NV4LL KCU25 | C162 | 4035593 | RCMX2507MORU KCK20 | .E61 | 4042943 | SPPX15T512MD KCU40 | .J89 | 4045222 | CPGT09T302LF KCU10 | .B189 |
| 4033889 | NV4RL KCU25 | C162 | 4035595 | RCHM2507MORU KCP25 | .E60 | 4042944 | SPPX15T512PH KCU40 | .J89 | 4045223 | CPGT09T304HP KCU10 | .B188 |
| 4033892 | NWC3R14E KCU25 | D25 | 4035698 | LNUX191940RFR KCP10 | .E51 | 4043046 | 32E03R045M16RP12 | .V70 | 4045224 | CPGT09T304LF KCU10 | .B189 |
| 4034717 | A4G0200M02P02GMP KCU10 | .C95 | 4036621 | RPGN090300E KYP30 | V155 | 4043047 | 40E04R045M16RP12 | .V70 | 4045225 | CPGT09T308HP KCU10 | .B188 |
| 4034718 | A4G0205M02U02GMN KCU10 | .C96 | 4036916 | LNUX191940RFR KCP25 | .E51 | 4043048 | 32A03R040B32RP12 | .V70 | 4045226 | CPGT09T308LF KCU10 | .B189 |
| 4034720 | A4G0250M2B02GMP KCU10 | .C95 | 4038003 | LNP2U2410ANSHDK KCPK30 | .S117 | 4043049 | 32A03R040A32RP12L190 | .V71 | 4045228 | CPMT060204FW KCU10 | .B189 |
| 4034721 | A4G0300M03P02GMP KCU10 | .C95 | 4038004 | LNP2U2410ANSRHD KCK15 | .S117 | 4043050 | 40A04R90S0RP12 | .V72 | 4045229 | CPMT060208FW KCU10 | .B189 |
| 4034722 | A4G0300M03P04GMP KCU10 | .C95 | 4038005 | LNP2U2410ANSRHD KCT25M | .S117 | 4043051 | 50A04S90S0RP12 | .V72 | 4045231 | CPMT09T304MW KCU10 | .B191 |
| 4034773 | A4G0305M03U02GMN KCU10 | .C96 | 4039608 | SM-906 KCT270 | .S116, S120, | 4043052 | 50A05S90S0RP12 | .V72 | 4045232 | CPMT09T308FW KCU10 | .B189 |
| 4034774 | A4G0305M03U02GMP KCU10 | .C95 | 4039774 | MS2236 | .V114-115 | 4043063 | 63A04R05S90S0RP12 | .V72 | 4045233 | DCGT070202HP KCU10 | .B206 |
| 4034776 | A4G0305M03U04GMN KCU10 | .C95 | 4040133 | SPGX070308MD KCU25 | .J89 | 4043065 | 80A04R90S0RP12 | .V72 | 4045234 | DCGT070201LP KCU10 | .B206 |
| 4034777 | A4G0400M04P02GMP KCU10 | .C95 | 4040135 | SPGX070308HP KCU25 | .J89 | 4044264 | B532A07200SPF KDF400 | .G105 | 4045240 | DCGT070208HP KCU10 | .B206 |
| 4034778 | A4G0400M04P04GMP KCU10 | .C95 | 4040138 | SPPX09T310MD KCU25 | .J89 | 4044820 | TCGT112021LP KCU10 | .B243 | 4045241 | DCGT11T302HP KCU10 | .B206 |
| 4034779 | A4G0400M04P08GMP KCU10 | .C95 | 4040139 | SPPX120412MD KCU25 | .J89 | 4044821 | TCGT112040HP KCU10 | .B243 | 4045242 | DCGT11T301LP KCU10 | .B206 |
| 4034780 | A4G0405M04U04GMN KCU10 | .C96 | 4040141 | SPPX120412HP KCU25 | .J89 | 4044822 | TCGT112040LP KCU10 | .B243 | 4045245 | DCR1150404 KCU10 | E28 |
| 4034781 | A4G0405M04U04GMP KCU10 | .C95 | 4040142 | SPPX15T512MD KCU25 | .J89 | 4045101 | VNGG160402LP KCU10 | .B143 | 4045246 | DCR1150408 KCU10 | E28 |
| 4034782 | A4G0405M04U08GMN KCU10 | .C96 | 4040178 | RPTET1204M0ELEJ K422M | .V73 | 4045102 | VNGG160404LP KCU10 | .B143 | 4045248 | KCR110304L08 KCU10 | E29 |
| 4034784 | A4G0500M05P04GMP KCU10 | .C95 | 4040905 | KC13M | .V153-154 | 4045134 | CGGT060202HP KCU10 | .B175 | 4045249 | KCR110304R08 KCU10 | E29 |
| 4034785 | A4G0500M05P08GMP KCU10 | .C95 | 4040931 | MEGA45D125B06LN24 | .S116 | 4045135 | CGGT060202LF KCU10 | .B175 | 4045250 | KCR110308L08 KCU10 | E29 |
| 4034786 | A4G0505M05U04GMN KCU10 | .C96 | 4040932 | MEGA45D160C07LN24 | .S116 | 4045136 | CGGT060201LP KCU10 | .B175 | 4045251 | KCR110308R08 KCU10 | E29 |
| 4034787 | A4G0505M05U04GMP KCU10 | .C95 | 4040954 | MEGA45D250C11LN24 | .S116 | 4045137 | CGGT060204HP KCU10 | .B175 | 4045263 | DCGT11T304HP KCU10 | .B206 |
| 4034788 | A4G0505M05U08GMN KCU10 | .C96 | 4040955 | MEGA45D151C13LN24 | .S116 | 4045138 | CGGT060204LF KCU10 | .B175 | 4045264 | DCGT11T308HP KCU10 | .B206 |
| 4034790 | A4G0600M06P04GMP KCU10 | .C95 | 4042332 | KSHRF50A04RS15HN09 | .S17 | 4045140 | CGGT060208LP KCU10 | .B175 | 4045265 | DCGT150408LF KCU10 | .B206 |
| 4034791 | A4G0600M06P08GMP KCU10 | .C95 | 4042533 | KSHRF160C12RS15HN09 | .S17 | 4045141 | CGGT060208LP KCU10 | .B175 | 4045266 | DCMT11T304FW KCU10 | .B207 |
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| 4034802 | A4G09412BP05GMN KCU10 | .C97 | 4042538 | B976Z02383 KCT315 | .G138 | 4045146 | VNGP160402 KCU10 | .B143 | 4045272 | DPGT070202LP KCU10 | .B214 |
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| 4034810 | A4G250I06P1GMN KCU10 | .C97 | 4042544 | B976Z02600 KCT315 | .G138 | 4045163 | VNGM160408FP KCU10 | .B145 | 4045281 | DPGT11T308LP KCU10 | .B214 |
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| 4034816 | A4R3035M03U00GMN KCU10 | .C97 | 4042549 | B976Z02820 KCT315 | .G138 | 4045169 | VNGM160412MP KCU10 | .B146 | 4045286 | RCMT060200 KCU10 | .B224 |
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| 4047868 | C2FX150508LMN KCU25 | E8 | 4050513 | CNMG160612MP KCU25 | B51 | 4050701 | CNMG160608RP KCU10 | B53 | 4051799 | B255A09500VPC KCK10... | G60 |
| 4047870 | D4FX140604RMN KCU25 | E11 | 4050514 | CNMG190612MP KCU25 | B51 | 4050702 | CNMG160612MP KCU10 | B51 | 4051800 | B255A09525VPC KCK10... | G60 |
| 4047871 | D4FX140608RMN KCU25 | E11 | 4050515 | DNMG150608MP KCU25 | B79 | 4050704 | CNMG160612UP KCU10 | B53 | 4051801 | B255A09600VPC KCK10... | G60 |
| 4050057 | CNMG120408RP KCU25 | B53 | 4050516 | DNMG150612MP KCU25 | B79 | 4050705 | CNMG160612UP KCU10 | B54 | 4051802 | B255A09700VPC KCK10... | G60 |
| 4050058 | RCGT0803MOHP KCU25 | B222 | 4050517 | SNMG120412MP KCU25 | B98 | 4050709 | CNMG190612 KCU10 | B47 | 4051826 | D4FIX140608RMN KCP10... | E11 |
| 4050060 | CNGP120408 KCU10 | B46 | 4050518 | SNMG120412RP KCU25 | B101 | 4050711 | CNMG190612P KCU10 | B52 | 4051829 | C8FX1X20504RPP KCP10... | E12 |
| 4050061 | CNMG120408FP KCU10 | B49 | 4050519 | SNMG150612RP KCU25 | B101 | 4050712 | CNMG190612RP KCU10 | B53 | 4051830 | C8FX1X20508RPP KCP10... | E12 |
| 4050062 | CNMG120412FP KCU10 | B49 | 4050520 | SNMG190612RP KCU25 | B101 | 4050713 | CNMG190616MP KCU10 | B51 | 4051837 | B254A10200VPC KCK10... | G60 |
| 4050332 | KSEM1932HIGM KCM7315 | H42 | 4050521 | DCGR150404 KCU25 | E28 | 4050714 | CNMG190616RP KCU10 | B53 | 4051838 | B254A10262VPC KCK10... | G60 |
| 4050372 | CCGT060202HP KCU25 | B175 | 4050522 | DCGR150408 KCU25 | E28 | 4050743 | DNMG110408FP KCU10 | B77 | 4051839 | B254A10300VPC KCK10... | G60 |
| 4050395 | CNGG120402FS KCU25 | B46 | 4050523 | DCGR150412 KCU25 | E28 | 4050744 | DNMG150408FP KCU10 | B76 | 4051840 | B254A10320VPC KCK10... | G60 |
| 4050397 | CNGG120404FS KCU25 | B46 | 4050524 | KCGR110304L08 KCU25 | E29 | 4050746 | WNMG060404FP KCU10 | B156 | 4051842 | B254A10490VPC KCK10... | G60 |
| 4050398 | CNGG120408FS KCU25 | B46 | 4050525 | KCGR110304R08 KCU25 | E29 | 4050748 | RCGV060400 KCU10 | B166 | 4051843 | B255A09800VPC KCK10... | G60 |
| 4050399 | CNMG120402MS KCU25 | B52 | 4050526 | KCGR110308L08 KCU25 | E29 | 4050764 | SPGN120304 KCU10 | B169 | 4051844 | B255A09921VPC KCK10... | G60 |
| 4050400 | CNMG120401MS KCU25 | B52 | 4050527 | KCRG110308R08 KCU25 | E29 | 4050765 | SPGN120308 KCU10 | B169 | 4051845 | B255A10000VPC KCK10... | G60 |
| 4050402 | CNMG120404MS KCU25 | B52 | 4050528 | KNGX150404L20 KCU25 | E30 | 4050767 | SPGN120412 KCU10 | B169 | 4051846 | B255A10200VPC KCK10... | G60 |
| 4050403 | CCGT060204HP KCU25 | B175 | 4050529 | KNGX150408L20 KCU25 | E30 | 4050769 | SPGN190412 KCU10 | B169 | 4051847 | B255A10262VPC KCK10... | G60 |
| 4050404 | CCGT060208HP KCU25 | B175 | 4050531 | KCGX110301L15 KCU25 | E31 | 4050770 | SPGR090308K KCU10 | B169 | 4051848 | B255A10300VPC KCK10... | G60 |
| 4050405 | CCGT097302HP KCU25 | B175 | 4050532 | KCGX110302L15 KCU25 | E31 | 4050771 | TPGN110304 KCU10 | B171 | 4051849 | B255A10320VPC KCK10... | G60 |
| 4050406 | CCGT097304HP KCU25 | B175 | 4050533 | KCGX110304L15 KCU25 | E31 | 4050772 | TPGN110308 KCU10 | B171 | 4051850 | B255A10400VPC KCK10... | G60 |
| 4050407 | CCGT097308HP KCU25 | B175 | 4050534 | KCGX110308L15 KCU25 | E31 | 4050774 | TPGN160304 KCU10 | B171 | 4051852 | B255A10500VPC KCK10... | G60 |
| 4050408 | CCGT120402HP KCU25 | B175 | 4050535 | KNGX150404R2 KCU25 | E30 | 4050775 | TPGN160308 KCU10 | B171 | 4051853 | B255A10600VPC KCK10... | G60 |
| 4050410 | CCGT120408HP KCU25 | B175 | 4050536 | KNGX150408R20 KCU25 | E30 | 4050778 | TPGN220404 KCU10 | B171 | 4051854 | B255A10716VPC KCK10... | G60 |
| 4050412 | CPGH097302 KCU25 | B188 | 4050537 | KNGX220404R2 KCU25 | E30 | 4050779 | TPGN220408 KCU10 | B171 | 4051855 | B255A10800VPC KCK10... | G60 |
| 4050413 | CPGH097304 KCU25 | B188 | 4050539 | KCGX110302R15 KCU25 | E31 | 4050780 | TPGN220412 KCU10 | B171 | 4051856 | B255A10900VPC KCK10... | G60 |
| 4050414 | CPGH097308 KCU25 | B188 | 4050540 | KCGX110304R15 KCU25 | E31 | 4050783 | TPGR110308K KCU10 | B171 | 4051857 | B255A11000VPC KCK10... | G60 |
| 4050415 | CPGT060202HP KCU25 | B188 | 4050544 | VCMR160404 KCU25 | E33 | 4050784 | TPGR160304K KCU10 | B171 | 4051858 | B255A11100VPC KCK10... | G60 |
| 4050416 | CPGT060204HP KCU25 | B188 | 4050545 | VCMR160408 KCU25 | E33 | 4050785 | TPGR160308K KCU10 | B171 | 4051859 | B255A1113YVPC KCK10... | G60 |
| 4050417 | CPGT060208HP KCU25 | B188 | 4050546 | VGR160402 KCU25 | E34 | 4050786 | TPGR220404K KCU10 | B171 | 4051860 | B255A11200VPC KCK10... | G60 |
| 4050419 | CPGT097304HP KCU25 | B188 | 4050547 | VGR160404 KCU25 | E34 | 4050787 | TPGR220408K KCU10 | B171 | 4051862 | B255A11500VPC KCK10... | G60 |
| 4050420 | CPGT097308HP KCU25 | B188 | 4050548 | VGR160408 KCU25 | E34 | 40507895 | D2FX150504RHP KCU10 | E9 | 4051865 | B255A10400VPC KCK10... | G60 |
| 4050421 | D2GT072020HP KCU25 | B206 | 4050549 | VGR160412 KCU25 | E34 | 4050896 | D2FX150508RHP KCU10 | E9 | 4051866 | B255A11800VPC KCK10... | G60 |
| 4050422 | D2GT07204HP KCU25 | B206 | 4050607 | CDHS4T50S0 KCU25 | B184 | 4050899 | D2FX150508LHP KCU10 | E9 | 4051867 | B255A11900VPC KCK10... | G60 |
| 4050424 | D2GT11T302HP KCU25 | B206 | 4050608 | CDHS4T002 KCU25 | B184 | 4051036 | C8FIX120505RNP KCU25 | E12 | 4051868 | B255A11908VPC KCK10... | G60 |
| 4050425 | D2GT11T304HP KCU25 | B206 | 4050609 | CDHS4T004 KCU25 | B184 | 4051038 | C8FIX120503RMP KCU25 | E12 | 4051869 | B255A12000VPC KCK10... | G60 |
| 4050426 | D2GT11T308HP KCU25 | B206 | 4050611 | CDHS4T002L KCU25 | B184 | 4051039 | C8FIX150605LRN KCU25 | E11 | 4051870 | B255A12100VPC KCK10... | G60 |
| 4050428 | D2GT070204HP KCU25 | B214 | 4050613 | CDHS4T004L KCU25 | B184 | 4051040 | C8FIX150608LRN KCU25 | E11 | 4051871 | B255A12200VPC KCK10... | G60 |
| 4050429 | D2GT070208HP KCU25 | B214 | 4050615 | GPCD050102 KCU25 | B222 | 4051041 | C8FIX150605RNP KCU25 | E11 | 4051872 | B255A12251VPC KCK10... | G60 |
| 4050430 | D2GT11T304HP KCU25 | B214 | 4050616 | GPCD050104 KCU25 | B222 | 4051042 | C8FIX150608RRN KCU25 | E11 | 4051873 | B255A12300VPC KCK10... | G60 |
| 4050431 | D2GT11T308HP KCU25 | B214 | 4050619 | TDHB07T1250 KCU25 | B249 | 4051044 | C8FIX150603RMP KCU25 | E12 | 4051874 | B255A12304VPC KCK10... | G60 |
| 4050432 | RCGT10T3M0HP KCU25 | B222 | 4050620 | TDHB07T1202 KCU25 | B249 | 4051048 | C8FX18012RNN KCU25 | E11 | 4051875 | B255A12500VPC KCK10... | G60 |
| 4050434 | TGCT110202HP KCU25 | B243 | 4050621 | TDHB07T1204 KCU25 | B249 | 4051051 | MS2190CG... | V82 | 4051876 | B255A12700VPC KCK10... | G60 |
| 4050435 | TGCT110204HP KCU25 | B243 | 4050623 | TDHH07T1202 L KCU25 | B249 | 4051052 | MS2188C... | V82 | 4051878 | B255A13000VPC KCK10... | G60 |
| 4050437 | TGCT16T302HP KCU25 | B243 | 4050624 | TDHH07T1204 KCU25 | B249 | 4051066 | C2FX110404RNP KCU10... | E8 | 4051879 | B255A13096VPC KCK10... | G60 |
| 4050441 | TPGT110204HP KCU25 | B254 | 4050628 | TPGH160304 KCU25 | B253 | 4051074 | C2FX150508LMLN KCU10... | E8 | 4051881 | B255A13495VPC KCK10... | G60 |
| 4050444 | TPGT16T304HP KCU25 | B254 | 4050632 | RCGG040300FS KCU10... | E63 | 4051077 | D4FX140608RRN KCU10... | E11 | 4051882 | B255A13500VPC KCK10... | G60 |
| 4050445 | TPGT16T308HP KCU25 | B254 | 4050653 | RCGG040300HP KCU10... | E63 | 4051088 | D2FX110403LHP KCU10... | E9 | 4051884 | B255A14000VPC KCK10... | G60 |
| 4050447 | VBGT110304HP KCU25 | B264 | 4050654 | RCGG060400FS KCU10... | E63 | 4051089 | D2FX110403RHP KCU10... | E9 | 4051885 | B255A14100VPC KCK10... | G60 |
| 4050448 | VBGT160404HP KCU25 | B264 | 4050655 | RCGG060400HP KCU10... | E63 | 4051090 | C2FX110405LMLN KCU10... | E8 | 4051886 | B255A14288VPC KCK10... | G60 |
| 4050449 | VBGT160408HP KCU25 | B264 | 4050656 | RCGG090700FS KCU10... | E63 | 4051091 | E2FX100505LHP KCU10... | E10 | 4051887 | B255A14500VPC KCK10... | G60 |
| 4050451 | CNMG120408MP KCU25 | B51 | 4050657 | RCGG090700HP KCU10... | E63 | 4051092 | E2FX100505RHP KCU10... | E10 | 4051888 | B255A14600VPC KCK10... | G60 |
| 4050452 | CNMG120412MP KCU25 | B51 | 4050658 | RCGG120800FS KCU10... | E63 | 4051104 | D2FX150503LHP KCU10... | E9 | 4051889 | B255A14684VPC KCK10... | G60 |
| 4050453 | CNMG120404RP KCU25 | B53 | 4050659 | RCGG120800HP KCU10... | E63 | 4051106 | D2FX150503LMS KCU10... | E10 | 4051893 | B255A15000VPC KCK10... | G60 |
| 4050454 | CNMG120408MS KCU25 | B52 | 4050661 | RCMG060400 KCU10... | E63 | 4051107 | D2FX150505LMS KCU10... | E10 | 4051894 | B255A15033VPC KCK10... | G60 |
| 4050455 | CNMG120412MS KCU25 | B52 | 4050664 | CNMG120402LF KCU10... | B46 | 4051109 | D2FX150503RHP KCU10... | E9 | 4051896 | B255A15250VPC KCK10... | G60 |
| 4050456 | CNMG120412RP KCU25 | B53 | 4050665 | CNMG120401LF KCU10... | B46 | 4051110 | D2FX150505RNP KCU10... | E10 | 4051897 | B255A15400VPC KCK10... | G61 |

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| 4053290 | B256A09800YPC KCK10..... | G60 | 4054407 | C8FX150605RRN KCP25..... | E11 | 4056175 | SS20KST135AR3M..... | K38 | 4059064 | T631M300X350R6H-X-L KP6525....M31 | |
| 4053291 | B256A10000YPC KCK10..... | G60 | 4054408 | C8FX150608RRN KCP25..... | E11 | 4056176 | SS20KST155AR3M..... | K38 | 4059065 | T631M330X350R6H-X-L KP6525....M31 | |
| 4053312 | CDHHS4T0X0 KCU10..... | B184 | 4054409 | C8FX150603LMP KCP25..... | E12 | 4056177 | SS16KST115AR5M..... | K38 | 4059067 | T631M360X400R6H-X-L KP6525....M31 | |
| 4053323 | CDHBS4T002 KCU10..... | B184 | 4054410 | C8FX150603RMP KCP25..... | E12 | 4056178 | SS20KST135AR5M..... | K38 | 4059069 | T631M420X450R6H-X-L KP6525....M31 | |
| 4053324 | CDHHS4T002 KCU10..... | B184 | 4054412 | C8FX180812LRN KCP25..... | E11 | 4056179 | SS20KST155AR5M..... | K38 | 4059090 | T620M240X300R6H-X-D KP6525....M8 | |
| 4053325 | CDHHS4T002L KCU10..... | B184 | 4054413 | C8FX180808RRN KCP25..... | E11 | 4056390 | RHM14000KST115H7HF KT6215.... | K31 | 4059092 | T620M300X350R6H-X-D KP6525....M8 | |
| 4053326 | CDHHS4T002R KCU10..... | B184 | 4054414 | C8FX180812RRN KCP25..... | E11 | 4056513 | RPGN120400E VSP30..... | V155 | 4059113 | T620M330X350R6H-X-D KP6525....M8 | |
| 4053327 | CDHHS4T004L KCU10..... | B184 | 4054416 | C8FX180805RMP KCP25..... | E12 | 4056980 | RHM14000KST115H7HF KT325.... | K31 | 4059115 | T620M360X400R6H-X-D KP6525....M8 | |
| 4053328 | CDHHS4T004R KCU10..... | B184 | 4054421 | D2FX150504RMN KCP25..... | E9 | 4056981 | RHM14288KST115H7HF KT325.... | K31 | 4059117 | T620M420X450R6H-X-D KP6525....M8 | |
| 4053336 | TDHB07T1202 KCU10..... | B249 | 4054422 | D2FX150508RMN KCP25..... | E9 | 4056983 | RHM15875KST115H7HF KT325.... | K31 | 4059121 | T630M300X350R6H-X-D KP6525....M28 | |
| 4053337 | TDHB07T1204 KCU10..... | B249 | 4054435 | D2FX150508LMN KCP25..... | E9 | 4056984 | RHM16000KST135H7HF KT325.... | K31 | 4059122 | T630M330X350R6H-X-D KP6525....M28 | |
| 4053339 | TDHH07T1202L KCU10..... | B249 | 4054442 | C2FX110408LMN KCP25..... | E8 | 4056985 | RHM17000KST135H7HF KT325.... | K31 | 4059124 | T630M360X400R6H-X-D KP6525....M28 | |
| 4053340 | TDHH07T1202R KCU10..... | B249 | 4054444 | C2FX150508LMN KCP25..... | E8 | 4056986 | RHM17463KST135H7HF KT325.... | K31 | 4059126 | T630M420X450R6H-X-D KP6525....M28 | |
| 4053341 | TDHH07T1204L KCU10..... | B249 | 4054447 | D4FX140608RMN KCP25..... | E11 | 4056987 | RHM18000KST155H7HF KT325.... | K31 | 4059129 | T631M240X300R6H-X-D KP6525....M29 | |
| 4053342 | TDHH07T1204R KCU10..... | B249 | 4054449 | D4FX140608LMN KCP25..... | E11 | 4056988 | RHM19000KST155H7HF KT325.... | K31 | 4059131 | T631M300X350R6H-X-D KP6525....M29 | |
| 4053344 | TPGH160304 KCU10..... | B253 | 4054450 | C8FX120504R KCP25..... | E12 | 4056989 | RHM19050KST155H7HF KT325.... | K31 | 4059132 | T631M330X350R6H-X-D KP6525....M29 | |
| 4053352 | DNGG150402LF KCU10..... | B74 | 4054451 | C8FX120508RPP KCP25..... | E12 | 4056990 | RHM14288SST115H7HF KT6215.... | K31 | 4059134 | T631M360X400R6H-X-D KP6525....M29 | |
| 4053363 | DNGG150404LF KCU10..... | B74 | 4054453 | C8FX150612RRN KCP25..... | E11 | 4056993 | RHM16000KST135H7HF KT6215.... | K31 | 4059136 | T631M420X450R6H-X-D KP6525....M29 | |
| 4053364 | DNGG150408LF KCU10..... | B74 | 4054455 | C8FX120508LRP KCP25..... | E12 | 4056994 | RHM17000KST135H7HF KT6215.... | K31 | 4059463 | KSHR800A4RS45HN13..... | S25 |
| 4053366 | DNGP150402 KCU10..... | B74 | 4054456 | C8FX150612LRN KCP25..... | E11 | 4056995 | RHM17463KST135H7HF KT6215.... | K31 | 4059485 | KSHR160C09RS45HN13..... | S25 |
| 4053367 | DNGP150404 KUJ10..... | B74 | 4054474 | D2FX110403RHP KCP25..... | E9 | 4056996 | RHM18000KST155H7HF KT6215.... | K31 | 4059486 | KSHR315C18RS45HN13..... | S25 |
| 4053368 | DNGP150408 KUJ10..... | B74 | 4054475 | D2FX110405RMN KCP25..... | E9 | 4056997 | RHM19000KST155H7HF KT6215.... | K31 | 4059938 | LNEU1240R08 4 KC725M..... | U19 |
| 4053369 | DNGP150604 KUJ10..... | B74 | 4054477 | C2FX110405LMN KCP25..... | E8 | 4056998 | RHM19050KST155H7HF KT6215.... | K31 | 4059939 | LNEU1240R16 4 KC725M..... | U19 |
| 4053370 | DNGP150608 KUJ10..... | B74 | 4054478 | C2FX110405RMN KCP25..... | E8 | 4057034 | RHM14000KST115H7HF KT325.... | K29 | 4059940 | LNEU1235R03 4 KC725M..... | U19 |
| 4053371 | DNMG110404FW KCU10..... | B78 | 4054483 | D2FX150505LMN KCP25..... | E9 | 4057035 | RHM14288KST115H7HF KT325.... | K29 | 4059941 | LNEU1240R03 4 KC725M..... | U19 |
| 4053372 | DNMG110408FF KCU10..... | B76 | 4054484 | D2FX150505LRN KCP25..... | E10 | 4057036 | RHM15000KST115H7HF KT325.... | K29 | 4059942 | LNEU1235R03 4 KC725M..... | U20 |
| 4053373 | DNMG110408MP KCU10..... | B79 | 4054486 | D2FX150503RHP KCP25..... | E9 | 4057037 | RHM15875KST115H7HF KT325.... | K29 | 4060093 | LNEQ1240R03 4 KC725M..... | U20 |
| 4053374 | DNMG110408RP KCU10..... | B81 | 4054487 | D2FX150505RPN KCP25..... | E10 | 4057038 | RHM16000KST135H7HF KT325.... | K29 | 4060099 | LNEU1235R03 4 KC520M..... | U19 |
| 4053376 | DNMG150404CT KCU10..... | B76 | 4054488 | D2FX150505RMN KCP25..... | E9 | 4057039 | RHM17000KST135H7HF KT325.... | K29 | 4060100 | LNEU1240R08 4 KC520M..... | U19 |
| 4053377 | DNMG150404FF KCU10..... | B76 | 4054490 | D2FX150503RMN KCP25..... | E9 | 4057040 | RHM17463KST135H7HF KT325.... | K29 | 4060101 | LNEU1240R03 4 KC520M..... | U19 |
| 4053378 | DNMG150404FW KCU10..... | B78 | 4054491 | C2FX150505LMN KCP25..... | E8 | 4057041 | RHM18000KST155H7HF KT325.... | K29 | 4060102 | LNEU1235R03SGP 4 KC725M..... | U20 |
| 4053379 | DNMG150404MP KCU10..... | B79 | 4054494 | B976A03175 KC7315..... | G138 | 4057042 | RHM19000KST155H7HF KT325.... | K29 | 4060528 | KST11515AS..... | K38 |
| 4053380 | DNMG150404P KCU10..... | B81 | 4054495 | B976A03454 KC7315..... | G138 | 4057044 | RHM14000KST115H7HF KT6215.... | K29 | 4060529 | KST13515AS..... | K38 |
| 4053381 | DNMG150404UP KCU10..... | B82 | 4054496 | B976A03734 KC7315..... | G138 | 4057045 | RHM14288SST115H7HF KT6215.... | K29 | 4060912 | KSHR200C10RS45HN13..... | S25 |
| 4053383 | DNMG150408FW KCU10..... | B78 | 4054497 | B976A03797 KC7315..... | G138 | 4057047 | RHM15875KST115H7HF KT6215.... | K29 | 4060933 | KSHR250C12RS45HN13..... | S25 |
| 4053384 | DNMG150408MP KCU10..... | B79 | 4054498 | B976A04039 KC7315..... | G138 | 4057048 | RHM16000KST135H7HF KT6215.... | K29 | 4060934 | KSHR315C14RS45HN13..... | S25 |
| 4053386 | DNMG150408P KCU10..... | B81 | 4054499 | B976A04366 KC7315..... | G139 | 4057049 | RHM17000KST135H7HF KT6215.... | K29 | 4060935 | KSHR100B05RS45HN13..... | S25 |
| 4053387 | DNMG150408RP KCU10..... | B81 | 4054500 | B976A04496 KC7315..... | G139 | 4057051 | RHM18000KST155H7HF KT6215.... | K29 | 4060936 | KSHR125B06RS45HN13..... | S25 |
| 4053388 | DNMG150408UP KCU10..... | B82 | 4054501 | B976A04700 KC7315..... | G139 | 4057053 | RHM19050KST155H7HF KT6215.... | K29 | 4060937 | KSHR200C12RS45HN13..... | S25 |
| 4053389 | DNMG150412CT KCU10..... | B76 | 4054502 | B976A05106 KC7315..... | G139 | 4057057 | HSK63FBHM1696..... | K128 | 4060938 | KSHR250C14RS45HN13..... | S25 |
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| 4053396 | DNMG150604MP KCU10..... | B79 | 4054507 | B976A06909 KC7315..... | G139 | 4057062 | AFM47115..... | K131 | 4063183 | KTIP270R3SCF25M..... | H32 |
| 4053399 | DNMG150608FW KCU10..... | B78 | 4054508 | B976A07366 KC7315..... | G140 | 4057093 | AFM29CSFP06..... | K132 | 4063184 | KTIP260R5SCF25M..... | H32 |
| 4053400 | DNMG150608MP KCU10..... | B79 | 4054509 | B976A08433 KC7315..... | G140 | 4057094 | AFM475CSFP09..... | K132 | 4063185 | KTIP270R5SCF25M..... | H32 |
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| 4112544 | B225A15400HP KCPK15 | G54 | 4112638 | B225A07600HP KCPK15 | G52 | 4112722 | B224A08500HP KCPK15 | G53 | 4112995 | A4G0200M02P02GMP KCU25....C95 | |
| 4112545 | B225A15479HP KCPK15 | G54 | 4112639 | B225A07700HP KCPK15 | G52 | 4112723 | B224A08700HP KCPK15 | G53 | 4112996 | A4G0205M02U02GMP KCU25....C96 | |
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| 4112548 | B225A15700HP KCPK15 | G54 | 4112642 | B225A07938HP KCPK15 | G52 | 4112726 | B224A09000HP KCPK15 | G53 | 4112999 | A4G0300M03P02GMP KCU25....C95 | |
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| 4112550 | B225A15875HP KCPK15 | G54 | 4112644 | B225A08100HP KCPK15 | G52 | 4112728 | B224A09500HP KCPK15 | G53 | 4113001 | A4G0305M03U02B KCU25....C98 | |
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| 4112553 | B225A16100HP KCPK15 | G54 | 4112647 | B225A08334HP KCPK15 | G53 | 4112731 | B224A10000HP KCPK15 | G53 | 411304 | A4G0305M03U04GMP KCU25....C96 | |
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| 4114331 | A4G0805M08U12GMN KCU25 | C96 | | | S15 | 4124359 | UGDE1200A5BRB KC643M | P37 | 4129463 | KTIP210R1SS25M | H31 |
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| 4114334 | A4G1005M10U08GMP KCU25 | C95 | | | S15 | 4124361 | UGDE1200A5BRD KC643M | P37 | 4129465 | KTIP230R1SS25M | H31 |
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| 4114339 | A4G250I06P1GMN KCU25 | C97 | 4121578 | HNGJ0604ANE NL KC522M.....S6 | S12 | 4124366 | UGDE1600A5ARE KC643M | P36 | 4129470 | KTIP080R1SCF12M | H32 |
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| 4114344 | A4R0205M02U00GMN KCU25 | C97 | 4121607 | XNGJ0604ANE NL3W KC522M.....S12 | S12 | 4124370 | UGDE1600A5BRD KC643M | P37 | 4129484 | KTIP100R1SCF16M | H32 |
| 4114345 | A4R0300M03P00GM KCU25 | C96 | 4121683 | SNMG120408MS KCU25 | B99 | 4124371 | UGDE1600A5BRE KC643M | P37 | 4129485 | KTIP105R1SCF16M | H32 |
| 4114346 | A4R0305M03U00GMN KCU25 | C97 | 4121684 | SNMG120408RP KCU25.....B101 | B101 | 4124372 | UGDE2000A5ARA KC643M | P36 | 4129486 | KTIP110R1SCF16M | H32 |
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| 4114351 | A4R0600M06P00GM KCU25 | C96 | 4121689 | SNMG190612MS KCU25 | B99 | 4124377 | UGDE2000A5BRA KC643M | P37 | 4129491 | KTIP135R1SCF16M | H32 |
| 4114352 | A4R0605M06U00GMN KCU25 | C97 | 4121690 | SNMG190616RP KCU25 | B101 | 4124378 | UGDE2000A5BRC KC643M | P37 | 4129492 | KTIP140R1SCF16M | H32 |
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| 4114354 | A4R0805M08U00GMN KCU25 | C97 | 4121696 | TNMG160404MS KCU25.....B126 | B126 | 4124380 | UGDE2000A5BRD KC643M | P37 | 4129494 | KTIP150R1SCF20M | H32 |
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| 4114356 | A4R1250I03P00GMN KCU25 | C97 | 4121698 | TNMG160408BP KCU25.....B128 | B128 | 4124382 | UGDE2500A5ARA KC643M | P36 | 4129496 | KTIP170R1SCF20M | H32 |
| 4114357 | A4R1870I04P00GMN KCU25 | C97 | 4121699 | TNMG160412RP KCU25.....B128 | B128 | 4124383 | UGDE2500A5ARB KC643M | P36 | 4129497 | KTIP180R1SCF25M | H32 |
| 4114358 | A4R250I06P00GMN KCU25 | C97 | 4121700 | TNMG220404MS KCU25.....B126 | B126 | 4124384 | UGDE2500A5ARC KC643M | P36 | 4129498 | KTIP190R1SCF25M | H32 |
| 4114696 | B967A09800 KCT315 | G133 | 4121701 | TNMG220408MS KCU25.....B126 | B126 | 4124385 | UGDE2500A5ARD KC643M | P36 | 4129499 | KTIP200R1SCF25M | H32 |
| 4114713 | B967A11800 KCT315 | G134 | 4121702 | TNMG220408BP KCU25.....B128 | B128 | 4124386 | UGDE2500A5ARE KC643M | P36 | 4129500 | KTIP210R1SCF25M | H32 |
| 4115401 | DFR040304ST KD1425 | J85 | 4121703 | TNMG220412MS KCU25.....B126 | B126 | 4124387 | UGDE2500A5BRA KC643M | P37 | 4129501 | KTIP220R1SCF25M | H32 |
| 4115433 | DFT057308ST KD1425 | J85 | 4121704 | TNMG220412RP KCU25.....B128 | B128 | 4124388 | UGDE2500A5BRE KC643M | P37 | 4129502 | KTIP230R1SCF25M | H32 |
| 4115434 | DFT067308ST KD1425 | J85 | 4121705 | TNMG220416RP KCU25.....B128 | B128 | 4124389 | UGDE2500A5BRC KC643M | P37 | 4129503 | KTIP240R1SCF25M | H32 |
| 4115435 | DFT070408ST KD1425 | J85 | 4121706 | TNMG270608MS KCU25.....B126 | B126 | 4124390 | UGDE2500A5BRD KC643M | P37 | 4129504 | KTIP250R1SCF25M | H32 |
| 4115436 | DFT090508ST KD1425 | J85 | 4121707 | TNMG270612RP KCU25.....B128 | B128 | 4124391 | UGDE2500A5BRE KC643M | P37 | 4129505 | KTIP260R1SCF25M | H32 |
| 4115437 | DFT110508ST KD1425 | J85 | 4121708 | VNGG160402FS KCU25 | B143 | 4124962 | B051A02000CPG KC7325 | G18 | 4129506 | KTIP270R1SCF25M | H32 |
| 4118347 | VGCR160404 KCP25 | E34 | 4121710 | VNGG160404FS KCU25 | B143 | 4125849 | A4G0505M05U04GMN KCP10 | C96 | 4129542 | CNGN120416T01020 KYS25 | B332 |
| 4119190 | HNGJ0604ANENLD KCPK30 | S6, S12, S15 | 4121711 | VNGG160408FS KCU25 | B143 | 4125882 | KSHR025D03M16HN06 | S8 | 4129546 | SNGN120416T01020 KYS25 | B335 |
| 4119224 | HNGJ0604ANENLD KCT25M | S6, S12, S15 | 4121712 | VNMG160402MS KCU25 | B146 | 4126343 | KSHR032D03M16HN06 | S8 | 4129549 | SNGN190616E KYS25 | B335 |
| 4119229 | HNPJ0604ANSNHD KCT25M | S7, S13, S16 | 4121714 | VNMG160404MS KCU25 | B146 | 4126344 | KSHR032D04M16HN06 | S8 | 4129552 | TNGN20412T01020 KYS25 | B336 |
| 4119227 | HNGJ0604ANENLD KCK15 | S6, S12, S15 | 4121715 | VNMG160408MS KCU25 | B146 | 4126348 | KSHR032D04MS2BHN06 | S8 | 4129553 | TNGN220416T01020 KYS25 | B336 |
| 4119228 | HNPJ0604ANSNHD KCPK30 | S7, S13, S16 | 4121716 | VNMG160408RP KCU25 | B147 | 4126349 | KSHR032D03B2BHN06 | S8 | 4129554 | CNGA120408E KYS25 | B332 |
| 4119230 | HNPJ0604ANSNHD KCK15 | S7, S13, S16 | 4121717 | VNMG160412RP KCU25 | B147 | 4126350 | KSHR032D04B2BHN06 | S8 | 4129555 | CNGA120408T01020 KYS25 | B332 |
| 4119253 | XNGJ0604ANENLD3W KCT25M | S11, S16 | 4121723 | WNMG080404MS KCU25 | B158 | 4126351 | KSHR025D02A20HN06L120 | S9 | 4129557 | CNGA120412T01020 KYS25 | B332 |
| 4119639 | HNGJ060432ANENLD KCPK30 | S6, S12, S15 | 4121724 | WNMG080408MS KCU25 | B158 | 4126352 | KSHR025D03A20HN06L120 | S9 | 4129562 | SNGA120412T01020 KYS25 | B335 |
| 4119697 | HNPJ060432ANENLD KCT22M | S7, S13, S16 | 4121719 | WNMG220408MS KCU25 | B146 | 4126383 | KSHR032D03A25HN06L130 | S9 | 4129563 | RCGX060400E KYS25 | B333 |
| 4119640 | HNGJ060432ANENLD KCT25M | S7, S12, S15 | 4121720 | WNMG060408RP KCU25 | B159 | 4126384 | KSHR032D04A25HN06L130 | S9 | 4129567 | CNGN120712T01020 KYS25 | B332 |
| 4119273 | HNPJ060432ANENLD KCT25M | S7, S13, S16 | 4121721 | WNMG060408RP KCU25 | B159 | 4126386 | KSHR025D03A25HN06L200 | S9 | 4129568 | CNGX120708T01020 KYS25 | B332 |
| 4119272 | WNMG0804042MS KCU25 | B158 | 4121722 | WNMG080404MS KCU25 | B158 | 4126387 | KSHR040404RS45HN06 | S10 | 4129569 | CNGX120712T01020 KYS25 | B332 |
| 4119255 | XNGJ0604ANENLD3W KCT25M | S11 | 4121723 | WNMG080404MS KCU25 | B158 | 4126388 | KSHR050A04RS45HN06 | S10 | 4129570 | DNGX150708T01020 KYS25 | B333 |
| 4119639 | HNGJ060432ANENLD KCPK30 | S6, S12, S15 | 4121724 | WNMG080408MS KCU25 | B158 | 4126389 | KSHR050A06RS45HN06 | S10 | 4129571 | DNGX150712T01020 KYS25 | B333 |
| 4119697 | HNPJ060432ANENLD KCT22M | S7, S13, S16 | 4121725 | WNMG080408RP KCU25 | B159 | 4126390 | KSHR063A08RS45HN06 | S10 | 4129576 | RNGN120700T01025 KYS25 | B334 |
| 4119640 | HNGJ060432ANENLD KCT25M | S7, S12, S15 | 4121726 | WNMG080412RP KCU25 | B159 | 4126391 | KSHR080A05RS45HN06 | S10 | 4129577 | RCGX120700T01025 KYS25 | B333 |
| 4119272 | WNMG080416RP KCU25 | B159 | 4121727 | WNMG080416RP KCU25 | B159 | 4126392 | KSHR080A08RS45HN06 | S10 | 4129565 | MEGA90D125B06LN22 | S122 |
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| 4135578 | TM711M080X125R2DHA KCU33 | M85 | 4138357 | TM741MF100X100R2DHA KCU36 | M90 | 4147460 | MEGA60D200C07LN22 | S120 | 4148922 | B051F04300CPG KC7325 | G24 |
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| 4135581 | TM711M140X200R2DHA KCU33 | M85 | 4138368 | TM741NC3750-16R2DHA KCU36 | M89 | 4147474 | RNGJ1204M0SHD KCPK30 | V58 | 4148925 | B051F04600CPG KC7325 | G24 |
| 4135582 | TM711M160X200R2DHA KCU33 | M85 | 4138370 | TM741NC0500-13R2DHA KCU36 | M89 | 4147477 | RNGJ1204M0SHD KC725M | V58 | 4148926 | B051F04700CPG KC7325 | G24 |
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| 4135667 | TM711MF060X075R2DHA KCU33 | M85 | 4138378 | TM741NF0500-20R2DHA KCU36 | M89 | 4147714 | KSHR05A04RS60HN06 | S14 | 4148931 | B051F05200CPG KC7325 | G24 |
| 4135668 | TM711MF080X075R2DHA KCU33 | M85 | 4138380 | TM741NF0625-18R2DHA KCU36 | M89 | 4147715 | KSHR05A05RS60HN06 | S14 | 4148932 | B051F05300CPG KC7325 | G24 |
| 4135669 | TM711MF080X100R2DHA KCU33 | M85 | 4138381 | TM741NC0750-16R2DHA KCU36 | M89 | 4147716 | KSHR063A04RS60HN06 | S14 | 4148933 | B051F05400CPG KC7325 | G24 |
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| 4135671 | TM711MF120X100R2DHA KCU33 | M85 | 4140842 | KSEM3920HPCCLM KC7410 | H49 | 4147718 | KSHR080A05RS60HN06 | S14 | 4148935 | B051F05600CPG KC7325 | G24 |
| 4135672 | TM711MF120X150R2DHA KCU33 | M85 | 4141558 | SSP8 | S126 | 4147719 | KSHR080A08RS60HN06 | S14 | 4148936 | B051F05700CPG KC7325 | G24 |
| 4135673 | TM711MF140X150R2DHA KCU33 | M85 | 4142614 | KSEM2210HPCCLM KC7410 | H48 | 4147720 | KSHR100B06RS60HN06 | S14 | 4148937 | B051F05800CPG KC7325 | G24 |
| 4135674 | TM711MF160X150R2DHA KCU33 | M85 | 4146399 | WNGA080408T01020 KY30 | B336 | 4147721 | KSHR100B09RS60HN06 | S14 | 4148938 | B051F05900CPG KC7325 | G24 |
| 4135675 | TM711MF180X150R2DHA KCU33 | M85 | 4146400 | WNGA080416T01020 KY30 | B336 | 4147722 | KSHR125B08RS60HN06 | S14 | 4148939 | B051F06000CPG KC7325 | G24 |
| 4135676 | TM711MF200X150R2DHA KCU33 | M85 | 4146401 | CNGA120408E KY30 | S322 | 4147723 | KSHR125B12RS60HN06 | S14 | 4148940 | B051F06100CPG KC7325 | G24 |
| 4135763 | TM721M060X100R2DHA KCU32 | M87 | 4146402 | CNGA120408T01020 KY30 | S322 | 4148475 | B051A18000CPG KC7325 | G22 | 4148941 | B051F06200CPG KC7325 | G25 |
| 4135764 | TM721M080X125R2DHA KCU32 | M87 | 4146424 | CNGA120412T01020 KY30 | S322 | 4148476 | B051A18100CPG KC7325 | G22 | 4148942 | B051F06300CPG KC7325 | G25 |
| 4135765 | TM721M100X150R2DHA KCU32 | M87 | 4146427 | DNGA150408T01020 KY30 | S333 | 4148477 | B051A18200CPG KC7325 | G22 | 4148943 | B051F06400CPG KC7325 | G25 |
| 4135766 | TM721M120X175R2DHA KCU32 | M87 | 4146428 | DNGA150412T01020 KY30 | S333 | 4148478 | B051A18258CPG KC7325 | G22 | 4148944 | B051F06500CPG KC7325 | G25 |
| 4135767 | TM721M140X200R2DHA KCU32 | M87 | 4146429 | SNGA120412T01020 KY30 | S335 | 4148479 | B051A18300CPG KC7325 | G22 | 4148945 | B051F06600CPG KC7325 | G25 |
| 4135768 | TM721M160X200R2DHA KCU32 | M87 | 4146436 | CNGN120712T01020 KY30 | S322 | 4148480 | B051A18400CPG KC7325 | G23 | 4148946 | B051F06700CPG KC7325 | G25 |
| 4135770 | TM721MF080X100R2DHA KCU32 | M87 | 4146437 | CNGN120716T01020 KY30 | S322 | 4148481 | B051A18500CPG KC7325 | G23 | 4148947 | B051F06800CPG KC7325 | G25 |
| 4135774 | TM721MF120X125R2DHA KCU32 | M87 | 4146438 | RCGX120700T01025 KY30 | S333 | 4148482 | B051A18600CPG KC7325 | G23 | 4148948 | B051F06900CPG KC7325 | G25 |
| 4135776 | TM721MF140X150R2DHA KCU32 | M87 | 4146440 | RNGN120400T01020 KY30 | S334 | 4148483 | B051A18654CPG KC7325 | G23 | 4148949 | B051F07000CPG KC7325 | G25 |
| 4135778 | TM721NC2500-20R2DHA KCU32 | M86 | 4146442 | RNGN120700T00525 KY30 | S334 | 4148484 | B051A18700CPG KC7325 | G23 | 4148950 | B051F07100CPG KC7325 | G25 |
| 4135779 | TM721NC3125-18R2DHA KCU32 | M86 | 4146443 | RNGN120700T01020 KY30 | S334 | 4148485 | B051A18800CPG KC7325 | G23 | 4148951 | B051F07200CPG KC7325 | G25 |
| 4135780 | TM721NC3750-16R2DHA KCU32 | M86 | 4146445 | RNGN190700T01020 KY30 | S334 | 4148486 | B051A18900CPG KC7325 | G23 | 4148952 | B051F07300CPG KC7325 | G25 |
| 4135781 | TM721NC4375-14R2DHA KCU32 | M86 | 4146446 | SNGN120408T01020 KY30 | S335 | 4148487 | B051A19000CPG KC7325 | G23 | 4148953 | B051F07400CPG KC7325 | G25 |
| 4135782 | TM721NC5000-13R2DHA KCU32 | M86 | 4146447 | SNGN120412T01020 KY30 | S335 | 4148488 | B051A19050CPG KC7325 | G23 | 4148954 | B051F07500CPG KC7325 | G25 |
| 4135783 | TM721NC5625-12R2DHA KCU32 | M86 | 4146448 | SNGN120416T01020 KY30 | S335 | 4148489 | B051A19100CPG KC7325 | G23 | 4148955 | B051F07600CPG KC7325 | G25 |
| 4135784 | TM721NC625-11R2DHA KCU32 | M86 | 4146451 | SNGN120716T01020 KY30 | S335 | 4148490 | B051A19200CPG KC7325 | G23 | 4148956 | B051F07700CPG KC7325 | G25 |
| 4135823 | TM731M040X070R2DHA KCU32 | M88 | 4146453 | SNGN190616T01020 KY30 | S335 | 4148491 | B051A19300CPG KC7325 | G23 | 4148957 | B051F07800CPG KC7325 | G25 |
| 4135824 | TM731M050X080R2DHA KCU32 | M88 | 4146454 | SNGN190724E KY30 | S335 | 4148492 | B051A19400CPG KC7325 | G23 | 4148958 | B051F07900CPG KC7325 | G25 |
| 4135825 | TM731M060X100R2DHA KCU32 | M88 | 4146459 | CNGX120708T01020 KY30 | S332 | 4148493 | B051A19500CPG KC7325 | G23 | 4148959 | B051F08000CPG KC7325 | G25 |
| 4135826 | TM731M080X125R2DHA KCU32 | M88 | 4146461 | CNGX120716T01020 KY30 | S332 | 4148494 | B051A19600CPG KC7325 | G23 | 4148960 | B051F08100CPG KC7325 | G25 |
| 4135827 | TM731M100X150R2DHA KCU32 | M88 | 4146462 | CNGX120716E KY30 | S332 | 4148495 | B051A19700CPG KC7325 | G23 | 4148961 | B051F08200CPG KC7325 | G25 |
| 4135828 | TM731M20X175R2DHA KCU32 | M88 | 4146464 | DNGX150712T01020 KY30 | S333 | 4148496 | B051A19800CPG KC7325 | G23 | 4148962 | B051F08300CPG KC7325 | G25 |
| 4135830 | TM731M160X200R2DHA KCU32 | M88 | 4146465 | DNGX150716T01020 KY30 | S333 | 4148497 | B051A19900CPG KC7325 | G23 | 4148963 | B051F08400CPG KC7325 | G25 |
| 4135832 | TM731MF080X100R2DHA KCU32 | M88 | 4146466 | SNGX120712T01020 KY30 | S335 | 4148498 | B051A20000CPG KC7325 | G23 | 4148964 | B051F08500CPG KC7325 | G25 |
| 4136208 | B269A03000HP KCPK15 | G68 | 4146467 | SNGX120716T01020 KY30 | S335 | 4148499 | B051A19600CPG KC7325 | G23 | 4148965 | B051F08600CPG KC7325 | G25 |
| 4136209 | B269A08500HP KCPK15 | G69 | 4146468 | RPGN090300E KY30 | S334 | 4148500 | B051A19700CPG KC7325 | G18 | 4148966 | B051F08700CPG KC7325 | G25 |
| 4136210 | B269A14000HP KCPK15 | G70 | 4146469 | RCGX060400E KY30 | S333 | 4148501 | B051A19800CPG KC7325 | G18 | 4148967 | B051F08800CPG KC7325 | G25 |
| 4137020 | A4G0305M030U2GMN KCP25 | C96 | 4146470 | RCGX090700E KY30 | S333 | 4148507 | B051A18000CPG KC7325 | G18 | 4148968 | B051F08900CPG KC7325 | G25 |
| 4137022 | A4G0405M040U4GMN KCP25 | C96 | 4146471 | RCGX090700T00525 KY30 | S333 | 4148508 | B051A19000CPG KC7325 | G18 | 4148969 | B051F09000CPG KC7325 | G25 |
| 4137043 | A4G0405M040U8GMN KCP25 | C96 | 4146472 | RCGX090700T01020 KY30 | S333 | 4148509 | B051A19000CPG KC7325 | G18 | 4148970 | B051F09100CPG KC7325 | G25 |
| 4137044 | A4G0505M05U04GMN KCP25 | C96 | 4146474 | RCGX120700T01020 KY30 | S333 | 4148510 | B051A20100CPG KC7325 | G18 | 4148971 | B051F09200CPG KC7325 | G25 |
| 4137045 | A4G0505M05U08GMN KCP25 | C96 | 4146475 | RCGX120400T01020 KY30 | S333 | 4148511 | B051A22000CPG KC7325 | G18 | 4148972 | B051F09300CPG KC7325 | G25 |
| 4137052 | A4G0805M08U2GMN KCP25 | C96 | 4146476 | RCGX090700T01020 KY30 | S334 | 4148512 | B051A23000CPG KC7325 | G18 | 4148973 | B051F09400CPG KC7325 | G25 |
| 4137053 | A4G0805M08U2GMN KCP25 | C96 | 4146477 | RCGX090700T01020 KY30 | S334 | 4148513 | B051F09500CPG KC7325 | G18 | 4148974 | B051F09600CPG KC7325 | G25 |
| 4137281 | CCNC1000A4AH KCN05 | P130 | 4146477 | CCNC1000A4AH KCN05 | P130 | 4148514 | B051F09600CPG KC7325 | G24 | 4148975 | B051F09700CPG KC7325 | G25 |
| 4137282 | CCNC1000A4BH KCN05 | P130 | 4146478 | CCNC1000A4BH KCN05 | P130 | 4148515 | B051F09700CPG KC7325 | G24 | 4148976 | B051F09800CPG KC7325 | G25 |
| 4137443 | CCNC1200A4AH KCN05 | P130 | 4146482 | RNGJ1204M0FLDJ K422MM | V57 | 4148517 | B051F098300CPG KC7325 | G24 | 4148977 | B051F09900CPG KC7325 | G25 |
| 4137444 | CCNC1200A4BH KCN05 | P130 | 4146583 | RNGJ1204MOELD KCPK30 | V57 | 4148843 | B051A02383CPG KC7325 | G18 | 4148978 | B051F09900CPG KC7325 | G25 |
| 4137452 | CCNC0600A3AH KCN05 | P130 | 4146584 | RNGJ1204MOELD KCPK32M | V57 | 4148844 | B051A02400CPG KC7325 | G18 | 4148995 | B051F10000CPG KC7325 | G25 |
| 4137453 | CCNC0600A3BH KCN05 | P130 | 4146585 | RNGJ1204MOELD KCPK25M | V57 | 4148845 | B051A02439CPG KC7325 | G18 | 4148996 | B051F10100CPG KC7325 | G25 |
| 4137475 | CBDB0600AXAS KCN05 | P132 | 4146586 | RNGJ1204M0SGD KCPK30 | V57 | 4148846 | B051A02489CPG KC7325 | G18 | 4148997 | B051F10200CPG KC7325 | G25 |
| 4137476 | CBDB0600AXBS KCN05 | P132 | 4146587 | RNGJ1204M0SGD KCPK22M | V57 | 4148847 | B051A02500CPG KC7325 | G18 | 4148998 | B051F10300CPG KC7325 | G25 |
| 4137477 | CBDB1000AXAS KCN05 | P132 | 4146588 | RNGJ1204M0SGD KCPK22RN12 | V57 | 4148848 | B051A02578CPG KC7325 | G18 | | | |



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| 4151461.....B041F12400CPG KC7325.....G16 | 4151628.....B041A01100CPG KC7325.....G8 | 4151797.....B042A02300CPG KC7325.....G8 | 4154108.....T600M100X150R6HX-D1 KSP21....M13 | | | | | | | | |
| 4151462.....B041F12500CPG KC7325.....G16 | 4151629.....B041A01181CPG KC7325.....G8 | 4151798.....B042A02383CPG KC7325.....G8 | 4154109.....T600M120X175R6HX-D6 KSP21....M13 | | | | | | | | |
| 4151463.....B041F12600CPG KC7325.....G16 | 4151630.....B041A01191CPG KC7325.....G8 | 4151799.....B042A02400CPG KC7325.....G8 | 4154110.....T600M140X200R6HX-D6 KSP21....M13 | | | | | | | | |
| 4151464.....B041F12700CPG KC7325.....G16 | 4151631.....B041A01200CPG KC7325.....G8 | 4151800.....B042A02439CPG KC7325.....G8 | 4154111.....T600M160X200R6HX-D6 KSP21....M13 | | | | | | | | |
| 4151465.....B041F12800CPG KC7325.....G16 | 4151632.....B041A01300CPG KC7325.....G8 | 4151801.....B042A02489CPG KC7325.....G8 | 4154112.....T600M180X250R6HX-D6 KSP21....M13 | | | | | | | | |
| 4151466.....B041F12900CPG KC7325.....G16 | 4151633.....B041A01321CPG KC7325.....G8 | 4151802.....B042A02500CPG KC7325.....G8 | 4154113.....T600M200X250R6HX-D6 KSP21....M13 | | | | | | | | |
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| 4151469.....B041F13200CPG KC7325.....G16 | 4151636.....B041A01500CPG KC7325.....G8 | 4151805.....B042A02642CPG KC7325.....G8 | 4154116.....T600MF100X125R6HX-D4 KSP21....M13 | | | | | | | | |
| 4151470.....B041F13300CPG KC7325.....G16 | 4151637.....B041A01600CPG KC7325.....G8 | 4151806.....B042A02700CPG KC7325.....G8 | 4154117.....T600MF120X125R6HX-D4 KSP21....M13 | | | | | | | | |
| 4151471.....B041F13400CPG KC7325.....G16 | 4151638.....B041A01700CPG KC7325.....G8 | 4151807.....B042A02705CPG KC7325.....G9 | 4154118.....T600MF120X150R6HX-D4 KSP21....M13 | | | | | | | | |
| 4151472.....B041F13500CPG KC7325.....G16 | 4151639.....B041A01800CPG KC7325.....G8 | 4151808.....B042A02779CPG KC7325.....G9 | 4154119.....T600MF140X150R6HX-D4 KSP21....M13 | | | | | | | | |
| 4151473.....B041F13600CPG KC7325.....G16 | 4151640.....B041A01900CPG KC7325.....G8 | 4151809.....B042A02800CPG KC7325.....G9 | 4154120.....T600MF160X150R6HX-D4 KSP21....M13 | | | | | | | | |
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| 4151478.....B041F14100CPG KC7325.....G16 | 4151645.....B041A02300CPG KC7325.....G8 | 4151819.....B042A02800CPG KC7325.....G9 | 4154651.....T622M080X125R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151479.....B041F14200CPG KC7325.....G16 | 4151646.....B041A02383CPG KC7325.....G8 | 4151820.....B042A02820CPG KC7325.....G9 | 4154652.....T622M100X150R6HX-D7 KSN28....M74 | | | | | | | | |
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| 4151481.....B041F14400CPG KC7325.....G16 | 4151648.....B041A02439CPG KC7325.....G8 | 4151822.....B042C0500A2KC643M.....P194 | 4154694.....T622M160X200R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151482.....B041F14500CPG KC7325.....G16 | 4151649.....B041A02489CPG KC7325.....G8 | 4151823.....B042C0600A2KC643M.....P194 | 4154695.....T622MF080X100R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151483.....B041F14600CPG KC7325.....G16 | 4151650.....B041A02500CPG KC7325.....G8 | 4151824.....B042C0800A2KC643M.....P194 | 4154696.....T622MF100X100R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151484.....B041F14700CPG KC7325.....G16 | 4151651.....B041A02578CPG KC7325.....G8 | 4151825.....B042C1000A2KC643M.....P194 | 4154697.....T622MF100X125R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151485.....B041F14800CPG KC7325.....G16 | 4151652.....B041A02600CPG KC7325.....G8 | 4151826.....B042C1200A2KC643M.....P194 | 4154698.....T622MF120X125R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151486.....B041F14900CPG KC7325.....G16 | 4151653.....B041A02642CPG KC7325.....G8 | 4151827.....B042C1500A2KC643M.....P194 | 4154699.....T622MF120X150R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151487.....B041F15000CPG KC7325.....G16 | 4151654.....B041A02700CPG KC7325.....G8 | 4151828.....B042C1800A2KC643M.....P194 | 4154700.....T622MF140X150R6HX-D7 KSN28....M74 | | | | | | | | |
| 4151488.....B041F15100CPG KC7325.....G16 | 4151655.....B041A02705CPG KC7325.....G9 | 4151829.....B042C2000A2KC643M.....P194 | 4154701.....T622MF160X150R6HX-D7 KSN28....M74 | | | | | | | | |
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| 4151493.....B041F15600CPG KC7325.....G16 | 4151660.....B041A02900CPG KC7325.....G9 | 4151834.....B042C3000A2KC643M.....P194 | 4156131.....UGDE1400A5ARD KC643M.....P36 | | | | | | | | |
| 4151494.....B041F15700CPG KC7325.....G16 | 4151661.....B041A02947CPG KC7325.....G9 | 4151835.....B042C3200A2KC643M.....P194 | 4156132.....UGDE1400A5BRD KC643M.....P37 | | | | | | | | |
| 4151495.....B041F15800CPG KC7325.....G16 | 4151736.....B053A01500CPG KC7325.....G18 | 4151836.....B042C3500A2KC643M.....P194 | 4156451.....T642M050X080R6HX-D1 K6P625....M65 | | | | | | | | |
| 4151496.....B041F15900CPG KC7325.....G16 | 4151737.....B053A01600CPG KC7325.....G18 | 4151837.....B650M240X300R6HX-D6 K6P625....M32 | 4156452.....T642M060X100R6HX-D1 K6P625....M65 | | | | | | | | |
| 4151497.....B041F16000CPG KC7325.....G16 | 4151738.....B053A01700CPG KC7325.....G18 | 4151838.....B650M240X300R6HX-D6 K6P625....M32 | 4156453.....T642M080X125R6HX-D6 K6P625....M65 | | | | | | | | |
| 4151498.....B041F16100CPG KC7325.....G16 | 4151739.....B053A01800CPG KC7325.....G18 | 4151839.....B650M300X200R6HX-D6 K6P625....M32 | 4156454.....T642M100X150R6HX-D6 K6P625....M65 | | | | | | | | |
| 4151499.....B041F16200CPG KC7325.....G16 | 4151740.....B053A01900CPG KC7325.....G18 | 4151840.....B650M300X300R6HX-D6 K6P625....M32 | 4156455.....T642M120X175R6HX-D6 K6P625....M65 | | | | | | | | |
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| 4151505.....B041F16800CPG KC7325.....G16 | 4151746.....B053A02383CPG KC7325.....G18 | 4151846.....B650M500X300R6HX-XL K6P625....M32 | 4156461.....T642M240X300R6HX-XL K6P625....M65 | | | | | | | | |
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| 4151507.....B041F17000CPG KC7325.....G17 | 4151748.....B053A02439CPG KC7325.....G18 | 4151848.....B650M360X400R6HX-XL K6P625....M32 | 4156551.....T643M060X100R6HX-D1 K6P625....M66 | | | | | | | | |
| 4151508.....B041F17100CPG KC7325.....G17 | 4151749.....B053A02489CPG KC7325.....G18 | 4151849.....B650M420X450R6HX-XL K6P625....M33 | 4156552.....T643M080X125R6HX-D1 K6P625....M66 | | | | | | | | |
| 4151509.....B041F17200CPG KC7325.....G17 | 4151750.....B053A02500CPG KC7325.....G18 | 4151850.....B650M420X500R6HX-XL K6P625....M33 | 4156553.....T643M100X150R6HX-D1 K6P625....M66 | | | | | | | | |
| 4151510.....B041F17300CPG KC7325.....G17 | 4151751.....B053A02578CPG KC7325.....G18 | 4151851.....B650M500X300R6HX-XL K6P625....M33 | 4156554.....T643M120X175R6HX-D1 K6P625....M66 | | | | | | | | |
| 4151511.....B041F17400CPG KC7325.....G17 | 4151752.....B053A02600CPG KC7325.....G18 | 4151852.....B650M500X350R6HX-XL K6P625....M33 | 4156555.....T643M140X200R6HX-D1 K6P625....M66 | | | | | | | | |
| 4151512.....B041F17500CPG KC7325.....G17 | 4151753.....B053A02642CPG KC7325.....G18 | 4151853.....B650M530X400R6HX-XL K6P625....M33 | 4156556.....T643M160X200R6HX-D1 K6P625....M66 | | | | | | | | |
| 4151513.....B041F17600CPG KC7325.....G17 | 4151754.....B053A02700CPG KC7325.....G18 | 4151854.....B650M570X450R6HX-XL K6P625....M33 | 4156557.....T643M180X200R6HX-D1 K6P625....M66 | | | | | | | | |
| 4151514.....B041F17700CPG KC7325.....G17 | 4151755.....B053A02750CPG KC7325.....G18 | 4151855.....B650M570X500R6HX-XL K6P625....M35 | 4156558.....T643M180X500R6HX-XL K6P625....M66 | | | | | | | | |
| 4151515.....B041F17800CPG KC7325.....G17 | 4151756.....B053A02779CPG KC7325.....G18 | 4151856.....B650M570X500R6HX-XL K6P625....M35 | 4156559.....T643M180X500R6HX-XL K6P625....M66 | | | | | | | | |
| 4151516.....B041F17900CPG KC7325.....G17 | 4151757.....B053A02800CPG KC7325.....G18 | 4151857.....B650M570X500R6HX-XL K6P625....M33 | 41565555.....T643M180X500R6HX-XL K6P625....M66 | | | | | | | | |
| 4151517.....B041F18000CPG KC7325.....G17 | 4151758.....B053A02820CPG KC7325.....G18 | 4151858.....B650M570X500R6HX-XL K6P625....M35 | 4156556.....T643M180X500R6HX-XL K6P625....M66 | | | | | | | | |
| 4151518.....B041F18100CPG KC7325.....G17 | 4151759.....B053A02870CPG KC7325.....G18 | 4151859.....B650M570X500R6HX-XL K6P625....M35 | 4156557.....T643M180X500R6HX-XL K6P625....M66 | | | | | | | | |
| 4151519.....B041F18200CPG KC7325.....G17 | 4151760.....B053A02900CPG KC7325.....G18 | 4151860.....B650M570X500R6HX-XL K6P625....M35 | 4157738.....T641M080X125R6HX-D1 KUJ36....M62 | | | | | | | | |
| 4151520.....B041F18300CPG KC7325.....G17 | 4151761.....B053A02947CPG KC7325.....G19 | 4151861.....B650M600X100R6HX-D1 K6P625....M26 | 4157739.....T641M100X150R6HX-D1 KUJ36....M62 | | | | | | | | |
| 4151521.....B041F18400CPG KC7325.....G17 | 4 | | | | | | | | | | |

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| 4158729 | KTIP0800HMP KCP15 | H26 | 4158971 | KTIP1380HPM KCP15 | H27 | 4159284 | KTIP2024HPM KCP15 | H28 | 4161344 | T604M120X175R6H-D6 KSH26 | M39 |
| 4158730 | KTIP0810HMP KCP15 | H26 | 4158972 | KTIP1389HPM KCP15 | H27 | 4159285 | KTIP2030HPM KCP15 | H28 | 4161345 | T604M140X200R6H-D6 KSH26 | M39 |
| 4158731 | KTIP0816HMP KCP15 | H26 | 4158973 | KTIP1390HPM KCP15 | H27 | 4159286 | KTIP2050HPM KCP15 | H28 | 4161346 | T604M160X200R6H-D6 KSH26 | M39 |
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| 4158902 | KTIP0880HMP KCP15 | H26 | 4158984 | KTIP1470HPM KCP15 | H27 | 4159297 | KTIP2223HPM KCP15 | H28 | 4164987 | RJQ09E1300 KC6005 | K55 |
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| 4158905 | KTIP0900HMP KCP15 | H26 | 4158987 | KTIP1508HPM KCP15 | H27 | 4159300 | KTIP2350HPM KCP15 | H28 | 4167882 | CV40FBHMKT645 | K123, K127 |
| 4158906 | KTIP0909HMP KCP15 | H26 | 4159030 | KTIP1520HPM KCP15 | H27 | 4159301 | KTIP2381HPM KCP15 | H28 | 4168063 | EBM1580160162 | K132 |
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| 4158932 | KTIP1050HMP KCP15 | H26 | 4159245 | KTIP1710HPM KCP15 | H27 | 4159629 | T623MF120X150R6H-X74 KSN28 | M75 | 4168943 | B269A03761HP KCP15 | G68 |
| 4158933 | KTIP1060HMP KCP15 | H26 | 4159246 | KTIP1720HPM KCP15 | H27 | 4159630 | T623MF140X150R6H-X74 KSN28 | M75 | 4168944 | B269A04000HP KCP15 | G68 |
| 4158934 | KTIP1070HMP KCP15 | H26 | 4159247 | KTIP1730HPM KCP15 | H27 | 4159631 | T623MF160X150R6H-X74 KSN28 | M75 | 4168945 | B269A04500HP KCP15 | G68 |
| 4158935 | KTIP1072HMP KCP15 | H26 | 4159248 | KTIP1740HPM KCP15 | H27 | 4159620 | T623M50X080R6H-X74 KSP21 | M75 | 4168946 | B269A04524HP KCP15 | G68 |
| 4158936 | KTIP1080HMP KCP15 | H26 | 4159249 | KTIP1748HPM KCP15 | H27 | 4159821 | T623M60X010R6H-X74 KSP21 | M75 | 4168947 | B269A04600HP KCP15 | G68 |
| 4158937 | KTIP1090HMP KCP15 | H26 | 4159250 | KTIP1750HPM KCP15 | H27 | 4159822 | T623M80X0125R6H-X74 KSP21 | M75 | 4168948 | B269A04628HP KCP15 | G68 |
| 4158938 | KTIP1100HMP KCP15 | H26 | 4159251 | KTIP1760HPM KCP15 | H27 | 4159843 | T623M100X150R6H-X74 KSP21 | M75 | 4168949 | B269A04761HP KCP15 | G68 |
| 4158939 | KTIP1110HMP KCP15 | H26 | 4159252 | KTIP1770HPM KCP15 | H27 | 4159844 | T623M120X175R6H-X74 KSP21 | M75 | 4168950 | B269A04800HP KCP15 | G68 |
| 4158940 | KTIP1111HMP KCP15 | H26 | 4159253 | KTIP1780HPM KCP15 | H27 | 4159845 | T623M160X200R6H-X74 KSP21 | M75 | 4168951 | B269A04850HP KCP15 | G68 |
| 4158941 | KTIP1120HMP KCP15 | H26 | 4159254 | KTIP1786HPM KCP15 | H27 | 4159846 | T623MF080X100R6H-X74 KSP21 | M75 | 4168952 | B269A04924HP KCP15 | G68 |
| 4158942 | KTIP1130HMP KCP15 | H26 | 4159255 | KTIP1790HPM KCP15 | H27 | 4159847 | T623MF100X100R6H-X74 KSP21 | M75 | 4168953 | B269A04961HP KCP15 | G68 |
| 4158943 | KTIP1140HMP KCP15 | H26 | 4159256 | KTIP1800HPM KCP15 | H27 | 4159848 | T623MF120X150R6H-X74 KSP21 | M75 | 4168954 | B269A04973HP KCP15 | G68 |
| 4158944 | KTIP1150HMP KCP15 | H26 | 4159257 | KTIP1810HPM KCP15 | H27 | 4159849 | T623MF140X150R6H-X74 KSP21 | M75 | 4168955 | B269A04984HP KCP15 | G68 |
| 4158945 | KTIP1151HMP KCP15 | H26 | 4159258 | KTIP1820HPM KCP15 | H27 | 4159850 | T623MF160X150R6H-X74 KSP21 | M75 | 4168956 | B269A05100HP KCP15 | G68 |
| 4158946 | KTIP1160HMP KCP15 | H26 | 4159259 | KTIP1826HPM KCP15 | H27 | 4159851 | T623MF030X050R6H-D1 KSN38 | M12 | 4169250 | B269A05264HP KCP15 | G68 |
| 4158947 | KTIP1170HMP KCP15 | H26 | 4159260 | KTIP1850HPM KCP15 | H27 | 4159852 | T670M040X070R6H-D1 KSN38 | M12 | 4169251 | B269A05300HP KCP15 | G68 |
| 4158948 | KTIP1180HMP KCP15 | H26 | 4159261 | KTIP1860HPM KCP15 | H27 | 4159933 | T670M050X080R6H-D1 KSN38 | M12 | 4169252 | B269A05410HP KCP15 | G68 |
| 4158949 | KTIP1190HMP KCP15 | H26 | 4159262 | KTIP1865HPM KCP15 | H27 | 4159934 | T670M060X100R6H-D1 KSN38 | M12 | 4169253 | B269A05500HP KCP15 | G68 |
| 4158950 | KTIP1191HMP KCP15 | H27 | 4159263 | KTIP1870HPM KCP15 | H27 | 4159935 | T670M080X125R6H-D1 KSN38 | M12 | 4169254 | B269A05558HP KCP15 | G68 |
| 4158951 | KTIP1200HMP KCP15 | H27 | 4159264 | KTIP1880HPM KCP15 | H27 | 4159936 | T670M100X150R6H-D1 KSN38 | M12 | 4169255 | B269A05600HP KCP15 | G69 |
| 4158952 | KTIP1210HMP KCP15 | H27 | 4159265 | KTIP1890HPM KCP15 | H27 | 4159937 | T670M120X175R6H-D6 KSN38 | M12 | 4169256 | B269A05700HP KCP15 | G69 |
| 4158953 | KTIP1220HMP KCP15 | H27 | 4159266 | KTIP1900HPM KCP15 | H27 | 4159938 | T670M160X200R6H-D6 KSN38 | M12 | 4169257 | B269A05800HP KCP15 | G69 |
| 4158954 | KTIP1230HMP KCP15 | H27 | 4159267 | KTIP1905HMP KCP15 | H27 | 4159939 | T680M030X050R6H-D1 KSN38 | M38 | 4169258 | B269A06000HP KCP15 | G69 |
| 4158955 | KTIP1240HMP KCP15 | H27 | 4159268 | KTIP1910HPM KCP15 | H27 | 4159940 | T680M040X070R6H-D1 KSN38 | M38 | 4169259 | B269A06200HP KCP15 | G69 |
| 4158956 | KTIP1 | | | | | | | | | | |

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| 4169274.....B269A08000HP KCPK15..... | G69 | 4171838.....TNMG160404FP KCU10..... | B124 | 4175851.....NG2047RK KCU10..... | C146 | 4175968.....NRD3062R KCU10..... | C159 | | | | |
| 4169275.....B269A08100HP KCPK15..... | G69 | 4171839.....TNMG160408FP KCU10..... | B124 | 4175852.....NG2062L KCU10..... | C155 | 4175969.....NRP3031L KCU10..... | C153 | | | | |
| 4169276.....B269A08334HP KCPK15..... | G69 | 4171840.....TNMG160412FP KCU10..... | B124 | 4175853.....NG2062L KCU10..... | C147 | 4175970.....NRP3031R KCU10..... | C153 | | | | |
| 4169277.....B269A08433HP KCPK15..... | G69 | 4171841.....TNMG220404FP KCU10..... | B124 | 4175854.....NG2062R KCU10..... | C154 | 4175971.....NRP3047L KCU10..... | C153 | | | | |
| 4169278.....B269A08700HP KCPK15..... | G69 | 4171842.....TNMG220408FP KCU10..... | B124 | 4175855.....NG2062R KCU10..... | C146 | 4175972.....NRP3047R KCU10..... | C153 | | | | |
| 4169279.....B269A08733HP KCPK15..... | G69 | 4171843.....VNMG160404FP KCU10..... | B145 | 4175856.....NG2094L KCU10..... | C155 | 4175975.....NRP3062R KCU10..... | C153 | | | | |
| 4169280.....B269A09000HP KCPK15..... | G69 | 4171844.....VNMG160408FP KCU10..... | B145 | 4175857.....NG2094L KCU10..... | C147 | 4175976.....NRP3094L KCU10..... | C153 | | | | |
| 4169281.....B269A09100HP KCPK15..... | G69 | 4171845.....WNMG060404FF KCU10..... | B155 | 4175858.....NG2094R KCU10..... | C154 | 4175977.....NRP3094R KCU10..... | C153 | | | | |
| 4169282.....B269A09129HP KCPK15..... | G69 | 4171848.....WNMG080404FP KCU10..... | B155 | 4175859.....NG2094R KCU10..... | C146 | 4175978.....NT3L KCU10..... | D19 | | | | |
| 4169283.....B269A09500HP KCPK15..... | G69 | 4171849.....WNMG080404FP KCU10..... | B156 | 4175860.....NG2125L KCU10..... | C155 | 4175979.....NT3LCK KCU10..... | D21 | | | | |
| 4169284.....B269A09525HP KCPK15..... | G69 | 4171851.....WNMG080408FP KCU10..... | B156 | 4175861.....NG2125L KCU10..... | C148 | 4175980.....NT3LK KCU10..... | D24 | | | | |
| 4169285.....B269A09921HP KCPK15..... | G69 | 4171853.....KNUX150405LP25 KCU10..... | E31 | 4175862.....NG2125R KCU10..... | C154 | 4175981.....NT3R KCU10..... | D19 | | | | |
| 4169286.....B269A10000HP KCPK15..... | G69 | 4171854.....KNUX150410LP25 KCU10..... | E31 | 4175863.....NG2125R KCU10..... | C146 | 4175982.....NT3RCK KCU10..... | D21 | | | | |
| 4169287.....B269A10200HP KCPK15..... | G69 | 4171855.....KCUX110302L15 KCU10..... | E32 | 4175864.....NG2M080L KCU10..... | C147 | 4175983.....NT3RK KCU10..... | D24 | | | | |
| 4169288.....B269A10300HP KCPK15..... | G69 | 4171856.....KCUX110305L15 KCU10..... | E32 | 4175865.....NG2M080R KCU10..... | C146 | 4175984.....NTF3L KCU10..... | D23 | | | | |
| 4169289.....B269A10320HP KCPK15..... | G69 | 4171857.....KNUX150405LP20 KCU10..... | E31 | 4175866.....NG2M100L KCU10..... | C147 | 4175985.....NTF3R KCU10..... | D23 | | | | |
| 4169290.....B269A10500HP KCPK15..... | G69 | 4171858.....KNUX150410R25 KCU10..... | E31 | 4175867.....NG2M100R KCU10..... | C146 | 4175986.....NTK3L KCU10..... | D23 | | | | |
| 4169291.....B269A10716HP KCPK15..... | G69 | 4171860.....KCUX110305R15 KCU10..... | E32 | 4175868.....NG2M120L KCU10..... | C147 | 4175987.....NTK3R KCU10..... | D23 | | | | |
| 4169292.....B269A10800HP KCPK15..... | G69 | 4175270.....B731A04200HP KCPK15..... | G120 | 4175869.....NG2M120R KCU10..... | C146 | 4175988.....NTP3L KCU10..... | D24 | | | | |
| 4169293.....B269A11000HP KCPK15..... | G69 | 4175271.....B731A05000HP KCPK15..... | G120 | 4175870.....NG2M140L KCU10..... | C147 | 4175989.....NTP3R KCU10..... | D24 | | | | |
| 4169294.....B269A1113HP KCPK15..... | G69 | 4175272.....B731A06800HP KCPK15..... | G120 | 4175871.....NG2M140R KCU10..... | C146 | 4176009.....NG4125L KCU10..... | C155 | | | | |
| 4169295.....B269A11500HP KCPK15..... | G70 | 4175403.....B731A108500HP KCPK15..... | G120 | 4175873.....NG2M170R KCU10..... | C146 | 4176010.....NG4125L KCU10..... | C148 | | | | |
| 4169296.....B269A11800HP KCPK15..... | G70 | 4175404.....B731A10200HP KCPK15..... | G120 | 4175875.....NG2M195R KCU10..... | C146 | 4176011.....NG4125R KCU10..... | C154 | | | | |
| 4169297.....B269A12000HP KCPK15..... | G70 | 4175405.....B731A10500HP KCPK15..... | G120 | 4175876.....NG2M200L KCU10..... | C147 | 4176012.....NG4125R KCU10..... | C147 | | | | |
| 4169298.....B269A12100HP KCPK15..... | G70 | 4175406.....B731A12000HP KCPK15..... | G120 | 4175877.....NG2M200R KCU10..... | C146 | 4176015.....NA3L4 KCU10..... | D12 | | | | |
| 4169299.....B269A12304HP KCPK15..... | G70 | 4175407.....B731A12500HP KCPK15..... | G120 | 4175878.....NG2M225L KCU10..... | C147 | 4176018.....NA3L8 KCU10..... | D12 | | | | |
| 4169300.....B269A12700HP KCPK15..... | G70 | 4175408.....B731A14000HP KCPK15..... | G120 | 4175879.....NG2M225R KCU10..... | C146 | 4176019.....NA3R10 KCU10..... | D12 | | | | |
| 4169301.....B269A13000HP KCPK15..... | G70 | 4175409.....B732A04200HP KCPK15..... | G121 | 4175880.....NG2M275R KCU10..... | C146 | 4176020.....NA3R12 KCU10..... | D12 | | | | |
| 4169302.....B269A13100HP KCPK15..... | G70 | 4175410.....B732A05000HP KCPK15..... | G121 | 4175881.....NG2M300L KCU10..... | C148 | 4176021.....NA3R16 KCU10..... | D12 | | | | |
| 4169303.....B269A13500HP KCPK15..... | G70 | 4175411.....B732A06800HP KCPK15..... | G121 | 4175882.....NG2M300R KCU10..... | C146 | 4176023.....NA3R5 KCU10..... | D12 | | | | |
| 4169304.....B269A14100HP KCPK15..... | G70 | 4175412.....B732A08500HP KCPK15..... | G121 | 4175883.....NGP3125R KCU10..... | C152 | 4176024.....NA3R6 KCU10..... | D12 | | | | |
| 4169305.....B269A14288HP KCPK15..... | G70 | 4175413.....B732A10200HP KCPK15..... | G121 | 4175884.....NGP3156R KCU10..... | C152 | 4176025.....NA3R8 KCU10..... | D12 | | | | |
| 4169306.....B269A14500HP KCPK15..... | G70 | 4175414.....B732A10500HP KCPK15..... | G121 | 4175886.....NJ3014R2 KCU10..... | D17 | 4176026.....NA3S10 KCU10..... | D13 | | | | |
| 4169307.....B269A14684HP KCPK15..... | G70 | 4175415.....B732A12000HP KCPK15..... | G121 | 4175887.....NJF3005R32 KCU10..... | D17 | 4176027.....NA3S15 L KCU10..... | D13 | | | | |
| 4169308.....B269A15000HP KCPK15..... | G70 | 4175416.....B732A12500HP KCPK15..... | G121 | 4175893.....NGP2031L KCU10..... | C152 | 4176028.....NA3S6 L KCU10..... | D13 | | | | |
| 4169309.....B269A15500HP KCPK15..... | G70 | 4175417.....B732A14000HP KCPK15..... | G121 | 4175894.....NGP2031R KCU10..... | C152 | 4176029.....NA3S8 L KCU10..... | D13 | | | | |
| 4169310.....B269A15875HP KCPK15..... | G70 | 4175418.....B731A03734HP KCPK15..... | G120 | 4175895.....NGP2062L KCU10..... | C152 | 4176030.....NA3S10 R KCU10..... | D13 | | | | |
| 4169311.....B269A16000HP KCPK15..... | G70 | 4175419.....B731A04496HP KCPK15..... | G120 | 4175896.....NGP2062R KCU10..... | C152 | 4176031.....NA3S15 R KCU10..... | D13 | | | | |
| 4169312.....B269A16500HP KCPK15..... | G70 | 4175420.....B731A05106HP KCPK15..... | G120 | 4175897.....NGP2125L KCU10..... | C152 | 4176032.....NA3S6 R KCU10..... | D13 | | | | |
| 4169313.....B269A17000HP KCPK15..... | G70 | 4175421.....B731A05410HP KCPK15..... | G120 | 4175898.....NGP2125R KCU10..... | C152 | 4176033.....NA3S8 R KCU10..... | D13 | | | | |
| 4169314.....B269A17463HP KCPK15..... | G70 | 4175422.....B731A06528HP KCPK15..... | G120 | 4175899.....NP2002R KCU10..... | C151 | 4176034.....NG3047L KCU10..... | C155 | | | | |
| 4169315.....B269A17500HP KCPK15..... | G70 | 4175423.....B731A06909HP KCPK15..... | G120 | 4175901.....NR2031L KCU10..... | C158 | 4176035.....NG3047LK KCU10..... | C148 | | | | |
| 4169316.....B269A18000HP KCPK15..... | G70 | 4175424.....B731A07938HP KCPK15..... | G120 | 4175902.....NR2031R KCU10..... | C158 | 4176036.....NG3047R KCU10..... | C154 | | | | |
| 4169317.....B269A18500HP KCPK15..... | G70 | 4175425.....B731A08433HP KCPK15..... | G120 | 4175903.....NR2062L KCU10..... | C158 | 4176037.....NG3047RK KCU10..... | C146 | | | | |
| 4169318.....B269A19000HP KCPK15..... | G70 | 4175426.....B731A09921HP KCPK15..... | G120 | 4175904.....NR2062R KCU10..... | C158 | 4176038.....NG3062L KCU10..... | C155 | | | | |
| 4169319.....B269A19050HP KCPK15..... | G70 | 4175427.....B731A10716HP KCPK15..... | G120 | 4175905.....NR2M050L KCU10..... | C158 | 4176039.....NG3062LK KCU10..... | C148 | | | | |
| 4169320.....B269A19500HP KCPK15..... | G70 | 4175428.....B731A19446HP KCPK15..... | G120 | 4175906.....NR2M050R KCU10..... | C158 | 4176040.....NG3062R KCU10..... | C154 | | | | |
| 4169321.....B269A20000HP KCPK15..... | G70 | 4175429.....B731A13096HP KCPK15..... | G120 | 4175907.....NR2M075R KCU10..... | C158 | 4176041.....NG3062RK KCU10..... | C146 | | | | |
| 4169337.....NG3M200RS02020ST KB1630..... | C163 | 4175430.....B731A13495HP KCPK15..... | G120 | 4175908.....NR2M100R KCU10..... | C158 | 4176042.....NG3072L KCU10..... | C155 | | | | |
| 4169338.....NG3M300RS02020ST KB1630..... | C163 | 4175431.....B731A16670HP KCPK15..... | G120 | 4175909.....NT2L KCU10..... | D19 | 4176043.....NG3072LK KCU10..... | C148 | | | | |
| 4169341.....NG3125RS0820ST KB1630..... | C163 | 4175432.....B731A17463HP KCPK15..... | G120 | 4175910.....NT2LK KCU10..... | D24 | 4176044.....NG3072R KCU10..... | C154 | | | | |
| 4169343.....NG3125LS0820ST KB1630..... | C163 | 4175433.....B731A19446HP KCPK15..... | G120 | 4175911.....NT2R KCU10..... | D19 | 4176045.....NG3072RK KCU10..... | C146 | | | | |
| 4169345.....A4SCR1212K0214..... | C114 | 4175434.....B732A03734HP KCPK15..... | G121 | 4175912.....NT2RK KCU10..... | D24 | 4176046.....NG3078L KCU10..... | C155 | | | | |
| 4169746.....A4SCR1616K0217..... | C114 | 4175435.....B732A04496HP KCPK15..... | G121 | 4175928.....NJK3008R20 KCU10..... | D18 | 4176047.....NG3078LK KCU10..... | C148 | | | | |
| 4169747.....A4SCR1212K034..... | C114 | 4175436.....B732A05106HP KCPK15..... | G121 | 4175932.....NJP3010R16 KCU10..... | D18 | 4176048.....NG3078RK KCU10..... | C154 | | | | |
| 4169748.....A4SCR1616K0317..... | C114 | 4175437.....B732A05410HP KCPK15..... | G121 | 4175933.....NTF2L KCU10..... | D23 | 4176049.....NG3078RK KCU10..... | C146 | | | | |
| 4169749.....A4SCR1212K0214..... | C114 | 4175438.....B732A06528HP KCPK15..... | G121 | 4175934.....NTF2R KCU10..... | D23 | 4176050.....NG3088L KCU10..... | C155 | | | | |
| 4169750.....A4SCL1616K0217..... | C114 | 4175439.....B732A06909HP KCPK15..... | G121 | 4175935.....NTK2L KCU10..... | D23 | 4176051.....NG3088R KCU10..... | C154 | | | | |
| 4169752.....A4SCL1616K0317..... | C114 | 4175440.....B732A07938HP KCPK15..... | G121 | 4175936.....NTK2R KCU10..... | D23 | 4176052.....NG3094L KCU10..... | C155 | | | | |
| 4170385.....CM209R ASSY..... | B58-60, B66, B105 | 4175441.....B732A08433HP KCPK15..... | G121 | 4175937.....NTPL2 KCU10..... | D24 | 4176053.....NG3094LK KCU10..... | C148 | | | | |
| 4170386.....CM210R ASSY..... | B59-60, B105 | 4175442.....B732A09921HP KCPK15..... | G121 | 4175938.....NTPL2R KCU10..... | D24 | 4176054.....NG3094R KCU10..... | C154 | | | | |
| 4170387.....CM236R ASSY..... | B105-106 | 4175443.....B732A10716HP KCPK15..... | G121 | 4175939.....NJP3014R12 KCU10..... | D18 | 4176055.....NG3094R KCU10..... | C146 | | | | |
| 4170408.....KSCMC9A00F KD1420..... | S134 | 4175445.....B732A13096HP KCPK15..... | G121 | 4175940.....NJP302R KCU10..... | C151 | 4176056.....NG3097LK KCU10..... | C155 | | | | |
| 4170410.....KSCMC9A0UNB KD1420..... | S134 | 4175446.....B732A13495HP KCPK15..... | G121 | 4175941.....NPD3012R KCU10..... | C151 | 4176057.....NG3097R KCU10..... | C154 | | | | |
| 4171227.....LNUX301940RRF KCP10..... | E51 | 4175447.....B732A16670HP KCPK15..... | G121 | 4175948.....NR3031L KCU10..... | C158 | 4176058.....NG3105L KCU10..... | C155 | | | | |
| 4171768.....RCGT0803M0MS KCU10..... | B23 | 4175448.....B732A17463HP KCPK15..... | G121 | 4175949.....NR3031K KCU10..... | C150 | 4176059.....NG3105R KCU10..... | C154 | | | | |
| 4171769.....RCGT1204MOMS KCU10..... | B23 | 4175453.....NGD3125R KCU10..... | C149 | 4175950.....NR3031R KCU10..... | C158 | 4176060.....NG3125L KCU10..... | C155 | | | | |
| 4171770.....RCGT1606MOMS KCU10..... | B223 | 4175453.....NGD3189L KCU10..... | C157 | 4175951.....NR3031R KCU10..... | C150 | 4176061.....NG3125LK KCU10..... | C148 | | | | |
| 4171783.....CNMG12042FN KCU10..... | B77 | 4175454.....B732A13945HP KCPK15..... | G121 | 4175952.....NR3047L KCU10..... | C158 | 4176062.....NG3125RK KCU10..... | C154 | | | | |
| 4171784.....CNMG120404FP KCU10..... | B77 | 4175455.....NGD3189R KCU10..... | C157 | 4175953.....NR3047L KCU10..... | C150 | 4176063.....NG3125RK KCU10..... | C147 | | | | |
| 4171785.....CNMG120404FP KCU10..... | B77 | 4175456.....NGD3189R KCU10..... | C149 | 4175954.....NR3047R KCU10..... | C158 | 4176064.....NG3142L KCU10..... | C155 | | | | |
| 4171785.....DNMG110404FF KCU10..... | B76 | 4175457.....NGD3M200R KCU10..... | C149 | 4175955.....NR3047R KCU10..... | C150 | 4176065.....NG3156L KCU10..... | C148 | | | | |
| 4171786.....DNMG110404FP KCU10..... | B77 | 4175458.....NGP3088L KCU10..... | C152 | 4175956.....NR3062L KCU10..... | C158 | 4176066.....NG3156R KCU10..... | C154 | | | | |
| 4171787.....DNMG150404PP KCU10..... | B77 | 4175459.....NGP3088R KCU10..... | C152 | 4175957.....NR3062L KCU10..... | C150 | 4176067.....NG3156RK KCU10..... | C147 | | | | |
| 4171788.....DNMG150408FP KCU10..... | B77 | 4175463.....NG2031L KCU10..... | C155 | 4175958.....NR3062R KCU10..... | C158 | 4176068.....NG3189L KCU10..... | C155 | | | | |
| 4171789.....DNMG150412PF KCU10..... | B77 | 4175464.....NG2031L KCU10..... | C147 | 4175959.....NR3062R KCU10..... | C150 | 4176069.....NG3189L KCU10..... | C148 | | | | |
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| 4176076 | ...NG4189RK KCU10 | C147 | 5001994 | ...A4R0405M04U00GMN KCP25 | C97 | 5065662 | ...DFR040304MD KCU40 | J84 | 5069160 | ...A4G1005M10U12GMN KCP25 | C96 |
| 4176077 | ...NG4250L KCU10 | C155 | 5004291 | ...RIQ09R0400FB KT6225 | K55 | 5065663 | ...DFT030204HP KCU40 | J87 | 5069161 | ...A4R0305M03U00GMN KCP25 | C97 |
| 4176078 | ...NG4250L KCU10 | C148 | 5006833 | ...B978A03800 KC7315 | G146 | 5065664 | ...DFT030204MD KCU40 | J87 | 5069162 | ...A4R0505M05U00GMN KCP25 | C97 |
| 4176079 | ...NG4250R KCU10 | C154 | 5015690 | ...193.545 | H102-103 | 5065665 | ...DFT030204GD KCU40 | J87 | 5069163 | ...A4R0605M06U00GMN KCP25 | C97 |
| 4176081 | ...NG4M400LK KCU10 | C148 | 5023558 | ...B269A03700HP KCPK15 | G68 | 5065666 | ...DFT030304HP KCU40 | J87 | 5069164 | ...A4R0805M08U00GMN KCP25 | C97 |
| 4176083 | ...NG4M500LK KCU10 | C148 | 5025597 | ...SF300M1LA1RA | K64 | 5065667 | ...DFT030304MD KCU40 | J87 | 5069354 | ...A4G0405M04U04GMP KCP10 | C95 |
| 4176084 | ...NG4M500RK KCU10 | C147 | 5025598 | ...SF750M1LA1RA | K64 | 5065916 | ...DFT030304GD KCU40 | J87 | 5069359 | ...A4G0505M05U04GMP KCP10 | C95 |
| 4176085 | ...NGD4125LK KCU10 | C149 | 5025599 | ...SF300M1RS | K64 | 5066013 | ...DFT05T308HP KCU40 | J87 | 5069390 | ...A4G0505M05U08GMP KCP10 | C95 |
| 4176086 | ...NGD4125RK KCU10 | C149 | 5025670 | ...SF750M1RS | K64 | 5066014 | ...DFT05T308MD KCU40 | J87 | 5069394 | ...A4G0205M02U02GMN KCP10 | C96 |
| 4176087 | ...NGD4189LK KCU10 | C149 | 5025671 | ...SFSLRS | K65 | 5066015 | ...DFT05T308GD KCU40 | J87 | 5069430 | ...A4G0305M03U02GMN KCP10 | C96 |
| 4176088 | ...NGD4189RK KCU10 | C149 | 5025672 | ...SFSLLS | K65 | 5066016 | ...DFT06T308HP KCU40 | J87 | 5069431 | ...A4G0305M03U04GMN KCP10 | C96 |
| 4176089 | ...NGD4250L KCU10 | C157 | 5025673 | ...SFSLRA | K65 | 5066019 | ...DFT06T308MD KCU40 | J87 | 5069432 | ...A4G0605M06U04GMN KCP10 | C96 |
| 4176090 | ...NGD4250L KCU10 | C149 | 5025674 | ...SFSLLA | K65 | 5066064 | ...DFT06T308GD KCU40 | J87 | 5069433 | ...A4G0805M08U08GMN KCP10 | C96 |
| 4176091 | ...NGD4250R KCU10 | C157 | 5025675 | ...SFMGS | K67 | 5066146 | ...DFT070408HP KCU40 | J87 | 5069435 | ...A4G0805M08U12GMN KCP10 | C96 |
| 4176092 | ...NGD4250R KCU10 | C149 | 5025676 | ...SFCR20 | K67 | 5066147 | ...DFT070408MD KCU40 | J87 | 5069437 | ...A4G1005M10U08GMN KCP10 | C96 |
| 4176093 | ...NG3M120R KCU10 | C146 | 5025677 | ...SFCRHSK3263 | K67 | 5066148 | ...DFT070408GD KCU40 | J87 | 5069439 | ...A4R0205M02U00GMN KCP10 | C97 |
| 4176094 | ...NG3M225LK KCU10 | C148 | 5025678 | ...SFCRHSK63100 | K67 | 5066149 | ...DFT090508HP KCU40 | J87 | 5069470 | ...A4R0305M03U00GMN KCP10 | C97 |
| 4176095 | ...NG3M225RK KCU10 | C146 | 5025679 | ...SFCR20S | K67 | 5066190 | ...DFT090508MD KCU40 | J87 | 5069471 | ...A4R0805M08U00GMN KCP10 | C97 |
| 4176096 | ...NG3M275LK KCU10 | C148 | 5025680 | ...SFVB | K65 | 5066191 | ...DFT090508GD KCU40 | J87 | 5077334 | ...B269A03300HP KCPK15 | G68 |
| 4176097 | ...NG3M275RK KCU10 | C147 | 5025681 | ...SFEB | K66 | 5066192 | ...DFR040304D28GD KCU40 | H89 | 5077336 | ...B269A04200HP KCPK15 | G68 |
| 4176098 | ...NG3M300LK KCU10 | C148 | 5025682 | ...SFEBCH | K66 | 5066193 | ...DFT05T308D32HP KCU40 | H88 | 5077337 | ...B269A08200HP KCPK15 | G69 |
| 4176099 | ...NG3M300RK KCU10 | C147 | 5025683 | ...SFSLSS | K65 | 5066195 | ...DFT05T308D33HP KCU40 | H88 | 5078982 | ...NGD2M200L KCU10 | C149 |
| 4176100 | ...NG3M400LK KCU10 | C148 | 5025684 | ...SFSB450 | K66 | 5066196 | ...DFT06T308D36HP KCU40 | H88 | 5080992 | ...SPGX060304MD KCPK10 | J89 |
| 4176101 | ...NG3M400RK KCU10 | C147 | 5025685 | ...SFSB900 | K66 | 5066197 | ...DFT06T308D39HP KCU40 | H88 | 5085631 | ...M1H40J4R80B32S90ED1C12 | T57 |
| 4176102 | ...NG3M425LK KCU10 | C148 | 5025686 | ...SFCP5 | K66 | 5066198 | ...DFT06T308D44HP KCU40 | H88 | 5090284 | ...RPGN060200E KYS30 | B334, |
| 4176104 | ...NGP4189R KCU10 | C152 | 5039055 | ...B269A04300HP KCPK15 | G68 | 5066199 | ...DFT070408D45HP KCU40 | H88 | | V155 | |
| 4176105 | ...NGP4250L KCU10 | C152 | 5048735 | ...CNMU120612MN KCP10 | B51 | 5066220 | ...DFT070408D50HP KCU40 | H88 | 5090285 | ...RPGN090300T01020 KYS30 | B334, |
| 4176107 | ...NR4062LK KCU10 | C150 | 5057900 | ...B976A10600 KC7315 | G141 | 5066221 | ...DFT090508D6HP KCU40 | H88 | | V155 | |
| 4176108 | ...NR4062RK KCU10 | C150 | 5058500 | ...KSEM2653HPGM KC7315 | H43 | 5066222 | ...DFT090508D63HP KCU40 | H88 | 5090286 | ...RPGN120400E KYS30 | B334, |
| 4176109 | ...NR4094LK KCU10 | C150 | 5059278 | ...B978A03400 KC7315 | G146 | 5066798 | ...DFR020204D KCU25 | J84 | | V155 | |
| 4176110 | ...NR4094RK KCU10 | C150 | 5062104 | ...SNMG090308FF KCU10 | B97 | 5066799 | ...DFR020204MD KCU25 | J84 | 5090287 | ...RPGN120400T01020 KYS30 | B334, |
| 4176112 | ...NR4125LK KCU10 | C150 | 5062106 | ...SNMG120408RM KCU10 | B98 | 5067312 | ...DFR030204GD KCU25 | J84 | | V155 | |
| 4176113 | ...NR4125RK KCU10 | C158 | 5062108 | ...SNMG120408RP KCU10 | B101 | 5067313 | ...DFR030204MD KCU25 | J84 | 5090494 | ...CNMG120420MS KCU10 | B52 |
| 4176114 | ...NR4125RK KCU10 | C150 | 5062109 | ...SNMG120412MP KCU10 | B98 | 5067314 | ...DFR040304GD KCU25 | J84 | 5090495 | ...CNMG120401MS KCU10 | B52 |
| 4176115 | ...NRD4062L KCU10 | C159 | 5062110 | ...SNMG120412P KCU10 | B100 | 5067316 | ...DFR040304MD KCU25 | J84 | 5090496 | ...CNMG120404MS KCU10 | B52 |
| 4176116 | ...NRD4062R KCU10 | C159 | 5062111 | ...SNMG120412P KCU10 | B101 | 5067318 | ...DFT030204HP KCU25 | J87 | 5090497 | ...CNMG120408MS KCU10 | B52 |
| 4176117 | ...NRD4094L KCU10 | C159 | 5062112 | ...SNMG150612MP KCU10 | B98 | 5067319 | ...DFT030204MD KCU25 | J87 | 5090498 | ...CNMG120412MS KCU10 | B52 |
| 4176118 | ...NRD4094R KCU10 | C159 | 5062113 | ...SNMG150612P KCU10 | B101 | 5067401 | ...DFT030204GD KCU25 | J87 | 5090499 | ...CNMG120416MS KCU10 | B52 |
| 4176119 | ...NRD4125L KCU10 | C159 | 5062114 | ...SNMG150612UP KCU10 | B102 | 5067402 | ...DFT030304HP KCU25 | J87 | 5090680 | ...CNMG160608MS KCU10 | B52 |
| 4176121 | ...NT4L KCU10 | D19 | 5062115 | ...SNMG190612R KCU10 | B96 | 5067403 | ...DFT030304MD KCU25 | J87 | 5090681 | ...CNMG160612MS KCU10 | B52 |
| 4176122 | ...NT4LK KCU10 | D24 | 5062117 | ...SNMG190612RP KCU10 | B101 | 5067404 | ...DFT030304GD KCU25 | J87 | 5090682 | ...CNMG190608MS KCU10 | B52 |
| 4176123 | ...NG3M25RK KCU10 | C147 | 5062120 | ...SNMG190616RP KCU10 | B101 | 5067406 | ...DFT05T308HP KCU25 | J87 | 5090684 | ...CNMG190616MS KCU10 | B52 |
| 4176124 | ...NGD3062LK KCU10 | C149 | 5062121 | ...SNMG250924 KCU10 | B96 | 5067408 | ...DFT05T308MD KCU25 | J87 | 5090685 | ...DNMG110408MS KCU10 | B79 |
| 4176125 | ...NGD3062RK KCU10 | C149 | 5062122 | ...SNMG250924RM KCU10 | B100 | 5067470 | ...DFT05T308GD KCU25 | J87 | 5090686 | ...DNMG150402MS KCU10 | B79 |
| 4176126 | ...NGD3094LK KCU10 | C149 | 5062123 | ...TNGG160402LF KCU10 | B122 | 5067473 | ...DFT06T308HP KCU25 | J87 | 5090687 | ...DNMG150401MS KCU10 | B79 |
| 4176127 | ...NGD3094RK KCU10 | C149 | 5062126 | ...TNGP160402 KCU10 | B122 | 5067474 | ...DFT06T308MD KCU25 | J87 | 5090688 | ...DNMG150404MS KCU10 | B79 |
| 4176128 | ...NGD3125LK KCU10 | C149 | 5062127 | ...TNGP160404 KCU10 | B122 | 5067475 | ...DFT06T308GD KCU25 | J87 | 5090689 | ...DNMG150408MS KCU10 | B79 |
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| 4176135 | ...NT4RK KCU10 | D24 | 5062129 | ...TNNG160404FP KCU10 | B124 | 5067478 | ...DFT070408MD KCU25 | J87 | 5090741 | ...DNMG150604MS KCU10 | B79 |
| 4176137 | ...NTP4R KCU10 | D24 | 5062130 | ...TNMG160404FW KCU10 | B125 | 5067479 | ...DFT070408GD KCU25 | J87 | 5090742 | ...DNMG150608MS KCU10 | B79 |
| 4176138 | ...NA4L4 KCU10 | D12 | 5062131 | ...TNMG160404MP KCU10 | B125 | 5067480 | ...DFT090508HP KCU25 | J87 | 5090743 | ...DNMG150612MS KCU10 | B79 |
| 4176141 | ...NA6R2 KCU10 | D12 | 5062132 | ...TNMG160404P KCU10 | B127 | 5067482 | ...DFT090508MD KCU25 | J87 | 5090744 | RCGH120400 KCU10 | B222 |
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| 4176165 | ...NDC3115VR75 KCU10 | D16 | 5062135 | ...TNMG160408MP KCU10 | B125 | 5067486 | ...DFR040304D28GD KCU25 | H89 | 5090761 | ...SNMG120412MS KCU10 | B99 |
| 4176166 | ...NDC314V75 KCU10 | D16 | 5062136 | ...TNMG160408P KCU10 | B127 | 5067487 | ...DFT05T308D32HP KCU25 | H88 | 5090763 | ...SNMG120416RP KCU10 | B101 |
| 4176167 | ...NDC327VR75 KCU10 | D16 | 5062137 | ...TNMG160408RP KCU10 | B128 | 5067488 | ...DFT05T308D33HP KCU25 | H88 | 5090764 | ...TNGG160404FS KCU10 | B122 |
| 4176177 | ...NDC68RDR75M KCU10 | D15 | 5062139 | ...TNMG220404P KCU10 | B127 | 5067489 | ...DFT06T308D36HP KCU25 | H88 | 5090765 | ...TNGG220408FS KCU10 | B122 |
| 4176178 | ...NDC8115VR75M KCU10 | D16 | 5062140 | ...TNMG220408MP KCU10 | B125 | 5067520 | ...DFT06T308D39HP KCU25 | H88 | 5090767 | ...TNGG160402MS KCU10 | B126 |
| 4176180 | ...NDC88VR75M KCU10 | D16 | 5062141 | ...TNMG220408RP KCU10 | B127 | 5067522 | ...DFT06T308D44HP KCU25 | H88 | 5090768 | ...TNGG220408MS KCU10 | B126 |
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| 4176186 | ...NTBL3LB KCU10 | D20 | 5062145 | ...TNMG220412RP KCU10 | B128 | 5067526 | ...DFT090508D56HP KCU25 | H88 | 5090811 | ...TNMG220408MS KCU10 | B126 |
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| 4176190 | ...NTB4RA KCU10 | D19 | 5062149 | ...CNMG190612MS KCU25 | B52 | 5068268 | ...DFT030204GD KCPK10 | J84 | 5090816 | ...VNGG160401FS KCU10 | B143 |
| 4176191 | ...NTB4RB KCU10 | D20 | 5063675 | ...RPET1204M0ELEJ KC725M | V73 | 5068280 | ...DFT040304GD KCPK10 | J84 | 5090817 | ...VNGG160404FS KCU10 | B143 |
| 4176192 | ...NTC3L10E KCU10 | D22 | 5063676 | ...RPET1204M0ELEJ KC725M | V73 | 5068281 | ...DFT030204HP KCPK10 | J87 | 5090819 | ...VNGG160408FS KCU10 | B143 |
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| 5152688 | KDR50Z06S22RN10 | .V49 | 5211999 | T631NF04375-20R3BX-D6 KP6525 | | 5212290 | T641NC05000-13R3BX-D6 KP6525 | | 5328738 | DNGA150408S01225MT KBH20 | .B314 |
| 5152689 | KDR52Z06S22RN10 | .V49 | | | .M37 | | | .M68 | 5329836 | WNGA080404S01015MT KBH20 | .B324 |
| 5152690 | KDR63Z07S22RN10 | .V49 | 5212000 | T631NF05000-20R3BX-D6 KP6525 | | 5212291 | T641NF02500-28R3BX-D1 KP6525 | | | | |
| 5152691 | KDR66Z07S27RN10 | .V49 | | | .M37 | | | .M68 | | | |
| 5152692 | KDR80Z08S27RN10 | .V49 | 5212152 | T620NC#06-32R2BX-D1 KP6525 | .M10 | 5212292 | T641NF03125-24R3BX-D1 KP6525 | | 5329837 | WNGA080408S01015MT KBH20 | .B324 |
| 5152693 | KDR50Z04S22RN16 | .V60 | 5212155 | T620NC#08-32R2BX-D1 KP6525 | .M10 | | | | | | |
| 5152694 | KDR52Z04S22RN16 | .V60 | 5212156 | T620NC#10-24R2BX-D1 KP6525 | .M10 | 5212293 | T641NF03750-24R3BX-D1 KP6525 | | 5329838 | WNGA080408S01225MT KBH20 | .B324 |
| 5152695 | KDR63Z04S22RN16 | .V60 | 5212158 | T620NC02500-20R3BX-D1 KP6525 | | | | | 5329839 | WNGA080408S01735MT KBH20 | .B324 |
| 5152696 | KDR62Z06S22RN16 | .V60 | | | .M10 | 5212294 | T641NF04375-20R3BX-D6 KP6525 | | | | |
| 5152697 | KDR66Z05S27RN16 | .V60 | 5212159 | T620NC03125-18R3BX-D1 KP6525 | | | | .M68 | | | |
| 5152698 | KDR80Z05S27RN16 | .V60 | | | .M10 | 5212295 | T641NF05000-20R3BX-D6 KP6525 | | 5330130 | WNGA080408S01015FWMT KBH20 | .B323 |
| 5152699 | KDR80Z07S27RN16 | .V60 | 5212210 | T620NC03750-16R3BX-D1 KP6525 | | | | .M68 | 5330131 | CCGW060202S01225MT KBH20 | .B308 |
| 5152700 | KDR100Z06S22RN16 | .V60 | | | .M10 | 5214053 | B269A03800HP KCPK15 | .G68 | | | |
| 5152701 | KDR100Z08S22RN16 | .V60 | 5212211 | T620NC04375-14R3BX-D6 KP6525 | | 5274660 | RNPJ10T3M0SGD KCPK30 | .V51 | 5330132 | CCGW060204S01225MT KBH20 | .B308 |
| 5152702 | KDR125Z08S22RN16 | .V60 | | | .M10 | 5274661 | RNPJ10T3M0SGD KCPK32M | .V51 | | | |
| 5152703 | KDR125Z10S40RN16 | .V60 | 5212212 | T620NC05000-13R3BX-D6 KP6525 | | 5274663 | RNPJ10T3M0SHD KCPK30 | .V51 | 5330133 | CCGW09T302S01225MT KBH20 | .B308 |
| 5152704 | KDR125Z10S40RN16 | .V60 | | | .M10 | 5274665 | RNPJ10T3M0SHD KCK15 | .V51 | 5330134 | CCGW09T304S01225MT KBH20 | .B308 |
| 5152705 | KDR125Z10S40RN16 | .V60 | 5212213 | T620NF#06-40R2BX-D1 KP6525 | .M10 | 5274690 | RNPJ1204M0SGD KCPK30 | .V58 | | | |
| 5152706 | KI0Q09E1300 KC6305 | K55 | 5212215 | T620NF#10-32R2BX-D1 KP6525 | .M10 | 5274691 | RNPJ1204M0SGD KCK22M | .V58 | | | |
| 5152707 | KI0Q06R0500FT KT6315 | K55 | 5212217 | T620NF02500-28R3BX-D1 KP6525 | | 5274693 | RNPJ1204M0SHD KCPK30 | .V58 | | | |
| 5161120 | NA31L16 KCU10 | D12 | | | .M10 | 5274699 | RNPJ1605M0SGD KCPK30 | .V61 | 5330135 | CCGW09T304S01015MT KBH20 | .B308 |
| 5161475 | B978F14500 KC7315 | G149 | 5212218 | T620NF03125-24R3BX-D1 KP6525 | | 5274720 | RNPJ1605M0SGD KCK725M | .V61 | 5330138 | CCGW09T308S01015MT KBH20 | .B308 |
| 5169173 | EDPT070308PDSRGEC KCT25M | T25 | 5212219 | T620NF03750-24R3BX-D1 KP6525 | | 5274721 | RNPJ1605M0SGD KCK22M | .V61 | 5330136 | CCGW09T308S01015FWMT KBH20 | .B308 |
| 5169174 | EDPT070308PDSRGEC K522M | T25 | | | .M10 | 5274722 | RNPJ1605M0SHD KCK30 | .V61 | 5330137 | CCGW09T308S01225MT KBH20 | .B308 |
| 5169175 | EDPT070308PDSRGEC KCPK30 | T25 | 5212220 | T620NF02500-28R3BX-D1 KP6525 | | 5274724 | RNPJ1605M0SHD KCK15 | .V61 | | | |
| 5172862 | RPPT1204M0SGDX KCT25M | V74 | | | .M10 | 5274725 | RNPJ1605M0SHD KCK520M | .V61 | | | |
| 5175059 | B977F07100 KC7315 | G144 | 5212230 | T620NF04375-20R3BX-D6 KP6525 | | 5276844 | KEGT25L516PEERLDJ2 KC410M | .T83 | 5330138 | CCGW09T308S01015MT KBH20 | .B308 |
| 5178669 | B978F16000 KC7315 | G149 | | | .M10 | 5309298 | B977A16300 KC7315 | .G142 | 5330139 | CCGW09T308S01015FWMT KBH20 | .B308 |
| 5182481 | KTIP1490HPM KCP15 | H27 | 5212231 | T620NF05000-20R3BX-D6 KP6525 | | 5314920 | KTIP2110HPM KCP15 | .H28 | | | |
| 5182869 | SNMG12041300 KCPK05 | B101 | | | .M10 | 5314951 | B707A03800FB KCM515 | .G114 | 5330140 | CCGW120408S01015MT KBH20 | .B308 |
| 5182893 | SNMG150612RN KCPK05 | B101 | 5212232 | T621NC02500-20R3BX-D1 KP6525 | | 5324450 | DCGR160404FP KCP25 | .E28 | 5330141 | DCGW070204S01225MT KBH20 | .B312 |
| 5189859 | B269A08600HP KCPK15 | .G69 | | | .M11 | 5324453 | DCGR150404FP KCU10 | .E28 | 5330142 | DCGW070204S01225MT KBH20 | .B312 |
| 5190190 | 12A02R018A12ED07 | T24 | 5212233 | T621NC03125-18R3BX-D1 KP6525 | | 5324456 | DCGR150408FP KCP10 | .E28 | 5330143 | CCGW070204S01015MT KBH20 | .B308 |
| 5190191 | 16A03R020A16ED07 | T24 | | | .M11 | 5324458 | DCGR150408FP KCM25 | .E28 | 5330144 | DCGW11T302S01225MT KBH20 | .B312 |
| 5190192 | 20A05R020A20ED07 | T24 | 5212234 | T621NC03750-16R3BX-D1 KP6525 | | 5324773 | KCGR110304L08FP KCP10 | .E29 | 5330145 | DCGW11T304S01225MT KBH20 | .B312 |
| 5190197 | 12A02R020M08ED07 | T24 | | | .M11 | 5324774 | KCGR110304L08FP KCP25 | .E29 | 5330146 | DCGW070204S01015MT KBH20 | .B308 |
| 5201519 | LS103 | S126 | 5212235 | T621NC04375-14R3BX-D6 KP6525 | | 5324775 | KCGR110304L08FP KCM25 | .E29 | 5330147 | CCGW11T302S01225MT KBH20 | .B312 |
| 5202233 | SALS080 | S126 | | | .M11 | 5324777 | KCGR110304L08FP KCU25 | .E29 | 5330148 | CCGW11T304S01015MT KBH20 | .B312 |
| 5202234 | SALS100 | S126 | 5212236 | T621NC05000-13R3BX-D6 KP6525 | | 5324779 | KCGR110304R08FP KCP10 | .E29 | 5330149 | CCGW11T304S01015FWMT KBH20 | .B312 |
| 5202235 | SALS125 | S126 | | | .M11 | 5324780 | KCGR110304R08FP KCP25 | .E29 | 5330150 | TPGW110202S01015MT KBH20 | .B312 |
| 5202236 | SALS160 | S126 | 5212237 | T621NF02500-28R3BX-D1 KP6525 | | 5324782 | KCGR110304R08FP KCM25 | .E29 | 5330151 | TPGW110204S01015MT KBH20 | .B312 |
| 5202514 | SWSMS15 | S126 | | | .M11 | 5324786 | KCGR110308L08FP KCP10 | .E29 | 5330152 | CCGW11T308S01015MT KBH20 | .B312 |
| 5211960 | T630NC#06-32R2BX-D1 KP6525 | .M36 | 5212238 | T621NF03125-24R3BX-D1 KP6525 | | 5324787 | KCGR110308L08FP KCP25 | .E29 | 5330153 | CCGW11T308S01015FWMT KBH20 | .B312 |
| 5211961 | T630NC#08-32R2BX-D1 KP6525 | .M36 | | | .M11 | 5324791 | KCGR110308R08FP KCP10 | .E29 | 5330154 | CCGW11T308S01015MT KBH20 | .B312 |
| 5211962 | T630NC#10-24R2BX-D1 KP6525 | .M36 | 5212239 | T621NF03750-24R3BX-D1 KP6525 | | 5324794 | KCGR110308R08FP KCU10 | .E29 | 5330155 | CCGW11T308S01225MT KBH20 | .B312 |
| 5211964 | T630NC02500-20R3BX-D1 KP6525 | | | | .M11 | 5324906 | VBMR110302FP KCP25 | .E32 | 5330156 | TCGW110202S01015MT KBH20 | .B312 |
| | | .M36 | 5212240 | T621NF04375-20R3BX-D6 KP6525 | | 5324911 | VBMR110304FP KCP10 | .E32 | 5330157 | TCGW110204S01015MT KBH20 | .B312 |
| 5211965 | T630NC03125-18R3BX-D1 KP6525 | | | | .M11 | 5324912 | VBMR110304FP KCP25 | .E32 | 5330158 | TCGW110204S01015FWMT KBH20 | .B312 |
| | | .M36 | 5212241 | T621NF05000-20R3BX-D6 KP6525 | | 5324915 | VBMR110304FP KCU25 | .E32 | 5330159 | TCGW110204S01015MT KBH20 | .B312 |
| 5211966 | T630NC03750-16R3BX-D1 KP6525 | | | | .M11 | 5324916 | VBMR110308FP KCP10 | .E32 | 5330160 | TCGW110204S01015FWMT KBH20 | .B312 |
| | | .M36 | 5212242 | T621NF070308S01015MT KBH20 | | 5324921 | VBMR110308FP KCU10 | .E32 | 5330161 | TCGW110208S01015MT KBH20 | .B312 |
| 5211967 | T630NC04375-14R3BX-D6 KP6525 | | | | .M67 | 5324923 | VCMR160404FP KCP10 | .E33 | 5330162 | TPGW110204S01015MT KBH20 | .B312 |
| | | .M36 | 5212243 | T640NC#06-32R2BX-D1 KP6525 | .M67 | 5324924 | VCMR160404FP KCP25 | .E33 | 5330163 | CCGW110204S01015FWMT KBH20 | .B312 |
| 5211968 | T630NC05000-13R3BX-D6 KP6525 | | | | .M67 | 5324925 | VCMR160404FP KCM25 | .E33 | 5330164 | CCGW110204S01015MT KBH20 | .B312 |
| | | .M36 | 5212244 | T640NC#08-32R2BX-D1 KP6525 | .M67 | 5324927 | VCMR160404FP KCU10 | .E33 | 5330165 | CCGW110208S01015MT KBH20 | .B312 |
| 5211969 | T630NC06000-13R3BX-D6 KP6525 | | | | .M67 | 5324928 | VCMR160404FP KCU25 | .E33 | 5330166 | CCGW110208S01015FWMT KBH20 | .B312 |
| | | .M36 | 5212245 | T640NC#10-24R2BX-D1 KP6525 | .M67 | 5324929 | VCMR160408FP KCP10 | .E33 | 5330167 | CCGW110208S01015MT KBH20 | .B312 |
| 5211971 | T630NF#06-40R2BX-D1 KP6525 | .M36 | | | .M67 | 5324930 | VCMR160408FP KCP25 | .E33 | 5330168 | CCGW110208S01015FWMT KBH20 | .B312 |
| 5211981 | T630NF#06-40R2BX-D1 KP6525 | .M36 | 5212247 | T640NC03125-18R3BX-D1 KP6525 | | 5324931 | VCMR160408FP KCM25 | .E33 | 5330169 | CCGW110208S01015MT KBH20 | .B312 |
| 5211983 | T630NF#10-32R2BX-D1 KP6525 | .M36 | | | .M67 | 5324932 | VCMR160408FP KCU05 | .E33 | 5330170 | CCGW110208S01015FWMT KBH20 | .B312 |
| 5211985 | T630NF02500-28R3BX-D1 KP6525 | | | | .M67 | 5327662 | A4R3035M03U00GUP KCU10 | .C94 | 5330171 | CCGW110208S01015MT KBH20 | .B312 |
| | | .M36 | 5212274 | T640NC03750-16R3BX-D1 KP6525 | | 5327663 | A4R0505M05U00GUP KCU10 | .C94 | 5330172 | CCGW110208S01015FWMT KBH20 | .B312 |
| 5211987 | T630NF03125-24R3BX-D1 KP6525 | | | | .M67 | 5327664 | A4R1005M1U00GUP KCU10 | .C94 | 5330173 | CCGW110208S01015MT KBH20 | .B312 |
| | | .M36 | 5212275 | T640NC04375-14R3BX-D6 KP6525 | | 5327665 | A4R31208P00GUP KCU10 | .C94 | 5330174 | CCGW110208S01015FWMT KBH20 | .B312 |
| 5211988 | T630NF03750-24R3BX-D1 KP6525 | | | | .M67 | 5327666 | A4R0300M03P00GUP KCU10 | .C94 | 5330175 | CCGW110208S01015MT KBH20 | .B312 |
| | | .M36 | 5212276 | T640NC05000-13R3BX-D6 KP6525 | | 5327667 | A4R1000M1P00GUP KCU10 | .C94 | 5330176 | CCGW110208S01015FWMT KBH20 | .B312 |
| 5211989 | T630NF04375-20R3BX-D6 KP6525 | | | | .M67 | 5327668 | A4R1250I3P00GUP KCU10 | .C94 | 5330177 | CCGW110208S01015MT KBH20 | .B3 |

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| 5330164.....VBGW160408S01015MT KBH20..... | 53308057.....KDR160Z12S40RN16..... | V60 | 5350615.....UJDE2000E6ARF KCSM15..... | P48 | 5358398.....UDDE2000E5AQN KCSM15..... | P32 | | | | | |
|B322 | 5341813.....KSEM3125HPGM KC7315..... | H43 | 5350616.....UJDE2000A6AS KCSM15..... | P48 | 5358399.....UDDE2500E5AQE KCSM15..... | P32 | | | | | |
| 5330165.....VBGW160412S01015MT KBH20..... | 5344687.....FAAS1400ADL38 KCPM15..... | P16 | 5350617.....UJDE2000A6AQE KCSM15..... | P49 | 5358400.....UDDE2500E5AQG KCSM15..... | P32 | | | | | |
|B322 | 5347999.....EADE0380A4AQE KYS40..... | P176 | 5350618.....UJDE2000A6AQG KCSM15..... | P49 | 5358401.....UDDE2500E5AQK KCSM15..... | P32 | | | | | |
| 5330166.....VBGW110308S01225MT KBH20..... | 5348060.....EADE0400A4AQF KYS40..... | P176 | 5350619.....UJDE2000A6AQK KCSM15..... | P49 | 5358402.....UDDE2500E5AQW KCSM15..... | P32 | | | | | |
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| 5330167.....VCGW160404S01225MT KBH20..... | 5348062.....EADE0600A4AQF KYS40..... | P176 | 5350641.....UJDE2000A6AQN KCSM15..... | P49 | 5358886.....KSOM32203M160F06X..... | S46 | | | | | |
|B322 | 5348063.....EADE0760A4AQG KYS40..... | P176 | 5350642.....UJDE2000A6ANS KCSM15..... | P49 | 5358887.....KSOM40Z04M160F06X..... | S46 | | | | | |
| 5330168.....VCGW160404S01015MT KBH20..... | 5348064.....EADE0800A4AQG KYS40..... | P176 | 5350644.....UJDE2000A6AQE KCSM15..... | P49 | 5358888.....KSOM32203A320F06X..... | S47 | | | | | |
|B322 | 5348065.....EADE0950A4AQH KYS40..... | P176 | 5350645.....UJDE2000A6AQG KCSM15..... | P49 | 5358889.....KSOM40Z04F06X..... | S48 | | | | | |
| 5330169.....VCGW160408S01225MT KBH20..... | 5348066.....EADE1000A4AQH KYS40..... | P176 | 5350646.....UJDE2000A6AQK KCSM15..... | P49 | 5358930.....KSOM50Z060F06X..... | S48 | | | | | |
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| 5330180.....VCGW160408S01015MT KBH20..... | 5348068.....EADE1200A4AQJ KYS40..... | P176 | 5350648.....UJDE2000A6AQN KCSM15..... | P49 | 5358932.....KSOM80Z090F06X..... | S48 | | | | | |
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| 5330695.....CNGA120404S01225MT KBH20..... | 5348070.....EADE0600A6ARF KYS40..... | P177 | 5350650.....UJDE2500E6ARF KCSM15..... | P48 | 5366566.....B269A17100HP KCPK15..... | G70 | | | | | |
|B310 | 5348071.....EADE0800A6ARG KYS40..... | P177 | 5350651.....UJDE2500A6ARS KCSM15..... | P48 | 5377581.....B269A04700HP KCPK15..... | G68 | | | | | |
| 5330696.....CNGA120404S01015MT KBH20..... | 5348072.....EADE1000A6ARH KYS40..... | P177 | 5350652.....UJDE2500A6AQE KCSM15..... | P49 | 5377582.....B269A06100HP KCPK15..... | G69 | | | | | |
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| 5330697.....CNGA120404S01735MT KBH20..... | 5348571.....CNGM120408S01325MTCB1 KBH20..... | B310 | 5350654.....UJDE2500A6AQK KCSM15..... | P49 | 5387230.....CNMG120412FM KCP10B..... | B50 | | | | | |
|B310 | 5348572.....CNGM120412S01325MTCB1 KBH20..... | B310 | 5350655.....UJDE2500A6AQW KCSM15..... | P49 | 5387231.....CNMG120412FM KCP25B..... | B50 | | | | | |
| 5330698.....CNGA120404S01015FWMT KBH20..... | 5348573.....CNGM120404S01325MTCB1 KBH20..... | B310 | 5350656.....UJDE2500A6AQN KCSM15..... | P49 | 5387540.....DNMG150612CT KCP25B..... | B76 | | | | | |
|B310 | 5348574.....DNGM150408S01325MTCB1 KBH20..... | B310 | 5350658.....UJDE2500E6AQE KCSM15..... | P49 | 5387541.....DNMG150612MN KCP25B..... | B78 | | | | | |
| 5330830.....CNGA120408S01015MT KBH20..... | 5348575.....DNGM150408S01325MTCB1 KBH20..... | B310 | 5350659.....UJDE2500E6AQK KCSM15..... | P49 | 5387542.....DNMG150612RN KCP25B..... | B81 | | | | | |
|B310 | 5348576.....DNGM150608S01325MTCB1 KBH20..... | B310 | 5350660.....UJDE2500E6AQL KCSM15..... | P49 | 5387543.....DNMG150612RP KCP25B..... | B81 | | | | | |
| 5330833.....CNGA120412S01225MT KBH20..... | 5348577.....DNGM150612S01325MTCB1 KBH20..... | B314 | 5350661.....UJDE2500E6AQM KCSM15..... | P49 | 5387544.....DNMG150616RN KCP25B..... | B81 | | | | | |
| 5330834.....CNGA120412S01015MT KBH20..... | 5348578.....DNGM150412S01325MTCB1 KBH20..... | B314 | 5350662.....UJDE2500E6AQN KCSM15..... | P49 | 5387545.....DNMG150616RP KCP25B..... | B81 | | | | | |
| 5330835.....CNGA120412S01735MT KBH20..... | 5348579.....TNGM160408S01325MTCB1 KBH20..... | B320 | 5356982.....UJDE0600B4AL KCPM15..... | P20 | 5387547.....DPMT11T308LF KCP25B..... | B215 | | | | | |
| 5330836.....CNGA120412S01015FWMT KBH20..... | 5348580.....DNGM150608S01325MTCB1 KBH20..... | B314 | 5356983.....UJDE0800B4AL KCPM15..... | P20 | 5387550.....SCMT09T304LF KCP25B..... | B230 | | | | | |
|B310 | 5348581.....VNMG160408S01325MTCB1 KBH20..... | B323 | 5356984.....UJDE1000B4AL KCPM15..... | P20 | 5387551.....SCMT09T308FP KCP25B..... | B230 | | | | | |
| 5330837.....DNGA150404S01225MT KBH20..... | 5348582.....VNMG160408S01325MTCB1 KBH20..... | B323 | 5356985.....UJDE1200B4AL KCPM15..... | P20 | 5387553.....SCMT09T308MF KCP25B..... | B231 | | | | | |
| 5330838.....DNGA150404S01015MT KBH20..... | 5348583.....VNMG160412S01325MTCB1 KBH20..... | B323 | 5356986.....UJDE1600B4AL KCPM15..... | P20 | 5387554.....SCMT09T308MP KCP25B..... | B231 | | | | | |
| 5330839.....DNGA150404S01735MT KBH20..... | 5348584.....CCGM09T304S01325MTCB1 KBH20..... | B323 | 5356987.....UJDE2000B4AL KCPM15..... | P20 | 5387555.....SCMT09T312MF KCP25B..... | B231 | | | | | |
| 5330840.....DNGA150408S01015MT KBH20..... | 5348585.....CCGM09T304S01325MTCB1 KBH20..... | B323 | 5356988.....UJDE2000B4AL KCPM15..... | P20 | 5387556.....SCMT120408PF KCP25B..... | B230 | | | | | |
| 5330841.....DNGA150408S01735MT KBH20..... | 5348586.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5356989.....UJDE2000B4AL KCPM15..... | P20 | 5387557.....SCMT120408MF KCP25B..... | B231 | | | | | |
| 5330842.....DNGA150412S01225MT KBH20..... | 5348587.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357000.....UJDE1000A4AL KCPM15..... | P20 | 5387558.....SCMT120412LF KCP25B..... | B230 | | | | | |
| 5330843.....DNGA150412S01015MT KBH20..... | 5348588.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357001.....UJDE1200A4AL KCPM15..... | P20 | 5387559.....SCMT120412MF KCP25B..... | B231 | | | | | |
| 5330844.....DNGA150412S01735MT KBH20..... | 5348589.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357002.....UJDE1600A4AL KCPM15..... | P20 | 5387563.....SNMG120412RP KCP25B..... | B101 | | | | | |
| 5330845.....DNGA150408S01015FWMT KBH20..... | 5348590.....CCGM09T308S01325MTCB1 KBH20..... | B313 | 5357003.....UJDE2000A4AL KCPM15..... | P20 | 5387567.....SNMG150612RP KCP25B..... | B101 | | | | | |
| 5330846.....DNGA150412S01015FWMT KBH20..... | 5348591.....CCGM09T308S01325MTCB1 KBH20..... | B313 | 5357041.....RUDC0400B3BN KCPM15..... | P80 | 5387571.....SPMT09T308LF KCP25B..... | B238 | | | | | |
| 5330847.....DNGA150412S01225MT KBH20..... | 5348592.....CCGM09T308S01325MTCB1 KBH20..... | B313 | 5357042.....RUDC0500B3BN KCPM15..... | P80 | 5387575.....TNMG160412RP KCP25B..... | B128 | | | | | |
| 5330848.....DNGA150412S01015FWMT KBH20..... | 5348593.....CCGM09T308S01325MTCB1 KBH20..... | B308 | 5357043.....RUDC0600B3BN KCPM15..... | P80 | 5387577.....TNMG220416RP KCP25B..... | B128 | | | | | |
| 5330849.....DNGA150404S01015MT KBH20..... | 5348594.....CCGM09T308S01325MTCB1 KBH20..... | B308 | 5357044.....RUDC0800B3BN KCPM15..... | P80 | 5387579.....TPMT110208LF KCP25B..... | B255 | | | | | |
| 5330850.....DNGA150608S01225MT KBH20..... | 5348595.....CCGM09T308S01325MTCB1 KBH20..... | B314 | 5357045.....RUDC1000B4BN KCPM15..... | P80 | 5387580.....TPMT110208MF KCP25B..... | B255 | | | | | |
| 5330851.....DNGA150608S01015MT KBH20..... | 5348596.....CCGM09T308S01325MTCB1 KBH20..... | B314 | 5357046.....RUDC1200B4BN KCPM15..... | P80 | 5387581.....TPMT16T308LF KCP25B..... | B255 | | | | | |
| 5330852.....DNGA150608S01735MT KBH20..... | 5348597.....CCGM09T308S01325MTCB1 KBH20..... | B314 | 5357047.....RUDC1400B4BN KCPM15..... | P80 | 5387584.....VBMT160404PF KCP25B..... | B265 | | | | | |
| 5330853.....DNGA150612S01225MT KBH20..... | 5348598.....CCGM09T308S01325MTCB1 KBH20..... | B314 | 5357048.....RUDC1600B4BN KCPM15..... | P80 | 5387587.....VBMT160408MP KCP25B..... | B265 | | | | | |
| 5330854.....DNGA150612S01015MT KBH20..... | 5348599.....CCGM09T308S01325MTCB1 KBH20..... | B314 | 5357049.....RUDC1800B4BN KCPM15..... | P80 | 5387588.....VBMT160412PP KCP25B..... | B265 | | | | | |
| 5330855.....DNGA150612S01735MT KBH20..... | 5348600.....CCGM09T308S01325MTCB1 KBH20..... | B314 | 5357050.....RUDC2000B4BN KCPM15..... | P80 | 5387610.....WNMG060408RN KCP25B..... | B159 | | | | | |
| 5330856.....DNGA150612S01015FWMT KBH20..... | 5348601.....CCGM09T308S01325MTCB1 KBH20..... | B318 | 5357051.....RUDC2500B5BN KCPM15..... | P80 | 5387611.....WNMG080408MN KCP25B..... | B157 | | | | | |
| 5330857.....SNGA120412S01225MT KBH20..... | 5348602.....CCGM09T308S01325MTCB1 KBH20..... | B318 | 5357097.....UBDE1200E4AQE KCSM15..... | P18 | 5387612.....WNMG080408MW KCP25B..... | B158 | | | | | |
| 5330858.....TNGA160404S01225MT KBH20..... | 5348603.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357098.....UBDE1200E4AQG KCSM15..... | P18 | 5387614.....WNMG080412MN KCP25B..... | B157 | | | | | |
| 5330859.....TNGA160404S01015MT KBH20..... | 5348604.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357099.....UBDE1200E4AQK KCSM15..... | P18 | 5387615.....WNMG080412MW KCP25B..... | B158 | | | | | |
| 5330860.....TNGA160404S01735MT KBH20..... | 5348605.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357100.....UBDE1200E4AQM KCSM15..... | P18 | 5387616.....WNMG080412RN KCP25B..... | B159 | | | | | |
| 5330861.....TNGA160408S01225MT KBH20..... | 5348606.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357101.....UBDE1200E4AQN KCSM15..... | P18 | 5387617.....WNMG080416RN KCP25B..... | B159 | | | | | |
| 5330862.....TNGA160408S01015MT KBH20..... | 5348607.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357102.....UBDE1200E4AQO KCSM15..... | P18 | 5387627.....CCMT09T304LF KCP25B..... | B177 | | | | | |
| 5330863.....TNGA160408S01735MT KBH20..... | 5348608.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357103.....UBDE1200E4AQP KCSM15..... | P18 | 5387628.....CCMT09T308LF KCP25B..... | B177 | | | | | |
| 5330864.....TNGA160412S01225MT KBH20..... | 5348609.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357104.....UBDE1600E4AQK KCSM15..... | P18 | 5387629.....CCMT09T308MF KCP25B..... | B177 | | | | | |
| 5330865.....TNGA160412S01015MT KBH20..... | 5348610.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357105.....UBDE1600E4AQL KCSM15..... | P18 | 5387661.....CMCT120408MF KCP25B..... | B177 | | | | | |
| 5330866.....TNGA160412S01735MT KBH20..... | 5348611.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357106.....UBDE1600E4AQM KCSM15..... | P18 | 5387662.....CMMG120408MN KCP25B..... | B50 | | | | | |
| 5330867.....TNGA160412S01015FWMT KBH20..... | 5348612.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357107.....UBDE1600E4AQN KCSM15..... | P18 | 5387663.....CMMG120408MW KCP25B..... | B52 | | | | | |
| 5330868.....TNGA160408S01735MT KBH20..... | 5348613.....CCGM09T308S01325MTCB1 KBH20..... | B320 | 5357108.....UBDE1600E4AQO KCSM15..... | P18 | 5387664.....CMMG120408RN KCP25B..... | B53 | | | | | |
| 5330869.....TNGA160404S01735MT KBH20..... | 5348614.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357109.....UBDE1600E4AQG KCSM15..... | P18 | 5387665.....CMMG120408RP KCP25B..... | B53 | | | | | |
| 5330870.....TNGA160408S01225MT KBH20..... | 5348615.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357110.....UBDE1600E4AQK KCSM15..... | P18 | 5387667.....CMMG120412MN KCP25B..... | B50 | | | | | |
| 5330871.....TNGA160408S01015MT KBH20..... | 5348616.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357111.....UBDE1600E4AQL KCSM15..... | P18 | 5387668.....CMMG120412RN KCP25B..... | B50 | | | | | |
| 5330872.....TNGA160408S01735MT KBH20..... | 5348617.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357112.....UBDE1600E4AQM KCSM15..... | P18 | 5387669.....CMMG120412RM KCP25B..... | B55 | | | | | |
| 5330873.....VNGA160404S01015MT KBH20..... | 5348618.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357113.....UBDE1600E4AQN KCSM15..... | P18 | 5387670.....CMMG120412RN KCP25B..... | B53 | | | | | |
| 5330874.....VNGA160404S01735MT KBH20..... | 5348619.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357114.....UBDE1600E4AQO KCSM15..... | P18 | 5387671.....CMMG120416RN KCP25B..... | B53 | | | | | |
| 5330875.....VNGA160408S01225MT KBH20..... | 5348620.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357115.....UBDE1600E4AQG KCSM15..... | P18 | 5387672.....CMMG190612MN KCP25B..... | B50 | | | | | |
| 5330876.....VNGA160408S01015MT KBH20..... | 5348621.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357116.....UBDE1600E4AQK KCSM15..... | P18 | 5387673.....CMMG190612RN KCP25B..... | B53 | | | | | |
| 5330877.....VNGA160408S01735MT KBH20..... | 5348622.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357117.....UBDE1600E4AQL KCSM15..... | P18 | 5387674.....CMMG190612RM KCP25B..... | B55 | | | | | |
| 5330878.....VNGA160408S01015FWMT KBH20..... | 5348623.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357118.....UBDE1600E4AQM KCSM15..... | P18 | 5387675.....CMMG190612RN KCP25B..... | B55 | | | | | |
| 5330879.....VNGA160408S01735MT KBH20..... | 5348624.....CCGM09T308S01325MTCB1 KBH20..... | B323 | 5357119.....UBDE1600E4AQN KCSM15..... | P18 | 5387676.....CMMG190612RM KCP25B..... | B55 | | | | | |
| 5330880.....VNGA160 | | | | | | | | | | | |

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| 5387754 | VNMG160408FN KCK15B | B145 | 5397491 | KSEM2500HPGM KCPM45 | H46 | 5403091 | CNMG120408MR KCP40 | B51 | 5413747 | RNPJ1204M0SGD KC725M | V58 |
| 5387755 | CNMG120408MW KCK15B | B52 | 5397492 | KSEM2540HPGM KCPM45 | H46 | 5403092 | CNMG120408MR KCK15B | B51 | 5413748 | RNPJ1204M0SHD KC725M | V58 |
| 5387801 | CNMG120412UN KCK15B | B54 | 5397493 | KSEM2560HPGM KCPM45 | H46 | 5403093 | CNMG120412MR KCM15 | B51 | 5413749 | RNPJ1605MOSHD KC725M | V61 |
| 5387802 | CNMG120408UN KCK15B | B54 | 5397494 | KSEM2565HPGM KCPM45 | H46 | 5403094 | CNMG120412MR KCM25 | B51 | 5414455 | ABDE1000A3ARG K600 | P112 |
| 5387804 | TNMG160408UN KCK15B | B128 | 5397495 | KSEM2567HPGM KCPM45 | H46 | 5403095 | CNMG120412MR KCM35 | B51 | 5414456 | ABDE1000A3ARK K600 | P112 |
| 5387805 | SNMG120412UN KCK15B | B102 | 5397496 | KSEM2581HPGM KCPM45 | H46 | 5403096 | CNMG120412MR KCP10B | B51 | 5414458 | ABDE1000A3ARN K600 | P112 |
| 5387806 | RNMG120400UN KCK15B | B94 | 5397497 | KSEM2600HPGM KCPM45 | H46 | 5403097 | CNMG120412MR KCP25B | B51 | 5414459 | ABDE1200A3ARG K600 | P112 |
| 5387807 | TNMG160412UN KCK15B | B128 | 5397498 | KSEM2619HPGM KCPM45 | H46 | 5403099 | CNMG120412MR KCK15B | B51 | 5414470 | ABDE1200A3ARK K600 | P112 |
| 5387808 | WNMG080408UN KCK15B | B160 | 5397499 | KSEM2700HPGM KCPM45 | H46 | 5403103 | CNMG160612MR KCP10B | B51 | 5414471 | ABDE1200A3ARM K600 | P112 |
| 5387809 | WNMG080416UN KCK15B | B160 | 5397500 | KSEM2800HPGM KCPM45 | H46 | 5403104 | CNMG160612MR KCP25B | B51 | 5414473 | ABDE1200A3ARN K600 | P112 |
| 5387810 | DNMG110408UN KCK15B | B82 | 5397501 | KSEM2858HPGM KCPM45 | H46 | 5403105 | CNMG160612MR KCP40 | B51 | 5414474 | ABDE1600A3ARM K600 | P113 |
| 5387811 | CNMG160616UN KCK15B | B54 | 5397502 | KSEM3000HPGM KCPM45 | H46 | 5403108 | CNMG120416MR KCP10B | B51 | 5414475 | ABDE1600A3ARN K600 | P113 |
| 5387812 | DNMG150616UN KCK15B | B82 | 5397503 | KSEM3016HPGM KCPM45 | H46 | 5403112 | CNMG160616MR KCP10B | B51 | 5414476 | ABDE2000A3ARG K600 | P113 |
| 5387851 | DNMG150616RP KCP10B | B81 | 5397504 | KSEM3175HPGM KCPM45 | H46 | 5403113 | CNMG160616MR KCP25B | B51 | 5414477 | ABDE2000A3ARK K600 | P113 |
| 5387853 | DPMT117308LF KCP10B | B215 | 5397505 | KSEM3200HPGM KCPM45 | H46 | 5403116 | CNMG190612MR KCM25 | B51 | 5414478 | ABDE2000A3ARM K600 | P113 |
| 5387856 | SCMT097304LF KCP10B | B230 | 5397506 | KSEM3300HPGM KCPM45 | H46 | 5403119 | CNMG190612MR KCP25B | B51 | 5414479 | ABDE2500A3ARE K600 | P113 |
| 5387858 | SCMT097308MF KCP10B | B231 | 5397507 | KSEM3340HPGM KCPM45 | H46 | 5405652 | PSC50KGMR65C | C65, C135 | 5414480 | ABDE2500A3ARG K600 | P113 |
| 5387864 | SCMT120412LF KCP10B | B230 | 5397508 | KSEM3600HPGM KCPM45 | H46 | 5405653 | PSC50KGML65C | C65, C135 | 5414481 | ABDE2500A3ARK K600 | P113 |
| 5387874 | SNMG120412RP KCP10B | B101 | 5397509 | KSEM3810HPGM KCPM45 | H46 | 5405654 | PSC50GKMSR65C | C64, C134 | 5414482 | ABDE2500A3ARM K600 | P113 |
| 5387882 | SNMG150612RP KCP10B | B101 | 5397510 | KSEM4000HPGM KCPM45 | H46 | 5405655 | PSC50GKMSL65C | C64, C134 | 5414483 | ABDE2500A3ARN K600 | P113 |
| 5387884 | SPMT097308LF KCP10B | B238 | 5397513 | KSEM7200PDS71A1M | H82, H92, H99 | 54056563 |170,365..... | H99 | 5415049 | .RIO06EGR06 KD1415..... | K56 |
| 5387896 | TNMG160412RP KCP10B | B128 | 5397514 | KSEM7400PDS71A1M | H82, H92, H99 | 5408657 | KGEM15881WN20M | H76 | 5417205 | T820M020X040R6H-D1 KSP32 | M14 |
| 5387901 | TNMG220432RP KCP10B | B128 | 5397515 | KSEM7600PDS71A1M | H82, H93, H99 | 5413058 | CNMG120416UN KCK15B | B54 | 5417206 | T820M020X040R6H-D1 KSP39 | M14 |
| 5387903 | TPMT1120208LF KCP10B | B255 | 5397516 | KSEM7620PDS71A1M | H82, H93, H99 | 5413059 | CNMM250924RH KCP25B | B55 | 5417207 | T820M020X040R6G-D1 KSP39 | M14 |
| 5387905 | TPMT16T308LF KCP10B | B255 | 5397517 | KSEM7800PDS71A1M | H82, H93, H99 | 5413170 | CMCT097312MF KCP25B | B177 | 5417208 | T820M025X045R6H-D1 KSP39 | M14 |
| 5387907 | VMBT160404PF KCP10B | B265 | 5397518 | KSEM8000PDS80A1M | H82, H93, H99 | 5413171 | CNMG120412CT KCP10B | B48 | 5417209 | T820M025X045R6G-D1 KSP39 | M14 |
| 5387910 | VMBT160412FP KCP10B | B265 | 5397519 | KSEM8200PDS80A1M | H82, H93, H99 | 5413172 | CNMG120412CT KCP25B | B48 | 5417220 | T820M030X050R6H-D1 KSP32 | M14 |
| 5387915 | WNMG080408RP KCP10B | B159 | 5397550 | KSEM8255PDS80A1M | H82, H93, H99 | 5413173 | CNMG120412WP KCK15B | B52 | 5417221 | T820M030X050R6H-D1 KSP39 | M14 |
| 5387919 | WNMG080412RP KCP10B | B159 | 5397551 | KSEM8400PDS80A1M | H82, H93, H99 | 5413174 | CNMG120412RP KCP10B | B53 | 5417222 | T820M030X050R6G-D1 KSP39 | M14 |
| 5388031 | CCMT097304LF KCP10B | B177 | 5397552 | KSEM8600PDS80A1M | H82, H93, H99 | 5413175 | CNMG120412RP KCP25B | B53 | 5417223 | T820M035X060R6H-D1 KSP39 | M14 |
| 5388032 | CCMT097308LF KCP10B | B177 | 5397553 | KSEM8800PDS80A1M | H82, H93, H99 | 5413176 | CNMG120416RP KCP10B | B53 | 5417224 | T820M040X070R6H-D1 KSP32 | M14 |
| 5388033 | CCMT097308MF KCP10B | B177 | 5397554 | KSEM8890PDS80A1M | H82, H93, H99 | 5413177 | CNMG120416RP KCP25B | B53 | 5417225 | T820M040X070R6H-D1 KSP39 | M14 |
| 5388035 | CCMT120408MF KCP10B | B177 | 5397555 | KSEM9000PDS90A1M | H82, H93, H99 | 5413178 | CNMG160612MN KCP10B | B50 | 5417226 | T820M040X050R6H-D1 KSP39 | M14 |
| 5388036 | CNMG120408MN KCP10B | B50 | 5397556 | KSEM9200PDS90A1M | H82, H93, H99 | 5413179 | CNMG160612MN KCP25B | B50 | 5417227 | T820M040X070R6G-D1 KSP39 | M14 |
| 5388037 | CNMG120408MW KCP10B | B52 | 5397557 | KSEM9400PDS90A1M | H82, H93, H99 | 5413180 | CNMG160612RP KCP10B | B53 | 5417228 | T820M050X080R6H-D1 KSP32 | M14 |
| 5388038 | CNMG120408RN KCP10B | B53 | 5397558 | KSEM9525PDS90A1M | H82, H93, H99 | 5413181 | CNMG160612RP KCP25B | B53 | 5417229 | T820M050X080R6H-D4 KSP39 | M14 |
| 5388039 | CNMG120408RP KCP10B | B53 | 5397559 | KSEM9600PDS90A1M | H82, H93, H99 | 5413182 | CNMG160616RP KCP10B | B53 | 5417230 | T820M050X050R6H-D4 KSP39 | M14 |
| 5388061 | CNMG120412MN KCP10B | B50 | 5397560 | KSEM9800PDS90A1M | H82, H93, H99 | 5413183 | CNMG160616RP KCP25B | B53 | 5417231 | T820M050X080R6G-D1 KSP39 | M14 |
| 5388062 | CNMG120412RN KCP10B | B53 | 5397561 | KSEM10160PDS90A1M | H82, H93, H99 | 5413184 | CPMT06208WP KCP25B | B190 | 5417232 | T820M060X010R6H-D1 KSP32 | M14 |
| 5388064 | CNMG120416RN KCP10B | B53 | 5397562 | KSEM17620PDS71B1M | H86, H95 | 5413185 | CPMT097308LF KCP10B | B190 | 5417233 | T820M060X100R6H-D1 KSP39 | M14 |
| 5388082 | CNMG160612RN KCP10B | B53 | 5397563 | KSEM8255PDS80B1M | H86, H96 | 5413186 | CPMT097308LF KCP25B | B190 | 5417234 | T820M060X050R6H-D4 KSP39 | M14 |
| 5388084 | CNMG160616RN KCP10B | B53 | 5397564 | KSEM8890PDS80B1M | H86, H96 | 5413187 | CPMT097308MF KCP10B | B190 | 5417235 | T820M060X075R6H-D4 KSP39 | M14 |
| 5388088 | CNMM120412RM KCP10B | B55 | 5397565 | KSEM9525PDS90B1M | H86, H96 | 5413188 | CPMT097308MF KCP25B | B190 | 5417236 | T820M060X100R6G-D1 KSP39 | M14 |
| 5388086 | CNMM120412RP KCP10B | B56 | 5397566 | KSEM10160PDS90B1M | H86, H96 | 5413189 | CPMT097308MP KCP25B | B190 | 5417237 | T820M070X100R6H-D1 KSP32 | M14 |
| 5388088 | CNMM160612RM KCP10B | B55 | 5397942 | WD50FDS71292M | H102 | 5413190 | DCMT11T308MF KCP10B | B208 | 5417238 | T820M070X100R6H-D1 KSP39 | M14 |
| 5388089 | CNMM160616RP KCP10B | B56 | 5397943 | WD50FDS71452M | H103 | 5413191 | DCMT11T308MF KCP25B | B208 | 5417239 | T820M070X100R6G-D1 KSP39 | M14 |
| 5388090 | CNMM160616RM KCP10B | B55 | 5397944 | WD50FDS80327M | H102 | 5413193 | DNMG110412MN KCP25B | B78 | 5417240 | T820M080X125R6H-D1 KSP32 | M14 |
| 5388095 | DCMT11T308LF KCP10B | B207 | 5397945 | WD50FDS80507M | H103 | 5413194 | DNMG150404CT KCP25B | B76 | 5417241 | T820M080X125R6H-D1 KSP39 | M14 |
| 5388097 | DCMT11T312MF KCP10B | B208 | 5397946 | WD50FDS90327M | H102 | 5413195 | DNMG150412RP KCP10B | B88 | 5417242 | T820M080X100R6H-D4 KSP39 | M14 |
| 5388111 | DNMG150408MN KCP10B | B78 | 5397947 | WD50FDS90562M | H103 | 5413196 | DNMG150412RP KCP25B | B88 | 5417243 | T820M080X125R6G-D1 KSP39 | M14 |
| 5388112 | DNMG150408RN KCP10B | B81 | 5400814 | B272206400HPS KN25 | G76 | 5413197 | DNMG150608RP KCP10B | B88 | 5417244 | T820M100X150R6H-D1 KSP32 | M14 |
| 5388116 | DNMG150608FN KCP10B | B77 | 5402877 | SNMG120412MR KCM25 | B99 | 5413198 | DNMG150608RP KCP25B | B88 | 5417245 | T820M100X150R6H-D1 KSP39 | M14 |
| 5388117 | DNMG150608MN KCP10B | B78 | 5402879 | SNMG120412MR KCP10B | B99 | 5413199 | DNMG150612CT KCP10B | B76 | 5417246 | T820M100X125R6H-D4 KSP39 | M14 |
| 5393242 | CNMG120408RN KCP40B | B53 | 5402920 | SNMG120412MR KCP25B | B99 | 5413200 | DNMG150612MN KCP10B | B78 | 5417247 | T820M100X150R6G-D1 KSP39 | M14 |
| 5393244 | CNMG120408RN KCP40B | B53 | 5402924 | SNMG160408MR KCM25 | B126 | 5413201 | DNMG150612RN KCP10B | B88 | 5417248 | T820M060X100R6H-D6 KSP39 | M14 |
| 5396014 | KF2X63Z05S22W009 | V40 | 5402926 | TNMG160408MR KCP10B | B126 | 5413202 | DNMG150612RP KCP10B | B88 | 5417249 | T820M080X125R6H-D6 KSP39 | M14 |
| 5396015 | KF2X66Z06S22W009 | V40 | 5402927 | TNMG160408MR KCP25B | B126 | 5413203 | SNMG120412RP KCK15B | B101 | 5417250 | T820M100X150R6H-D6 KSP39 | M14 |
| 5397385 | KSEM1707HPGM KCPM45 | H45 | 5402930 | TNMG160412MR KCP25B | B126 | 5413205 | VNMG160412RP KCK15B | B147 | 5417251 | T820M120X175R6H-D6 KSP32 | M15 |
| 5397386 | KSEM1239HPGM KCPM45 | H45 | 5402931 | TNMG160412MR KCP25B | B126 | 5413206 | VNMG080408RP KCP25B | B159 | 5417252 | T820M120X175R6H-D6 KSP39 | M15 |
| 5397387 | KSEM1400HPGM KCPM45 | H45 | 5402932 | TNMG160412MR KCK15B | B126 | 5413207 | VNMG080412RP KCP25B | B159 | 5417253 | T820MF120X125R6H-D4 KSP39 | M14 |
| 5397388 | KSEM1429HPGM KCPM45 | H45 | 5402935 | WNMG080408MR KCM25 | B157 | 5413208 | VNMG080416RP KCP25B | B159 | 5417254 | T820MF120X150R6H-D4 KSP39 | M14 |
| 5397389 | KSEM1609HPGM KCPM45 | H45 | 5402936 | WNMG080408MR KCM35 | B157 | 5413209 | DNMM150616RP KCP10B | B88 | 5417255 | T820M120X175R6G-D6 KSP39 | M15 |
| 5397470 | KSEM1620HPGM KCPM45 | H45 | 5402937 | WNMG080408MR KCP10B | B157 | 5413210 | CNMM250924RM KCP25B | B85 | 5417256 | T820M140X200R6H-D6 KSP32 | M15 |
| 5397471 | KSEM1667HPGM KCPM45 | H45 | 5402938 | WNMG080408MR KCP25B | B157 | 5413211 | SNMM250724RH KCP25B | B102 | 5417257 | T820M140X200R6H-D6 KSP39 | M15 |
| 5397473 | KSEM1746HPGM KCPM45 | H45 | 5402960 | WNMG080408MR KCK15B | B157 | 5413212 | SNMM250924RH KCP25B | B102 | 5417258 | T820MF140X125R6H-D4 KSP39 | M15 |
| 5397474 | KSEM1800HPGM KCPM45 | H45 | 5402963 | WNMG080412MR KCM35 | B157 | 5413242 | SCMT097308LF KCP10B | B230 | 5417259 | T820MF140X150R6H-D4 KSP39 | M15 |
| 5397475 | KSEM1826HPGM KCPM45</ | | | | | | | | | | |

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| 5417276 | T830M020X040R6H-D1 KSP39 | M40 | 5417388 | T820M160X200R6H-J KSU30 | M18 | 5420678 | B551A14288DAL KN15 | G108 | 5434718 | B284D05558HPS KN15 | G88 |
| 5417277 | T830M020X040R6G-D1 KSP39 | M40 | 5417389 | T832MF080X100R6H-D4 KSP39 | M42 | 5420679 | B551A15875DAL KN15 | G108 | 5434719 | B284D05600HPS KN15 | G89 |
| 5417278 | T830M025X045R6H-D1 KSP39 | M40 | 5417390 | T820MF160X150R6H-J KSU30 | M18 | 5420800 | B556A04763DAL KN15 | G108 | 5434721 | B284D05800HPS KN15 | G89 |
| 5417279 | T830M025X045R6G-D1 KSP39 | M40 | 5417391 | T832M100X150R6H-D1 KSP32 | M42 | 5420801 | B556A04826DAL KN15 | G108 | 5434722 | B284D05954HPS KN15 | G89 |
| 5417280 | T830M030X050R6H-D1 KSP32 | M40 | 5417392 | T820M180X250R6H-J KSU30 | M18 | 5420802 | B556A06350DAL KN15 | G108 | 5434723 | B284D06000HPS KN15 | G89 |
| 5417281 | T830M030X050R6H-D1 KSP39 | M40 | 5417393 | T832M100X150R6H-D1 KSP39 | M42 | 5420803 | B556A06375DAL KN15 | G108 | 5434724 | B284D06400HPS KN15 | G89 |
| 5417282 | T830M030X050R6G-D1 KSP39 | M40 | 5417394 | T820M200X250R6H-J KSU30 | M18 | 5420804 | B556A07938DAL KN15 | G108 | 5434725 | B284D06500HPS KN15 | G89 |
| 5417283 | T830M035X060R6H-D1 KSP39 | M40 | 5417395 | T832MF100X125R6H-D4 KSP32 | M42 | 5420805 | B556A09525DAL KN15 | G108 | 5434726 | B284D06746HPS KN15 | G89 |
| 5417284 | T830M040X070R6H-D1 KSP32 | M40 | 5417396 | T832MF100X125R6H-D4 KSP39 | M42 | 5420806 | B556A11113DAL KN15 | G108 | 5434727 | B284D06800HPS KN15 | G89 |
| 5417285 | T830M040X070R6H-D1 KSP39 | M40 | 5417397 | T832M120X175R6H-D6 KSP32 | M42 | 5420807 | B556A12700DAL KN15 | G108 | 5434728 | B284D07000HPS KN15 | G89 |
| 5417286 | T830M040X070R6G-D1 KSP39 | M40 | 5417398 | T832M120X175R6H-D6 KSP39 | M42 | 5420808 | B556A14288DAL KN15 | G108 | 5434729 | B284D07145HPS KN15 | G89 |
| 5417287 | T830M050X080R6H-D1 KSP32 | M40 | 5417399 | T832MF120X150R6H-D4 KSP32 | M42 | 5420809 | B556A15875DAL KN15 | G108 | 5434730 | B284D07400HPS KN15 | G89 |
| 5417288 | T830M050X080R6H-D1 KSP39 | M40 | 5417400 | T820MF120X150R6H-D4 KSP39 | M42 | 5420832 | HNGX090530MC1 KCK15 | S91, S97 | 5434731 | B284D07500HPS KN15 | G89 |
| 5417289 | T830M050X080R6G-D1 KSP39 | M40 | 5417401 | T832M140X200R6H-D6 KSP32 | M42 | 5420836 | SNXF120412ENLD KCK15 | S104 | 5434732 | B284D07541HPS KN15 | G89 |
| 5417290 | T830M060X100R6H-D1 KSP32 | M40 | 5417402 | T820M140X200R6H-D6 KSP39 | M42 | 5420837 | SNXF12042NEFLD KCK15 | S104 | 5434733 | B284D07938HPS KN15 | G89 |
| 5417291 | T830M060X100R6H-D1 KSP39 | M40 | 5417403 | T832MF140X150R6H-D4 KSP32 | M42 | 5420838 | SNXF120412NSNP KCK15 | S104 | 5434734 | B284D08000HPS KN15 | G89 |
| 5417292 | T830M060X100R6G-D1 KSP39 | M40 | 5417404 | T820MF140X150R6H-D4 KSP39 | M42 | 5420839 | SNXF12042NSNP KCK15 | S104 | 5434735 | B284D08334HPS KN15 | G89 |
| 5417293 | T830M070X100R6H-D1 KSP39 | M40 | 5417405 | T832M160X200R6H-D6 KSP39 | M42 | 5420840 | SNXF120412SNHE KCK15 | S104 | 5434736 | B284D08500HPS KN15 | G89 |
| 5417294 | T830M080X125R6H-D1 KSP32 | M40 | 5417406 | T832M180X250R6H-D6 KSP32 | M42 | 5420841 | SNXF12042NSNHE KCK15 | S104 | 5434737 | B284D08733HPS KN15 | G89 |
| 5417295 | T830M080X125R6H-D1 KSP39 | M40 | 5417407 | T832M180X250R6H-D6 KSP39 | M42 | 5420842 | SNXF12042NEFLD KCK15 | S106 | 5434738 | B284D09000HPS KN15 | G89 |
| 5417296 | T830MF080X100R6H-D4 KSP32 | M40 | 5417408 | T832M200X250R6H-D6 KSP32 | M42 | 5424912 | WNMG080408RN KCP25B | B159 | 5434739 | B284D09129HPS KN15 | G89 |
| 5417297 | T830MF080X100R6H-D4 KSP39 | M40 | 5417409 | T832M200X250R6H-D6 KSP39 | M42 | 5425545 | CNMG160612RN KCP25B | B53 | 5434740 | B284D09500HPS KN15 | G89 |
| 5417298 | T830M080X125R6G-D1 KSP39 | M40 | 5417410 | T830M030X050R6H-J KSU31 | M50 | 5425546 | CNMG160616RN KCP25B | B53 | 5434741 | B284D09525HPS KN15 | G89 |
| 5417299 | T830M100X150R6H-D1 KSP32 | M40 | 5417411 | T830M030X050R6H-J KSU30 | M50 | 5425547 | CNMG190616MN KCP25B | B50 | 5434742 | B284D09921HPS KN15 | G89 |
| 5417300 | T830M100X150R6H-D1 KSP39 | M40 | 5417412 | T830M040X070R6H-J KSU31 | M50 | 5425548 | CNMG150412MN KCP25B | B78 | 5434743 | B284D10000HPS KN15 | G89 |
| 5417301 | T830MF100X125R6H-D4 KSP32 | M40 | 5417413 | T830M040X070R6H-J KSU30 | M50 | 5425549 | CNMG150412RN KCP25B | B81 | 5434744 | B284D10200HPS KN15 | G89 |
| 5417302 | T830MF100X125R6H-D4 KSP39 | M40 | 5417414 | T830M050X080R6H-J KSU31 | M50 | 5425551 | RNMG120400RN KCP10B | B94 | 5434745 | B284D10320HPS KN15 | G89 |
| 5417303 | T830MF100X150R6G-D1 KSP39 | M40 | 5417415 | T830M050X080R6H-J KSU30 | M50 | 5425582 | SNMG090308MN KCP10B | B98 | 5434746 | B284D10500HPS KN15 | G89 |
| 5417304 | T830MF060X100R6H-D6 KSP39 | M40 | 5417416 | T830M060X100R6H-J KSU31 | M50 | 5425583 | SNMG120412MN KCP10B | B98 | 5434747 | B284D10716HPS KN15 | G90 |
| 5417305 | T830M080X125R6H-D6 KSP39 | M40 | 5417417 | T830M060X100R6H-J KSU30 | M50 | 5425584 | SNMG120412RN KCP10B | B101 | 5434748 | B284D11000HPS KN15 | G90 |
| 5417306 | T830M100X150R6H-D6 KSP39 | M40 | 5417418 | T830M080X125R6H-J KSU30 | M50 | 5425585 | SNMG120416RN KCP10B | B101 | 5434749 | B284D11113HPS KN15 | G90 |
| 5417307 | T830MF120X175R6H-D6 KSP32 | M40 | 5417419 | T830M080X125R6H-J KSU31 | M50 | 5425586 | SNMG150612MN KCP10B | B98 | 5434750 | B284D11908HPS KN15 | G90 |
| 5417308 | T830MF120X175R6H-D6 KSP39 | M40 | 5417420 | T830M100X150R6H-J KSU30 | M50 | 5425587 | SNMG150612RN KCP10B | B101 | 5434751 | B284D12000HPS KN15 | G90 |
| 5417309 | T830MF120X125R6H-D4 KSP39 | M40 | 5417421 | T830M100X150R6H-J KSU31 | M50 | 5425588 | TNMG160412MN KCP10B | B125 | 5434752 | B284D12500HPS KN15 | G90 |
| 5417310 | T830MF120X150R6H-D4 KSP32 | M40 | 5417422 | T830M120X175R6H-J KSU30 | M50 | 5425589 | TNMG160412RN KCP10B | B127 | 5434753 | B284D12700HPS KN15 | G90 |
| 5417311 | T830MF120X150R6H-D4 KSP39 | M40 | 5417423 | T830MF120X125R6H-J KSU30 | M50 | 5425591 | VNMG160408MN KCP10B | B145 | 5434754 | B284D14000HPS KN15 | G90 |
| 5417312 | T830MF120X175R6G-D6 KSP39 | M40 | 5417424 | T830MF120X150R6H-J KSU30 | M50 | 5425592 | VNMG060408RN KCP10B | B159 | 5434755 | B284D14288HPS KN15 | G90 |
| 5417313 | T830MF140X200R6H-D6 KSP32 | M41 | 5417425 | T830MF140X150R6H-J KSU30 | M50 | 5425593 | VNMG080412MN KCP10B | B157 | 5434756 | B284D15875HPS KN15 | G90 |
| 5417314 | T830MF140X200R6H-D6 KSP39 | M41 | 5417426 | T830M140X200R6H-J KSU30 | M50 | 5425594 | VNMG080412RN KCP10B | B159 | 5434757 | B284D19050HPS KN15 | G90 |
| 5417315 | T830MF140X150R6H-D4 KSP32 | M41 | 5417427 | T830MF160X150R6H-J KSU30 | M50 | 5425595 | VNMG080416RN KCP10B | B159 | 5434758 | B284D20000HPS KN15 | G90 |
| 5417316 | T830MF140X150R6H-D4 KSP39 | M41 | 5417428 | T830M160X200R6H-J KSU30 | M50 | 5425596 | RNMG090300RN KCP25B | B94 | 5434759 | B285D03000HPS KN15 | G88 |
| 5417317 | T830MF140X200R66-D6 KSP39 | M41 | 5417429 | T830M180X250R6H-J KSU30 | M50 | 5425597 | RNMG120400RN KCP25B | B94 | 5434760 | B285D03175HPS KN15 | G88 |
| 5417318 | T830MF160X200R6H-D6 KSP39 | M41 | 5417430 | T830M200X250R6H-J KSU30 | M50 | 5425598 | SNMG090308MN KCP25B | B98 | 5434761 | B285D03200HPS KN15 | G88 |
| 5417319 | T830MF160X150R6H-D4 KSP39 | M41 | 5417431 | T830MF160X150R6H-D4 KSP39 | M41 | 5425599 | SNMG120412MN KCP25B | B98 | 5434762 | B285D03300HPS KN15 | G88 |
| 5417320 | T830MF160X150R6G-D6 KSP39 | M41 | 5417432 | T830MF160X150R6H-D6 KSP39 | M41 | 5425600 | SNMG120412RN KCP25B | B101 | 5434763 | B285D03970HPS KN15 | G88 |
| 5417321 | T830MF180X250R6H-D6 KSP39 | M41 | 5417433 | T830MF180X150R6H-D4 KSP39 | M41 | 5425601 | SNMG120416RN KCP25B | B101 | 5434764 | B285D04000HPS KN15 | G88 |
| 5417322 | T830MF180X150R6H-D4 KSP39 | M41 | 5417434 | T830MF180X150R6H-D4 KSP39 | M41 | 5425602 | SNMG160122MN KCP25B | B98 | 5434765 | B285D04200HPS KN15 | G88 |
| 5417323 | T830MF180X150R6H-D6 KSP39 | M41 | 5417435 | T830MF180X150R6H-D6 KSP39 | M41 | 5425603 | SNMG150612RN KCP25B | B101 | 5434766 | B285D04500HPS KN15 | G88 |
| 5417324 | T830MF180X150R6H-D6 KSP39 | M41 | 5417436 | T830MF180X150R6H-D6 KSP39 | M41 | 5425604 | TNMG160412MN KCP25B | B125 | 5434767 | B285D0473HPS KN15 | G88 |
| 5417325 | T830MF200X250R6H-D6 KSP39 | M41 | 5417437 | T830MF200X250R6H-D6 KSP39 | M41 | 5425605 | TNMG160412RN KCP25B | B127 | 5434768 | B285D04800HPS KN15 | G88 |
| 5417326 | T830MF200X250R6H-D6 KSP39 | M41 | 5417438 | T830MF200X250R6H-D6 KSP39 | M41 | 5425606 | TNMG220416RN KCP25B | B127 | 5434769 | B285D04900HPS KN15 | G88 |
| 5417327 | T830MF200X250R6H-D6 KSP39 | M41 | 5417439 | T830MF200X250R6H-D6 KSP39 | M41 | 5425607 | VNMG160408MN KCP25B | B145 | 5434770 | B285D05000HPS KN15 | G88 |
| 5417328 | T830MF200X250R6H-D6 KSP39 | M41 | 5417440 | T830MF200X250R6H-D6 KSP39 | M41 | 5425608 | VNMG090412RN KCK15 | B159 | 5434771 | B285D05100HPS KN15 | G88 |
| 5417329 | T830MF200X250R6H-D6 KSP39 | M41 | 5417441 | T830MF200X250R6H-D6 KSP39 | M41 | 5425609 | CNMG160612RN KCP10B | B53 | 5434772 | B285D05200HPS KN15 | G88 |
| 5417330 | T830MF200X250R6H-D6 KSP39 | M41 | 5417442 | T830MF200X250R6H-D6 KSP39 | M41 | 5425610 | CNMG160616RN KCP10B | B125 | 5434773 | B285D05500HPS KN15 | G88 |
| 5417331 | T830MF200X250R6H-D6 KSP39 | M41 | 5417443 | T830MF200X250R6H-D6 KSP39 | M41 | 5425611 | CNMG190616MN KCP10B | B50 | 5434774 | B285D05558HPS KN15 | G88 |
| 5417332 | T830MF200X250R6H-D6 KSP39 | M41 | 5417444 | T830MF200X250R6H-D6 KSP39 | M41 | 5425612 | CNMG160122RN KCP25B | B98 | 5434775 | B285D05600HPS KN15 | G89 |
| 5417333 | T830MF200X250R6H-D6 KSP39 | M41 | 5417445 | T830MF200X250R6H-D6 KSP39 | M41 | 5425613 | SNMG090308RN KCP10B | B61 | 5434776 | B285D05700HPS KN15 | G88 |
| 5417334 | T830MF200X250R6H-D6 KSP39 | M41 | 5417446 | T830MF200X250R6H-D6 KSP39 | M41 | 5425614 | SNMG090308RN KCP10B | B61 | 5434777 | B285D06300HPS KN15 | G89 |
| 5417335 | T830MF200X250R6H-D6 KSP39 | M41 | 5417447 | T830MF200X250R6H-D6 KSP39 | M41 | 5425615 | SNMG120412RN KCP25B | B101 | 5434778 | B285D06400HPS KN15 | G89 |
| 5417336 | T830MF200X250R6H-D6 KSP39 | M41 | 5417448 | T830MF200X250R6H-D6 KSP39 | M41 | 5425616 | SNMG220416RN KCP25B | B101 | 5434779 | B285D06500HPS KN15 | G89 |
| 5417337 | T830MF200X250R6H-D6 KSP39 | M41 | 5417449 | T830MF200X250R6H-D6 KSP39 | M41 | 5425617 | VNMG160408MN KCP25B | B145 | 5434775 | B285D06600HPS KN15 | G89 |
| 5417338 | T830MF200X250R6H-D6 KSP39 | M41 | 5417450 | T830MF200X250R6H-D6 KSP39 | M41 | 5425618 | VNMG090412RN KCP10B | B78 | 5434776 | B285D06700HPS KN15 | G89 |
| 5417339 | T830MF200X250R6H-D6 KSP39 | M41 | 5417451 | T830MF200X250R6H-D | | | | | | | |

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| 5434802 | B285D14000HPS KN15 | G90 | 5479780 | T830NF10000-12R2B-D6 KSP39 | M46 | 5506105 | B274Z07000HPG KCPK20 | G79 | 5506340 | B272Z07541HPG KCPK20 | G77 |
| 5434803 | B285D14500HPS KN15 | G90 | 5479781 | T820MF100X100R6H-D4 KSP39 | M14 | 5506106 | B271Z09000HPG KCPK20 | G75 | 5506341 | B272Z07938HPG KCPK20 | G77 |
| 5434804 | B285D18000HPS KN15 | G90 | 5479782 | T820MF120X100R6H-D4 KSP39 | M14 | 5506107 | B274Z07700HPG KCPK20 | G80 | 5506342 | B272Z08000HPG KCPK20 | G77 |
| 5477295 | EDPT140408PDERHD2 KC725M | T53, T62 | 5479783 | T820MF140X100R6H-D4 KSP39 | M15 | 5506108 | B271Z09100HPG KCPK20 | G75 | 5506343 | B272Z08334HPG KCPK20 | G77 |
| 5477296 | EDPT140408PDERHD2 KCPK30 | T53, T62 | 5479784 | T820MF160X100R6H-D4 KSP39 | M15 | 5506109 | B274Z07938HPG KCPK20 | G80 | 5506344 | B272Z08433HPG KCPK20 | G77 |
| 5477296 | EDPT140408PDERHD2 KCK15 | T53, T62 | 5479785 | T820MF180X200R6H-D4 KSP39 | M15 | 5506110 | B271Z09200HPG KCPK20 | G75 | 5506345 | B272Z08500HPG KCPK20 | G77 |
| 5477297 | EDPT140408PDERHD2 KCK15 | T53, T62 | 5479786 | T820MF200X150R6H-D4 KSP39 | M15 | 5506111 | B274Z08000HPG KCPK20 | G80 | 5506346 | B272Z08733HPG KCPK20 | G77 |
| 5477299 | EDPT140408PDERHD2 KC522M | T53, T62 | 5479787 | T820MF200X200R6H-D4 KSP39 | M15 | 5506112 | B271Z09500HPG KCPK20 | G75 | 5506347 | B272Z09000HPG KCPK20 | G77 |
| 5477299 | EDPT140408PDERHD2 KC522M | T53, T62 | 5479788 | T820MF220X150R6H-D4 KSP39 | M15 | 5506113 | B274Z08334HPG KCPK20 | G80 | 5506348 | B272Z09100HPG KCPK20 | G77 |
| 5479648 | T820NC#04-40R2B-D1 KSP39 | M16 | 5479789 | T820MF220X200R6H-D4 KSP39 | M15 | 5506114 | B271Z09525HPG KCPK20 | G75 | 5506349 | B272Z09500HPG KCPK20 | G77 |
| 5479649 | T820NC#04-40R3B-D1 KSP39 | M17 | 5479790 | T820MF240X150R6H-D4 KSP39 | M15 | 5506115 | B274Z08500HPG KCPK20 | G80 | 5506350 | B272Z09525HPG KCPK20 | G77 |
| 5479649 | T820NC#04-40R3B-D1 KSP39 | M17 | 5479791 | KTP0983HPM KCP15 | H26 | 5506116 | B271Z09750HPG KCPK20 | G75 | 5506351 | B272Z09750HPG KCPK20 | G77 |
| 5479649 | T820NC#04-40R3B-D1 KSP39 | M17 | 5479792 | WNGM080416MN KCP25B | B157 | 5506117 | B274Z08700HPG KCPK20 | G80 | 5506352 | B272Z10000HPG KCPK20 | G77 |
| 5479690 | T820NC#05-40R2B-D1 KSP39 | M16 | 5479793 | CNMG190616RP KCPK05 | B53 | 5506118 | B271Z10000HPG KCPK20 | G75 | 5506353 | B272Z10200HPG KCPK20 | G77 |
| 5479691 | T820NC#06-32R2B-D1 KSP39 | M16 | 5479794 | RQ06EDR06 KD1415 | K56 | 5506119 | B274Z09000HPG KCPK20 | G80 | 5506354 | B272Z10500HPG KCPK20 | G77 |
| 5479692 | T820NC#06-32R3B-D1 KSP39 | M17 | 5479795 | T820MF240X150R6H-D4 KSP39 | M15 | 5506120 | B271Z10200HPG KCPK20 | G75 | 5506355 | B272Z10716HPG KCPK20 | G77 |
| 5479693 | T820NF#06-40R2B-D1 KSP39 | M16 | 5479796 | T820NF#06-40R2B-D1 KSP39 | M16 | 5506121 | B274Z09525HPG KCPK20 | G80 | 5506356 | B272Z11000HPG KCPK20 | G77 |
| 5479694 | T820NC#08-32R2B-D1 KSP39 | M16 | 5479797 | CFM0402R00RHP KCU40 | H34 | 5506122 | B271Z10500HPG KCPK20 | G75 | 5506357 | B272Z11500HPG KCPK20 | G77 |
| 5479695 | T820NC#08-32R3B-D1 KSP39 | M17 | 5479798 | T820MF220X150R6H-D4 KSP39 | M15 | 5506123 | B274Z10000HPG KCPK20 | G80 | 5506358 | B272Z11800HPG KCPK20 | G77 |
| 5479696 | T820NC#10-24R2B-D1 KSP39 | M16 | 5479799 | T820MF220X200R6H-D4 KSP39 | M15 | 5506124 | B271Z09525HPG KCPK20 | G75 | 5506359 | B272Z12000HPG KCPK20 | G77 |
| 5479697 | T820NF#10-32R2B-D1 KSP39 | M16 | 5479800 | KTMDUSCREW1 | W29-31 | 5506125 | B274Z10200HPG KCPK20 | G80 | 5506360 | B272Z12500HPG KCPK20 | G77 |
| 5479698 | T820NF#10-32R3B-D1 KSP39 | M17 | 5479801 | T820NF#10-32R3B-D1 KSP39 | M16 | 5506126 | B271Z10800HPG KCPK20 | G75 | 5506361 | B272Z12700HPG KCPK20 | G77 |
| 5479699 | T820NC02500-20R2B-D1 KSP39 | M16 | 5479802 | B271Z02705KMG KCPK20 | G74 | 5506127 | B274Z10500HPG KCPK20 | G80 | 5506362 | B272Z13000HPG KCPK20 | G77 |
| 5479700 | T820NF02500-28R2B-D1 KSP39 | M16 | 5479803 | B271Z02779KMG KCPK20 | G74 | 5506128 | B271Z10000HPG KCPK20 | G75 | 5506363 | B272Z13100HPG KCPK20 | G77 |
| 5479701 | T820NF02500-28R3B-D1 KSP39 | M17 | 5479804 | B271Z02820KMG KCPK20 | G74 | 5506129 | B274Z10716HPG KCPK20 | G80 | 5506364 | B272Z13500HPG KCPK20 | G77 |
| 5479702 | T820NC03125-18R2B-D1 KSP39 | M16 | 5479805 | B271Z03000HPG KCPK20 | G74 | 5506130 | B271Z11500HPG KCPK20 | G75 | 5506365 | B272Z14000HPG KCPK20 | G77 |
| 5479703 | T820NF03125-24R2B-D1 KSP39 | M16 | 5479806 | B271Z03175HPG KCPK20 | G74 | 5506135 | B274Z11000HPG KCPK20 | G80 | 5506367 | B272Z14500HPG KCPK20 | G77 |
| 5479704 | T820NF03125-24R3B-D1 KSP39 | M17 | 5479807 | B271Z03200HPG KCPK20 | G74 | 5506136 | B271Z12000HPG KCPK20 | G75 | 5506368 | B272Z15000HPG KCPK20 | G77 |
| 5479705 | T820NC03750-16R2B-D1 KSP39 | M16 | 5479808 | B271Z03300HPG KCPK20 | G74 | 5506137 | B274Z11500HPG KCPK20 | G80 | 5506369 | B272Z15500HPG KCPK20 | G77 |
| 5479706 | T820NF03750-24R2B-D1 KSP39 | M16 | 5479809 | B271Z03600HPG KCPK20 | G74 | 5506138 | B271Z12500HPG KCPK20 | G75 | 5506370 | B272Z15875HPG KCPK20 | G77 |
| 5479707 | T820NF03750-24R3B-D1 KSP39 | M17 | 5479810 | B271Z03700HPG KCPK20 | G74 | 5506139 | B274Z11800HPG KCPK20 | G80 | 5506371 | B272Z16000HPG KCPK20 | G77 |
| 5479708 | T820NC04375-16R2B-D6 KSP39 | M16 | 5479811 | B271Z03970HPG KCPK20 | G74 | 5506140 | B271Z12700HPG KCPK20 | G75 | 5507556 | TNMG220408MP KCP10B | B125 |
| 5479709 | T820NF04375-20R2B-D6 KSP39 | M16 | 5479812 | B271Z04000HPG KCPK20 | G74 | 5506141 | B274Z12700HPG KCPK20 | G80 | 5507610 | TNMG220408FN KCP10B | B124 |
| 5479710 | T820NF04375-20R3B-D6 KSP39 | M17 | 5479813 | B271Z04500HPG KCPK20 | G74 | 5506142 | B271Z13000HPG KCPK20 | G75 | 5507611 | WNMG080408FW KCP10B | B156 |
| 5479711 | T820NC05000-13R2B-D6 KSP39 | M16 | 5479814 | B271Z04623HPG KCPK20 | G74 | 5506143 | B274Z12500HPG KCPK20 | G80 | 5507612 | WNMG080408RN KCP10B | B159 |
| 5479712 | T820NF05000-20R2B-D6 KSP39 | M16 | 5479815 | B271Z04763HPG KCPK20 | G74 | 5506144 | B271Z13500HPG KCPK20 | G75 | 5511788 | B273Z02383KMG KCPK20 | G78 |
| 5479713 | T820NF05000-20R3B-D6 KSP39 | M17 | 5479816 | B271Z04800HPG KCPK20 | G74 | 5506145 | B274Z12700HPG KCPK20 | G80 | 5511789 | B273Z02500KMG KCPK20 | G78 |
| 5479714 | T820NC05625-12R2B-D6 KSP39 | M16 | 5479817 | B271Z05000HPG KCPK20 | G74 | 5506146 | B271Z14000HPG KCPK20 | G75 | 5511930 | B273Z02600KMG KCPK20 | G78 |
| 5479715 | T820NF05625-18R2B-D6 KSP39 | M16 | 5479818 | B271Z05060HPG KCPK20 | G74 | 5506147 | B274Z13000HPG KCPK20 | G80 | 5511933 | B273Z03000HPG KCPK20 | G78 |
| 5479716 | T820NC06250-11R2B-D6 KSP39 | M16 | 5479819 | B271Z05260HPG KCPK20 | G74 | 5506148 | B271Z14288HPG KCPK20 | G75 | 5511934 | B273Z03175HPG KCPK20 | G78 |
| 5479717 | T820NF06250-18R2B-D6 KSP39 | M16 | 5479820 | B271Z05410HPG KCPK20 | G74 | 5506149 | B271Z14500HPG KCPK20 | G75 | 5511935 | B273Z03500HPG KCPK20 | G78 |
| 5479718 | T820NC07500-10R2B-D6 KSP39 | M16 | 5479821 | B271Z05500HPG KCPK20 | G74 | 5506150 | B271Z15000HPG KCPK20 | G75 | 5511936 | B273Z04000HPG KCPK20 | G78 |
| 5479719 | T820NF07500-16R2B-D6 KSP39 | M16 | 5479822 | B271Z05588HPG KCPK20 | G74 | 5506151 | B271Z15875HPG KCPK20 | G75 | 5511937 | B273Z04500HPG KCPK20 | G78 |
| 5479720 | T820NC08750-9R2B-D6 KSP39 | M16 | 5479823 | B274Z02383KMG KCPK20 | G79 | 5506152 | B271Z16000HPG KCPK20 | G75 | 5511938 | B273Z05000HPG KCPK20 | G78 |
| 5479721 | T820NF08750-10R2B-D6 KSP39 | M16 | 5479824 | B271Z05800HPG KCPK20 | G74 | 5506153 | B272Z02383KMG KCPK20 | G76 | 5511939 | B273Z05100HPG KCPK20 | G78 |
| 5479722 | T820NC10000-8R2B-D6 KSP39 | M16 | 5479825 | B271Z05200KMG KCPK20 | G79 | 5506154 | B272Z02400KMG KCPK20 | G76 | 5511940 | B273Z05500HPG KCPK20 | G78 |
| 5479723 | T820NF10000-12R2B-D6 KSP39 | M16 | 5479826 | B271Z05900HPG KCPK20 | G74 | 5506155 | B272Z02489KMG KCPK20 | G76 | 5511941 | B273Z05800HPG KCPK20 | G78 |
| 5479724 | T830NC#04-40R2B-D1 KSP39 | M46 | 5479827 | B271Z06000HPG KCPK20 | G74 | 5506156 | B272Z02500KMG KCPK20 | G76 | 5511942 | B273Z06000HPG KCPK20 | G78 |
| 5479725 | T830NC#04-40R3B-D1 KSP39 | M49 | 5479828 | B274Z02600KMG KCPK20 | G79 | 5506157 | B272Z02779KMG KCPK20 | G76 | 5511943 | B273Z06350HPG KCPK20 | G78 |
| 5479726 | T830NC#05-40R2B-D1 KSP39 | M46 | 5479829 | B271Z06039HPG KCPK20 | G74 | 5506158 | B272Z03000HPG KCPK20 | G76 | 5511944 | B273Z06500HPG KCPK20 | G78 |
| 5479727 | T830NC#06-32R2B-D1 KSP39 | M46 | 5479830 | B272Z02800KMG KCPK20 | G79 | 5506159 | B272Z03175HPG KCPK20 | G76 | 5511945 | B273Z06746HPG KCPK20 | G78 |
| 5479728 | T830NC#06-32R3B-D1 KSP39 | M49 | 5479831 | B271Z06350HPG KCPK20 | G74 | 5506160 | B272Z03300HPG KCPK20 | G76 | 5511946 | B273Z07000HPG KCPK20 | G78 |
| 5479729 | T830NF#06-40R2B-D1 KSP39 | M46 | 5479832 | B274Z03000HPG KCPK20 | G79 | 5506161 | B272Z03850HPG KCPK20 | G76 | 5511947 | B273Z07500HPG KCPK20 | G78 |
| 5479730 | T830NC#08-32R2B-D1 KSP39 | M46 | 5479833 | B271Z06500HPG KCPK20 | G75 | 5506162 | B272Z03850HPG KCPK20 | G76 | 5511948 | B273Z08000HPG KCPK20 | G78 |
| 5479732 | T830NC#08-32R3B-D1 KSP39 | M49 | 5479834 | B271Z06715HPG KCPK20 | G79 | 5506163 | B272Z03970HPG KCPK20 | G76 | 5511949 | B273Z08500HPG KCPK20 | G78 |
| 5479733 | T830NC#10-24R2B-D1 KSP39 | M46 | 5479835 | B271Z06528HPG KCPK20 | G75 | 5506164 | B272Z04000HPG KCPK20 | G76 | 5511950 | B273Z08733HPG KCPK20 | G78 |
| 5479734 | T830NF#10-32R2B-D1 KSP39 | M46 | 5479836 | B274Z03500HPG KCPK20 | G79 | 5506165 | B272Z04500HPG KCPK20 | G76 | 5511951 | B273Z09000HPG KCPK20 | G78 |
| 5479735 | T830NF#10-32R3B-D1 KSP39 | M49 | 5479837 | B271Z06746HPG KCPK20 | G75 | 5506166 | B272Z04623HPG KCPK20 | G76 | 5511952 | B273Z10000HPG KCPK20 | G78 |
| 5479736 | T830NC02500-20R2B-D1 KSP39 | M46 | 5479838 | B274Z03970HPG KCPK20 | G79 | 5506167 | B272Z04763HPG KCPK20 | G76 | 5511953 | B273Z10200HPG KCPK20 | G78 |
| 5479737 | T830NF02500-28R2B-D1 KSP39 | M46 | 5479839 | B271Z06909HPG KCPK20 | G75 | 5506168 | B272Z05000HPG KCPK20 | G76 | 5511954 | B273Z10500HPG KCPK20 | G78 |
| 5479738 | T830NF02500-28R3B-D1 KSP39 | M49 | 5479840 | B274Z04000HPG KCPK20 | G79 | 5506169 | B272Z05200HPG KCPK20 | G76 | 5511955 | B273Z11000HPG KCPK20 | G78 |
| 5479739 | T830NC03125-18R2B-D1 KSP39 | M46 | 5479841 | B271Z07000HPG KCPK20 | G75 | 5506170 | BRCMT2006MOP KCP10B | E60 | 5511956 | B273Z11500HPG KCPK20 | G78 |
| 5479740 | T830NF03750-24R2B-D1 KSP39 | M49 | 5479842 | B274Z04300HPG KCPK20 | G79 | 5506171 | B272Z05526HPG KCPK20 | G76 | 5511957 | B273Z12000HPG KCPK20 | G78 |
| 5479741 | T830NC04375-14R2B-D6 KSP39 | M46 | 5479843 | B271Z07145HPG KCPK20 | G | | | | | | |

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| 5515179 | KSEM4000HPCCLM KC7410...H49 | H87 | 5528630 | M4D025Z0B25LN15 | T15 | 5533151 | EC020M02R06CF02 KCU25 | C24 | 5534147 | SPGX060304FP KCU40 | J90 |
| 5515220 | KSEMP3500HPGM KC7315 | H87 | 5528631 | M4D032Z03B32LN15 | T15 | 5533156 | EC020M02N00CR02 KCU25 | C27 | 5534148 | SPGX060304RHP KCU40 | J89 |
| 5515221 | KSEMP3600HPGM KC7315 | H87 | 5528632 | M4D040Z04S16LN15 | T17 | 5533171 | EC060M06L06CR04 KCU25 | C27 | 5534149 | SPGX060304MD KCU40 | J89 |
| 5515222 | KSEMP3700HPGM KC7315 | H87 | 5528633 | M4D050Z05S22LN15 | T17 | 5533172 | EC060M06R06CR04 KCU25 | C27 | 5534230 | SPGX070304FP KCU40 | J90 |
| 5515223 | KSEMP3800HPGM KC7315 | H87 | 5528634 | M4D050Z06S22LN15 | T17 | 5533173 | EC080M08L06CR04 KCU25 | C27 | 5534231 | SPGX070304RHP KCU40 | J89 |
| 5515224 | KSEMP3900HPGM KC7315 | H87 | 5528635 | M4D063Z06S22LN15 | T17 | 5533174 | EC080M08R06CR04 KCU25 | C27 | 5534232 | SPGX070304MD KCU40 | J89 |
| 5515225 | KSEMP4000HPGM KC7315 | H87 | 5528636 | M4D063Z07S22LN15 | T17 | 5533178 | EG380I01U3GUP KCU25 | C19 | 5534233 | SPPX09T308FP KCU40 | J90 |
| 5515226 | KSEM2900HPGM KCPM45 | H46 | 5528637 | M4D080Z07S27LN15 | T17 | 5533179 | EG063I10U05GUN KCU25 | C23 | 5534234 | SPPX09T308RHP KCU40 | J89 |
| 5515746 | LNGU15T612SRGE KCS20M | T19 | 5528638 | M4D100Z08S32LN15 | T17 | 5533210 | EG380I01U3GUN KCU25 | C23 | 5534235 | SPPX09T308MD KCU40 | J89 |
| 5515747 | LNGU15T612SRGE KCS22M | T19 | 5528977 | OFKT07L6AFENG KCSM30 | S55 | 5533212 | EG0512M05U04GUP KCU25 | C17 | 5534236 | SPPX120408FP KCU40 | J90 |
| 5515748 | LNGU15T612SRGE KCT25M | T19 | 5531233 | CNGG120401FS KCU10 | B46 | 5533214 | EG0512M05U06GUP KCU25 | C17 | 5534237 | SPPX120408RHP KCU40 | J89 |
| 5515749 | LNGU15T612SRGE KCK15 | T19 | 5531234 | CNGG120402FS KCU10 | B46 | 5533216 | EG0712M06U08GUP KCU25 | C17 | 5534238 | SPPX120408MD KCU40 | J89 |
| 5515759 | LNGU15T608SRGE KCS20M | T19 | 5531235 | CNGG120404FS KCU10 | B46 | 5533220 | EG1012M10U12GUP KCU25 | C17 | 5534239 | SPPX15T508FP KCU40 | J90 |
| 5515890 | LNGU15T608SRGE KCS22M | T19 | 5531236 | CNGG120408FS KCU10 | B46 | 5533221 | EG0512M05U04GUN KCU25 | C22 | 5534250 | SPPX15T508RHP KCU40 | J89 |
| 5515891 | LNGU15T608SRGE KCT25M | T19 | 5531238 | CNMG190612MS KCU10 | B52 | 5533222 | EG0512M05U06GUN KCU25 | C22 | 5534251 | SPPX15T508MD KCU40 | J89 |
| 5515892 | LNGU15T608SRGE KCK15 | T19 | 5531240 | SNMG150616MP KCU10 | B98 | 5533223 | EG1012M10U12GUN KCU25 | C22 | 5534252 | SPGX060304FP KCU25 | J90 |
| 5515893 | LNGU15T608SRGE KCPK30 | T19 | 5531241 | TGT16T301LF KCU10 | B243 | 5533261 | ER130I03U0GUP KCU25 | C21 | 5534253 | SPGX060304RHP KCU25 | J89 |
| 5516070 | LNGU15T612SRGE KCPK30 | T19 | 5531835 | CNMG120404FP KCP25B | B49 | 5533263 | ER192I04U0GUP KCU25 | C21 | 5534254 | SPGX060304MD KCU25 | J89 |
| 5516073 | LNGU15T604SRGE KCS20M | T19 | 5531836 | CNMG120404FN KCP10B | B49 | 5533265 | ER255I06U0GUP KCU25 | C21 | 5534255 | SPGX070304FP KCU25 | J90 |
| 5516074 | LNGU15T604SRGE KCS22M | T19 | 5531837 | CNMG120404FN KCK15B | B49 | 5533267 | ER317I08U0GUP KCU25 | C21 | 5534256 | SPGX070304RHP KCU25 | J89 |
| 5516075 | LNGU15T604SRGE KCT25M | T19 | 5531838 | CNMG120404FN KCP25B | B49 | 5533268 | ER310I03U0GUN KCU25 | C24 | 5534257 | SPGX070304MD KCU25 | J89 |
| 5516076 | LNGU15T604SRGE KCK15 | T19 | 5531839 | CNMG120408FN KCP10B | B49 | 5533269 | ER192I04U0GUN KCU25 | C24 | 5534258 | SPPX09T308FP KCU25 | J90 |
| 5516077 | LNGU15T604SRGE KCPK30 | T19 | 5531890 | CNMG120408FN KCP25B | B49 | 5533270 | ER255I06U0GUN KCU25 | C24 | 5534259 | SPPX09T308RHP KCU25 | J89 |
| 5517575 | RCGT2006MOSGFJ KCSM30 | V83 | 5531891 | CNMG120408FP KCP10B | B49 | 5533271 | ER317I08U0GUN KCU25 | C24 | 5534260 | SPPX09T308MD KCU25 | J89 |
| 5517600 | SNMM190624R WPCK25B | B103 | 5531892 | CNMG120408FP KCP25B | B49 | 5533448 | EC014M1BL06CL01 KCU25 | C25 | 5534261 | SPPX120408FP KCU25 | J90 |
| 5517760 | RPET1204M0E0LJ KCSM30 | V73 | 5531893 | CNMG120412FN KCP25B | B49 | 5533449 | EC014M1BL06CL01 KCU25 | C25 | 5534262 | SPPX120408RHP KCU25 | J89 |
| 5517761 | RPET1204M0S0GEJ KCSM30 | V73 | 5531894 | CNMG120412FN KCP10B | B49 | 5533510 | EC020M02L06CL02 KCU25 | C25 | 5534263 | SPPX120408MD KCU25 | J89 |
| 5517764 | RPET1605M0S0GEJ KCSM30 | V79 | 5531896 | CNMG110404FN KCP10B | B77 | 5533511 | EC020M02R06CL02 KCU25 | C25 | 5534264 | SPPX15T508FP KCU25 | J90 |
| 5517767 | WOEJ109012SRGG KCSM30 | V41 | 5531897 | CNMG110408FN KCP25B | B77 | 5533512 | EC030M03L06CL02 KCU25 | C25 | 5534265 | SPPX15T508RHP KCU25 | J89 |
| 5517773 | RNGJ1204M0ELDJ KCSM30 | V57 | 5531898 | CNMG150404FN KCK15B | B77 | 5533513 | EC030M03R06CL02 KCU25 | C25 | 5534266 | SPPX15T508MD KCU25 | J89 |
| 5517778 | RNGJ10T3M0SGDQ KCSM30 | V51 | 5531899 | CNMG150404FN KCP25B | B77 | 5533514 | EC040M04L06CL02 KCU25 | C25 | 5534267 | SPGX060304FP KCPK10 | J90 |
| 5518566 | DNMG150612MR KCP25B | B80 | 5531900 | DNMG150408FN KCP10B | B77 | 5533515 | EC040M04R06CL02 KCU25 | C25 | 5534268 | SPGX070304FP KCPK10 | J90 |
| 5519287 | EDPT070308PDSRGE KCSM30 | T25 | 5531901 | DNMG150604FN KCP10B | B77 | 5533516 | EC014M1BL06CF01 KCU25 | C24 | 5534269 | SPPX09T308FP KCPK10 | J90 |
| 5519923 | SDET1204PDSRGB KCSM30 | T105 | 5531902 | DNMG150604FN KCK15B | B77 | 5533517 | EC014M1BR06CF01 KCU25 | C24 | 5534270 | SPPX120408FP KCPK10 | J90 |
| | | T112, | 5531903 | DNMG150604FN KCP25B | B77 | 5533518 | EC050M05N00CF03 KCU25 | C24 | 5534271 | SPPX15T508FP KCPK10 | J90 |
| | | U51 | 5531904 | DNMG150608FP KCP10B | B77 | 5533519 | EC014M1BL06CM01 KCU25 | C26 | 5534274 | ER0312M03U0GUP KCU25 | C20 |
| 5519967 | SDCT120432ENLD2 KCSM30 | T104, | 5531905 | DNMG150608FP KCP25B | B77 | 5533521 | EC020M02L06CM02 KCU25 | C26 | 5534276 | ER0412M04U0GUP KCU25 | C20 |
| | | T111, | 5531906 | DNMG150608FN KCP25B | B77 | 5533522 | EC020M02R06CM02 KCU25 | C26 | 5534278 | ER0512M05U0GUP KCU25 | C20 |
| 5519983 | EDPT140431PDERHD KCSM30 | T53, | 5531907 | DNMG150608FN KCK15B | B77 | 5533523 | EC050M05N00CM03 KCU25 | C26 | 5534290 | ER0612M06U0GUP KCU25 | C20 |
| | | T62 | 5531908 | DNMG150612FN KCP10B | B77 | 5533524 | EC070M06N00CM04 KCU25 | C26 | 5534292 | ER0812M08U0GUP KCU25 | C20 |
| 5520493 | EDPT140416PDERHD KCSM30 | T53, | 5531909 | SNMG15090308FN KCK15B | B97 | 5533525 | EC080M08N00CM04 KCU25 | C26 | 5534293 | ER0312M03U0GUN KCU25 | C23 |
| | | T62 | 5531910 | SNMG120404FN KCP10B | B97 | 5533526 | EC050M05N00CR03 KCU25 | C27 | 5534294 | ER0412M04U0GUN KCU25 | C23 |
| 5520494 | EDPT140440PDERHD KCSM30 | T53, | 5531911 | M4D025Z02M02LN15... | T14 | 5533527 | EC070M06N00CR04 KCU25 | C27 | 5534295 | ER0512M05U0GUN KCU25 | C23 |
| | | T62 | 5531912 | M4D032Z03M16LN15... | T14 | 5533528 | EC020M02M02U06CR02 KCU25 | C27 | 5534296 | ER0612M06U0GUN KCU25 | C23 |
| 5520684 | EDPT10T316PDERHD KCSM30 | T36 | 5531913 | M4D040Z03B32LN15... | T15 | 5533529 | EC020M02R02L06CR02 KCU25 | C27 | 5534297 | ER0812M08U0GUN KCU25 | C23 |
| 5520687 | SPCT10T316ENLD2 KCSM30 | T100, | 5531914 | M4D025Z02A25LN15L100 | T16 | 5533530 | EC020M02R02A40L KCU25... | J84 | 5534298 | CNMG120404FF KCP10B | B48 |
| | | U36 | 5531915 | M4D025Z02A25LN15L170 | T16 | 5533546 | DFR032040L KCU25... | J84 | 5535020 | CNMG120408CT KCP25B | B48 |
| 5520736 | T353M040X070R6HX-D1 KCK17 | M59 | 5531916 | M4D032Z03A32LN15L110 | T16 | 5533547 | DRF030204L KCU25... | J84 | 5535021 | CNMG120408CT KCP10B | B48 |
| 5520737 | T353M050X080R6HX-D1 KCK17 | M59 | 5531917 | M4D032Z03A32LN15L200 | T16 | 5533548 | DRF040304L KCU25... | J84 | 5535022 | CNMG120408FP KCP10B | B48 |
| 5520738 | T353M060X100R6HX-D1 KCK17 | M59 | 5531918 | M4D040Z03A32LN15L200 | T16 | 5533549 | DRF040204L KCP10... | J84 | 5535025 | DNMG110408CT KCP10B | B76 |
| 5520739 | T353M080X125R6HX-D1 KCK17 | M59 | 5531919 | M4D040Z03A32LN15L200 | T16 | 5533630 | DRF030204L KCP10... | J84 | 5535026 | DNMG110408FF KCP10B | B76 |
| 5520790 | T353M100X15R6HX-D1 KCK17 | M59 | 5531920 | M4D125Z12S40LN15 | T17 | 5533631 | DRF040304L KCP10... | J84 | 5535027 | DNMG150408CT KCP10B | B76 |
| 5520791 | T353M120X125R6HX-D6 KCK17 | M59 | 5531921 | M4D022M02U02GUP KCU25 | C17 | 5533632 | DRF030204L KCU17... | J84 | 5535028 | DNMG150408FW KCP10B | B78 |
| 5520792 | T353M140X200R6HX-D6 KCK17 | M59 | 5531922 | M4D022M02U02GUN KCU25 | C22 | 5533633 | DRF040304L KCU17... | J84 | 5535029 | DNMG150604FC KCP10B | B76 |
| 5520793 | T351M060X100R6HX-D1 KCK17 | M58 | 5531923 | M4D022M02U02GUN KCU25 | C22 | 5533634 | DRF040304L KCU17... | J84 | 5535040 | DNMG150604FW KCP10B | B78 |
| 5520794 | T351M070X100R6HX-D4 KCK17 | M58 | 5531924 | M4D022M02U02GUP KCU25 | C17 | 5533635 | DRF040304L KCU17... | J84 | 5535041 | DNMG150608CT KCP10B | B76 |
| 5520795 | T351M080X125R6HX-D1 KCK17 | M58 | 5531925 | M4D022M02U02GUP KCU25 | C17 | 5533636 | DRF040304L KCU17... | J84 | 5535042 | DNMG150608FF KCP10B | B76 |
| 5520796 | T351M090X125R6HX-D1 KCK17 | M58 | 5531926 | M4D022M02U08GUN KCU25 | C22 | 5533637 | DRF040304R21 KCP10... | J100 | 5535043 | DNMG150608FW KCP15B | B78 |
| 5520798 | T351M100X150R6HX-D1 KCK17 | M58 | 5531927 | M4D022M02U12GUN KCU25 | C22 | 5533638 | DRF040308R21 KCP10... | J100 | 5535044 | DNMG150608FW KCP10B | B78 |
| 5520799 | T351M100X100R6HX-D4 KCK17 | M58 | 5531928 | M4D022M02U12GUN KCU25 | C22 | 5533639 | DRF040308R21 KCP10... | J100 | 5535045 | DRF040308R21 KCP10... | B78 |
| 5520800 | T351MF100X125R6HX-D4 KCK17 | M58 | 5531929 | M4D022M02U12GUN KCU25 | C22 | 5533640 | DRF040204R20 KCU25... | J99 | 5535046 | DNMP150604K KCP25B | B83 |
| 5520801 | T351MF120X150R6HX-D4 KCK17 | M58 | 5531930 | M4D022M02U12GUN KCU25 | C22 | 5533641 | DRF040204R20 KCU25... | J99 | 5535047 | DNMP150608K KCP25B | B83 |
| 5520802 | T351MF120X125R6HX-D4 KCK17 | M58 | 5531931 | M4D025U06GUN KCU25 | C23 | 5533642 | DRF040304R20 KCU25... | J99 | 5537375 | CCMT062040FP KCP10B | B176 |
| 5520803 | T351MF120X150R6HX-D4 KCK17 | M58 | 5531932 | M4D030M03N00L02 KCU25 | C25 | 5533643 | DRF040308R20 KCU25... | J99 | 5537378 | CCMT062040FP KCP25B | B176 |
| 5520804 | T351MF140X200R6HX-D6 KCK17 | M58 | 5531933 | M4D030M03N00L02 KCU25 | C24 | 5533644 | DRF040308R20 KCU25... | J99 | 5537379 | CCMT097302FP KCP25B | B176 |
| 5520805 | T351MF140X125R6HX-D4 KCK17 | M58 | 5531934 | M4D020M02N00C02 KCU25 | C24 | 5533645 | DRF040308R20 KCU25... | J99 | 5537420 | CCMT097304FP KCP10B | B176 |
| 5520806 | T351MF140X150R6HX-D4 KCK17 | M58 | 5531935 | M4D020M02N00C01 KCU25 | C26 | 5533646 | DRF040308R20 KCU25... | J99 | 5537421 | CCMT097304FP KCP25B | B176 |
| 5520807</td | | | | | | | | | | | |



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| 5537442 | DCMT11T304FP KCP10B | B207 | 5545403 | EDPT180516PDSRGD KCPM40 | T75 | 5551084 | T491M080X125R6HX KCN14 | M72 | 5591152 | SCMT120408LF KCM25B | B230 |
| 5537443 | DCMT11T304FP KCP25B | B207 | 5545562 | EDPT140408PDERHD KCPM40 | T53 | 5551085 | T491M100X150R6HX KCN14 | M72 | 5591154 | VBMT110304LF KCM25B | B265 |
| 5537444 | DCMT11T304UF KCP10B | B208 | | | | 5551086 | T491M120X175R6HX KCN14 | M72 | 5591155 | DPMT11T304LF KCM25B | B215 |
| 5538857 | DCMT11T304UF KCP25B | B208 | 5546298 | VNMG160412MN KCP25B | B145 | 5551479 | RIOQ9ERG0 KD1415 | K56 | 5591156 | TCMT16T304LF KCM25B | B244 |
| 5538858 | DCMT11T308FP KCP10B | B207 | 5547848 | LNPNU15T608SRGE KC520M | T19 | 5555606 | M4D032204M16LN15 | T14 | 5591157 | CPMT09T304LF KCM25B | B190 |
| 5538891 | TCMT090204FP KCP25B | B244 | 5547849 | LNPNU15T608SRGE KC522M | T19 | 5555607 | M4D040Z04B32LN15 | T15 | 5591158 | SCMT120404LF KCM25B | B230 |
| 5538894 | TCMT110304FP KCP10B | B244 | 5548040 | LNPNU15T608SRGE KC725M | T19 | 5555608 | M4D032204A32LN15LN10 | T16 | 5591159 | TCMT16T308LF KCM25B | B244 |
| 5538900 | TPMT110304FP KCP10B | B254 | 5548041 | LNPNU15T608SRGE KC15 | T19 | 5555609 | M4D032204A32LN15L200 | T16 | 5591160 | TCMT110208LF KCM25B | B244 |
| 5538903 | VBMT160408FP KCP10B | B265 | 5548042 | LNPNU15T608SRGE KCPK30 | T19 | 5555716 | B22A040100HP KCPK15 | G51 | 5591161 | TPMT16T304LF KCM25B | B255 |
| 5538904 | VBMT160408FP KCP25B | B265 | 5548378 | B967A0930 KC7315 | G133 | 5555800 | M4D040Z04A32LN15L200 | T16 | 5591162 | TPMT110204LF KCM25B | B255 |
| 5542022 | SDET120412PDENGDZ KCPM40 | V141 | 5550701 | HNGJ0604ANENLD KCPM40 | S6 | 5555801 | M4D040Z05S16LN15 | T17 | 5591164 | TPMT16T308MF KCM25B | B255 |
| 5542023 | SDET120412PDNSGDZ KCPM40 | V141 | | | | 5555802 | M4D080Z09S27LN15 | T17 | 5591166 | SCMT120408MF KCM25B | B231 |
| 5542024 | SDPT120412PDENHZ KCPM40 | V141 | 5550702 | HNPJ0604ANSNHD KCPM40 | S7 | 5555803 | M4D100Z11S32LN15 | T17 | 5591167 | TCMT16T308MF KCM25B | B245 |
| 5542025 | SDPT120412PDSNHPZ KCPM40 | V141 | | | | 5555804 | M4D125Z09S40LN15 | T17 | 5591168 | SPMT09T308MF KCM25B | B239 |
| 5542028 | RNPJ10T3M0SGD KCPM40 | V51 | 5550703 | HNPJ0604ANSNGD KCPM40 | S7 | 5555805 | M4D160Z12S40LN15 | T17 | 5591169 | CPMT09T308MF KCM25B | B190 |
| 5542029 | RNPJ10T3M0SHD KCPM40 | V51 | | | | 5555806 | M4D160Z16S40LN15 | T17 | 5591170 | TCMT16T312MF KCM25B | B245 |
| 5542179 | CNMA120412KCK15B | B47 | 5550793 | HNGJ0905ANSNGD KCPM40 | S18 | 5556965 | SDET120464SNGB KCSM30 | T105 | 5591172 | CCMT09T304MF KCM25B | B177 |
| 5542190 | RNPJ1204M0SGD KCPM40 | V58 | | | | | | T112 | 5591173 | DCMT11T304MF KCM25B | B208 |
| 5542191 | RNPJ1204M0SHD KCPM40 | V58 | 5550794 | HNGJ0905ANSNHD KCPM40 | S19 | | | U51 | 5591174 | CCMT060204MF KCM25B | B177 |
| 5542192 | RNPJ1605M0SGD KCPM40 | V61 | 5550795 | HNPJ0905ANSNGD KCPM40 | S19 | 5566274 | RCMT1204M0RP KCP25B | B226 | 5591175 | SCMT09T308MF KCM25B | B231 |
| 5542193 | RNPJ1605M0SHD KCPM40 | V61 | | | | 5572826 | SDPT1204PDERGB2 KCPM40 | T105 | 5591256 | CCMT09T312MF KCM25B | B177 |
| 5542210 | CNMA160612KCK15B | B47 | 5550796 | HNPJ0905ANSNHD KCPM40 | S19 | | | T112 | 5591610 | TNMG220404FP KCM25B | B124 |
| 5542242 | WOEJ090512RHD KCPM40 | V41 | 5550797 | HNPJ0905ANSNHD KCPM40 | S19 | | | U52 | 5591611 | SNMG120408FP KCM25B | B97 |
| 5542243 | WOEJ090512RSHD KCPM40 | V41 | 5550797 | HNPJ0905ANSNHD KCPM40 | S24 | 5572827 | SDPT1204PDSRGB2 KCPM40 | T105 | 5591612 | SNMM250724RH KCP40B | B102 |
| 5542246 | RPPT1204M0SGP KCPM40 | V74 | | | | | | T112 | 5591613 | SNMM250924RH KCP40B | B102 |
| 5542247 | RPPT1204M0SGDX KCPM40 | V74 | 5550797 | HNPJ090543ANSNHD KCPM40 | S19 | | | U52 | 5591615 | CNMM190616RH KCP40B | B55 |
| 5542248 | RPPT1605M0SHP KCPM40 | V80 | | | | 5573990 | DCMT150408LF KCP10B | B207 | 5591616 | SNMM190624RH KCP40B | B102 |
| 5542321 | RCGT1206M0SHFJ KCPM40 | V83 | 5550816 | HNPJ130720ANSNHD KCPM40 | S27 | 5575827 | LNGU15T608SRGEKC520M | T19 | 5591617 | SNMM190624RH KCP40B | B103 |
| 5542324 | RCGT2006M0SGFJ KCPM40 | V83 | 5550817 | HNGJ1307ANENG KCPM40 | S26 | 5575828 | LNGU15T608SRGEKC15 | T19 | 5591633 | CNMM190624RP KCM25B | B56 |
| 5543553 | KM4X63KGML65C | C63, C133 | 5550819 | OFPT07L6AFENG KCPM40 | S55 | 5575829 | LNGU15T608SRGEKC30 | T19 | 5591634 | SNMM250924RP KCM25B | B103 |
| 5543555 | KM4X63KGMR65C | C63, C133 | 5550901 | OFPT06L5AFENG KCPM40 | S51 | 5576320 | VNMG160408FF KCP25B | B145 | 5591711 | CPMT060208MF KCM25B | B190 |
| 5543558 | KM4X63KGMSL65C | C62, C133 | 5551030 | T340NC6-32R3BX KCK17 | M54 | 5577076 | LNEU1245R08 KCPM40 | U19 | 5591712 | CPMT09T312MF KCM25B | B190 |
| 5543560 | KM4X63KGMSR65C | C62, C133 | 5551031 | T340NC8-32R3BX KCK17 | M54 | 5577077 | LNEU1255R08 KCPM40 | U19 | 5591713 | TCMT110208MF KCM25B | B245 |
| 5544143 | SS20RBHT24 | K120 | 5551032 | T340NC10-24R3BX KCK17 | M54 | 5577078 | LNEU1245R04 KCPM40 | U19 | 5591714 | SNMG120408MN KCP40B | B98 |
| 5544144 | SS20FBHS24 | K135 | 5551033 | T340NF10-32R3BX KCK17 | M54 | 5577079 | LNEU1255R04 KCPM40 | U19 | 5591716 | CNMG120412MN KCP40B | B50 |
| 5544145 | SS25RBHT30 | K120 | 5551034 | T340NC02500-20R3BX KCK17 | M54 | 5577120 | LNEU1245R08SGP KCPM40 | U20 | 5591718 | WNMG080412MP KCM25B | B157 |
| 5544146 | SS25FBHS31 | K135 | 5551035 | T340NC03125-18R3BX KCK17 | M54 | 5577121 | LNEU1240R08 KCPM40 | U19 | 5591720 | TNMG220412MN KCP40B | B125 |
| 5544148 | ER25RBHT40 | K119 | 5551036 | T340NC03750-16R3BX KCK17 | M54 | 5577122 | LNEU1240R04 KCPM40 | U19 | 5591721 | DNMG150412MN KCP40B | B78 |
| 5544149 | ER25FBHS40 | K134 | 5551037 | T340NF03750-24R3BX KCK17 | M54 | 5577123 | LNEQ1260R04 KCPM40 | U20 | 5591727 | DNMG150612MN KCP40B | B78 |
| 5544190 | ER32RBHT50 | K119 | 5551038 | T340NC05000-13R3BX KCK17 | M54 | 5577124 | LNEU1260R04 KCPM40 | U19 | 5591773 | CNMG120404MN KCP40B | B50 |
| 5544191 | ER32FBHS51 | K134 | 5551039 | T340NF05000-20R3BX KCK17 | M54 | 5580585 | WNMG080412MP KCP25B | B157 | 5591774 | WNMG080408MP KCM25B | B157 |
| 5544192 | ER40RBHT66 | K119 | 5551040 | T340NF05625-18R3BX KCK17 | M54 | 558495 | B22A05050H KCPK15 | G52 | 5591775 | CNMG160616MP KCM25B | B51 |
| 5544193 | ER40FBHS67 | K134 | 5551041 | T340M040X070R6HX KCK17 | M55 | 5586046 | SNHK1102T KCPM40 | U14 | 5591776 | SCMT09T308MP KCM25B | B231 |
| 5544755 | DNMG110412FN KCP10B | B77 | 5551042 | T340M050X080R6HX KCK17 | M55 | 5586047 | SNHK1103T KCPM40 | U14 | 5591777 | CCMT120408MP KCM25B | B177 |
| 5545061 | EDPT140408PDSRGD2 KCPM40 | T54, T63 | 5551043 | T340M060X100R6HX KCK17 | M55 | 5586048 | SNHK1203T KCPM40 | U14 | 5591778 | VBMT160408MP KCM25B | B265 |
| | | | 5551044 | T340M080X125R6HX KCK17 | M55 | 5586060 | SNHK11T3PZTNGP KCPM40 | U15 | 5591779 | CNMG120404MP KCM25B | B51 |
| 5545066 | EDPT140412PDSRGD KCPM40 | T54, T63 | 5551045 | T340MF100X100R6HX KCK17 | M55 | 5586061 | SNHK1102T ZTNGP KCPM40 | U15 | 5591780 | CNMG160612MP KCM25B | B51 |
| 5545067 | EDCT140408PDERGD KCPM40 | T52 | 5551046 | T340M100X150R6HX KCK17 | M55 | 5586062 | SNHK1203PZTNGP KCPM40 | U15 | 5591781 | VNMG160408MP KCM25B | B146 |
| | | | 5551047 | T340MF120X150R6HX KCK17 | M55 | 5586626 | LNXU301940R08 KCP10B | E51 | 5591782 | DNMG150408MP KCM25B | B79 |
| 5545160 | EDPT140408PDERHD KCPM40 | T53, T62 | 5551048 | T340M120X175R6HX KCK17 | M55 | 5588385 | LNGU15T608ERGEKC725M | T18 | 5591783 | CCMT09T308MP KCM25B | B177 |
| 5545161 | EDPT140408PDSRG E KCPM40 | T53, T62 | 5551049 | T351NC8-32R3BX KCK17 | M56 | 5588386 | LNGU15T608ERGE KCSM30 | T18 | 5591784 | DCMT11T308MP KCM25B | B208 |
| 5545162 | SDET1204PDERLD2 KCPM40 | T52, T61 | 5551050 | T340M140X200R6HX KCK17 | M55 | 5588387 | LNGU15T608ERGE KCPM40 | T18 | 5591785 | TNMG160404MP KCM25B | B125 |
| 5545169 | EDPT140412PDERHD KCPM40 | T53, T62 | 5551051 | T340M160X200R6HX KCK17 | M55 | 5588388 | LNGU15T608ERGEKC522M | T18 | 5591786 | VBMT160404MP KCM25B | B265 |
| 5545160 | EDPT140408PDERHD KCPM40 | T53, T62 | 5551052 | T340M200X250R6HX KCK17 | M55 | 5588513 | LNGU15T604ERGEKC725M | T18 | 5591787 | CNMG190608MP KCM25B | B51 |
| 5545161 | EDPT140408PDSRG E KCPM40 | T53, T62 | 5551053 | T351NC8-32R3BX KCK17 | M56 | 5588514 | LNGU15T604ERGE KCSM30 | T18 | 5591788 | DNMG150604MP KCM25B | B79 |
| 5545161 | EDPT140408PDSRG E KCPM40 | T53, T62 | 5551054 | T351NC8-32R3BX KCK17 | M56 | 5588515 | LNGU15T604ERGE KCPM40 | T18 | 5591789 | VNMG160404MP KCM25B | B146 |
| 5545162 | SDET1204PDSRGB KCPM40 | T52, T61 | 5551055 | T351NC8-32R3BX KCK17 | M56 | 5588516 | LNGU15T604ERGEKC522M | T18 | 5591790 | WNMG080412MP KCM25B | B157 |
| 5545162 | SDET1204PDSRGB KCPM40 | T52, T61 | 5551056 | T351NC2050-20R3BX KCK17 | M56 | 5588517 | LNGU15T612ERGEKC725M | T18 | 5591791 | DNMG110408MP KCM25B | B79 |
| 5545162 | SDET1204PDSRGB KCPM40 | T52, T61 | 5551057 | T351NC03125-18R3BX KCK17 | M56 | 5588518 | LNGU15T612ERGE KCSM30 | T18 | 5591792 | CCMT109T304MP KCM25B | B177 |
| 5545163 | SDCT1204PDERLD2 KCPM40 | T52, T61 | 5551058 | T351NC03750-16R3BX KCK17 | M56 | 5588519 | LNGU15T612ERGE KCPM40 | T18 | 5591793 | CCMT120412MP KCM25B | B177 |
| 5545163 | SDCT1204PDERLD2 KCPM40 | T52, T61 | 5551059 | T351NC040375-14R3BX KCK17 | M56 | 5588520 | LNGU15T612ERGE KC522M | T18 | 5591794 | SCMT120408MP KCM25B | B231 |
| 5545163 | SDCT1204PDERLD2 KCPM40 | T52, T61 | 5551060 | T351NC05000-13R3BX KCK17 | M56 | 5588937 | DFT110508MD KCP1740 | J87 | 5591795 | DNMG150612MP KCM25B | B79 |
| 5545164 | SDET1204PDERGB2 KCPM40 | T52, T61 | 5551061 | T351NC06250-11R3BX KCK17 | M56 | 5588973 | RIOQ9ERD00 KC6005 | K56 | 5591796 | TNMG160404MP KCM25B | B125 |
| 5545164 | SDET1204PDERGB2 KCPM40 | T52, T61 | 5551062 | T351NC07500-10R3BX KCK17 | M56 | 5589680 | LNPNU221012PNSRHD KCPM40 | S121 | 5591799 | CNMG190612MP KCM25B | B51 |
| 5545164 | SDET1204PDERGB2 KCPM40 | T52, T61 | 5551063 | T351M040X070R6HX KCK17 | M57 | | | S123 | 5591900 | DNMG150608MP KCM25B | B79 |
| 5545164 | SDET1204PDERGB2 KCPM40 | T52, T61 | 5551064 | T351M050X080R6HX KCK17 | M57 | 5589965 | B97F809000 KC7315 | G149 | 5591901 | CNMG120412MP KCM25B | B51 |
| 5545164 | SDET1204PDERGB2 KCPM40 | T52, T61 | 5551065 | T351M060X010R6HX KCK17 | M57 | 5589966 | LNXU301940R08 KCP10B | E51 | 5591902 | DNMG150404MP KCM25B | B79 |
| 5545167 | SPCT10T3PPERLD2 KCPM40 | T100, U36 | 5551066 | T351M080X125R6HX KCK17 | M57 | 5589967 | LNGU15T608ERGEKC725M | T18 | 5591903 | CNMG160612RN KCP40B | B81 |
| 5545168 | SPET10T3PPERGB2 KCPM40 | T100, U37 | 5551067 | T351M100X100R6HX KCK17 | M57 | 5589968 | LNGU15T612ERGEKC725M | T18 | 5591904 | TCMT16T304MP KCM2 | |

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| 5591933 | SNMG120412MP KCM25B | B98 | 5593144 | TMST25D36L34Z5 | W13 | 5593756 | TM41N550ISO KC635M | W26 | 5595038 | VNMG160408FF KCP10B | B145 |
| 5591934 | SNMG190612MP KCM25B | B98 | 5593149 | TM24D14L26Z1 | W4 | 5593757 | TM41N600ISO KC635M | W26 | 5596414 | CCMT120408LF KCM25B | B177 |
| 5591935 | SNMG190612RP KCM25B | B101 | 5593150 | TM24D15L30Z1 | W4 | 5593758 | TM41EN8NPT KC635M | W26 | 5596415 | CCMT097308LF KCM25B | B177 |
| 5591936 | SNMG190616RP KCM25B | B101 | 5593151 | TM24D16L28Z2 | W4 | 5593759 | TM41ENBLANK | W26 | 5596416 | VBMT160408LF KCM25B | B265 |
| 5591937 | WNMG060404MP KCM25B | B157 | 5593152 | TM24D16L36Z1 | W4 | 5593760 | TM40N20UN KC635M | W20 | 5596417 | DCMT117308LF KCM25B | B207 |
| 5591938 | WNMG080412RP KCM25B | B159 | 5593153 | TMT24D14L26Z1 | W5 | 5593762 | TM40N16UN KC635M | W20 | 5596418 | VBMT160404LF KCM25B | B265 |
| 5591939 | SNMG150608MP KCM25B | B98 | 5593159 | TM41D21L45Z1 | W24 | 5593764 | TM40N12UN KC635M | W20 | 5596419 | DCMT117304LF KCM25B | B207 |
| 5591950 | CNMG120404RP KCM25B | B53 | 5593170 | TM41D25L43Z2 | W24 | 5593767 | TM40N8UN KC635M | W20 | 5596450 | CCMT097304LF KCM25B | B177 |
| 5591952 | SNMG120416MP KCM25B | B98 | 5593171 | TM41D30L43Z3 | W24 | 5593768 | TM40N100ISO KC635M | W20 | 5596451 | CCMT062040LF KCM25B | B177 |
| 5591953 | SNMG150616RP KCM25B | B101 | 5593172 | TM41D30L65Z3 | W24 | 5593769 | TM40N150ISO KC635M | W20 | 5596455 | CCMT097308MF KCM25B | B177 |
| 5591954 | SNMG150612MP KCM25B | B98 | 5593173 | TM41D36L43Z5 | W24 | 5593780 | TM40N200ISO KC635M | W20 | 5596456 | CCMT120408MF KCM25B | B177 |
| 5591955 | CNMG190616RP KCM25B | B53 | 5593174 | TM41D36L65Z4 | W24 | 5593782 | TM40N300ISO KC635M | W20 | 5596457 | CNMG120408RM KCP40B | B50 |
| 5591956 | TNMG160412MP KCM25B | B125 | 5593175 | TMS41D48L50Z5 | W25 | 5593786 | TM40N11BSF KC635M | W20 | 5596460 | CNMG120408MP KCM25B | B51 |
| 5591957 | CNMG120416RP KCM25B | B53 | 5593176 | TMS41D58L50Z6 | W25 | 5593788 | TM40E008NPT KC635M | W20 | 5596461 | TNMG160408MP KCM25B | B125 |
| 5591959 | WNMG080408RP KCM25B | B159 | 5593184 | TM40D22L43Z3 | W17 | 5593790 | TM40E008NPTF KC635M | W21 | 5596462 | CNMM190624RH KCP40B | B55 |
| 5591960 | CNMG160616RP KCM25B | B53 | 5593185 | TM40D22L65Z3 | W17 | 5593791 | TM40E011BSPT KC635M | W21 | 5596463 | SNMM190616RM KCP40B | B103 |
| 5591962 | TNMG220408RP KCM25B | B128 | 5593186 | TM40D30L55Z4 | W17 | 5593792 | TM40ENBLANK | W21 | 5596465 | CNMG120412RN KCP40B | B53 |
| 5591963 | CNMG120408MW KCM25B | B52 | 5593187 | TM40D30L80Z3 | W17 | 5593793 | TM24N32UN KC610M | W6 | 5596466 | CNMG120416RN KCP40B | B53 |
| 5591964 | TNMG220412RP KCM25B | B128 | 5593188 | TM40D44L48Z6 | W18 | 5593794 | TM24N28UN KC610M | W6 | 5596468 | CNMG120408RP KCM25B | B53 |
| 5591967 | TNMG270612RP KCM25B | B128 | 5593189 | TM40D52L50Z6 | W18 | 5593795 | TM24N24UN KC610M | W6 | 5596469 | CNMG120412RP KCM25B | B53 |
| 5591968 | SNMG150612RN KCP40B | B101 | 5593190 | TMT40D45L48Z6 | W19 | 5593797 | TM42N20UN KC610M | W6 | 5596480 | TNMM220412RP KCM25B | B130 |
| 5591970 | TNMG330294RN KCP40B | B127 | 5593383 | TKTMDU11L0515N60 KC635M | W32 | 5593798 | TM24N18UN KC610M | W6 | 5596481 | CNMM120408RP KCM25B | B56 |
| 5591971 | CNMG190612RP KCP40B | B53 | 5593385 | TKTMDU11L1520N60 KC635M | W32 | 5593799 | TM24N16UN KC610M | W6 | 5596483 | SNMM190616RP KCM25B | B103 |
| 5591972 | WNMG080408RP KCP40B | B159 | 5593386 | TKTMDU112025N60 KC635M | W32 | 5593800 | TM24N14UN KC610M | W6 | 5596485 | SNMM190616RP KCM25B | B56 |
| 5591973 | SNMG190612RN KCP40B | B53 | 5593387 | TKTMDU11L2525N60 KC635M | W32 | 5593801 | TM24N12UN KC610M | W6 | 5596488 | CNMM160612RP KCM25B | B56 |
| 5591974 | TNMG330294RP KCP40B | B128 | 5593388 | TKTMDU11L2540N60 KC635M | W32 | 5593802 | TM24N10UN KC610M | W6 | 5596489 | CNMM190612RP KCM25B | B56 |
| 5591975 | CNMG190616RN KCP40B | B53 | 5593389 | TKTMDU16L1520N60 KC635M | W36 | 5593803 | TM24N050ISO KC610M | W6 | 5596859 | KTIP1328HFM KCP15 | H27 |
| 5591976 | DNMG150408RP KCM25B | B81 | 5593680 | TKTMDU16L2535N60 KC635M | W36 | 5593804 | TM24N07SISO KC610M | W6 | 5596899 | LNX301940RPP KCP25 | E52 |
| 5591977 | SNMG190616RN KCP40B | B101 | 5593681 | TKTMDU16L4060N60 KC635M | W36 | 5593805 | TM24N100ISO KC610M | W6 | 5602422 | KSEM3234HPGM KCT315 | H43 |
| 5591979 | WNMG080412RN KCP40B | B159 | 5593682 | TKTMDU11L4816N55 KC635M | W32 | 5593806 | TM24N125ISO KC610M | W6 | 5604719 | B269A13800HP KCPK15 | G70 |
| 5591982 | SNMG120412RP KCM25B | B101 | 5593683 | TKTMDU11L612N55 KC635M | W32 | 5593807 | TM24N150ISO KC610M | W6 | 5606542 | UJBE1000A6AL KCSM15 | P54 |
| 5591983 | CNMG160612RN KCP40B | B53 | 5593684 | TKTMDU11L7107N55 KC635M | W32 | 5593808 | TM24N17SISO KC610M | W6 | 5606543 | UJBE1200A6AL KCSM15 | P54 |
| 5591986 | TNMG220408RN KCP40B | B127 | 5593686 | TKTMDU16L1107N55 KC635M | W36 | 5593809 | TM24N200ISO KC610M | W6 | 5606544 | UJBE1600A6AL KCSM15 | P54 |
| 5591987 | CNMG120408UP KCM25B | B54 | 5593687 | TKTMDU16L604N55 KC635M | W36 | 5593830 | TM24N250ISO KC610M | W6 | 5606545 | UJBE2000A6AL KCSM15 | P54 |
| 5591988 | SNMG120412RN KCP40B | B101 | 5593688 | TKTMDU11L0515N60 KC610M | W32 | 5593831 | TM24EN18NPT KC610M | W6 | 5606546 | UJBE1000A6AN KCSM15 | P54 |
| 5591989 | CNMG190612UP KCM25B | B54 | 5593689 | TKTMDU11L520N60 KC610M | W32 | 5593832 | TM24EN18NPTF KC610M | W7 | 5606547 | UJBE1200A6AN KCSM15 | P54 |
| 5591990 | SNMG120416RN KCP40B | B101 | 5593690 | TKTMDU11L2025N60 KC610M | W32 | 5593833 | TM24EN19BSF KC610M | W6 | 5606548 | UJBE1600A6AN KCSM15 | P54 |
| 5591991 | CNMG120412UP KCM25B | B54 | 5593691 | TKTMDU11L2525N60 KC610M | W32 | 5593834 | TM24EN14BSF KC610M | W6 | 5606549 | UJBE2000A6AN KCSM15 | P54 |
| 5591992 | TNMG270616RN KCP40B | B127 | 5593692 | TKTMDU11L2540N60 KC610M | W32 | 5593835 | TM24EN19BSPT KC610M | W7 | 5607996 | LNPUI15T612SRGE KC520M | T19 |
| 5591993 | CNMG120404UP KCM25B | B54 | 5593693 | TKTMDU16L1520N60 KC610M | W36 | 5593837 | TM41N8UN KC610M | W26 | 5607997 | LNPUI15T612SRGE KC522M | T19 |
| 5591995 | DNMG150408UP KCM25B | B82 | 5593694 | TKTMDU16L2535N60 KC610M | W36 | 5593838 | TM41N7UN KC610M | W26 | 5607998 | LNPUI15T612SRGE KC725M | T19 |
| 5591998 | DNMG150616RN KCP40B | B81 | 5593695 | TKTMDU16L4060N60 KC610M | W36 | 5593839 | TM41N16UN KC610M | W26 | 5608030 | LNPUI15T612SRGE KCPK30 | T19 |
| 5592000 | SNMG120408RN KCP40B | B101 | 5593696 | TKTMDU11L4816N55 KC610M | W32 | 5593840 | TM41N5UN KC610M | W26 | 5608034 | LNPUI15T604SRGE KC520M | T19 |
| 5592003 | WNMG060408UP KCM25B | B160 | 5593697 | TKTMDU11L612N55 KC610M | W32 | 5593841 | TM41N45UN KC610M | W26 | 5608035 | LNPUI15T604SRGE KC522M | T19 |
| 5592005 | WNMG080408UP KCM25B | B160 | 5593698 | TKTMDU11L7107N55 KC610M | W32 | 5593842 | TM41N44UN KC610M | W26 | 5608036 | LNPUI15T6045SRGE KC725M | T19 |
| 5592006 | RNMG190606RN KCP40B | B94 | 5593699 | TKTMDU16L1612N55 KC610M | W36 | 5593843 | TM41N300ISO KC610M | W26 | 5608037 | LNPUI15T6045SRGE KC1K5 | T19 |
| 5592007 | DNMG150608UP KCM25B | B82 | 5593701 | TKTMDU11L6117N55 KC610M | W36 | 5593844 | TM41N350ISO KC610M | W26 | 5608038 | LNPUI15T6045SRGE KCPK30 | T19 |
| 5592008 | DNMG150608RN KCP40B | B81 | 5593711 | TKTMDU16L0604N55 KC610M | W36 | 5593845 | TM41N400ISO KC610M | W26 | 5608090 | CNMM190616RP KCP25B | B56 |
| 5592010 | TNMG220408MR KCP40B | B127 | 5593712 | TM24N32UN KC635M | W6 | 5593846 | TM41N450ISO KC610M | W26 | 5611509 | HNHX090516ENLE KC1K5 | S90, S96 |
| 5592012 | CNMG160612UP KCM25B | B54 | 5593713 | TM24N28UN KC635M | W6 | 5593847 | TM41N500ISO KC610M | W26 | 5611511 | HNPX090530SNGE KC1K5 | S91, S97 |
| 5592103 | CNMG160608MR KCP25B | B51 | 5593714 | TM24N24UN KC635M | W6 | 5593848 | TM41N505ISO KC610M | W26 | 5611518 | HNHX090516SNGE KC1K5 | S91, S97 |
| 5592107 | WNMG060408MR KCP25B | B157 | 5593715 | TM24N20UN KC635M | W6 | 5593850 | TM41N600ISO KC610M | W26 | 5611519 | HNHX090516SNGE KC514M | S91, S97 |
| 5592121 | TNMG220408MR KCP25B | B126 | 5593716 | TM24N18UN KC635M | W6 | 5593851 | TM41EN8NPT KC610M | W26 | 5611534 | VNMP160408K CP10B | B148 |
| 5592123 | TNMG220408MR KCM25 | B126 | 5593717 | TM24N16UN KC635M | W6 | 5593853 | TM40N20UN KC610M | W20 | 5611568 | VNMG160408FP KCP25B | B145 |
| 5592124 | SNMG120408MR KCP25B | B99 | 5593718 | TM24N14UN KC635M | W6 | 5593854 | TM40N205ISO KC635M | W6 | 5611569 | VNMG160408FN KCP10B | B145 |
| 5592128 | CNMG190616MR KCP25B | B51 | 5593719 | TM24N12UN KC635M | W6 | 5593855 | TM40N16UN KC610M | W20 | 5611571 | KSEM3234HPGM KCT315 | H43 |
| 5592141 | DNMG110408MR KCP25B | B80 | 5593720 | TM24N10UN KC635M | W6 | 5593856 | TM40N14UN KC610M | W20 | 5611572 | KSEM3234HPGM KCT315 | H43 |
| 5592142 | DNMG110408MR KCP10B | B80 | 5593721 | TM24N050ISO KC635M | W6 | 5593857 | TM40N12UN KC610M | W20 | 5611580 | HNPX090520SNGE KC1K5 | S91, S97 |
| 5592146 | TNMG270612MR KCM15 | B146 | 5593722 | TM24N075ISO KC635M | W6 | 5593858 | TM40N10UN KC610M | W20 | 5611582 | HNHX090520SNGE KC1K5 | S91, S97 |
| 5592160 | VNMG160412MR KCM15 | B146 | 5593723 | TM24N100ISO KC635M | W6 | 5593859 | TM40N9UN KC610M | W20 | 5611583 | HNHX090520SNGE KC1K5 | S91, S97 |
| 5592162 | WNMG080416MR KCP10B | B157 | 5593724 | TM24N125ISO KC635M | W6 | 5593870 | TM40N8UN KC610M | W20 | 5611584 | HNPX090516SNGE KC1K5 | S91, S97 |
| 5592163 | WNMG080416MR KCP25B | B157 | 5593725 | TM24N150ISO KC635M | W6 | 5593871 | TM40N100ISO KC610M | W20 | 56115687 | HNHX090530SNGE KC1K5 | S91, S97 |
| 5593078 | KTMDUDW15L04Z1 | W29 | 5593726 | TM24N175ISO KC635M | W6 | 5593872 | TM40N150ISO KC610M | W20 | 5611615 | HNHX090520ENLE KC1K5 | S91, S97 |
| 5593100 | KTMDUDC15L060Z1 | W30 | 5593727 | TM24N200ISO KC635M | W6 | 5593873 | TM40N200ISO KC610M | W20 | 5611616 | HNHX090520ENLE KC514M | S90, S96 |
| 5593101 | KTMDUDW23L070Z2 | W29 | 5593728 | TM24N250ISO KC635M | W6 | 5593874 | TM40N205ISO KC635M | W20 | 5611617 | HNHX090545SNGE KC1K5 | S90, S96 |
| 5593101 | KTMDUDW26L080Z3 | W29 | 5593729 | TM24N18NPT KC635M | W6 | 5593875 | TM40N300ISO KC610M | W20 | 5611618 | HNHX090545SNGE KC514M | S90, S96 |
| 5593102 | KTMDUDW36L095Z3 | W34 | 5593730 | TM24EN18NPTF KC635M | W7 | 5593876 | TM40EN16BSF KC610M | W20 | 5611602 | SNNM150612RM KCP25B | B103 |
| 5593103 | KTMDUDW31L095Z4 | W29 | 5593731 | TM24EN19BSF KC635M | W6 | | | | | | |

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| 5620360 | LNPNU221012PNSRH2 KCPK30 | S121, S123 | 56228831 | CNMG160616RN KCPK05 | B53 | 5639840 | VBMT110308LF KCK20B | B265 | 5640997 | WNGA080408S01015FWHBM T KBH20 | |
| 5620745 | LNPNU2410ANSRH2 KCPM40 | S117 | 56228832 | CNMG160616RP KCPK05 | B53 | 5639845 | CCMT060204FW KCK20B | B176 | | | B324 |
| 5620747 | LNPNU2410ANSRH2 KCPK30 | S117 | 56228833 | DNMG150408MR KCPK05 | B80 | 5639849 | CCMT060208LF KCK20B | B177 | 5641044 | SNMG150612MR KCM15B | B99 |
| 5620748 | SM-906LH KCT20 | S116, S120, S122 | 56228835 | DNMG150412RN KCPK05 | B81 | 5640382 | CCMT09T304MF KCK20B | B177 | 5641046 | WNMG080408MR KCM15B | B157 |
| 56226642 | KSEM1250HPGM KCPM45 | H45 | 56228837 | DNMG150412MR KCPK05 | B80 | 5640383 | CCMT09T304MP KCK20B | B177 | 5641047 | WNMG080412MR KCM15B | B157 |
| 56226643 | KSEM1280HPGM KCPM45 | H45 | 56228838 | DNMG150608MW KCPK05 | B80 | 5640386 | CCMT09T308MP KCK20B | B177 | 5641048 | CNMG120404MR KCM15B | B51 |
| 56226644 | KSEM1300HPGM KCPM45 | H45 | 56228839 | DNMG150612RN KCPK05 | B81 | 5640387 | CCMT09T308MW KCK20B | B178 | 5641055 | DNMG150608MR KCM15B | B80 |
| 56226645 | KSEM1350HPGM KCPM45 | H45 | 56228841 | SNMG150616RN KCPK05 | B101 | 5640388 | CCMT09T312MF KCK20B | B177 | 5641062 | VNMG160408MR KCM15B | B146 |
| 56226647 | KSEM1360HPGM KCPM45 | H45 | 56228844 | WNMG080408MR KCPK05 | B159 | 5640391 | CCMT120408MF KCK20B | B177 | 5641064 | WNMG060408MR KCM15B | B157 |
| 56226648 | KSEM1380HPGM KCPM45 | H45 | 56228850 | WNMG080412MR KCPK05 | B157 | 5640392 | CCMT120408MP KCK20B | B177 | 5641067 | CPGH09T304 KCM15B | B188 |
| 56226649 | KSEM1389HPGM KCPM45 | H45 | 56228853 | CNMG120412RN KCPK05 | B53 | 5640393 | CCMT120408MW KCK20B | B178 | 5641069 | CPMT060208MF KCM15B | B190 |
| 56226700 | KSEM1410HPGM KCPM45 | H45 | 56228857 | CNMG190616RN KCPK05 | B53 | 5640394 | CCMT120412LF KCK20B | B177 | 5641090 | CPMT09T304LF KCM15B | B190 |
| 56226701 | KSEM1450HPGM KCPM45 | H45 | 56228859 | CNMG160616RN KCPK05 | B56 | 5640400 | CCMW120408 KCK20B | B178 | 5641094 | DCMT11T308MF KCM15B | B208 |
| 56226702 | KSEM1468HPGM KCPM45 | H45 | 56228861 | DNMG150408MN KCPK05 | B78 | 5640401 | CCMW120412RN KCK20B | B178 | 5641095 | DNMG110408FW KCM15B | B78 |
| 56226703 | KSEM1500HPGM KCPM45 | H45 | 56228866 | DNMG150408RN KCPK05 | B159 | 5640402 | CNMA160616 KCK20B | B47 | 5641096 | DNMG150404FF KCM15B | B76 |
| 56226704 | KSEM1508HPGM KCPM45 | H45 | 56228870 | DNMG15060204 KCK20B | B178 | 5640403 | CNMA160616 KCK20B | B47 | 5641098 | DNMG150404MP KCM15B | B79 |
| 56226705 | KSEM1550HPGM KCPM45 | H45 | 56228874 | DNMG15060204 KCK20B | B178 | 5640406 | CNMA190616 KCK20B | B47 | 5641099 | DNMG150408MP KCM15B | B79 |
| 56226706 | KSEM1580HPGM KCPM45 | H45 | 56228878 | DNMG15060204 KCK20B | B178 | 5640408 | CNMG120416LP KCK20B | B53 | 5641101 | DNMG150604MP KCM15B | B79 |
| 56226707 | KSEM1588HPGM KCPM45 | H45 | 56228880 | DNMG160616RN KCPK30 | T19 | 5640409 | CNMG160612RP KCK20B | B53 | 5641102 | DNMG150608MP KCM15B | B79 |
| 56226708 | KSEM1600HPGM KCPM45 | H45 | 56228884 | SNPJ10T308SNGD KC520M | S61 | 5640416 | CPMT060208MF KCK20B | B190 | 5641105 | SNMG120408MP KCM15B | B88 |
| 56226709 | KSEM1627HPGM KCPM45 | H45 | 56228888 | SNPJ10T308SNGD KCPM40 | S61 | 5640418 | CPMT09T304FW KCK20B | B189 | 5641107 | SNMG150616RP KCM15B | B101 |
| 56226710 | KSEM1650HPGM KCPM45 | H45 | 56228892 | SNPJ10T308SNGD KCK15 | S61 | 5640419 | CPMT09T304LF KCK20B | B190 | 5641108 | TCMT110204LF KCM15B | B244 |
| 56226711 | KSEM1700HPGM KCPM45 | H45 | 56228896 | SNPJ10T308SNGD KCPM40 | S61 | 5640421 | CPMT09T308LF KCK20B | B190 | 5641109 | TNMG160404FF KCM15B | B124 |
| 56226712 | KSEM1707HPGM KCPM45 | H45 | 56228900 | SNPJ10T312SNGD KCPM40 | S61 | 5640422 | CPMT09T308MF KCK20B | B190 | 5641110 | TNMG160404MP KCM15B | B125 |
| 56226713 | KSEM1750HPGM KCPM45 | H45 | 56228904 | SNPJ10T312SNGD KCK15 | S61 | 5640424 | CPMT09T308MW KCK20B | B191 | 5641111 | TNMG160412MP KCM15B | B125 |
| 56226714 | KSEM1786HPGM KCPM45 | H45 | 56228908 | SNPJ120608SNGD KC520M | S64 | 5640425 | VBMT160404RP KCK20B | B265 | 5641113 | TNMG220408MP KCM15B | B125 |
| 56226715 | KSEM1850HPGM KCPM45 | H45 | 56228912 | SNPJ120608SNGD KCPM40 | S64 | 5640427 | VBMT160408FP KCK20B | B265 | 5641114 | VNMG160404FF KCM15B | B145 |
| 56226716 | KSEM1865HPGM KCPM45 | H45 | 56228916 | SNPJ120616SNGD KCPM40 | S64 | 5640428 | VBMT160408MP KCK20B | B265 | 5641115 | VNMG160404MP KCM15B | B146 |
| 56226717 | KSEM1923HPGM KCPM45 | H45 | 56228920 | SNPJ120616SNGD KCK15 | S64 | 5640429 | VBMT160412LF KCK20B | B265 | 5641116 | VNMG160408MP KCM15B | B146 |
| 56226718 | KSEM1945HPGM KCPM45 | H45 | 56228924 | SNMG12060408RP KCP25B | B101 | 5640431 | VNMG160408RP KCK20B | B147 | 5641117 | VNMG160412MP KCM15B | B146 |
| 56226719 | KSEM2024HPGM KCPM45 | H45 | 56228928 | SNMG12060408RP KCP25B | B101 | 5640436 | WNMG080408RP KCK20B | B159 | 5641118 | WNMG08040408FP KCM15B | B156 |
| 56226720 | KSEM2050HPGM KCPM45 | H45 | 56228932 | ND3040L KCU25 | D14 | 5640437 | WNMG08040412RP KCK20B | B159 | 5641119 | WNMG080404P KCM15B | B158 |
| 56226721 | KSEM2143HPGM KCPM45 | H45 | 56228936 | DCMT11T308LP KCK20B | B207 | 5640441 | CCMT060204LP KCM15B | B177 | 5641120 | WNMG080408MP KCM15B | B157 |
| 56226722 | KSEM2150HPGM KCPM45 | H45 | 56228940 | DCMT11T308MP KCK20B | B208 | 5640443 | CCMT09T308LP KCM15B | B177 | 5641121 | WNMG080408P KCM15B | B158 |
| 56226723 | KSEM2183HPGM KCPM45 | H45 | 56228944 | DCMT11T312MF KCK20B | B208 | 5640445 | CPMT09T308MF KCM15B | B177 | 5641122 | WNMG080408RP KCM15B | B159 |
| 56226724 | KSEM2244HPGM KCPM45 | H45 | 56228948 | DNNA150408 KCK20B | B75 | 5640448 | CCMT120408MF KCM15B | B177 | 5641123 | CCMT060204LP KCK20B | B177 |
| 56226725 | KSEM2250HPGM KCPM45 | H45 | 56228952 | DNNA150612 KCK20B | B75 | 5640449 | CNMG120408FP KCM15B | B49 | 5641237 | CCMT09T308LF KCK20B | B177 |
| 56226726 | KSEM2342HPGM KCPM45 | H45 | 56228956 | DNMG110408RP KCK20B | B81 | 5640450 | CNMG120408MP KCM15B | B51 | 5641238 | CCMT09T308MF KCK20B | B177 |
| 56226727 | KSEM2350HPGM KCPM45 | H45 | 56228960 | DNMG150408RP KCK20B | B81 | 5640452 | CNMG120408RP KCK20B | B53 | 5641239 | CCMT120408LF KCK20B | B177 |
| 56226728 | KSEM2450HPGM KCPM45 | H45 | 56228964 | CNMG150612RP KCK20B | B81 | 5640453 | CNMG120408RP KCK20B | B53 | 5641360 | CNMA120408 KCK20B | B47 |
| 56226729 | KSEM2461HPGM KCPM45 | H46 | 56228968 | DPMT070208FW KCK20B | B215 | 5640454 | DCMT11T304LP KCM15B | B207 | 5641361 | CNMA120412 KCK20B | B47 |
| 56226730 | KSEM2550HPGM KCPM45 | H46 | 56228972 | RCMT08030M KCK20B | B224 | 5640458 | DCMT11T308LF KCM15B | B207 | 5641363 | CNMA160612 KCK20B | B47 |
| 56226731 | KSEM2650HPGM KCPM45 | H46 | 56228976 | RCMT10T303M KCK20B | B224 | 5640461 | DCMT11T308MF KCK20B | B77 | 5641364 | CNMG120404UN KCK20B | B54 |
| 56226732 | KSEM2659HPGM KCPM45 | H46 | 56228980 | RCMT12040M KCK20B | B224 | 5640462 | DNMG150612FP KCM15B | B77 | 5641365 | CNMG120404RP KCK20B | B53 |
| 56226733 | KSEM2750HPGM KCPM45 | H46 | 56228984 | RCMT2006M0 KCK20B | B224 | 5640463 | DNMG160408MP KCM15B | B125 | 5641366 | CNMG120408UN KCK20B | B54 |
| 56226734 | KSEM2778HPGM KCPM45 | H46 | 56228988 | SCMT09T308MFP KCK20B | B231 | 56404691 | TPMT090204LP KCM15B | B255 | 5641367 | CNMG120412RP KCK20B | B53 |
| 56226735 | KSEM2818HPGM KCPM45 | H46 | 56228992 | SCMT09T308MP KCK20B | B231 | 5640492 | VBMT160404LF KCM15B | B265 | 5641369 | DCMT11T304LF KCK20B | B207 |
| 56226736 | KSEM2850HPGM KCPM45 | H46 | 56228996 | SCMT120408LP KCK20B | B230 | 5640493 | VBMT160408LP KCM15B | B265 | 5641370 | DCMT11T308LF KCK20B | B207 |
| 56226737 | KSEM2937HPGM KCPM45 | H46 | 56229000 | SCMT120408MF KCK20B | B231 | 5640494 | WNMG080408FP KCM15B | B156 | 5641371 | SCMT09T308LF KCK20B | B230 |
| 56226738 | KSEM2950HPGM KCPM45 | H46 | 56229004 | SCMT120408MP KCK20B | B231 | 5640496 | WNMG0804012MW KCM15B | B158 | 5641372 | SNMA120412 KCK20B | B96 |
| 56226739 | KSEM2977HPGM KCPM45 | H46 | 56229008 | SCMT120412MF KCK20B | B231 | 5640499 | CCMT060204FP KCM15B | B176 | 5641373 | SNMG120412UN KCK20B | B102 |
| 56226740 | KSEM3050HPGM KCPM45 | H46 | 56229012 | SCMW09T308 KCK20B | B232 | 56404995 | CCMT060204MF KCM15B | B177 | 5641375 | VBMT160404LF KCK20B | B265 |
| 56226741 | KSEM3096HPGM KCPM45 | H46 | 56229016 | SCMW120408 KCK20B | B232 | 5640506 | CCMT060204MP KCM15B | B177 | 5641377 | WNMA080408 KCK20B | B155 |
| 56226742 | KSEM3100HPGM KCPM45 | H46 | 56229020 | SCMW120412 KCK20B | B232 | 5640507 | CCMT060208LP KCM15B | B177 | 5641379 | WNMG060408UN KCK20B | B160 |
| 56226743 | KSEM3150HPGM KCPM45 | H46 | 56229024 | SNMA120408 KCK20B | B96 | 5640509 | CCMT09T304FP KCM15B | B176 | 5641426 | CNMG120412UN KCK20B | B54 |
| 56226744 | KSEM3250HPGM KCPM45 | H46 | 56229028 | SNMG120408RP KCK20B | B101 | 56405099 | CCMT09T304MF KCM15B | B177 | 5641427 | CNMG120416UN KCK20B | B54 |
| 56226745 | KSEM3254HPGM KCPM45 | H46 | 56229032 | SPMT09T308LF KCK20B | B238 | 56405096 | CCMT09T304MP KCM15B | B177 | 5641428 | CNMG160608UN KCK20B | B54 |
| 56226746 | KSEM3305HPGM KCPM45 | H46 | 56229036 | TCMT110204FP KCK20B | B244 | 56405091 | CCMT09T304MW KCM15B | B178 | 5641429 | CNMG160612UN KCK20B | B54 |
| 56226747 | KSEM3400HPGM KCPM45 | H46 | 56229040 | TCMT110204LP KCK20B | B244 | 56405092 | CCMT09T308FP KCM15B | B176 | 5641450 | CNMG160616UN KCK20B | B54 |
| 56226748 | KSEM3450HPGM KCPM45 | H46 | 56229044 | TCMT110208LP KCK20B | B244 | 56405093 | CCMT09T308FW KCM15B | B176 | 5641451 | CNMG160612UN KCK20B | B54 |
| 56226749 | KSEM3500HPGM KCPM45 | H46 | 56229048 | TCMT110208MF KCK20B | B244 | 56405094 | CCMT09T308MP KCM15B | B176 | 5641452 | CNMG160616UN KCK20B | B54 |
| 56226750 | KSEM3500HPGM KCPM45 | H46 | 56229052 | TCMT110208MF KCK20B | B244 | 56405095 | CCMT09T308MF KCM15B | B176 | 5641453 | CNMG160616UN KCK20B | B54 |
| 56226751 | KSEM3500HPGM KCPM45 | H46 | 56229056 | TCMT110208MF KCK20B | B244 | 56405096 | CCMT09T308MP KCM15B | B176 | 5641454 | CNMG160616UN KCK20B | B54 |
| 56226752 | KSEM3500HPGM KCPM45 | H46 | 56229060 | TCMT110208MF KCK20B | B244 | 56405097 | CCMT09T308MF KCM15B | B176 | 5641455 | CNMG160616UN KCK20B | B54 |
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| 5681122 | ...7792XP06SA020Z3R35 S | V4, V6 | 5689640 | ...DFSP190R3WD32M | J24 | 5692312 | ...DFSP500R4WD40M | J27 | 5694101 | ...CPMT09T304LF KCP25B | B190 |
| 5681124 | ...7792XP06CA032Z5R190 S | V5-6 | 5689641 | ...DFSP195R3WD32M | J24 | 5692313 | ...DFSP510R4WD40M | J27 | 5694102 | ...DCMT070204LF KCP25B | B207 |
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| 5682157 | ...XE100MN4-C SP4060 | P72 | 5689643 | ...DFSP210R3WD32M | J24-25 | 5692315 | ...DFSP530R4WD40M | J27 | 5694104 | ...DCMT150404LF KCP25B | B207 |
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| 5682725 | ...M16X2X40 LHSCS S | V28 | 5689645 | ...DFSP230R3WD32M | J24 | 5692317 | ...DFSP550R4WD50M | J27 | 5694106 | ...DNMG110404MN KCP25B | B78 |
| 5682757 | ...TB20 | V28 | 5689684 | ...DFSP175R4WD32M | J26 | 5692319 | ...DFSP240R2WD32M | J22 | 5694107 | ...DNMG110408MN KCP25B | B78 |
| 5682767 | ...M12 X 1.75 X 30 SHCS S | T88, T115, T118, V12, V21, V28, V89, V94 | 5689685 | ...DFSP180R4WD32M | J26 | 5692320 | ...DFSP250R2WD32M | J22-23 | 5694108 | ...DNMG110408RP KCP25B | B81 |
| 5682768 | ...M10 1.5 X 25 SHCS S | T88, V12, V21, V28, V89, V94 | 5689686 | ...DFSP185R4WD32M | J26 | 5692321 | ...DFSP260R2WD32M | J22 | 5694109 | ...DNMG110412RP KCP25B | B81 |
| 5682773 | ...M16 X 2 X 40 SHCS S | T118, V21 | 5689687 | ...DFSP190R4WD32M | J26 | 5692322 | ...DFSP265R2WD32M | J22 | 5694120 | ...DNMG150404MN KCP25B | B78 |
| 5682897 | ...NLW-0.375 S | T115, T118 | 5689690 | ...DFSP210R4WD32M | J26-27 | 5692325 | ...DFSP290R2WD32M | J22 | 5694123 | ...DNMG150608RN KCP25B | B81 |
| 5684657 | ...LNPU15T608SRGE KCPM40 | T19 | 5689691 | ...DFSP220R4WD32M | J26 | 5692326 | ...DFSP300R2WD32M | J22 | 5694125 | ...DNMP150404K KCP25B | B83 |
| 5684744 | ...RNGN120400TGN KYS30 | V148 | 5689692 | ...DFSP230R4WD32M | J26 | 5692327 | ...DFSP310R2WD32M | J22 | 5694126 | ...DNMP150408K KCP25B | B83 |
| 5684745 | ...RNGN120400EGN KYS30 | V148 | 5689693 | ...DFSP200R5WD32M | J28 | 5692329 | ...DFSP320R2WD32M | J22-23 | 5694127 | ...DPMT070204LF KCP25B | B215 |
| 5684746 | ...RNGN120400TGN KYS30 | V148 | 5689696 | ...DFSP210R5WD32M | J28 | 5692330 | ...DFSP330R2WD32M | J22 | 5694128 | ...DPMT11T304LF KCP25B | B215 |
| 5684747 | ...RNGN120400EGN KYS30 | V148 | 5689697 | ...DFSP220R5WD32M | J28 | 5692331 | ...DFSP340R2WD32M | J22 | 5694157 | ...RCGT0602MORP KCP25B | B223 |
| 5685937 | ...CMMG120408MN KCPK05 | B50 | 5689698 | ...DFSP230R5WD32M | J28 | 5692332 | ...DFSP350R2WD32M | J22 | 5694158 | ...RCGT0803MORP KCP25B | B223 |
| 5686413 | ...RCMH3209MOTUP KCP25B | E60 | 5691861 | ...DFSP240R3WD32M | J24 | 5692333 | ...DFSP360R2WD32M | J22 | 5694159 | ...RCMT1606MORP KCP25B | B226 |
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| 5689447 | ...DFSP240R5WD32M | J28 | 5691864 | ...DFSP265R3WD32M | J24 | 5692335 | ...DFSP375R2WD32M | J22 | 5694172 | ...SNMM250724RW KCP25B | B103 |
| 5689448 | ...DFSP250R5WD32M | J28-29 | 5691865 | ...DFSP270R3WD32M | J24 | 5692336 | ...DFSP380R2WD32M | J22 | 5694175 | ...CNMM250924RW KCP25B | B56 |
| 5689449 | ...DFSP260R5WD32M | J28 | 5691866 | ...DFSP280R3WD32M | J24 | 5692337 | ...DFSP390R2WD32M | J22 | 5694176 | ...TNMM330924MR KCP25B | B129 |
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| 5689503 | ...DFSP290R5WD32M | J28 | 5691870 | ...DFSP320R3WD32M | J24-25 | 5692342 | ...DFSP440R2WD32M | J23 | 5694628 | ...RCMX1003MORP KCP10B | B226 |
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| 5689505 | ...DFSP310R5WD32M | J28 | 5691872 | ...DFSP340R3WD32M | J24 | 5692344 | ...DFSP460R2WD40M | J23 | 5694740 | ...SNMM250924RH KCP10B | B102 |
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| 5689508 | ...DFSP340R5WD32M | J28 | 5691875 | ...DFSP370R3WD32M | J24 | 5692347 | ...DFSP490R2WD40M | J23 | 5694868 | ...CNMG160612UN KCK15B | B54 |
| 5689509 | ...DFSP350R5WD32M | J28 | 5691876 | ...DFSP375R3WD32M | J24 | 5692348 | ...DFSP500R2WD40M | J23 | 5694869 | ...CNMG190612UN KCK15B | B54 |
| 5689510 | ...DFSP360R5WD32M | J28 | 5691877 | ...DFSP380R3WD32M | J24 | 5692349 | ...DFSP505R2WD40M | J23 | 5694872 | ...DNMG110412UN KCK15B | B82 |
| 5689511 | ...DFSP370R5WD32M | J28 | 5691878 | ...DFSP390R3WD32M | J24 | 5692350 | ...DFSP510R2WD40M | J23 | 5694873 | ...DNMG150408UN KCK15B | B82 |
| 5689512 | ...DFSP375R5WD32M | J28 | 5691879 | ...DFSP400R3WD32M | J24-25 | 5692351 | ...DFSP520R2WD40M | J23 | 5694874 | ...DNMG150608UN KCK15B | B82 |
| 5689513 | ...DFSP380R5WD32M | J28 | 5691880 | ...DFSP410R3WD32M | J24 | 5692352 | ...DFSP530R2WD40M | J23 | 5694875 | ...DNMG150612UN KCK15B | B82 |
| 5689514 | ...DFSP390R5WD32M | J28 | 5691881 | ...DFSP420R3WD32M | J25 | 5692353 | ...DFSP540R2WD40M | J23 | 5694876 | ...SNMG120408UN KCK15B | B102 |
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| 5689517 | ...DFSP420R5WD32M | J28 | 5691884 | ...DFSP450R3WD40M | J25 | 5692358 | ...SPGX050204MD KCU25 | J87 | 5694883 | ...WNMG080412UN KCK15B | B160 |
| 5689518 | ...DFSP430R5WD32M | J28-29 | 5691885 | ...DFSP460R3WD40M | J25 | 5692359 | ...SPGX050204HP KCU40 | J89 | 5694885 | ...TNMP160404K KCP25B | B130 |
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| 5689530 | ...DFSP450R5WD40M | J28 | 5691887 | ...DFSP480R3WD40M | J25 | 5692361 | ...SPGX050204HP KCT140 | J89 | 5694887 | ...TNMP160408UN KCK15B | B102 |
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| 5941071 | EG0412M04U046UP KCU25 | C17 | 5949429 | EVSM3232P0532C | C37 | 59554631 | NGD4M500L KCU25 | C49 | 5964145 | KSEM2100SPLM KCM35 | H52 |
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| 5941074 | EC030M03L06CF2 KCU25 | C24 | 5949422 | EVSM3232P0626C | C37 | 5956375 | UADE1600A4BV KCPM15 | P17 | 5964161 | KSEM2223SPLM KCM35 | H52 |
| 5941075 | EC030M03R06CF2 KCU25 | C24 | 5949423 | EVSM2525M0616C | C37 | 5956376 | UADE2000A4BV KCPM15 | P17 | 5964163 | KSEM2300SPLM KCM35 | H52 |
| 5941076 | EC040M04N0400CF2 KCU25 | C24 | 5949424 | EVSM2525M0526C | C37 | 5956377 | UADE2500A4BV KCPM15 | P17 | 5964165 | KSEM2381SPLM KCM35 | H52 |
| 5941077 | EC040M04L06CF2 KCU25 | C24 | 5949425 | EVSM2525M0516C | C37 | 5956378 | UADE2100B4BV KCPM15 | P17 | 5964167 | KSEM2400SPLM KCM35 | H52 |
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| 5941080 | EC040M04N0400CM2 KCU25 | C26 | 5949428 | EVSM2020K0522C | C37 | 5956421 | UADE2500B4BV KCPM15 | P17 | 5964173 | KSEM2560SPLM KCM35 | H52 |
| 5941081 | EC030M03N00CR2 KCU25 | C27 | 5949429 | EVSM2020K0516C | C37 | 5956817 | M4KITD25Z02A25SGECPM40 | T21 | 5964175 | KSEM2565SPLM KCM35 | H52 |
| 5941082 | EC040M04N0400CR2 KCU25 | C27 | 5949420 | EVSM4040R040C | C37 | 5956818 | M4KITD32Z03A23SGECPM40 | T21 | 5964177 | KSEM2567SPLM KCM35 | H52 |
| 5941083 | EG0412M04U08GUN KCU25 | C17 | 5949421 | EVSM4040R0840C | C37 | 5956819 | M4KITD40Z04S16SGECPM40 | T21 | 5964179 | KSEM2581SPLM KCM35 | H52 |
| 5941084 | EG0412M04U08GUN KCU25 | C22 | 5949422 | EVSM4040R0640C | C37 | 5956820 | M4KITD50Z06S22SGECPM40 | T21 | 5964181 | KSEM2600SPLM KCM35 | H52 |
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| 5941087 | EC040M04L06CM2 KCU25 | C26 | 5949425 | EVSM3232P0826C | C37 | 5956874 | M4KITD80Z07S27SGECPM40 | T21 | 5964185 | KSEM2858SPLM KCM35 | H53 |
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| 5941091 | EC040M04L06CR2 KCU25 | C27 | 5949429 | EVSM3232P0526C | C36 | 5956878 | M4KITD40Z04S16GEK725M | T21 | 5964189 | KSEM3486SPLM KCM35 | H53 |
| 5941092 | EC040M04R06CR2 KCU25 | C27 | 5949430 | EVSM2525M0826C | C37 | 5956879 | M4KITD50Z05S22GEK725M | T21 | 5964190 | KSEM4000SPLM KCM35 | H53 |
| 5941093 | EG130103U05GUP KCU25 | C19 | 59494251 | EVSM2525M0626C | C37 | 5956880 | M4KITD50Z06S22GEK725M | T21 | 5964197 | UADE0600A4BV KCPM15 | P17 |
| 5941094 | EG130103U01GUP KCU25 | C19 | 59494252 | EVSM2525M0616C | C37 | 5956891 | M4KITD6Z306S22GEK725M | T21 | 5964198 | UADE0800A4BV KCPM15 | P17 |
| 5941095 | EG130103U05GUN KCU25 | C23 | 59494253 | EVSM2525M0526C | C36 | 5956892 | M4KITD80Z07S27GEK725M | T21 | 5964199 | UADE0800A4BV KCPM15 | P17 |
| 5941096 | EG130103U1GUN KCU25 | C23 | 59494254 | EVSM2525M0516C | C36 | 5956893 | M4KITD25Z02A25SGEMKC520M | T21 | 5964201 | UADE0600B4BV KCPM15 | P17 |
| 5941097 | EG192104U1GUP KCU25 | C19 | 59494255 | EVSM2020K0622C | C37 | 5956894 | M4KITD32Z03A32SGEMKC520M | T21 | 5964202 | UADE0800B4BV KCPM15 | P17 |
| 5941098 | EG192104U1GUN KCU25 | C23 | 59494256 | EVSM2020K0616C | C37 | 5956896 | M4KITD40Z04S16SGEMKC520M | T21 | 5964203 | UADE1000B4BV KCPM15 | P17 |
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| 5941101 | EG0300M03P02UP KCU25 | C18 | 59494259 | A16MEVEMR0307M | C46 | 5956899 | M4KITD6Z306S22SGEMKC520M | T21 | 5967745 | NG | |

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| 5967807 | NG2M080RK KCP10B | C146 | 5968011 | NG2M200LK KCP25B | C147 | 5968391 | KTIP0800FEGM KCPM45 | H29 | 5979202 | EVM50L0312MC | C51 |
| 5967808 | NG2M100LK KCP10B | C147 | 5968012 | NG2M200RK KCP25B | C146 | 5968392 | KTIP0850FEGM KCPM45 | H29 | 5979203 | EVM50L0412MC | C51 |
| 5967810 | NG2M100RK KCP10B | C146 | 5968013 | NG2M220LK KCP25B | C147 | 5968393 | KTIP0900FEGM KCPM45 | H29 | 5979745 | KGMSR2525M65C | C58 |
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| 5967822 | NG2M120RK KCP10B | C146 | 5968015 | NG2M225LK KCP25B | C147 | 5968395 | KTIP1000FEGM KCPM45 | H29 | 5979747 | KGMSR3232P65C | C58 |
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| 5967834 | NG2M275RK KCP10B | C146 | 5968026 | NG3047LK KCP25B | C148 | 5968406 | KTIP1500FEGM KCPM45 | H29 | 5979853 | WNMG080408MG KCP25B | B156 |
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| 5967836 | NG2M300RK KCP10B | C146 | 5968028 | NG3062LK KCP25B | C146 | 5968408 | KTIP1600FEGM KCPM45 | H29 | 5980139 | EVSCTR1616K0216 | C39 |
| 5967837 | NG3047LK KCP10B | C148 | 5968029 | NG3072LK KCP25B | C148 | 5968409 | KTIP1650FEGM KCPM45 | H29 | 5980140 | EVSCTR1616K0316C | C39 |
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| 5967839 | NG3062RK KCP10B | C146 | 5968031 | NG3078LK KCP25B | C148 | 5968411 | KTIP1750FEGM KCPM45 | H29 | 5980519 | A12KEVEMR0205M | C46 |
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| 5967841 | NG3072RK KCP10B | C146 | 5968034 | NG3094LK KCP25B | C148 | 5968413 | KTIP1850FEGM KCPM45 | H29 | 5980621 | A16MEVEMR0207M | C46 |
| 5967842 | NG3078LK KCP10B | C148 | 5968035 | NG3125LK KCP25B | C148 | 5968414 | KTIP1900FEGM KCPM45 | H29 | 5980622 | A20QEVEMR1F07M | C46 |
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| 5967877 | NG3M275RK KCP10B | C147 | 5968050 | NG3M200LK KCP25B | C148 | 5970221 | UUBE1000A6BP KCSM15 | P62 | 5980765 | EVSCTR2020K0416C | C39 |
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| 5967880 | NG3M400LK KCP10B | C148 | 5968053 | NG3M220RK KCP25B | C146 | 5970237 | RPPT1204M0432X4 S625 | V97 | 5980768 | EVSCTR2525M0226 | C39 |
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| 5967945 | NG2047LK KCP25B | C147 | 5968069 | NG3M400RK KCP25B | C147 | 5977292 | LNUX301960RPP KCP25B | E48 | 5980804 | EVSCTL2020K0426C | C40 |
| 5967946 | NG2047RK KCP25B | C146 | 5968071 | NG3M425LK KCP25B | C148 | 597735 | EVBSN26J0540... | C49 | 5980805 | EVSCTL2525M0216 | C40 |
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| 5967999 | NG2M120LK KCP25B | C147 | 5968084 | NG4M350LK KCP25B | | | | | | | |

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| 5990952 | B285D09400HPS KN15 | G89 | 6000153 | PSC50KGM5L50C | C64, C134 | 6012656 | EG0412M04U04GUN KCP10B | C22 | 6012768 | ER130I03U00GUN KCP25B | C21 |
| 5990953 | B285D09900HPS KN15 | G89 | 6000159 | PSC63KGMR50C | C65, C135 | 6012657 | EG0412M04U08GUN KCP10B | C22 | 6012898 | EG0412M04U04GUN KCU10 | C22 |
| 5990954 | B285D0921HIPS KN15 | G89 | 6000160 | PSC63KGML50C | C65, C135 | 6012658 | EG19204U1GUN KCP10B | C23 | 6012899 | EG0412M04U08GUN KCU10 | C22 |
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| 5990958 | B285D10320HPS KN15 | G89 | 6000214 | PSC80KGMR50C | C65, C135 | 6012672 | EG0812M08U08GUN KCP10B | C22 | 6012903 | EG0612M06U08GUN KCU10 | C22 |
| 5990959 | B285D10600HPS KN15 | G89 | 6000215 | PSC80KGML50C | C65, C135 | 6012673 | EG0812M08U12GUN KCP10B | C22 | 6012904 | EG0812M08U08GUN KCU10 | C22 |
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| 5990981 | B285D12600HPS KN15 | G90 | 6000430 | KM63TSKGML65C | C61, C132 | 6012685 | ER317108U00GUN KCP10B | C24 | 6012917 | ER0812M08U00GUN KCU10 | C23 |
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| 5990983 | B285D13000HIPS KN15 | G90 | 6000433 | KM63TSKGMSL65C | C60, C131 | 6012687 | ER0200M02P02GUP KCU10 | C18 | 6012919 | ER255106U00GUN KCU10 | C24 |
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| 5990988 | B285D13500HIPS KN15 | G90 | 6000464 | PSC63KGMSR65C | C64, C134 | 6012702 | EG0500M05P04GUP KCU10 | C18 | 6012947 | EG0512M05U08GUP KCU10 | C17 |
| 5990989 | B285D14200HIPS KN15 | G90 | 6000465 | PSC63KGMSL65C | C64, C134 | 6012703 | EG0500M05P08GUP KCU10 | C18 | 6012948 | EG0612M06U04GUP KCU10 | C17 |
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| 5991007 | B285D17859HIPS KN15 | G90 | 6001247 | ONGX080620SNHB KCK20 | S36 | 6012721 | ER0400M04P00GUP KCU10 | C21 | 6012976 | ER31708U00GUP KCU10 | C21 |
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| 5999863 | KM50TSKGML50C | C61, C132 | 6001973 | MILL16D0630Z060N08W | S32 | 6012742 | EG19204U2GUP KCP10B | C19 | 6013062 | EG1301U305GUN KCP10B | C23 |
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| 5999973 | KM63XMZKGMSL50C | C60, C | | | | | | | | | |

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| 6054195 | KSCMA90QFBF KD1420 | S134 | 6059101 | T877G03750-19R-D56 KSU31 | M78 | 6065059 | RPPT1204M0SGDX4 KCM40 | V97 | 6072508 | UDDV3200X5CQN KC643M | 013 |
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| 6105104 | TPUN220412 KCP25B | B171 | 6117076 | EVM50L0312A350999C | C53 | 6124200 | EVSBL2525M0516060075C | C43 | 6127287 | RQDB1200X4CV KCPM15 | 034 |
| 6108706 | SNMG120416MG KCP25B | B99 | 6117077 | EVM50R0312B350999C | C55 | 6124211 | EVSBL2525M0516060075C | C45 | 6127288 | RQDB1600X4CV KCPM15 | 034 |
| 6109122 | SDCT120464ENLD2 KCSM40 | T104, T111, U51 | 6117078 | EVM50L0312B350999C | C56 | 6124212 | EVSBL2525M0526060075C | C44 | 6127289 | RQDB2000X4CV KCPM15 | 034 |
| 6109124 | SDET120464SNGB KCSM40 | T105, T112, U51 | 6117091 | EVM50R0416A100180C | C52 | 6124213 | EVSBL2525M0526060075C | C45 | 6127290 | RQDB2500X5CV KCPM15 | 034 |
| 6109130 | SDET120424ENG KCSM40 | T105, T112, U51 | 6117094 | EVM50L0416A180250C | C53 | 6124214 | EVSBL2525M0516075100C | C44 | 6127311 | FMDF2000X6CQE KCPM15 | 042 |
| 6109210 | KTIP1595FEGM KCPM45 | H29 | 6117095 | EVM50R0416B100180C | C55 | 6124215 | EVSBL2525M0516075100C | C45 | 6127312 | FMDF2500X6CQE KCPM15 | 042 |
| 6109265 | SDET120424SNGB KCSM40 | T105, T112, U51 | 6117098 | EVM50R0416A250350C | C53 | 6124226 | EVSBL2525M0516250350C | C44 | 6127388 | XRD1000X4CRM KCPM15 | 049 |
| 6111468 | OFKT06L5AFENG KCPM40 | S50 | 6117100 | EVM50L0416B250350C | C56 | 6124227 | EVSBL2525M0516250350C | C45 | 6127389 | XRD1600X6CRN KCPM15 | 049 |
| 6111469 | OFKT07L6AFENG KCPM40 | S55 | 6117101 | EVM50L0416A350999C | C52 | 6124230 | EVSBL2525M0516350999C | C44 | 6127404 | XADA1000X4CH45 KCPM15 | 048 |
| 6111470 | OFKT07L6AFNSHB KCPM40 | S55 | 6117102 | EVM50L0416A350999C | C53 | 6124235 | EVSBL3232P0532100180C | C44 | 6127405 | XADA1200X5CH45 KCPM15 | 048 |
| 6111471 | SDET120412PDERGB KCPM40 | T105, T112, U51 | 6117104 | EVM50L0416B350999C | C56 | 6124236 | EVSBL3232P0532100180C | C45 | 6127885 | EDPT10304PDSRG EKCPM40 | T36 |
| 6111673 | SDET120420SNGB2 KCPM40 | T104, T111, U52 | 6117149 | CNNU120616MN KCP25B | B51 | 6124238 | EVSBL3232P0532100250C | C45 | 6127886 | EDPT10308PDSRG EKCPM40 | T36 |
| 6111672 | SDET120412PDERGB2 KCPM40 | T104, T111, U52 | 6117573 | DNNM150612RP KCP10B | B83 | 6124239 | EVSBL3232P0532250350C | C44 | 6127888 | EDPT10312PDERHD KCPM40 | T36 |
| 6111674 | SDET120412PDSRG B2 KCPM40 | T104, T111, U52 | 6123362 | KSEM150612R P0532100180C | H54 | 6124240 | EVSBL3232P0532250350C | C45 | 6127889 | EDPT10316PDERHD KCPM40 | T36 |
| 6111675 | SDET120420SNGB2 KCPM40 | T104, T111, U52 | 6123352 | KTIP100R12S120M | H31 | 6124241 | EVSBL2525M0616180250C | C44 | 6128132 | EDPT140404PDERHD KCPM40 | T53 |
| 6111676 | SEKT1404AEENG2P KCPM40 | S42 | 6123572 | KTIP090R12S10M | H31 | 6124605 | EVSBL2525M0616060075C | C44 | 6128133 | EDPT140408PDSRGD KCPM40 | T54 |
| 6111677 | SEKT1404AEENG2P KCPM40 | S42 | 6123573 | WD50FDs40100M | H102 | 6124606 | EVSBL2525M0626060750C | C45 | 6128134 | EDPT140416PDERHD KCPM40 | T53 |
| 6111679 | A32SEVSAR0312M03042 | C48 | 6123575 | WD50FDs45112M | H102 | 6124607 | EVSBL2525M0616100180C | C44 | 6128138 | EDCT180504PDERGD KCPM40 | T74 |
| 6111698 | A32SEVSAR0312M033042 | C48 | 6123576 | WD50FDs50122M | H102 | 6124608 | EVSBL2525M0616100180C | C45 | 6128139 | EDCT180512PDERGD KCPM40 | T74 |
| 6111699 | A40TEVSAR0312M041050 | C48 | 6123577 | WD50FDs56140M | H102 | 6124609 | EVSBL2525M0616100180C | C44 | 6128140 | EDCT180504PDERGD KCPM40 | T74 |
| 6111700 | A40TEVSAR0312M041050 | C48 | 6123578 | WD50FDs63154M | H102 | 6124609 | EVSBL2525M0616100180C | C45 | 6128141 | EDCT180508PDERGD KCPM40 | T74 |
| 6111651 | A25REVSAR0212M026030 | C48 | 6123579 | WD50FDs71172M | H102 | 6124609 | EVSBL2525M0616250350C | C44 | 6128142 | EDCT180512PDERGD KCPM40 | T74 |
| 6111652 | A25REVSAR0312M03035 | C48 | 6123580 | WD50FDs80192M | H102 | 6124609 | EVSBL2525M0616250350C | C45 | 6128143 | EDCT180508PDERGD KCPM40 | T74 |
| 61116527 | A25REVSAR0212M026030 | C48 | 6123581 | WD50FDs90212M | H102 | 6124609 | EVSBL2525M0616350999C | C44 | 6128144 | EDCT180512PDERGD KCPM40 | T74 |
| 61116528 | A25REVSAR0312M03035 | C48 | 6123601 | KTIP110R12S121M | H31 | 6124608 | EVSBL2525M0616350999C | C45 | 6128145 | EDCT180512PDERGD KCPM40 | T74 |
| 61116561 | EVSBL2020K0312040050C | C44 | 6123602 | KTIP115R12S121M | H31 | 6124609 | EVSBL232P0632100180C | C44 | 6128074 | EVSBL232P0632100180C | C44 |
| 61116562 | EVSBL2020K0312040050C | C44 | 6123603 | KTIP120R12S14M | H31 | 6124609 | EVSBL3232P0632100180C | C45 | 6128075 | EVSBL232P0632100180C | C44 |
| 61116563 | EVSBL2020K0312050060C | C43 | 6123604 | KTIP125R12S14M | H31 | 6124609 | EVSBL3232P0632180250C | C44 | 6128078 | EVSBL23 | |

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| 6130879 | UADE1400B4V KCPM15 | P17 | 6130501 | SS20SLD10115M | 056 | 6143988 | 3CH0600MX028A KC633M | Q20 | 6146950 | 3CH0800DL016A KC633M | Q18 |
| 6131423 | LNGU110412SRGEM KCK15 | T9 | 6130502 | SS20DL10200M | 057 | 6143989 | 3CH0800MX028A KC633M | Q20 | 6146951 | 3CH1000DL019A KC633M | Q18 |
| 6131424 | LNGU110412SRGEM KCPK30 | T9 | 6130503 | SS20SLD12105M | 056 | 6143990 | 3CH1000MX032A KC633M | Q20 | 6146952 | 3CH1200DL022A KC633M | Q19 |
| 6131425 | LNGU110412SRGEM KC520M | T9 | 6130504 | SS20DL12200M | 057 | 6144061 | 3CH1200MX045A KC633M | Q20 | 6146953 | 3CH1400DL022A KC633M | Q19 |
| 6131426 | LNGU110412SRGEM KCPM40 | T9 | 6130505 | SS20SLD16080M | 056 | 6144062 | 3CH1600MX056A KC633M | Q20 | 6146954 | 3CH1600DL026A KC633M | Q19 |
| 6131428 | LNPUI110412SRGE KC522M | T9 | 6130506 | SS20DL16200M | 057 | 6144063 | 3CH2000MX064A KC633M | Q20 | 6146955 | 3CH1800DL026A KC633M | Q19 |
| 6131429 | LNPUI110412SRGE KCPM40 | T9 | 6130507 | SS20SLD20080M | 056 | 6144064 | 3CH3000MX19B KC633M | Q20 | 6146956 | 3CH2000DL032A KC633M | Q19 |
| 6131430 | LNPUI110412SRGE KC725M | T9 | 6130508 | SS20DL20200M | 057 | 6144066 | 3CH5000MX20B KC633M | Q20 | 6146957 | 3CH2000DL006B KC633M | Q18 |
| 6131502 | LNPUI110408SRGEGE KC522M | T9 | 6130509 | SS25SLD16115M | 056 | 6144067 | 3CH6000MX20B KC633M | Q20 | 6146958 | 3CH2500DL007B KC633M | Q18 |
| 6131503 | LNPUI110408SRGEGE KCPM40 | T9 | 61305060 | SS25DL16250M | 057 | 6144068 | 3CH8000MX028B KC633M | Q20 | 6146959 | 3CH0300DL007B KC633M | Q18 |
| 6131504 | LNPUI110408SRGEGE KC725M | T9 | 61305061 | SS25SLD20095M | 056 | 6144069 | 3CH1000MX032B KC633M | Q20 | 6146960 | 3CH0350DL007B KC633M | Q18 |
| 6131505 | LNPUI110408SRGEGE KCPK30 | T9 | 61305062 | SS25DL20250M | 057 | 6144070 | 3CH1200MX045B KC633M | Q20 | 6146961 | 3CH4000DL008B KC633M | Q18 |
| 6131506 | LNPUI110408SRGEGE KC520M | T9 | 61305063 | SS25SLD25090M | 056 | 6144071 | 3CH1600MX056B KC633M | Q20 | 6146962 | 3CH4500DL008B KC633M | Q18 |
| 6131507 | LNPUI110408SRGEGE KCK15 | T9 | 61305064 | SS25DL25250M | 057 | 6144072 | 3CH2000MX064B KC633M | Q20 | 6146963 | 3CH0500DL010B KC633M | Q18 |
| 6131511 | LNPUI110412SRGEGE KCPK30 | T9 | 61305065 | SS32SLD25105M | 056 | 6145374 | 1-16NPTF-JIC | C75 | 6146964 | 3CH0550DL010B KC633M | Q18 |
| 6131512 | LNPUI110412SRGEGE KC520M | T9 | 61305066 | SS32SLD25250M | 057 | 6145375 | 1-BNPTF-JIC | C75 | 6146965 | 3CH6000DL010B KC633M | Q18 |
| 6131513 | LNPUI110412SRGEGE KCK15 | T9 | 61305067 | SS32SLD32105M | 056 | 6145376 | G18-JIC | C75 | 6146966 | 3CH7000DL013B KC633M | Q18 |
| 6131514 | LNGU110404ERGE KC725M | T8 | 61305068 | SS32DL32250M | 057 | 6145377 | M10-JIC | C75 | 6146967 | 3CH0800DL016B KC633M | Q18 |
| 6131515 | LNGU110404ERGE KC522M | T8 | 61305069 | SS40SLD32140M | 056 | 6145378 | M8-JIC | C75 | 6146968 | 3CH1000DL019B KC633M | Q18 |
| 6131516 | LNGU110404ERGE KCPM40 | T8 | 61305070 | SS40DL32250M | 057 | 6145379 | JICM-JICF-ELB | C75 | 6146969 | 3CH1200DL022B KC633M | Q19 |
| 6131541 | LNGU110408ERGE KC725M | T8 | 61305081 | SS50SLD32200M | 056 | 6145380 | COOL-HOSE-200 | C75 | 6146970 | 3CH1400DL022B KC633M | Q19 |
| 6131542 | LNGU110408ERGE KC522M | T8 | 61305082 | SS50DL32250M | 057 | 6145381 | COOL-HOSE-300 | C75 | 6146971 | 3CH1600DL026B KC633M | Q19 |
| 6131543 | LNGU110408ERGE KCPM40 | T8 | 61305413 | TWDLTM | 058 | 6145382 | M6-JIC | C75 | 6146972 | 3CH1800DL026B KC633M | Q19 |
| 6131544 | LNGU110408ERGE KCSM30 | T8 | 61305414 | TWTMINERTDL10 | 058 | 6145383 | JICM-JICM-STR | C75 | 6146973 | 3CH2000DL032B KC633M | Q19 |
| 6131556 | LNGU110408ERLEJ KC422M | T8 | 61305415 | TWTMINERTDL12 | 058 | 6145386 | G14-G18-RED | C75 | 6151025 | ABDE1000X3CQE K600 | 029 |
| 6131557 | LNPUI110416SRGEGE KC522M | T9 | 61305416 | TWTMINERTDL16 | 058 | 6146871 | 3CH0250DK003A KC633M | Q18 | 6151026 | ABDE1000X3CQQ K600 | 029 |
| 6131558 | LNPUI110416SRGEGE KCPM40 | T9 | 61305417 | TWTMINERTDL20 | 058 | 6146872 | 3CH0300DK004A KC633M | Q18 | 6151027 | ABDE1000X3CQJ K600 | 029 |
| 6131559 | LNPUI110416SRGEGE KC725M | T9 | 61305418 | TWTMINERTDL25 | 058 | 6146874 | 3CH0350DK004A KC633M | Q18 | 6151028 | ABDE1200X3CQE K600 | 029 |
| 6131560 | LNPUI110416SRGEGE KCPK30 | T9 | 61305419 | TWTMINERTDL32 | 058 | 6146875 | 3CH0400DK005A KC633M | Q18 | 6151029 | ABDE1200X3CQG K600 | 029 |
| 6131601 | LNPUI110416SRGEGE KC520M | T9 | 61305420 | TWTMINERTDL10W | 058 | 6146876 | 3CH0450DK005A KC633M | Q18 | 6151030 | ABDE1200X3CQJ K600 | 029 |
| 6131602 | LNGU110408SRGEGE KCK15 | T9 | 61305421 | TWTMINERTDL12W | 058 | 6146877 | 3CH0500DK006A KC633M | Q18 | 6151031 | ABDE1200X3CQL K600 | 029 |
| 6131603 | LNGU110408SRGEGE KCPK30 | T9 | 61305422 | TWTMEXT | 058 | 6146878 | 3CH0550DK007A KC633M | Q18 | 6151032 | ABDE1600X3CQS K600 | 029 |
| 6131604 | LNGU110408SRGEGE KC520M | T9 | 61305423 | TWTMBC | 058 | 6146879 | 3CH0600DK0012A KC633M | Q18 | 6151033 | ABDE1600X3CQJ K600 | 029 |
| 6131605 | LNGU110408SRGEGE KC522M | T9 | 61306737 | M4D016Z02A1621L1150 | T6 | 6146880 | 3CH0700DK008A KC633M | Q18 | 6151034 | ABDE1600X3CQK K600 | 029 |
| 6131606 | LNGU110408SRGEGE KCPM40 | T9 | 61306738 | M4D016Z02M08L11 | T4 | 6146881 | 3CH0800DK009A KC633M | Q18 | 6151035 | ABDE1600X3CQL K600 | 029 |
| 6131627 | M4D016Z02A1611L11090 | T6,T11 | 61306739 | M4D020Z03A20L11L150 | T6 | 6146882 | 3CH0200DK011A KC633M | Q18 | 6151036 | ABDE1600X3CQM K600 | 029 |
| 6131628 | M4D016Z02B16L11 | T5 | 61306740 | M4D020Z03B20L11N1 | T5 | 6146883 | 3CH1200DK012A KC633M | Q18 | 6151037 | ABDE2000X3CQK K600 | 029 |
| 6131629 | M4D020Z02A20L11L150 | T6 | 61306780 | TCMT167312LF KCP10B | B24 | 6146884 | 3CH1400DK014A KC633M | Q19 | 6151038 | ABDE2000X3CQK K600 | 029 |
| 6131630 | M4D020Z02B20L11 | T5,T11 | 61306791 | M4D025Z04A25L11L170 | T6 | 6146885 | 3CH1600DK016A KC633M | Q19 | 6151039 | ABDE2000X3CQL K600 | 029 |
| 6131681 | M4D020Z03A20L11L1090 | T6,T11 | 61306792 | M4D032Z05A32L11L200 | T6 | 6146886 | 3CH1800DK018A KC633M | Q19 | 6151040 | ABDE2000X3CQM K600 | 029 |
| 6131682 | M4D020Z03M10LN11 | T4 | 61306793 | M4D032Z05M16LN11 | T4 | 6146888 | 3CH2000DK020A KC633M | Q19 | 6151042 | ABDE2000X3CQN K600 | 029 |
| 6131683 | M4D025Z03A25LN11L170 | T6 | 61306794 | M4D040Z05A32LN11L200 | T6 | 6146890 | 3CH2000DK003A KC633M | Q18 | 6151043 | ABDE2500X3CQL K600 | 029 |
| 6131684 | M4D025Z03B25LN11 | T5 | 61306795 | M4D040Z05B32LN11 | T5 | 6146891 | 3CH0300DK004B KC633M | Q18 | 6151044 | ABDE2500X3CQN K600 | 029 |
| 6131685 | M4D025Z04A25LN11L100 | T6,T11 | 61306796 | M4D040Z07S16LN11 | T7 | 6146892 | 3CH0350DK004B KC633M | Q18 | 6151046 | ABDF1000X2CU K600 | 028 |
| 6131686 | M4D025Z04M12LN11 | T4 | 61306797 | M4D050Z09S22LN11 | T7 | 6146893 | 3CH0400DK005B KC633M | Q18 | 6151047 | ABDF1200X2CU K600 | 028 |
| 6132022 | LNGU110408SRGEGE KC522M | T9 | 61306798 | M4D080Z01S27LN11 | T7 | 6146894 | 3CH0450DK005B KC633M | Q18 | 6151048 | ABDF1600X2CU K600 | 028 |
| 6132023 | LNGU110408SRGEGE KCPM40 | T9 | 61306799 | HSK63ADL10048M | 052 | 6146895 | 3CH0500DK006B KC633M | Q18 | 6151049 | ABDF2000X2CU K600 | 028 |
| 6132024 | LNGU110408SRGEGE KC725M | T9 | 61306800 | HSK63ADL10050M | 052 | 6146896 | 3CH0550DK007B KC633M | Q18 | 6151050 | ABDF2500X2CU K600 | 028 |
| 6132025 | LNGU110408SRGEGE KCPK30 | T9 | 61306801 | HSK63ADL16057M | 052 | 6146897 | 3CH0600DK007B KC633M | Q18 | 6151051 | ABDF3000X2CU K600 | 028 |
| 6132026 | LNGU110408SRGEGE KCK15 | T9 | 61306802 | HSK63ADL20057M | 052 | 6146898 | 3CH0700DK008B KC633M | Q18 | 6151052 | ABDF4000X2CU K600 | 028 |
| 6132452 | KSEM3750SPSL KCM535 | H53 | 61306803 | HSK63ADL25061M | 052 | 6146899 | 3CH0800DK009B KC633M | Q18 | 6151053 | ABDF5000X2CU K600 | 028 |
| 6133107 | B976F15400 KC7315 | G145 | 61306804 | HSK63ADL30207M | 052 | 6146900 | 3CH1000DK011B KC633M | Q18 | 6151054 | ABDF6000X2CU K600 | 028 |
| 6133636 | KSEM2950SPSL KCM535 | H53 | 61306805 | HSK63ADL3050M | 052 | 6146901 | 3CH1200DK012B KC633M | Q18 | 6151055 | ABDF7000X2CU K600 | 028 |
| 6134054 | MILL16D080Z08N08W | S32 | 61306806 | HSK63DL1050M | 052 | 6146902 | 3CH1400DK014B KC633M | Q19 | 6151056 | ABDF8000X2CU K600 | 028 |
| 6134055 | MILL16D100Z0100N08W | S32 | 61306807 | HSK63DL16055M | 052 | 6146903 | 3CH1600DK016B KC633M | Q19 | 6151057 | ABDF9000X2CU K600 | 028 |
| 6134056 | MILL16D125Z140N08W | S32 | 61306808 | HSK63DL20055M | 052 | 6146904 | 3CH1800DK018B KC633M | Q19 | 6151058 | ABDF10000X2CU K600 | 028 |
| 6134057 | MILL16D160Z160N08W | S32 | 61306809 | HSK63DL25060M | 052 | 6146905 | 3CH2000DK020B KC633M | Q19 | 6151059 | ABDF12000X2CU K600 | 028 |
| 6134058 | MILL16D200Z200N08W | S32 | 61306810 | CV40BLD10041M | 053 | 6146906 | 3CH0100MS004A KC633M | Q20 | 6151060 | ABDF15000X2CU K600 | 028 |
| 6134184 | M4D032Z04A32LN11L200 | T6 | 61306811 | CV40BLD12041M | 053 | 6146907 | 3CH0200MS006A KC633M | Q20 | 6151061 | ABDF18000X2CU K600 | 028 |
| 6134185 | M4D032Z04B32LN11 | T5,T11 | 61306812 | CV40BLD16050M | 053 | 6146908 | 3CH0250MS007A KC633M | Q20 | 6151062 | ABDF20000X2CU K600 | 028 |
| 6134186 | M4D032Z05A32LN11L110 | T6,T11 | 61306813 | CV40BLD20050M | 053 | 6146909 | 3CH0300MS008A KC633M | Q20 | 6151063 | ABDF25000X2CU K600 | 028 |
| 6134187 | M4D032Z06M16LN11 | T4 | 61306814 | CV40BLD25056M | 053 | 6146910 | 3CH0400MS009A KC633M | Q20 | 6151064 | ABDF30000X2CU K600 | 028 |
| 6134188 | M4D040Z04S16LN11 | T7,T11 | 61306815 | CV40BLD32068M | 053 | 6146911 | 3CH0500MS010A KC633M | Q20 | 6151065 | ABDF40000X2CU K600 | 028 |
| 6134189 | SS10SLD10055M | 056 | 61306816 | CV40BLD10041M | 054 | 6146912 | 3CH0600MS010A KC633M | Q20 | 6151066 | ABDF50000X2CU K600 | 028 |
| 6134890 | SS101DL10100M | 057 | 61306817 | CV40BLD12041M | 054 | 6146913 | 3CH0700MS012A KC633M | Q20 | 6151067 | ABDF60000X2CU K600 | 028 |
| 6135041 | SS12SLD10065M | 056 | 61306818 | CV40BLD16050M | 054 | 6146914 | 3CH0800MS016A KC633M | Q20 | 6151068 | ABDF70000X2CU K600 | 028 |
| 6135042 | SS12DL10120M | 057 | 61306819 | CV40BLD25056M | 054 | 6146915 | 3CH0900MS017A KC633M | Q20 | 6151069 | ABDF80000X2CU K600 | 028 |
| 6135043 | SS12SLD12065M | 056 | 61306820 | CV | | | | | | | |

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| 6152252 | D355CFA | S33 | | | S13, | | | T61 | 6172685 | T839M100X150R6H-D1 KSP39 | M45 |
| 6152253 | D400CFA | S33 | | | S16 | 6172122 | EDPT140408PDERHD KCSM40 | T53, | 6172686 | T839M100X150R6H-D1 KSU31 | M45 |
| 6152254 | D500CFA | S33 | 6165760 | HNPJ0604ANSNHD KCSM40 | S7, | 6172123 | EDPT140412PDERHD KCSM40 | T53, | 6172687 | T839M120X175R6H-D6 KSP39 | M45 |
| 6159024 | MILL16D050Z040N08SC | S34 | | | S13, | 6172123 | EDPT140412PDERHD KCSM40 | T53, | 6172688 | T839M120X175R6H-D6 KSU31 | M45 |
| 6159025 | MILL16D063Z040N08SC | S34 | | | S16 | 6172124 | EDPT140416PDERHD KCSM40 | T53, | 6172689 | T839M140X200R6H-D6 KSP39 | M45 |
| 6159026 | MILL16D063Z050N08SC | S34 | 6165861 | HNPJ060432ANSNHD KCSM40 | S7, | 6172124 | EDPT140416PDERHD KCSM40 | T53, | 6172690 | T839M140X200R6H-D6 KSU31 | M45 |
| 6159027 | MILL16D080Z050N08SC | S34 | | | S13, | 6172127 | EDPT140420PDERHD KCSM40 | T53, | 6172701 | T839M160X200R6H-D6 KSP39 | M45 |
| 6159028 | MILL16D080Z070N08SC | S34 | | | S16 | 6172125 | EDPT140420PDERHD KCSM40 | T53, | 6172702 | T839M160X200R6H-D6 KSU31 | M45 |
| 6159029 | MILL16D100Z060N08SC | S34 | 6165862 | HNGJ0604ANEFLD KCSM40 | S6, | 6172128 | EDPT140440PDERHD KCSM40 | T53, | 6172703 | T839M180X250R6H-D6 KSP39 | M45 |
| 6159030 | MILL16D100Z080N08SC | S34 | | | S12, | 6172126 | EDPT140424PDERHD KCSM40 | T53, | 6172704 | T839M180X250R6H-D6 KSU31 | M45 |
| 6159061 | MILL16D125Z080N08SC | S34 | | | S15 | 6172126 | EDPT140424PDERHD KCSM40 | T53, | 6172705 | T839M200X250R6H-D6 KSP39 | M45 |
| 6159062 | MILL16D125Z100N08SC | S34 | 6165863 | XNGJ0604ANEFLD3W KCSM40 | S12, | 6172127 | EDPT140431PDERHD KCSM40 | T53, | 6172706 | T839NC05625-12R2B-D6 KSP39 | M47 |
| 6159063 | MILL16D160Z100N08SC | S34 | 6165864 | HNGJ0604ANSNHD KCSM40 | S7, | 6172128 | EDPT140440PDERHD KCSM40 | T53, | 6172875 | T838NC05625-12R2B-D6 KSU31 | M47 |
| 6159064 | MILL16D160Z120N08SC | S34 | | | S12, | 6172128 | EDPT140440PDERHD KCSM40 | T53, | 6172876 | T838NC05625-12R2B-D6 KSU31 | M47 |
| 6159065 | MILL16D200Z100N08SC | S34 | | | S16 | 6172129 | EDPT140408PDPSRGD KCSM40 | T54, | 6172877 | T838NF05625-18R2B-D4 KSP39 | M47 |
| 6159066 | MILL16D200Z140N08SC | S34 | 6167618 | FSDE1000A9BCE KC643M | P92 | 6172129 | EDPT140408PDPSRGD KCSM40 | T54, | 6172878 | T838NF05625-18R2B-D4 KSU31 | M47 |
| 6159067 | MILL16D250Z120N08SC | S34 | 6167619 | FSDE1000A9BCG KC643M | P92 | 6172130 | EDPT140412PDPSRGD KCSM40 | T54, | 6172879 | T838NC06250-11R2B-D6 KSP39 | M47 |
| 6159068 | MILL16D250Z160N08SC | S34 | 6167620 | FSDE1200A9BCE KC643M | P92 | 6172130 | EDPT140412PDPSRGD KCSM40 | T54, | 6172880 | T838NC06250-11R2B-D6 KSU31 | M47 |
| 6160117 | 5720V16HA050Z4R7 | T89 | 6167621 | FSDE1200A9BCG KC643M | P92 | 6172130 | EDPT140412PDPSRGD KCSM40 | T54, | 6172967 | T838M020X040R6H-D1 KSP39 | M43 |
| 6162808 | EDPT180516PDERHD KCPM40 | T75 | 6167622 | FSDE1200A9BCL KC643M | P92 | 6172191 | EDPT140416PDPSRGD KCSM40 | T54, | 6172968 | T838M020X040R6H-D1 KSU31 | M43 |
| 6162809 | EDPT180532PDERHD KCPM40 | T75 | 6167623 | FSDE1600ABBKG KC643M | P92 | 6172192 | EDPT140408PDPSRGD KCSM40 | T54, | 6172969 | T838M030X050R6H-D1 KSP39 | M43 |
| 6162869 | KSEM1830SPLM KCM35 | H52 | 6167624 | FSDE1600ABBCL KC643M | P92 | 6172192 | EDPT140408PDPSRGD KCSM40 | T54, | 6172970 | T838M030X050R6H-D1 KSU31 | M43 |
| 6162870 | KSEM2024SPLM KCM35 | H52 | 6167625 | FSDE1600ABBKG KC643M | P92 | 6172192 | EDPT140408PDPSRGD KCSM40 | T54, | 6173001 | T838M040X070R6H-D1 KSP39 | M43 |
| 6163121 | KSEM2250SPLM KCM35 | H52 | 6167626 | FSDE1600ABBPC KC643M | P92 | 6172193 | EDPT140412PDPSRGD KCSM40 | T53, | 6173002 | T838M040X070R6H-D1 KSU31 | M43 |
| 6163122 | KSEM2350SPLM KCM35 | H52 | 6167627 | FSDE2000A9BCG KC643M | P92 | 6172193 | EDPT140412PDPSRGD KCSM40 | T53, | 6173003 | T838M050X080R6H-D1 KSP39 | M43 |
| 6163123 | KSEM2450SPLM KCM35 | H52 | 6167628 | FSDE2000A9BCK KC643M | P92 | 6172194 | EDPT140416PDPSRGD KCSM40 | T53, | 6173004 | T838M050X080R6H-D1 KSU31 | M43 |
| 6163124 | KSEM2525SPLM KCM35 | H52 | 6167629 | FSDE2000A9BCL KC643M | P92 | 6172350 | EDPT180516PDPSRGD KCSM40 | T75, | 6173005 | T838M050X080R6H-D1 KSP39 | M43 |
| 6163125 | KSEM2530SPLM KCM35 | H52 | 6167630 | FSDE2000A9BCN KC643M | P92 | 6172350 | EDPT180516PDPSRGD KCSM40 | T75, | 6173006 | T838M050X080R6H-D6 KSU31 | M43 |
| 6163126 | KSEM2550SPLM KCM35 | H52 | 6167631 | FSDE2000A9BCP KC643M | P92 | 6172391 | EDPT180512PDPSRGD KCSM40 | T75, | 6173007 | T838MF060X075R6H-D4 KSP39 | M43 |
| 6163127 | KSEM2630SPLM KCM35 | H52 | 6167633 | FSDE2500A9BCG KC643M | P92 | 6172348 | EDPT180508PDPSRGD KCSM40 | T75, | 6173008 | T838MF060X075R6H-D4 KSU31 | M43 |
| 6163128 | KSEM2650SPLM KCM35 | H52 | 6167634 | FSDE2500A9BCL KC643M | P92 | 6172349 | EDPT180512PDPSRGD KCSM40 | T75, | 6173009 | T838MF061X100R6H-D1 KSP39 | M43 |
| 6163129 | KSEM2659SPLM KCM35 | H52 | 6167635 | FSDE2500A9BPC KC643M | P92 | 6172350 | EDPT180516PDPSRGD KCSM40 | T75, | 6173010 | T838MF061X100R6H-D1 KSU31 | M43 |
| 6163130 | KSEM2750SPLM KCM35 | H52 | 6168013 | SDCT1204PDERLD2 KCSM40 | T104, | 6172391 | EDPT180532PDPSRGD KCSM40 | T75, | 6173011 | T838MF061X100R6H-D6 KSP39 | M43 |
| 6163131 | KSEM2800SPLM KCM35 | H52 | | | T111, | 6172392 | EDPT180548PDPSRGD KCSM40 | T75, | 6173012 | T838MF060X100R6H-D6 KSU31 | M43 |
| 6163132 | KSEM2850SPLM KCM35 | H52 | | | U51 | 6172393 | EDPT180564PDPSRGD KCSM40 | T75, | 6173013 | T838MF080X075R6H-D4 KSP39 | M43 |
| 6163133 | KSEM2900SPLM KCM35 | H53 | 6168014 | SDCT120412PDERLD2 KCSM40 | T104, | 6172394 | EDPT180508PDPSRGD KCSM40 | T75, | 6173014 | T838MF080X075R6H-D4 KSU31 | M43 |
| 6163134 | KSEM3050SPLM KCM35 | H53 | | | T111, | 6172395 | EDPT180512PDPSRGD KCSM40 | T75, | 6173015 | T838MF080X100R6H-D4 KSP39 | M43 |
| 6163135 | KSEM3100SPLM KCM35 | H53 | | | U51 | 6172396 | EDPT180516PDPSRGD KCSM40 | T75, | 6173016 | T838MF080X100R6H-D4 KSU31 | M43 |
| 6163136 | KSEM3150SPLM KCM35 | H53 | 6168015 | SDET120412PDERGB KCSM40 | T105, | 6172397 | EDPT180532PDPSRGD KCSM40 | T75, | 6173017 | T838MF080X125R6H-D1 KSP39 | M43 |
| 6163137 | KSEM3250SPLM KCM35 | H53 | | | T112, | 6172398 | EDPT180508PDERGD KCSM40 | T74, | 6173018 | T838MF080X125R6H-D1 KSU31 | M43 |
| 6163138 | KSEM3350SPLM KCM35 | H53 | 6168016 | SDCT120416ENLD2 KCSM40 | T104, | 6172399 | EDPT180516PDERGD KCSM40 | T74, | 6173019 | T838MF080X125R6H-D6 KSP39 | M43 |
| 6163139 | KSEM3400SPLM KCM35 | H53 | | | T111, | 6172400 | EDPT180532PDERGD KCSM40 | T74, | 6173020 | T838MF080X125R6H-D6 KSU31 | M43 |
| 6163141 | KSEM3450SPLM KCM35 | H53 | | | U51 | 6172411 | EDPT180548PDERGD KCSM40 | T74, | 6173021 | T838MF100X075R6H-D4 KSP39 | M43 |
| 6163142 | KSEM3500SPLM KCM35 | H53 | | | U51 | 6172412 | EDPT180564PDERGD KCSM40 | T74, | 6173022 | T838MF100X075R6H-D4 KSU31 | M43 |
| 6163143 | KSEM3550SPLM KCM35 | H53 | 6168017 | SDCT120432ENLD2 KCSM40 | T104, | 6172413 | EDPT180508PDERHD KCSM40 | T75, | 6173023 | T838MF100X0100R6H-D4 KSP39 | M43 |
| 6163144 | KSEM3600SPLM KCM35 | H53 | | | T111, | 6172414 | EDPT180512PDERHD KCSM40 | T75, | 6173024 | T838MF100X0100R6H-D4 KSU31 | M43 |
| 6163145 | KSEM3650SPLM KCM35 | H53 | | | U51 | 6172415 | EDPT180516PDERHD KCSM40 | T75, | 6173025 | T838MF100X125R6H-D4 KSP39 | M43 |
| 6163146 | KSEM3700SPLM KCM35 | H53 | | | U51 | 6172416 | EDPT180532PDERHD KCSM40 | T75, | 6173026 | T838MF100X125R6H-D4 KSU31 | M43 |
| 6163147 | KSEM3800SPLM KCM35 | H53 | | | T111, | 6172417 | EDPT180540PDERHD KCSM40 | T75, | 6173027 | T838MF100X150R6H-D1 KSP39 | M43 |
| 6163148 | KSEM3850SPLM KCM35 | H53 | | | U52 | 6172418 | EDPT180548PDERHD KCSM40 | T75, | 6173028 | T838MF100X150R6H-D1 KSU31 | M43 |
| 6163149 | KSEM3900SPLM KCM35 | H53 | 6168019 | SDET120464ENGK KCSM40 | T105, | 6172513 | B967A03000 KCT315 | G132 | 6173029 | T838MF100X150R6H-D6 KSP39 | M43 |
| 6163150 | KSEM3950SPLM KCM35 | H53 | | | T112, | 6172514 | B967A03100 KCT315 | G132 | 6173030 | T838MF100X150R6H-D6 KSU31 | M43 |
| 6163300 | KTIP0913FEGM KCPM45 | H29 | | | U51 | 6172515 | B967A03200 KCT315 | G132 | 6173051 | T838MF100X120X100R6H-D4 KSP39 | M43 |
| 6163381 | KTIP1010FEGM KCPM45 | H29 | 6168020 | SDET120448SNGB KCSM40 | T105, | 6172516 | B967A03300 KCT315 | G132 | 6173052 | T838MF120X100R6H-D4 KSU31 | M43 |
| 6163382 | KTIP1170FEGM KCPM45 | H29 | | | T112, | 6172517 | B967A03500 KCT315 | G132 | 6173053 | T838MF120X125R6H-D4 KSP39 | M43 |
| 6163383 | KTIP1984FEGM KCPM45 | H54 | | | U51 | 6172518 | B967A03800 KCT315 | G132 | 6173054 | T838MF120X125R6H-D4 KSU31 | M43 |
| 6163384 | KSEM2580FEGM KCPM45 | H54 | 6168101 | SDET120448ENGK KCSM40 | T105, | 6172519 | B967A04000 KCT315 | G132 | 6173055 | T838MF120X150R6H-D4 KSP39 | M43 |
| 6163385 | KSEM2581FEGM KCPM45 | H54 | | | T112, | 6172520 | B967A04200 KCT315 | G132 | 6173056 | T838MF120X150R6H-D4 KSU31 | M43 |
| 6163386 | KSEM2619FEGM KCPM45 | H54 | | | U51 | 6172531 | B967A04300 KCT315 | G132 | 6173057 | T838MF120X175R6H-D6 KSP39 | M43 |
| 6163387 | KSEM3050FEGM KCPM45 | H54 | 6168102 | SDET120432SNGB KCSM40 | T105, | 6172532 | B967A04500 KCT315 | G132 | 6173058 | T838MF120X175R6H-D6 KSU31 | M43 |
| 6163388 | KSEM3150FEGM KCPM45 | H54 | | | T112, | 6172533 | B967A04800 KCT315 | G132 | 6173059 | T838MF140X100R6H-D4 KSP39 | M43 |
| 6163389 | KSEM3250FEGM KCPM45 | H54 | | | U51 | 6172534 | B967A05100 KCT315 | G132 | 6173060 | T838MF140X100R6H-D4 KSU31 | M43 |
| 6163390 | KSEM3350FEGM KCPM45 | H54 | 6168103 | SDET120432ENGK KCSM40 | T105, | 6172535 | B967A05200 KCT315 | G132 | 6173061 | T838MF140X125R6H-D4 KSP39 | M43 |
| 6163411 | KSEM3550FEGM KCPM45 | H54 | | | T112, | 6172536 | B967A05500 KCT315 | G132 | 6173062 | T838MF140X125R6H-D4 KSU31 | M43 |
| 6163412 | KSEM3650FEGM KCPM45 | H55 | | | U51 | 6172537 | B967A05800 KCT315 | G132 | 6173063 | T838MF140X150R6H-D4 KSP39 | M43 |
| 6163413 | KSEM3750FEGM KCPM45 | H55 | 6168104 | SDET120416SNGB KCSM40 | T105, | 6172538 | B967A06100 KCT315 | G132 | 6173064 | T838MF140X150R6H-D4 KSU31 | M43 |
| 6163414 | KSEM3850FEGM KCPM45 | H55 | | | T112, | 6172539 | B967A06600 KCT315 | G133 | 6173065 | T838MF140X200R6H-D6 KSP39 | M43 |
| 6163415 | KSEM3950FEGM KCPM45 | H55 | | | U51 | 6172540 | B967A06800 KCT315 | G133 | 6173066 | T838MF140X200R6H-D6 KSU31 | M43 |
| 6163504 | KSEM2360HPGM KCPM45 | H45 | 6168105 | SDET120416ENGK KCSM40 | T105, | 6172541 | B967A030X050R6H-D1 KSP39 | M45 | 6173067 | T838MF160X150R6H-D4 KSP39 | M43 |
| 6163505 | KSEM1965HPGM KCPM45 | H45 | | | | | | | | | |

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| 6173081 | T838NC10000-8R2B-D KSP39 | .M47 | 6173269 | T838NC#10-24R2B-D1 KSU31 | .M47 | 6178236 | DFT090508GD KC7140 | .J87 | 6187384 | SDPT1204PDSRGB2 KCSM40 | .T105, |
| 6173082 | T838NC10000-8R2B-D KSU31 | .M47 | 6173270 | T838NF#10-32R2B-D1 KSP39 | .M47 | 6178237 | SDHT120412EN422 KCSM40 | .T119 | | | T112, |
| 6173083 | T838NF10000-12R2B-D4 KSP39 | .M47 | 6173271 | T838NF#10-32R2B-D1 KSU31 | .M47 | 6178238 | SDHT120412EN423 KCSM40 | .T119 | | | U52 |
| 6173084 | T838NF10000-12R2B-D4 KSU31 | .M47 | 6173272 | T838NC#12-24R2B-D1 KSP39 | .M47 | 6178239 | SDMT120412EN41 KCSM40 | .T120 | 6187511 | XPPW060310SRD KCPM40 | .V7 |
| 6173085 | T838NC11250-7R2B-D6 KSP39 | .M48 | 6173273 | T838NC#12-24R2B-D1 KSU31 | .M47 | 6178240 | SDMW120412TN KCSM40 | .T120 | 6187512 | XPPW060310SRD KCPK30 | .V7 |
| 6173086 | T838NC11250-7R2B-D6 KSU31 | .M48 | 6173274 | T838NF#12-28R2B-D1 KSP39 | .M47 | 6178251 | SDHT09T308EN422 KCSM40 | .T116 | 6187513 | XPPW060310SRD KC522M | .V7 |
| 6173087 | T838NF11250-12R2B-D4 KSP39 | .M48 | 6173275 | T838NF#12-28R2B-D1 KSU31 | .M47 | 6178252 | SDHT09T308EN423 KCSM40 | .T116 | 6187514 | XPPW060310SRD KC510M | .V7 |
| 6173088 | T838NF11250-12R2B-D4 KSU31 | .M48 | 6173276 | T838NC02500-20R2B-D1 KSP39 | .M47 | 6178253 | SDMT09T308EN41 KCSM40 | .T117 | 6187535 | XDPW090412SRD KCPM40 | .V16 |
| 6173089 | T838NC12500-7R2B-D6 KSP39 | .M48 | 6173277 | T838NC02500-20R2B-D1 KSU31 | .M47 | 6178254 | SDMW09T308TN KCSM40 | .T117 | 6187536 | XDPW090412SRD KCPK30 | .V16 |
| 6173090 | T838NC12500-7R2B-D6 KSU31 | .M48 | 6173278 | T838NC02500-20R2B-D6 KSP39 | .M47 | 6179709 | EVSCFL1010K1B10 | .C42 | 6187537 | XDPW090412SRD KCK15 | .V16 |
| 6173091 | T838NF12500-12R2B-D4 KSP39 | .M48 | 6173279 | T838NC02500-20R2B-D6 KSU31 | .M47 | 6179710 | EVSCFL1010K1F10 | .C42 | 6187538 | XDPW090412SRD KC522M | .V16 |
| 6173092 | T838NF12500-12R2B-D4 KSU31 | .M48 | 6173280 | T838NF02500-28R2B-D1 KSP39 | .M47 | 6179755 | EVSTR1212K0316C | .C39 | 6187539 | XDPW090412SRD KC510M | .V16 |
| 6173093 | T838NC13750-6R2B-D6 KSP39 | .M48 | 6173281 | T838NF02500-28R2B-D1 KSU31 | .M47 | 6179756 | EVCTL1212K0316C | .C40 | 6187714 | XEPW160520SRD KCPM40 | .V31 |
| 6173094 | T838NC13750-6R2B-D6 KSU31 | .M48 | 6173282 | T838NF02500-28R2B-D4 KSP39 | .M47 | 6179757 | EVSTR1212K1B16 | .C39 | 6187715 | XEPW160520SRD KCPK30 | .V31 |
| 6173095 | T838NF13750-12R2B-D4 KSP39 | .M48 | 6173283 | T838NF02500-28R2B-D4 KSU31 | .M47 | 6179758 | EVSTR1212K1F16 | .C39 | 6187716 | XEPW160520SRD KCK15 | .V31 |
| 6173096 | T838NF13750-12R2B-D4 KSU31 | .M48 | 6173284 | T838NC03125-18R2B-D1 KSP39 | .M47 | 6179759 | EVSTR1212K0216 | .C39 | 6187717 | XEPW160520SRD KC522M | .V31 |
| 6173097 | T838NC15000-6R2B-D6 KSP39 | .M48 | 6173285 | T838NC03125-18R2B-D1 KSU31 | .M47 | 6179760 | EVCTL1212K1B16 | .C40 | 6187806 | XDPT120508ERD41 KCSM40 | .V23 |
| 6173098 | T838NC15000-6R2B-D6 KSU31 | .M48 | 6173286 | T838NC03125-18R2B-D6 KSP39 | .M47 | 6179761 | EVCTL1212K1F16 | .C40 | 6187808 | XDPT120512ERD41 KCSM40 | .V24 |
| 6173099 | T838NF15000-12R2B-D4 KSP39 | .M48 | 6173287 | T838NC03125-18R2B-D6 KSU31 | .M47 | 6179762 | EVCTL1212K0216 | .C40 | 6191237 | KSDR100031EWOS KD1400 | .S127 |
| 6173100 | T838NF15000-12R2B-D4 KSU31 | .M48 | 6173288 | T838NF03125-24R2B-D4 KSP39 | .M47 | 6179763 | EVCFR1010K1B10 | .C41 | 6191238 | KSDR100031EWOS KD1425 | .S127 |
| 6173101 | T838NC17500-5R2B-D6 KSP39 | .M48 | 6173289 | T838NF03125-24R2B-D4 KSU31 | .M47 | 6179764 | EVCFR1010K1F10 | .C41 | 6191356 | RCGT2006MOELF KCSM40 | .V83 |
| 6173102 | T838NC17500-5R2B-D6 KSU31 | .M48 | 6173290 | T838NC03750-16R2B-D1 KSP39 | .M47 | 6179765 | EVCFR1010K0210 | .C41 | 6191357 | RCGT2006MOELF KCSM40 | .V83 |
| 6173103 | T838NC20000-4,5R2B-D6 KSP39 | .M48 | 6173301 | T838NC03750-16R2B-D1 KSU31 | .M47 | 6179766 | EVCFR1212K1B10 | .C41 | 6191557 | XEPT160516ERD41 KCPM40 | .V31 |
| 6173104 | T838NC20000-4,5R2B-D6 KSU31 | .M48 | 6173302 | T838NC03750-16R2B-D6 KSP39 | .M47 | 6179767 | EVCFR1212K1B13 | .C41 | 6191558 | XEPT160516ERD41 KCPK30 | .V31 |
| 6173111 | T838MF160X200R6H-D6 KSU31 | .M43 | 6173303 | T838NC03750-16R2B-D6 KSU31 | .M47 | 6179768 | EVCFR1212K1F10 | .C41 | 6191559 | XEPT160516ERD41 KCK22M | .V31 |
| 6173112 | T838MF180X150R6H-D4 KSP39 | .M43 | 6173304 | T838NF03750-24R2B-D4 KSP39 | .M47 | 6179769 | EVCFR1212K1F13 | .C41 | 6191642 | XDPT090412SRGP KCPM40 | .V16 |
| 6173113 | T838MF180X150R6H-D4 KSU31 | .M43 | 6173305 | T838NF03750-24R2B-D4 KSU31 | .M47 | 6179770 | EVCFR1212K0210 | .C41 | 6191643 | XDPT090412SRGP KCPK30 | .V16 |
| 6173114 | T838MF180X150R6H-D4 KSP39 | .M43 | 6173306 | T838NC04375-14R2B-D6 KSP39 | .M47 | 6179771 | EVCFR1212K0216 | .C41 | 6191644 | XDPT090412SRGP KCK22M | .V16 |
| 6173115 | T838MF180X200R6H-D4 KSU31 | .M43 | 6173307 | T838NC04375-14R2B-D6 KSU31 | .M47 | 6179772 | EVCFR1212K0310C | .C41 | 6191645 | XDPT090412SRGP KCS22M | .V16 |
| 6173116 | T838MF180X200R6H-D6 KSP39 | .M43 | 6173308 | T838NF04375-20R2B-D4 KSP39 | .M47 | 6179773 | EVCFR1212K0316C | .C41 | 6197561 | DTQ50140 | .S32-33 |
| 6173117 | T838MF180X250R6H-D6 KSP39 | .M44 | 6173309 | T838NF04375-20R2B-D4 KSU31 | .M47 | 6179774 | EVCFR1616K1B16 | .C41 | 6200729 | LNGU110416SRGEM KCK15 | .T9 |
| 6173118 | T838MF200X150R6H-D4 KSP39 | .M43 | 6173310 | T838NC05000-13R2B-D6 KSP39 | .M47 | 6179775 | EVCFR1616K1F16 | .C41 | 6200730 | LNGU110416SRGEM KCPK30 | .T9 |
| 6173119 | T838MF200X150R6H-D4 KSU31 | .M43 | 6173311 | T838NC05000-13R2B-D6 KSU31 | .M47 | 6179776 | EVCFR1616K0216 | .C41 | 6201021 | LNGU110416SRGEM KCS20M | .T9 |
| 6173120 | T838MF200X200R6H-D4 KSP39 | .M43 | 6173312 | T838NF05000-20R2B-D4 KSP39 | .M47 | 6179777 | EVCFR1616K0316C | .C41 | 6201022 | LNGU110416SRGEM KCPM40 | .T9 |
| 6173131 | T838MF200X200R6H-D4 KSU31 | .M43 | 6173313 | T838NF05000-20R2B-D4 KSP39 | .M47 | 6179778 | EVCFR2020K1B16 | .C41 | 6201279 | LNGU110404SRGEM KCS22M | .T9 |
| 6173132 | T838MF200X250R6H-D6 KSP39 | .M44 | 6173376 | LNPV221012PNRSHD2 KCSM40 | .S121, | 6179779 | EVCFR2020K1F16 | .C41 | 6201280 | LNGU110404SRGE KCPM40 | .T9 |
| 6173133 | T838MF200X250R6H-D6 KSU31 | .M44 | 6173377 | FSDE1200A9BCN KC643M | .P92 | 6179780 | EVCFR2020K0216 | .C41 | 6201291 | LNGU110404SRGE KCSM40 | .T9 |
| 6173134 | T838MF220X150R6H-D4 KSP39 | .M44 | 6173378 | FSDE1600ABBNC KC643M | .P92 | 6179781 | EVCFR2020K0316C | .C41 | 6201292 | LNGU110404ERLE JK422M | .T8 |
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| 6173138 | T838MF220X250R6H-D6 KSP39 | .M44 | 6173382 | EDPT10316PDERHD KCSM40 | .T36 | 6179924 | EVCFL1212K1F10 | .C42 | 6201354 | LNGU110408ERGE KCSM40 | .T8 |
| 6173139 | T838MF220X250R6H-D6 KSU31 | .M44 | 6173383 | EDPT10320PDERHD KCSM40 | .T36 | 6179925 | EVCFL1212K1F13 | .C42 | 6202331 | 250C246RF60HN09C | .S94 |
| 6173140 | T838MF240X150R6H-D4 KSP39 | .M44 | 6173384 | EDPT10324PDERHD KCSM40 | .T36 | 6179926 | EVCFL1212K0216 | .C42 | 6202333 | 315Z328RF60HN09WSC | .S94 |
| 6173141 | T838MF240X150R6H-D4 KSU31 | .M44 | 6176091 | EDPT10331PDERHD KCSM40 | .T36 | 6179927 | EVCFL1212K0216 | .C42 | 6202340 | ONPX080608NSNP KCK20 | .S36 |
| 6173142 | T838MF240X200R6H-D4 KSP39 | .M44 | 6176092 | EDPT10308PDSRGE KCSM40 | .T36 | 6179928 | EVCFL1212K0310C | .C42 | 6202371 | ONPX080620SNHB KCK20 | .S36 |
| 6173143 | T838MF240X200R6H-D4 KSU31 | .M44 | 6176093 | EDPT10312PDSRGE KCSM40 | .T36 | 6179929 | EVCFL1212K0316C | .C42 | 6205876 | BTOQSW3L90 | .S32-33 |
| 6173144 | T838MF240X300R6H-D6 KSP39 | .M44 | 6176094 | EDPT10316PDSRGE KCSM40 | .T36 | 6179930 | EVCFL1616K1B16 | .C42 | 6207836 | KBDM250SD30 | .S126 |
| 6173145 | T838MF240X300R6H-D6 KSU31 | .M44 | 6176095 | EDPT10331PDSRGE KCSM40 | .T36 | 6179931 | EVCFL1616K1F16 | .C42 | 6210796 | HDHN070408SR KBK50 | .S112 |
| 6173146 | T838MF270X150R6H-D4 KSP39 | .M44 | 6176096 | EDCT10308PDERLD KCSM40 | .T35 | 6179932 | EVCFL1616K0216 | .C42 | 6210797 | SDHN1204ZSZN4W KBK51M | .S112 |
| 6173147 | T838MF270X150R6H-D4 KSU31 | .M44 | 6176097 | EDCT10312PDERLD KCSM40 | .T35 | 6179933 | EVCFL1616K0316C | .C42 | 6201036 | KCFMCA45SD12C | .S111 |
| 6173148 | T838MF270X300R6H-D6 KSP39 | .M44 | 6176098 | EDCT10316PDERLD KCSM40 | .T35 | 6179934 | EVCFL2020K1B16 | .C42 | 6210837 | KCFMCA45HD07 | .S111 |
| 6173149 | T838MF270X300R6H-D4 KSU31 | .M44 | 6176099 | EDCT10324PDERLD KCSM40 | .T35 | 6179935 | EVCFL2020K1F16 | .C42 | 6210838 | HDHN070408SR KB514M | .S112 |
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| 6173152 | T838MF300X200R6H-D4 KSP39 | .M44 | 6177924 | OFKT06L5AFENLB KCSM40 | .S50 | 6180436 | DNMG110412CT KCP10B | .B76 | 6213970 | M4-11KTD16Z2A16SGEKPM40 | .T11 |
| 6173153 | T838MF300X200R6H-D4 KSU31 | .M44 | 6177925 | OFKT06L5AFENG B KCSM40 | .S50 | 6181214 | KNU150405R20 KCP25B | .E32 | 6214071 | M4-11KTD2022A20SGEKPM40 | .T11 |
| 6173154 | T838MF300X350R6H-D6 KSP39 | .M44 | 6177926 | OFKT06L5AFNSH B KCSM40 | .S50 | 6181215 | SMNX1906040S-W7 KCP25B | .E53 | 6214073 | M4-11KTD253B25SGEKPM40 | .T11 |
| 6173155 | T838MF300X350R6H-D6 KSU31 | .M44 | 6177927 | OFPT06L5AFNSH B KCSM40 | .S51 | 6181216 | KCLX110305R15 KCP25B | .E32 | 6214074 | M4-11KTD253Z4A25SGEKPM40 | .T11 |
| 6173156 | T838MF330X350R6H-D6 KSP39 | .M44 | 6177928 | OFKT07L6AFENLB KCSM40 | .S54 | 6181217 | KNU150405R5-07 KCP25B | .E31 | 6214075 | M4-11KTD3224B32SGEKPM40 | .T11 |
| 6173157 | T838MF330X350R6H-D6 KSU31 | .M44 | 6177929 | OFKT07L6AFENG B KCSM40 | .S55 | 6181311 | CNNM190740RRP KCP10B | .E53 | 6214076 | M4-11KTD322Z3A25SGEKPM40 | .T11 |
| 6173158 | T838MF360X400R6H-D6 KSP39 | .M44 | 6177930 | OFPT07L6AFNSH B KCSM40 | .S55 | 6181316 | RCMX2507M07 KCP25B | .E53 | 6214077 | M4-11KTD4024S16SGEKPM40 | .T11 |
| 6173159 | T838MF360X400R6H-D6 KSU31 | .M44 | 6178013 | HNGJ0905ANENLD KCSM40 | .S18, | 6183779 | RIQB6C4500S KBH10 | .K56 | 6214078 | M4-11KTD4026S16SG | |

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| 6224412 | KCFM200R16HD07W4 | S110 | 6295942 | DNGA150408S01015FWMT KBH10 | | 6296034 | TPGW110308S01225MT KBH10 | | 6349032 | B275Z03000HPS KN25 | G81 |
| 6224413 | KCFM250R24HD07W6 | S110 | | | B313 | 6296035 | TPGW110404S01225MT KBH10 | | 6349033 | B275Z03175HPS KN25 | G81 |
| 6226803 | LNUX191940RRSM KCP25B | E52 | 6295943 | DNGA150412S01015MT KBH10... B314 | | 6296036 | TPGW110408S01225MT KBH10 | | 6349034 | B275Z03500HPS KN25 | G81 |
| 6228171 | NG2031L KCK20B | C155 | 6295944 | DNGA150408S01225MT KBH10... B314 | | 6296037 | VBGW110304S01015MT KBH10 | | 6349035 | B275Z03571HPS KN25 | G81 |
| 6228172 | NG2031R KCK20B | C154 | 6295946 | DNGA150408S01225FWMT KBH10 | | 6296038 | VBGW110308S01015MT KBH10 | | 6349036 | B275Z03970HPS KN25 | G81 |
| 6228173 | NG2041L KCK20B | C155 | | | B313 | 6296039 | VBGW110404S01015MT KBH10 | | 6349037 | B275Z04000HPS KN25 | G81 |
| 6228174 | NG2041R KCK20B | C154 | 6295947 | DNGA150412S01225MT KBH10... B314 | | 6296040 | VBGW110408S01015MT KBH10 | | 6349038 | B275Z04200HPS KN25 | G81 |
| 6228175 | NG2047R KCK20B | C154 | 6295948 | DNGA150412S01225FWMT KBH10 | | 6296041 | VBGW110408S01015MT KBH10 | | 6349039 | B275Z04500HPS KN25 | G81 |
| 6228176 | NG2062L KCK20B | C155 | | | B313 | 6296042 | VBGW110408S01015MT KBH10 | | 6349040 | B275Z04763HPS KN25 | G81 |
| 6228177 | NG2062R KCK20B | C154 | 6295949 | DNGA150408S01735MT KBH10... B314 | | 6296043 | VBGW110408S01015MT KBH10 | | 6349041 | B275Z05000HPS KN25 | G81 |
| 6228178 | NG2094L KCK20B | C155 | 6295950 | DNGA150412S01735MT KBH10... B314 | | 6296044 | VBGW110408S01015MT KBH10 | | 6349042 | B275Z05500HPS KN25 | G81 |
| 6228179 | NG2094R KCK20B | C154 | 6295951 | DNGA150604S01015MT KBH10... B314 | | 6296045 | VBGW110408S01015MT KBH10 | | 6349043 | B275Z05558HPS KN25 | G81 |
| 6228180 | NG2125L KCK20B | C155 | 6295952 | DNGA150608S01015MT KBH10... B314 | | 6296046 | VBGW110408S01015MT KBH10 | | 6349044 | B275Z06000HPS KN25 | G81 |
| 6228181 | NG3047L KCK20B | C155 | 6295953 | DNGA150612S01015MT KBH10... B314 | | 6296047 | VBGW110408S01015MT KBH10 | | 6349045 | B275Z06350HPS KN25 | G81 |
| 6228182 | NG3047R KCK20B | C154 | 6295954 | DNGA150608S01225MT KBH10... B314 | | 6296048 | VBGW110408S01015MT KBH10 | | 6349046 | B275Z06500HPS KN25 | G81 |
| 6228183 | NG3062L KCK20B | C155 | 6295955 | DNGA150612S01225MT KBH10... B314 | | 6300607 | KNUX160405L1 KCM15B | E31 | 6349047 | B275Z06800HPS KN25 | G81 |
| 6228184 | NG3062R KCK20B | C154 | 6295956 | SNGA120408S01015MT KBH10... B318 | | 6300608 | KNUX160405L1 KCM25B | E31 | 6349048 | B275Z07000HPS KN25 | G81 |
| 6228185 | NG3072R KCK20B | C154 | 6295957 | SNGA120408S01225MT KBH10... B318 | | 6300609 | KNUX160405L2 KU10 | E31 | 6349049 | B275Z07145HPS KN25 | G81 |
| 6228186 | NG3078R KCK20B | C154 | 6295958 | SNGA120412S01225MT KBH10... B318 | | 6300610 | KNUX160405R1 KCU25 | E31 | 6349050 | B275Z07500HPS KN25 | G81 |
| 6228187 | NG3088R KCK20B | C154 | 6295959 | TNGA160404S01015MT KBH10... B320 | | 6300611 | KNUX160405R1 KCM15B | E31 | 6349051 | B275Z07938HPS KN25 | G81 |
| 6228188 | NG3094L KCK20B | C155 | 6295960 | TNGA160408S01015MT KBH10... B320 | | 6300612 | KNUX160405R1 KCM25B | E31 | 6349052 | B275Z08000HPS KN25 | G81 |
| 6228189 | NG3094R KCK20B | C154 | 6295971 | TNGA160412S01015MT KBH10... B320 | | 6300613 | KNUX160405R2 KCM25B | E31 | 6349053 | B275Z08500HPS KN25 | G81 |
| 6228190 | NG3097R KCK20B | C154 | 6295972 | TNGA160408S01225MT KBH10... B320 | | 6300614 | KNUX160410R1 KCM25 | E31 | 6349054 | B275Z08733HPS KN25 | G81 |
| 6228191 | NG3105R KCK20B | C154 | 6295973 | TNGA160412S01225MT KBH10... B320 | | 6300615 | KNUX160410R2 KCM25B | E31 | 6349055 | B275Z09000HPS KN25 | G81 |
| 6228192 | NG3125L KCK20B | C155 | 6295974 | TNGA160408S01735MT KBH10... B320 | | 6320146 | RCMH2507MOTP6 KCP10B | E60 | 6349056 | B275Z09525HPS KN25 | G81 |
| 6228193 | NG3125R KCK20B | C154 | 6295975 | TNGA160412S01735MT KBH10... B320 | | 6320147 | RCMH2507MOTPUP KCP25B | E60 | 6349057 | B275Z10000HPS KN25 | G81 |
| 6228194 | NG3156R KCK20B | C154 | 6295976 | VNGA160404S01015MT KBH10... B323 | | 6320148 | RCMH2507MOTPUP KCP10B | E61 | 6349058 | B275Z10200HPS KN25 | G81 |
| 6228195 | NG3189L KCK20B | C155 | 6295977 | VNGA160408S01015MT KBH10... B323 | | 6320149 | RCMX2507MOTPUP KCP25B | E61 | 6349059 | B275Z10320HPS KN25 | G81 |
| 6228196 | NG3189R KCK20B | C154 | 6295978 | VNGA160404S01225MT KBH10... B323 | | 6320150 | RCMH3209MOTPUP KCP10B | E60 | 6349060 | B275Z11000HPS KN25 | G81 |
| 6228197 | NG4125R KCK20B | C154 | 6295979 | VNGA160408S01225MT KBH10... B323 | | 6320351 | RCMH3209MOTPUP KCP25B | E60 | 6350374 | B211A03000SGL KCMS15 | G38 |
| 6228198 | NG4189L KCK20B | C155 | 6295980 | WNGA80408S01015MT KBH10... B324 | | 6320352 | RCMH3209MOTPUP KCP10B | E61 | 6350375 | B211A03048SGL KCMS15 | G38 |
| 6228199 | NG4189R KCK20B | C154 | 6295991 | WNGA80408S01225MT KBH10... B324 | | 6320353 | RCMH3209MOTPUP KCP25B | E61 | 6350376 | B211A03100SGL KCMS15 | G38 |
| 6228200 | NG4250L KCK20B | C155 | 6295992 | CCGW060202S01015MT KBH10 | | 6320354 | RCMT1606MOPUP KCPK05 | E60 | 6350377 | B211A03175SGL KCMS15 | G38 |
| 6228201 | NG4250R KCK20B | C154 | | | B308 | 6320355 | RCMT1606MOPUP KCP10B | E60 | 6350378 | B211A03200SGL KCMS15 | G38 |
| 6231915 | ER094102U00GUN KCU10 | C24 | 6295993 | CCGW060204S01015MT KBH10 | | 6320356 | RCMT1606MOPUP KCP25B | E60 | 6350379 | B211A03300SGL KCMS15 | G38 |
| 6231916 | ER125103U00GUN KCU10 | C24 | | | B308 | 6320357 | RCMT1606MOPUP KCK15B | E60 | 6350380 | B211A03400SGL KCMS15 | G38 |
| 6231917 | ER187104U00GUN KCU25 | C24 | 6295994 | CCGW09T302S01015MT KBH10 | | 6320358 | RCMT2006MOPUP KCPK05 | E60 | 6350381 | B211A03455SGL KCMS15 | G38 |
| 6231918 | ER250106U00GUN KCU25 | C24 | | | B308 | 6320359 | RCMT2006MOPUP KCP10B | E60 | 6350382 | B211A03500SGL KCMS15 | G38 |
| 6231919 | ER312108U00GUN KCU10 | C24 | 6295995 | CCGW09T304S01015MT KBH10 | | 6320360 | RCMT2006MOPUP KCP25B | E60 | 6350383 | B211A03571SGL KCMS15 | G38 |
| 6231920 | ER094102U00GUN KCP10B | C24 | | | B308 | 6320361 | RCMT2006MOPUP KCK15B | E60 | 6350384 | B211A03600SGL KCMS15 | G38 |
| 6231921 | ER125103U00GUN KCP25 | C24 | 6295996 | CCGW09T308S01015MT KBH10 | | 6342967 | TWDL10TM | 058 | 6350385 | B211A03658SGL KCMS15 | G38 |
| 6231922 | ER187104U00GUN KCP25 | C24 | | | B308 | 6342968 | TWDL12TM | 058 | 6350386 | B211A03700SGL KCMS15 | G38 |
| 6231923 | ER250106U00GUN KCP25 | C24 | 6295997 | CCGW09T308S01015FWMT KBH10 | | 6342969 | TWDL16TM | 058 | 6350387 | B211A03734SGL KCMS15 | G38 |
| 6231924 | ER312108U00GUN KCP25 | C24 | | | B308 | 6342970 | TWDL20TM | 058 | 6350388 | B211A03800SGL KCMS15 | G38 |
| 6231925 | ER094102U00GUN KCP10B | C24 | 6295998 | CCGW09T304S01225MT KBH10 | | 6343061 | TWDL25TM | 058 | 6350389 | B211A03861SGL KCMS15 | G38 |
| 6231926 | ER125103U00GUN KCP25 | C24 | | | B308 | 6343062 | TWDL32TM | 058 | 6350390 | B211A03900SGL KCMS15 | G38 |
| 6231927 | ER187104U00GUN KCP10B | C24 | 6296000 | CCGW09T308S01225MT KBH10 | | 6348983 | BTZ3Z16000HPG KCPK15 | G78 | 6350391 | B211A04000SGL KCMS15 | G38 |
| 6231928 | ER250106U00GUN KCP10B | C24 | | | B308 | 6348984 | BTZ4Z13500HPG KCPK15 | G80 | 6350392 | B211A040395GK KCMS15 | G38 |
| 6231929 | ER312108U00GUN KCP10B | C24 | 6296002 | DCGW70202S01015MT KBH10... B312 | | 6348985 | BTZ4Z14000HPG KCPK15 | G80 | 6350393 | B211A04100SGL KCMS15 | G38 |
| 6231930 | ER094102U00GUN KCP25B | C24 | 6296004 | DCGW70204S01015MT KBH10... B312 | | 6348986 | BTZ4Z15000HPG KCPK15 | G80 | 6350394 | B211A04200SGL KCMS15 | G38 |
| 6231931 | ER125103U00GUN KCP25 | C24 | 6296007 | DCGW11T302S01015MT KBH10 | | 6348987 | BTZ5Z02500KMG KCPK20 | G81 | 6350395 | B211A04217SGL KCMS15 | G38 |
| 6231932 | ER187104U00GUN KCP25 | C24 | | | B312 | 6348988 | BTZ5Z03000KMG KCPK20 | G81 | 6350396 | B211A04300SGL KCMS15 | G38 |
| 6231933 | ER250106U00GUN KCP25 | C24 | 6296008 | DCGW11T304S01015MT KBH10 | | 6348989 | BTZ5Z03175HPG KCPK20 | G81 | 6350397 | B211A04366SGL KCMS15 | G38 |
| 6231934 | ER312108U00GUN KCP25 | C24 | | | B312 | 6348990 | BTZ5Z03500HPG KCPK20 | G81 | 6350398 | B211A04400SGL KCMS15 | G38 |
| 6231935 | ER094102U00GUN KCK20B | C24 | 6296009 | DCGW11T308S01015MT KBH10 | | 6349001 | BTZ5Z03571HPG KCPK20 | G81 | 6350399 | B211A04500SGL KCMS15 | G38 |
| 6231936 | ER125103U00GUN KCK20B | C24 | | | B312 | 6349002 | BTZ5Z03701HPG KCPK20 | G81 | 6350400 | B211A04600SGL KCMS15 | G38 |
| 6231937 | ER187104U00GUN KCK20B | C24 | 6296010 | DCGW11T308S01015FWMT KBH10 | | 6349003 | BTZ5Z04000HPG KCPK20 | G81 | 6350401 | B211A04700SGL KCMS15 | G38 |
| 6231938 | ER250106U00GUN KCK20B | C24 | | | B312 | 6349004 | BTZ5Z04200HPG KCPK20 | G81 | 6350402 | B211A04763SGL KCMS15 | G39 |
| 6231939 | ER312108U00GUN KCK20B | C24 | 6296021 | DCGW70204S01225MT KBH10... B312 | | 6349006 | BTZ5Z04763HPG KCPK20 | G81 | 6350403 | B211A04800SGL KCMS15 | G39 |
| 6274622 | TCDE1000A5C5RE K643M | P42 | 6296022 | DCGW11T304S01225MT KBH10 | | 6349007 | BTZ5Z05000HPG KCPK20 | G81 | 6350404 | B211A04852SGL KCMS15 | G39 |
| 6274623 | TCDE1200A5C5RG K643M | P42 | | | B312 | 6349008 | BTZ5Z05500HPG KCPK20 | G81 | 6350405 | B211A04900SGL KCMS15 | G39 |
| 6283516 | TCDE800A5C5RE K643M | P42 | 6296023 | DCGW11T308S01225MT KBH10 | | 6349009 | BTZ5Z0558P5HPG KCPK20 | G81 | 6350406 | B211A05000SGL KCMS15 | G39 |
| 6283517 | TCDE1600A5C5RG K643M | P42 | | | B312 | 6349010 | BTZ5Z06000HPG KCPK20 | G81 | 6350407 | B211A05100SGL KCMS15 | G39 |
| 6283518 | TCDE2000A5C5RG K643M | P42 | 6296024 | DCGW11T308S01225FWMT KBH10 | | 6349011 | BTZ5Z063500HPG KCPK20 | G81 | 6350408 | B211A05106SGL KCMS15 | G39 |
| 6283519 | TCDE2500A5C5RG K643M | P42 | | | B312 | 6349012 | BTZ5Z065000HPG KCPK20 | G81 | 6350409 | B211A05159SGL KCMS15 | G39 |
| 6295898 | CNGA120404S01015MT KBH10... B310 | | 6296025 | TCGW110202S01015MT KBH10 | | 6349013 | BTZ5Z06800HPG KCPK20 | G81 | 6350410 | B211A05200SGL KCMS15 | G39 |
| 6295899 | CNGA120404S01015FWMT KBH10... B310 | | | | B319 | 6349014 | BTZ5Z07000HPG KCPK20 | G81 | 6350411 | B211A05300SGL KCMS15 | G39 |
| 6295900 | CNGA120408S01015MT KBH10... B310 | | 6296026 | TCGW110204S01015MT KBH10 | | 6349015 | BTZ5Z07145HPG KCPK20 | G81 | 6350412 | B211A05400SGL K | |

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| 6358148 | B210A04700SGL KCMS15 | G38 | 6358230 | B210A20000SGL KCMS15 | G41 | 6370356 | KTFST16670HPCM KC7410 | H13 | 6370902 | KTFST10200HPCM KC7410 | H12 |
| 6358149 | B210A04800SGL KCMS15 | G39 | 6358241 | B210202500SGL KCMS15 | G38 | 6370357 | KTFST17000HPCM KC7410 | H13 | 6370903 | KTFST10300HPCM KC7410 | H12 |
| 6358150 | B210A04900SGL KCMS15 | G39 | 6358971 | B941Z02500 KC7315 | G126 | 6370358 | KTFST17066HPCM KC7410 | H13 | 6370904 | KTFST10320HPCM KC7410 | H12 |
| 6358151 | B210A05000SGL KCMS15 | G39 | 6358972 | B941A03000 KC7315 | G126 | 6370359 | KTFST17100HPCM KC7410 | H13 | 6370905 | KTFST10500HPCM KC7410 | H12 |
| 6358152 | B210A05100SGL KCMS15 | G39 | 6358973 | B941A03300 KC7315 | G126 | 6370360 | KTFST17200HPCM KC7410 | H13 | 6370906 | KTFST16000HPLM KCMS15 | H15 |
| 6358153 | B210A05106SGL KCMS15 | G39 | 6358974 | B941A03400 KC7315 | G126 | 6370361 | KTFST17300HPCM KC7410 | H13 | 6370907 | KTFST16104HPLM KCMS15 | H15 |
| 6358154 | B210A05159SGL KCMS15 | G39 | 6358975 | B941A03500 KC7315 | G126 | 6370362 | KTFST17463HPCM KC7410 | H13 | 6370908 | KTFST10600HPCM KC7410 | H12 |
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| 6358160 | B210A05800SGL KCMS15 | G39 | 6358981 | B941A05100 KC7315 | G126 | 6370368 | KTFST18000HPCM KC7410 | H13 | 6370914 | KTFST10800HPCM KC7410 | H12 |
| 6358161 | B210A05954SGL KCMS15 | G39 | 6358982 | B941A05200 KC7315 | G126 | 6370369 | KTFST18100HPCM KC7410 | H13 | 6370915 | KTFST11000HPCM KC7410 | H12 |
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| 6358163 | B210A06100SGL KCMS15 | G39 | 6358984 | B941A06000 KC7315 | G126 | 6370381 | KTFST18500HPCM KC7410 | H13 | 6370917 | KTFST11100HPCM KC7410 | H12 |
| 6358164 | B210A06200SGL KCMS15 | G39 | 6358985 | B941A06000 KC7315 | G126 | 6370382 | KTFST18600HPCM KC7410 | H13 | 6370918 | KTFST16670HPLM KCMS15 | H15 |
| 6358165 | B210A06300SGL KCMS15 | G39 | 6358986 | B941A06000 KC7315 | G126 | 6370383 | KTFST18700HPCM KC7410 | H13 | 6370919 | KTFST1113HPCM KC7410 | H12 |
| 6358166 | B210A06350SGL KCMS15 | G39 | 6358987 | B941A07000 KC7315 | G126 | 6370384 | KTFST19000HPCM KC7410 | H13 | 6370920 | KTFST17000HPLM KCMS15 | H15 |
| 6358167 | B210A06400SGL KCMS15 | G39 | 6358988 | B941A07100 KC7315 | G126 | 6370385 | KTFST19050HPCM KC7410 | H13 | 6370921 | KTFST11400HPCM KC7410 | H12 |
| 6358168 | B210A06500SGL KCMS15 | G39 | 6358989 | B941A08000 KC7315 | G126 | 6370386 | KTFST19279HPCM KC7410 | H13 | 6370922 | KTFST17463HPLM KCMS15 | H15 |
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| 6358174 | B210A07145SGL KCMS15 | G39 | 6358995 | B941A10400 KC7315 | G126 | 6370402 | KTFST20300HPCM KC7410 | H13 | 6370928 | KTFST11908HPCM KC7410 | H12 |
| 6358175 | B210A07400SGL KCMS15 | G39 | 6358996 | B941A10500 KC7315 | G126 | 6370403 | KTFST20500HPCM KC7410 | H13 | 6370929 | KTFST18000HPLM KCMS15 | H15 |
| 6358176 | B210A07500SGL KCMS15 | G39 | 6358997 | B941A11100 KC7315 | G126 | 6370404 | KTFST20638HPCM KC7410 | H13 | 6370930 | KTFST12000HPCM KC7410 | H12 |
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| 6358178 | B210A07938SGL KCMS15 | G39 | 6358999 | B941A14000 KC7315 | G126 | 6370406 | KTFST21433HPCM KC7410 | H13 | 6370932 | KTFST12304HPCM KC7410 | H12 |
| 6358179 | B210A08000SGL KCMS15 | G39 | 6359000 | B951A03000 KC7315 | G127 | 6370407 | KTFST21500HPCM KC7410 | H13 | 6370933 | KTFST18500HPLM KCMS15 | H15 |
| 6358180 | B210A08100SGL KCMS15 | G39 | 6359011 | B951A03175 KC7315 | G127 | 6370408 | KTFST22000HPCM KC7410 | H13 | 6370934 | KTFST12500HPCM KC7410 | H12 |
| 6358181 | B210A08200SGL KCMS15 | G39 | 6359012 | B951A03454 KC7315 | G127 | 6370409 | KTFST22225HPCM KC7410 | H13 | 6370935 | KTFST18654HPLM KCMS15 | H15 |
| 6358182 | B210A08400SGL KCMS15 | G39 | 6359013 | B951A03500 KC7315 | G127 | 6370410 | KTFST22400HPCM KC7410 | H13 | 6370936 | KTFST12700HPCM KC7410 | H12 |
| 6358183 | B210A08433SGL KCMS15 | G39 | 6359014 | B951A03800 KC7315 | G127 | 6370411 | KTFST22500HPCM KC7410 | H13 | 6370937 | KTFST19000HPLM KCMS15 | H15 |
| 6358184 | B210A08500SGL KCMS15 | G39 | 6359015 | B951A04000 KC7315 | G127 | 6370412 | KTFST23000HPCM KC7410 | H13 | 6370938 | KTFST13000HPCM KC7410 | H12 |
| 6358185 | B210A08600SGL KCMS15 | G39 | 6359016 | B951A04100 KC7315 | G127 | 6370413 | KTFST23416HPCM KC7410 | H13 | 6370939 | KTFST19050HPLM KCMS15 | H15 |
| 6358186 | B210A08700SGL KCMS15 | G40 | 6359017 | B951A04200 KC7315 | G127 | 6370414 | KTFST23500HPCM KC7410 | H13 | 6370940 | KTFST13096HPCM KC7410 | H12 |
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| 6358188 | B210A09000SGL KCMS15 | G40 | 6359019 | B951A04500 KC7315 | G127 | 6370416 | KTFST24000HPCM KC7410 | H13 | 6370942 | KTFST19228HPLM KCMS15 | H15 |
| 6358189 | B210A09093SGL KCMS15 | G40 | 6359020 | B951A04800 KC7315 | G127 | 6370417 | KTFST24500HPCM KC7410 | H13 | 6370943 | KTFST13200HPCM KC7410 | H12 |
| 6358190 | B210A09500SGL KCMS15 | G40 | 6359021 | B951A04900 KC7315 | G127 | 6370407 | KTFST24608HPCM KC7410 | H13 | 6370944 | KTFST19253HPLM KCMS15 | H15 |
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| 6358192 | B210A09800SGL KCMS15 | G40 | 6359023 | B951A05500 KC7315 | G127 | 6370420 | KTFST25070HPCM KC7410 | H13 | 6370946 | KTFST13492HPCM KC7410 | H12 |
| 6358193 | B210A09921SGL KCMS15 | G40 | 6359024 | B951A05800 KC7315 | G127 | 6370421 | KTFST25400HPCM KC7410 | H13 | 6370947 | KTFST19279HPLM KCMS15 | H15 |
| 6358194 | B210A10000SGL KCMS15 | G40 | 6359025 | B951A06000 KC7315 | G127 | 6370422 | KTFST25500HPCM KC7410 | H13 | 6370948 | KTFST15300HPCM KC7410 | H12 |
| 6358195 | B210A10200SGL KCMS15 | G40 | 6359026 | B951A06350 KC7315 | G127 | 6370423 | KTFST25679HPCM KC7410 | H13 | 6370949 | KTFST19355HPLM KCMS15 | H15 |
| 6358196 | B210A10400SGL KCMS15 | G40 | 6359027 | B951A06500 KC7315 | G127 | 6370424 | KTFST25806HPCM KC7410 | H13 | 6370950 | KTFST13600HPCM KC7410 | H12 |
| 6358197 | B210A10500SGL KCMS15 | G40 | 6359028 | B951A06800 KC7315 | G127 | 6370425 | KTFST26000HPCM KC7410 | H13 | 6370951 | KTFST19446HPLM KCMS15 | H15 |
| 6358198 | B210A10716SGL KCMS15 | G40 | 6359029 | B951A07000 KC7315 | G127 | 6370700 | KTFST06000HPCM KC7410 | H12 | 6370952 | KTFST13800HPCM KC7410 | H12 |
| 6358199 | B210A10800SGL KCMS15 | G40 | 6359030 | B951A08000 KC7315 | G127 | 6370871 | KTFST06200HPCM KC7410 | H12 | 6370953 | KTFST19460HPLM KCMS15 | H15 |
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| 6358202 | B210A11500SGL KCMS15 | G40 | 6359033 | B951A09500 KC7315 | G127 | 6370874 | KTFST06530HPCM KC7410 | H12 | 6370956 | KTFST06000HPLM KCMS15 | H14 |
| 6358203 | B210A11509SGL KCMS15 | G40 | 6359034 | B951A09800 KC7315 | G127 | 6370875 | KTFST06746HPCM KC7410 | H12 | 6370957 | KTFST19845HPLM KCMS15 | H15 |
| 6358204 | B210A12000SGL KCMS15 | G40 | 6359035 | B951A10000 KC7315 | G127 | 6370876 | KTFST06700HPCM KC7410 | H12 | 6370958 | KTFST14000HPCM KC7410 | H12 |
| 6358205 | B210A12200SGL KCMS15 | G40 | 6359036 | B951A12000 KC7315 | G127 | 6370877 | KTFST06800HPCM KC7410 | H12 | 6370959 | KTFST19850HPLM KCMS15 | H15 |
| 6358206 | B210A12304SGL KCMS15 | G40 | 6359037 | B951A10500 KC7315 | G127 | 6370878 | KTFST07000HPCM KC7410 | H12 | 6370960 | KTFST14100HPCM KC7410 | H12 |
| 6358207 | B210A12500SGL KCMS15 | G40 | 6359038 | B951A10800 KC7315 | G128 | 6370879 | KTFST07145HPCM KC7410 | H12 | 6370971 | KTFST06350HPLM KCMS15 | H14 |
| 6358208 | B210A12700SGL KCMS15 | G40 | 6359039 | B951A11000 KC7315 | G128 | 6370880 | KTFST07300HPCM KC7410 | H12 | 6370972 | KTFST20000HPLM KCMS15 | H15 |
| 6358209 | B210A12800SGL KCMS15 | G40 | 6359040 | B951A11500 KC7315 | G128 | 6370881 | KTFST07500HPCM KC7410 | H12 | 6370973 | KTFST14288HPCM KC7410 | H12 |
| 6358210 | B210A13000SGL KCMS15 | G40 | 6359041 | B951A11800 KC7315 | G128 | 6370882 | KTFST07600HPCM KC7410 | H12 | 6370974 | KTFST06500HPLM KCMS15 | H14 |
| 6358211 | B210A13495SGL KCMS15 | G40 | 6359042 | B951A12000 KC7315 | G128 | 6370883 | KTFST07800HPCM KC7410 | H12 | 6370975 | KTFST20500HPLM KCMS15 | H15 |
| 6358212 | B210A13500SGL KCMS15 | G40 | 6359043 | B951A12500 KC7315 | G128 | 6370884 | KTFST07938HPCM KC7410 | H12 | 6370976 | KTFST14500HPCM KC7410 | H12 |
| 6358213 | B210A14000SGL KCMS15 | G40 | 6359044 | B951A12700 KC7315 | G128 | 6370885 | KTFST08000HPCM KC7410 | H12 | 6370977 | KTFST06629HPLM KCMS15 | H14 |
| 6358214 | B210A14100SGL KCMS15 | G40 | 6359045 | B951A12800 KC7315 | G128 | 6370886 | KTFST08100HPCM KC7410</ | | | | |

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|---|---|---------------------------------------|--|---|---|---------------------------------------|--|---|---|---------------------------------------|--|---|---|---------------------------------------|--|---|---|---------------------------------------|--|---|---|--|--|---|---|--|--|---|---|--|--|---|---|--|--|---|--------------------------------------|--|--|---|--------------------------------------|--|--|---|--------------------------------------|--|--|---|--------------------------------------|--|--|---|--------------------------------------|--|--|---|--------------------------------------|--|---|--|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|--------------------------------------|--|---|---|--------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|---|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|---|---------------------------------------|--|---|---|---------------------------------------|--|--|
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| 6388701 | KTFSS22255HPGM KCP15A..... | H10 | 6388784 | KTFSS14100HPGM KCP15A..... | H9 | 6389394 | KTFS080R08SS10M..... | H16 | 6397613 | SNXF12042ZNSNGP KCPK30..... | S104 |
| 6388702 | KTFSS11000HPGM KCP15A..... | H8 | 6388785 | KTFSS25806HPGM KCP15A..... | H10 | 6389395 | KTFS085R08SS10M..... | H16 | 6397614 | SNXF1204ZNEFLD KCK20..... | S104 |
| 6388703 | KTFSS22400HPGM KCP15A..... | H10 | 6388786 | KTFSS14200HPGM KCP15A..... | H9 | 6389396 | KTFS090R08SS10M..... | H16 | 6397615 | SNXF12042ZSNHE KCK20..... | S104 |
| 6388704 | KTFSS11100HPGM KCP15A..... | H8 | 6388787 | KTFSS14288HPGM KCP15A..... | H9 | 6389397 | KTFS095R08SS10M..... | H16 | 6397616 | SNXF120412SNGP KCK20..... | S104 |
| 6388705 | KTFSS22500HPGM KCP15A..... | H10 | 6388788 | KTFSS25900HPGM KCP15A..... | H10 | 6389436 | KTFS080R03SCF12M..... | H17 | 6397617 | SNXF120412SNHE KCK20..... | S104 |
| 6388706 | KTFSS11113HPGM KCP15A..... | H8 | 6388789 | KTFSS14300HPGM KCP15A..... | H9 | 6389437 | KTFS085R03SCF12M..... | H17 | 6397618 | SNXF120412ENLD KCK20..... | S104 |
| 6388707 | KTFSS22600HPGM KCP15A..... | H10 | 6388790 | KTFSS26000HPGM KCP15A..... | H10 | 6389438 | KTFS090R03SCF12M..... | H17 | 6397619 | SNXF12042ZNSNGP KCK20..... | S104 |
| 6388708 | KTFSS11200HPGM KCP15A..... | H8 | 6388791 | KTFSS14400HPGM KCP15A..... | H9 | 6389439 | KTFS095R03SCF12M..... | H17 | 6401814 | A4M50L0314MC..... | C123 |
| 6388709 | KTFSS22700HPGM KCP15A..... | H10 | 6388792 | KTFSS14500HPGM KCP15A..... | H9 | 6389440 | KTFS080R03SCF12M..... | H17 | 6401815 | A4M50L0314MC..... | C123 |
| 6388710 | KTFSS11300HPGM KCP15A..... | H9 | 6388793 | KTFSS14600HPGM KCP15A..... | H9 | 6389441 | KTFS085R03SCF12M..... | H17 | 6401816 | A4M50L0414MC..... | C123 |
| 6388711 | KTFSS22800HPGM KCP15A..... | H10 | 6388794 | KTFSS14666HPGM KCP15A..... | H9 | 6389442 | KTFS090R03SCF12M..... | H17 | 6401817 | A4M50L0414MC..... | C123 |
| 6388712 | KTFSS11400HPGM KCP15A..... | H9 | 6388795 | KTFSS14684HPGM KCP15A..... | H9 | 6389443 | KTFS095R05SCF12M..... | H17 | 6401818 | A4M50L0519MC..... | C123 |
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| 6388715 | KTFSS23000HPGM KCP15A..... | H10 | 6388799 | KTFSS14900HPGM KCP15A..... | H9 | 6389446 | KTFS090R08SCF12M..... | H17 | 6401831 | A4M65R0522MC..... | C123 |
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| 6388717 | KTFSS23100HPGM KCP15A..... | H10 | 6388821 | KTFSS15033HPGM KCP15A..... | H9 | 6389448 | KTFS100R01SS12M..... | H16 | 6401833 | A4M65L0626MC..... | C123 |
| 6388718 | KTFSS11600HPGM KCP15A..... | H9 | 6388822 | KTFSS15100HPGM KCP15A..... | H9 | 6389449 | KTFS150R01SS12M..... | H16 | 6401834 | A4M65R0620MC..... | C123 |
| 6388719 | KTFSS23200HPGM KCP15A..... | H10 | 6388823 | KTFSS15200HPGM KCP15A..... | H9 | 6389450 | KTFS110R01SS12M..... | H16 | 6401835 | A4M65R0626MC..... | C123 |
| 6388720 | KTFSS11700HPGM KCP15A..... | H9 | 6388824 | KTFSS15300HPGM KCP15A..... | H9 | 6389471 | KTFSS115R01SS12M..... | H16 | 6401836 | A4M65L0820MC..... | C123 |
| 6388721 | KTFSS23300HPGM KCP15A..... | H10 | 6388825 | KTFSS15380HPGM KCP15A..... | H9 | 6389472 | KTFSS120R01SS14M..... | H16 | 6401837 | A4M65L0826MC..... | C123 |
| 6388722 | KTFSS11800HPGM KCP15A..... | H9 | 6388826 | KTFSS15400HPGM KCP15A..... | H9 | 6389473 | KTFSS125R01SS14M..... | H16 | 6401838 | A4M65R0820MC..... | C123 |
| 6388723 | KTFSS23400HPGM KCP15A..... | H10 | 6388828 | KTFSS15479HPGM KCP15A..... | H9 | 6389474 | KTFSS130R01SS14M..... | H16 | 6401839 | A4M65R0826MC..... | C123 |
| 6388724 | KTFSS11900HPGM KCP15A..... | H9 | 6388829 | KTFSS15500HPGM KCP15A..... | H9 | 6389475 | KTFSS135R01SS14M..... | H16 | 6401840 | A4M65L1020MC..... | C123 |
| 6388725 | KTFSS23416HPGM KCP15A..... | H10 | 6388830 | KTFSS15600HPGM KCP15A..... | H9 | 6389476 | KTFSS140R01SS16M..... | H16 | 6401851 | A4M65L1026MC..... | C123 |
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| 6388727 | KTFSS23500HPGM KCP15A..... | H10 | 6388832 | KTFSS15800HPGM KCP15A..... | H9 | 6389478 | KTFSS150R01SS16M..... | H16 | 6401853 | A4M65R1026MC..... | C123 |
| 6388728 | KTFSS12000HPGM KCP15A..... | H9 | 6388833 | KTFSS15875HPGM KCP15A..... | H9 | 6389479 | KTFSS160R01SS16M..... | H16 | 6401854 | EVSMR2020K0216C..... | C36 |
| 6388729 | KTFSS23600HPGM KCP15A..... | H10 | 6388834 | KTFSS15900HPGM KCP15A..... | H9 | 6389480 | KTFSS170R01SS20M..... | H16 | 6401855 | EVSMR2525M0216C..... | C36 |
| 6388730 | KTFSS12100HPGM KCP15A..... | H9 | 6389147 | KTFSS180R03SS20M..... | H16 | 6389481 | KTFSS100R12SF16M..... | H16 | 6401856 | EVSMR2525M0226C..... | C36 |
| 6388731 | KTFSS23700HPGM KCP15A..... | H10 | 6389148 | KTFSS190R03SS20M..... | H16 | 6389482 | KTFSS105R12SF16M..... | H16 | 6401857 | EVSMR2020K0222C..... | C36 |
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| A2525LSEL22..... | D81 | A25TSQLB11..... | B269 | A40TDDQNR15KC06..... | B89 | A4G0200M02P02GMP KCU25..... | C95 |
| A2525LSEL16..... | D81 | A25TSQLB11..... | B269 | A40TDDUCL15KC06..... | B90 | A4G0200M02P02GUP KCU10..... | C93 |
| A2525LSEL16..... | D81 | A25TSQLB11..... | D81 | A40TDDUCL15KC06..... | B90 | A4G0200M02P02GUP KCU25..... | C93 |
| A2525LSEL22..... | D81 | A25TSQLB22..... | D81 | A40TDUNL15KC04..... | B152 | A4G0200M2SPO2GUP KCU10..... | C98 |
| A2525A4EML0210M..... | C119 | A25TSQLB22..... | D81 | A40TDUNL16KC04..... | B152 | A4G0200M2SPO2GUP KCU25..... | C98 |
| A2525A4EML0310M..... | C119 | A32SA4EML0312M..... | C119 | A40TDUNL16KC04..... | B152 | A4G0200M2SPO2GUP KCU25..... | C98 |
| A2525A4EML0410M..... | C119 | A32SA4EML0412M..... | C119 | A40TDUNR16KC04..... | B163 | A4G0205M02U02GMN KC5010..... | C96 |
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| A2525A4EML0410M..... | C119 | A32SA4EML0616M..... | C119 | A40TEVSA0312M041050..... | C48 | A4G0205M02U02GMN KCP10..... | C96 |
| A2525A4EML0410M..... | C119 | A32SA4EML0712M..... | C119 | A40TDDPNL15KC06..... | B89 | A4G0205M02U02GMN KCP10..... | C96 |
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| A2525RDCLNL12KC04..... | B66 | A32SDDQNL15KC06..... | B89 | A40TDUNR16KC04..... | B152 | A4G0205M02U02GMN KCU25..... | C98 |
| A2525RDCLNL12KC04..... | B66 | A32SDDQNR15KC06..... | B89 | A40TMTFNR16..... | B137 | A4G0205M02U02GMN KCU25..... | C92 |
| A2525RDCLNL12KC04..... | B66 | A32SDDQNR15KC06..... | B89 | A40TMWLN08..... | B164 | A4G0205M2S0U02GMN KCU10..... | C99 |
| A2525RDDPNR11KC04..... | B89 | A32SDDUCL11KC04..... | B90 | A40TMWLN08..... | B164 | A4G0205M2S0U02GMN KCU25..... | C99 |
| A2525RDDPNR11KC04..... | B89 | A32SDDUCL15KC06..... | B90 | A40TNKLN15..... | E41 | A4G0205M2S0U02GMN KCU10..... | C99 |
| A2525DDQNR11KC04..... | B89 | A32SDDUNR11KC04..... | B90 | A40TNNTOL3..... | C169, D36 | A4G0205M2S0U02GMN KCU25..... | C99 |
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| A2525REVEMR0410M..... | C46 | A32SMCLNR12..... | B67 | A4B4HCL32K0217L..... | C122 | A4G0300M03P04EST KB1630..... | C101 |
| A2525REVSA0212M026030..... | C48 | A32SMCLNR11..... | B90 | A4B4HCL32K0317L..... | C122 | A4G0300M03P04GMP K313..... | C95 |
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| LT16ER175ISOCB KC5025 | D58 | LT16NL25SO KC5025 | D70 | LT16NRAG60CB KC5025 | D67 | M1H32J02R28A32ED10C4 | T40 |
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| LT16ER48UN KC5025 | D62 | LT16NR20ISO KC5010 | D70 | M-13-M8-C16-130 S | V35 | M4-11KTD50Z5S22EGEK725M | T11 |
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| LT16ER8ACME KC5025 | D54 | LT16NR20UN KC5025 | D71 | M-18-M10-C20-110 S | V35 | M4-11KTD50Z7S22EGEK725M | T11 |
| LT16ER8APIRD KC5025 | D55 | LT16NR20UN KC5025 | D74 | M-18-M10-C20-130 S | V35 | M4-11KTD50Z7S22SGEKCPM40 | T11 |
| LT16ER8NPT KC5025 | D59 | LT16NR20UNCB KC5025 | D75 | M-18-M10-C20-170 S | V35 | M4-11KTD63Z9S22EGEK725M | T11 |
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| LT16ER9W KC5025 | D64 | LT16NR30ISO KC5010 | D70 | M-29-M16-CA32-160 S | V35 | M4D020Z02B20LN11 | T5, T11 |
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| T631M300X350R6HX-XL KP6525 | M31 | T641M100X150R6HX-D1 KP6525 | .M64 | T820M040X070R6G-D1 KSP39 | M14 | T820NC#04-40R3B-D1 KSP39 | .M17 |
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| T631M420X450R6HX-XL KP6525 | M31 | T641NC02500-20R3BX-D1 KP6525 | .M68 | T820M050X080R6H-D1 KSP32 | M14 | T820NC#10-24R2B-D1 KSP39 | .M16 |
| T631MF080X100R6HX-D4 KM6515 | M25 | T641NC03125-18R3BX-D1 KP6525 | .M68 | T820M050X080R6H-D1 KSP39 | M14 | T820NC02500-20R2B-D1 KSP39 | .M16 |
| T631MF080X100R6HX-D4 KP6525 | M25 | T641NC03750-16R3BX-D1 KP6525 | .M68 | T820M050X080R6H-J KSU30 | M18 | T820NC03125-18R2B-D1 KSP39 | .M16 |
| T631MF100X100R6HX-D4 KM6515 | M25 | T641NC04375-14R3BX-D6 KP6525 | .M68 | T820M050X080R6H-J KSU31 | M18 | T820NC03750-16R2B-D1 KSP39 | .M16 |
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| T631NC03750-16R3BX-D1 KP6525 | M37 | T643M080X125R6HX-D1 KP6525 | .M66 | T820M100X150R6H-D6 KSP39 | M14 | T820NF05000-20R2B-D6 KSP39 | .M16 |
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| T631NF02500-28R3BX-D1 KP6525 | M37 | T643M140X200R6HX-D6 KP6525 | .M66 | T820M100X150R6H-J KSU31 | M18 | T820NF05625-18R2B-D6 KSP39 | .M16 |
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| T634MF040X070R6HX-D1 KP6525 | M63 | T651M600X150R6HX-D1 KSN38 | .M12 | T820M180X200R6H-D6 KSP39 | M15 | T830M040X070R6H-J KSU31 | .M50 |
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| T640MF060X100R6HX-D1 KP6525 | M63 | T651M600X200R6HX-D1 KSN38 | .M12 | T820M180X200R6H-D6 KSP39 | M15 | T830M040X070R6H-J KSU31 | .M50 |
| T640MF080X125R6HX-D1 KP6525 | M63 | T651M600X225R6HX-D1 KSN38 | .M12 | T820M180X200R6H-D6 KSP39 | M15 | T830M040X070R6H-J KSU31 | .M50 |
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| T640MF120X175R6HX-D6 KP6525 | M63 | T651M600X275R6HX-D1 KSN38 | .M12 | T820M180X200R6H-D6 KSP39 | M15 | T830M040X070R6H-J KSU31 | .M50 |
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| T877G06250-14R-D56 KSU31..... | M78 | TCMT110204LF KCK15..... | B244 | TCMT16T308FP KCP25..... | B244 | TDHB07T12S0 KCU25 | B249 |
| T877G07500-14R-D56 KSP39..... | M78 | TCMT110204LF KCK15B..... | B244 | TCMT16T308FP KCU10..... | B244 | TDHB07T12S0 KT315 | B249 |
| T877G07500-14R-D56 KSU31..... | M78 | TCMT110204LF KCK20..... | B244 | TCMT16T308FP KCU25..... | B244 | TDHB07T1202L KC5010 | B249 |
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United Arab Emirates

General Sales: +971 (0) 6 5529983
info@passtech.overmach.com

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 $\leq h6$ | | Shank: Cylindrical Weldon® |
| | Shank: Cylindrical Whistle Notch | | Shank: Cylindrical Whistle Notch $\leq h6$ | | 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 Hardness |  | 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: 0° |  | Tapping Helix Angle: 10° |  | Tapping Helix Angle: L8° |  | Tapping Helix Angle: 15° |  | Tapping Helix Angle: L15° |
|  | Tapping Helix Angle: 25° |  | Tapping Helix Angle: 30° |  | Tapping Helix Angle: 42° |  | Tapping Helix Angle: 45° |  | 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: Fine Finishing | | Side Milling/Shoulder Milling: Fine Finishing with AE/AP Dimensions | | Side Milling/Shoulder Milling: Radius |
| | 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 | | DIN 69893 | | Shank: HSK A/ DIN69893 |
| | 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% | - | - | - | GAISiCu4, GDAISi10Mg |
| 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 | G10150 | 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 | S 460 M | — | — | — | 1.8827 | — |
| — | BTSE 355 TM | S 355 ML | — | — | S 355 ML | E 355 | S 355 ML | — | — | — | 1.8834 | — |
| — | BTSE 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 BFM | 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/S 235 JRG2 | 4260-40 C | SS 34 | K 02502 | S 235 JR G 2 | E 24-2 NE | Fe 360 BFN | 1312 | — | — | 1.0038 | — |
| — | S 235 JRH | S 235 JRH | — | — | S 235JRH | E 24-2 | S 235 JRH | — | — | — | 1.0039 | — |
| — | R St 42-1 | — | — | K02507 | — | — | — | — | — | — | 1.0077 | — |
| — | S 235J2G3/Fe 360 D1 | S 235 J 2 G 3 | — | K01501 | S 235 J 2 G 3 | E 24-4 | S 235 J 2 G 3 | 1313 | — | — | 1.0161 | — |
| — | C 10 Pb | — | — | — | C 10 GPb | — | — | — | — | — | 1.0302 | — |
| — | Ost 32-3 | — | SWRCH6R | — | CB 4 FF KD | — | CB 4 FF | — | — | — | 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 | — |
| — | US1 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/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 335 N | E 355 | S 335 N | 2134 | — | — | 1.0545 | — |
| — | S 355 NL (TStE 355) | 50 E E | — | — | S 355 NL | E 355 | S 355 NL | 2135 | — | — | 1.0546 | — |
| — | R 7 S 6/C 7 R 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 Smn 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 | 36 Smn 14 | — | — | 36 Smn 14 | 36 Smn 14 | — | — | — | — | 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 | C20D2 | - | - | - | 1.1137 | - |
| - | C26D2 | - | - | - | C 26 D 2 | FM 26 | C26D2 | - | - | - | 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 | - |
| - | Ca 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 J 0 W | S 235 J 0 W | - | - | - | - | 1.8958 | - |
| - | S 355 J 0 W (Allwesta 510) | WR 50 B | SMA 490 BW | - | S 235 J 0 W | E24W-3 | S 235 J 0 W | - | - | - | 1.8959 | - |
| - | WTSt 37-2/S235JRW | WR 50 B | SMA 41 A | K11538 | S 235 J RW | E 24 W-2 | - | - | - | - | 1.8960 | - |
| - | WTSt 37-3 | WR 50 C | SMA 50 A | - | S 235 J 2 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 K 2 G 4 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 J 2 G 3 F) | - | - | - | S 355 J 2 G 3 F | - | FE 510 C | - | - | - | 1.0572 | - |
| - | S 355 J 2H (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 | - | - | G 11510 | 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 H 1 | 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 H 1 | 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 | - | G 10550 | 3 C 55 | XC 55 H 1 | 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 | - | - | G 15520 | - | - | - | - | - | - | 1.1226 | - |
| 1065 | FD (Federstahldraht) | 095 A 65 | - | G 10650 | 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 | - | - | G 10690 | 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 | G 10780 | C 78 D | FM 78 | C 78 D | - | - | - | 1.0620 | - |
| 1035 | Cm 35 | 080 M 36 | - | G 10350 | 3 C 35 | 38 H 1 k | C 35 R | 1572-03 | - | - | 1.1180 | - |
| 1566 | 66 Mn 4 | - | - | G 15660 | - | - | - | - | - | - | 1.1260 | - |
| 1084 | C 85 W | - | SK 5 | G 10840 | C 90 U | Y 3 90 | - | - | - | - | 1.1830 | - |

NOTE: For legend, see page Y217.

Y193

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 | G13300 | 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 | SOPH 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 M 15 | 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 | G51150 | 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 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 | — |
| 50840 | 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 | K02502 | 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/F/P | Fe E 355 KG | 2132 | — | — | 1.0562 | — |
| A 633 Gr. E | St E 420 | S 420 N | SM 50 C | K02002 | Fe E 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 MnCr 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 | BW 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 | Y 120 | C 120 KU | — | — | — | 1.1663 | — |
| W 210 | 100 V 1 | BW 2 | SKS 43 | T72302 | 100 V 2 | Y 105 V | 102 V 2 KU | — | — | — | 1.2833 | — |
| — | St 50-1 | — | — | — | — | — | — | — | — | — | 1.0052 | — |
| — | S 235 J0/Fe 360 C | En 40C | — | S 235 J0 | — | E 24-3 | Fe 360 CFN | — | — | — | 1.0114 | — |
| — | OSI 37-3 | — | SWRCH 12R | — | — | — | — | — | — | — | 1.0123 | — |
| — | S 275 J0 | En43C, S275J0 | — | S 275 J0/ Fe 430 C | S 275 J0; E 28-3 | S 275 J0; 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 | — |
| — | S 37.0 | — | STPG 38 | — | P 235 T1 | — | — | — | — | — | 1.0254 | — |
| — | C 90 | — | SWRM 8 | — | C 9 D | FM 9 | C 9 D | — | — | — | 1.0304 | — |
| — | C 7D | C 7 D | SWRM 8 | G10060 | C 7 D | FM 8 | C 7 D | — | — | — | 1.0313 | — |
| — | P 235 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 | — |
| — | P 310 NB | 224-410 | SG 325 | K02100 | P 280GH | BS 2 | P 275 N | 2103 | — | — | 1.0426 | — |
| — | L 290 MB | — | — | — | L 290MB | L 290 MB | — | — | — | — | 1.0429 | — |
| — | H II/P265NH | — | Sm 38 | — | P 285 NH | — | — | — | — | — | 1.0435 | — |
| — | P 310 NB | 224-430 | SG 325 | K02100 | P 305GH | 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 | — |
| — | SIE 240.7 | — | — | — | L 245 NB | L 245 NB | — | — | — | — | 1.0457 | — |
| — | TSIE 255 | — | — | K11535 | — | — | — | — | — | — | 1.0463 | — |
| — | 15 Mn 3 Al | — | — | — | C 14 GAI | — | — | — | — | — | 1.0468 | — |
| — | 19 Mn 6/P 355 GH | P 355 GH | SGV 46 | K03300 | P 355GH | A 52 CP | Fe E 355-2 | 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 | K03102 | — | A 52 CP; AP; FP | Fe 460-2 KW | — | — | — | 1.0482 | — |
| — | L 290 AG | — | — | — | L 290GA | TS E 290 | — | — | — | — | 1.0483 | — |
| — | L 290 NB | — | — | — | L 290NB | L 290 NB | — | — | — | — | 1.0484 | — |
| — | 21 Mn 6 | — | — | K12320 | — | — | — | — | — | — | 1.0485 | — |
| — | S t E 285 | P 275 N | SM 41 A | K01802 | P 275 N | P 275 N | Fe E 285 KG | — | — | — | 1.0486 | — |
| — | W St E 285 | P 275 N | — | K01802 | P 275 NH | P 275 N | Fe E 285 KW | — | — | — | 1.0487 | — |
| — | T St E 285 | P 275 NL 1 | SLA 235 A | K01803 | 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 | S 275NLH | — | — | S 275 NLH | — | S 275 NLH | — | — | — | 1.0497 | — |
| — | C 35 Pb/C 35 GPD | — | — | — | C 35 Pb | — | — | — | — | — | 1.0502 | — |
| — | S t 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 E 315 | — | SLA 325 A | K02404 | P 315 NL | — | — | 2106 | — | — | 1.0508 | — |
| — | C 40 Pb | — | — | — | C 40 G Pb | — | — | — | — | — | 1.0512 | — |
| — | C 38D | — | SWRH 37 | — | C 38 D | FM 38 | C 38 D | — | — | — | 1.0516 | — |
| — | C 48D | — | SWRH 48 | — | C 48 D | FM 48 | C 48 D | — | — | — | 1.0517 | — |
| — | C 56D | — | — | — | C 56 D | FM 56 | C 56 D | — | — | — | 1.0518 | — |
| — | S 355 NH | S 355 NH | — | — | S 355 NH | — | S 3 | | | | | |

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 | Fe E 355 KW | — | — | — | — | 1.0565 | — |
| — | T St E 355 | P 355 NL1 | SLA 37 | — | P 355 NL1 | P 355 NL1 | Fe E 355 KT | — | — | — | 1.0566 | — |
| — | P355 QH1 | P 355 OH | — | — | P 355 OH | P 355 OH | — | — | — | — | 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 | — | — | — | L 360NB | L 360 NB | — | — | — | — | 1.0582 | — |
| — | S 355 J 2 G 3 Cu/St 52-3 Cu3 | — | — | — | S 355 J 2 G 3 Cu + CR | — | — | — | — | — | 1.0585 | — |
| — | C50D | — | — | — | C 50 D | FM 50 | C 50 D | — | — | — | 1.0586 | — |
| — | QSt 52-3 Cu 3 | — | — | — | S 355 J 2 G 3 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 J 2 G 4 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 T/M/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 E 340 TM | HR 40/30 | — | — | S 340 MC | E 335 D | — | — | — | — | 1.0974 | — |
| — | QSt E 340 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 E 360 N | — | — | — | S 355 NC | — | Fe E 355 TD | — | — | — | 1.0977 | — |
| — | QSt E 380 TM | — | — | — | S 380 MC | E 390 D | — | — | — | — | 1.0978 | — |
| — | QSt E 380 N | — | — | — | S 380 NC | — | Fe E 380 TD | — | — | — | 1.0979 | — |
| — | QSt E 420 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 E 500 TM | — | — | — | S 500 MC | E 490 D | Fe E 490 TM | 2662 | — | — | 1.0984 | — |
| — | QSt E 500 N | — | — | — | S 500 NC | — | — | — | — | — | 1.0985 | — |
| — | QSt E 550 TM | 60/55 HS | — | — | S 550 MC | E 560 D | Fe E 560 TM | — | — | — | 1.0986 | — |
| — | QSt E 550 N | — | — | — | S 550 NC | — | — | — | — | — | 1.0987 | — |
| — | ESIE 285 | P 275 NL 2 | STK 400 | — | P 275 NL 2 | P 275 NL 2 | P 275 NL 2 | — | — | — | 1.1104 | — |
| — | ESIE 315 | — | — | — | S 315 NL 1 | — | — | — | — | — | 1.1105 | — |
| — | ESIE 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 | C 46 D 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 | C 48 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 | C 10 R | — | — | — | 1.1207 | — |
| — | C 16 R | 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 | - | - | - | C 90U | - | - | - | - | - | 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 | - | - | - | 28 CrS 4 | 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 | - |
| - | BTSE 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 | - |
| - | SIE 460 | S 460 N | - | - | S 460 N | E 460 | S 460 N | - | - | - | 1.8901 | - |
| - | TSIE 460 | S 460 L | - | - | S 460 NL | E 460 | 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/TSIE 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 SIE 460/P460NL1 | P 460 NL 1 | - | K02900 | P 460 NL 1 | E 460 T-I | Fe E 460 KT | - | - | - | 1.8915 | - |
| - | S 460 QL 1 | 55 F | - | - | S 460 QL 1 | - | - | - | - | - | 1.8916 | - |
| - | T SIE 500 | - | - | K02001 | - | E 500 T-I | - | - | - | - | 1.8917 | - |
| - | ESIE 460/P460NI2 | P 460 NL 2 | - | - | P 460 NL 2 | P 460 NL 2 | P 460 NL 2 | - | - | - | 1.8918 | - |
| - | ESIE 500/S500NL1 | - | - | - | S 500 NL 1 | - | - | - | - | - | 1.8919 | - |
| - | TSIE 690 VA/S690G1QL | - | - | - | S 690 G 1 QL | - | - | - | - | - | 1.8920 | - |
| - | TSE 690 VB/S690G2QL | - | - | K11646 | S 690 G 2 QL | - | - | - | - | - | 1.8921 | - |
| - | S 690 G 4 QL/TSIE 690 VC | - | - | - | S 690 G 4 QL | - | - | - | - | - | 1.8922 | - |
| - | S 590 QL/TSIE 590 V | - | - | - | S 590 QL | - | - | - | - | - | 1.8923 | - |
| - | S 500 Q (SIE 500 V) | - | - | - | S 500 Q | E 500 | S 500 Q | 2614 | - | - | 1.8924 | - |
| - | S 890 QL 1 (TSIE 90 V) | - | - | - | S 890 QL 1 | - | - | - | - | - | 1.8925 | - |
| - | S 690 QL (TSIE 690 V) | - | SHY 685 NS | - | S 690 QL | - | - | - | - | - | 1.8928 | - |
| - | S 690 Q/SIE 690 V | - | SHY 685 N | - | S 690 Q | E 690 | S 690 Q | - | - | - | 1.8931 | - |
| - | WSt E 420/P420N | 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 J 0 WP | E 36 W-A3 | S 355 J 0 WP | - | - | - | 1.8945 | - |
| - | S 355 J 2 WP | S 355 J 2 WP | - | - | S 355 J 2 WP | E36W-A4 | S 355 J 2 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 | WS 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 TMS 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/QStE 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/QStE 480.7 TM | — | — | — | L 485 MB | L 485 MB | — | — | — | — | 1.8977 | — |
| — | SIE 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/ZStE 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 | — |
| — | TSIE 380/S380NL | — | — | — | S 380 NL | — | Fe E 390 KT | 2117 | — | — | 1.8910 | — |
| — | 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 MnMn 5 5 | — | — | — | 18 MnMn 5-5 | — | — | — | — | — | 1.6308 | — |
| — | 20 MnMn 4 5 | — | SQV 2 B | K12539 | 20 MnMn 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 CrMo3 3.5 | — | — | — | 22 CrMo3-3.5 | 22 CrMo3-3.5 | — | — | — | — | 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 460 N | — | — | — | 1.8901 | — |
| — | TSIE 460 | S 460 L | — | — | S 460 NL | E 460 | 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 | — |
| — | TSIE 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 | — |
| — | TStE 460 | — | — | K02001 | — | E 500 T-I | — | — | — | — | 1.8917 | — |
| — | ESIE 460/P460NI2 | P 460 NL 2 | — | — | P 460 NL 2 | P 460 NL 2 | P 460 NL 2 | — | — | — | 1.8918 | — |
| — | ESIE 500/S500NL1 | — | — | — | S 500 NL 1 | — | — | — | — | — | 1.8919 | — |
| — | TSIE 690 VA/S690G1QL | — | — | — | S 690 G 1 QL | — | — | — | — | — | 1.8920 | — |
| — | TSIE 690 VB/S690G2QL | — | — | K11646 | S 690 G 2 QL | — | — | — | — | — | 1.8921 | — |
| — | S 690 G 4 QL/TSIE 690 VC | — | — | — | S 690 G 4 QL | — | — | — | — | — | 1.8922 | — |
| — | S 590 QL/TSIE 590 V | — | — | — | S 590 QL | — | — | — | — | — | 1.8923 | — |
| — | S 500 Q (SIE 500 V) | — | — | — | S 500 Q | E 500 | S 500 Q | 2614 | — | — | 1.8924 | — |
| — | S 890 QL 1 (ESIE 90 V) | — | — | — | S 890 QL 1 | — | — | — | — | — | 1.8925 | — |
| — | S 690 QL (TSIE 690 V) | SHY 685 NS | — | — | S 690 QL | — | — | — | — | — | 1.8928 | — |
| — | S 690 Q/SIE 690 V | SHY 685 N | — | — | S 690 Q | E 690 | S 690 Q | — | — | — | 1.8931 | — |

NOTE: For legend, see page Y217.

(continued)

Workpiece Materials Overview Listing

Steel



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 J 0 WP | E 36 W-A3 | S 355 J 0 WP | - | - | - | 1.8945 | - |
| - | S 355 J 2 WP | S 355 J 2 WP | - | - | S 355 J 2 WP | E36W-A4 | S 355 J 2 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 | - |
| - | WSt 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 K 2 G 1 W | S 355 K 2 G 1 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 K 2 G 2 W | 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 | - |
| - | S 415.7 TL 415 NB | - | - | - | L 415 NB | L 415 NB | - | - | - | - | 1.8972 | - |
| - | S 415.7 TML 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/S 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/S 480.7 TM | - | - | - | L 485 MB | L 485 MB | - | - | - | - | 1.8977 | - |
| - | SIE 550.7 TML 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 | - | - | - | - | 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 | K02502 | 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 | - | SWRH 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 | - |
| - | H311/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 | - |
| - | TSIE 255 | - | - | K11535 | - | - | - | - | - | - | 1.0463 | - |
| - | 15 Mn 3 Al | - | - | - | C 14 GAI | - | - | - | - | - | 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 | K01802 | P 275 N | P 275 N | Fe E 285 KG | - | - | - | 1.0486 | - |
| - | W St E 285 | P 275 N | - | K01802 | P 275 NH | P 275 N | Fe E 285 KW | - | - | - | 1.0487 | - |
| - | T St E 285 | P 275 NL 1 | SLA 235 A | K01803 | 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 | - | - | - | 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 E 315 | - | 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 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 335 N LH | - | S 335 N L H | - | - | - | 1.0549 | - |
| - | GS-52 | A2 | - | - | GE 260 | - | - | - | - | - | 1.0552 | - |
| - | 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 CFN | - | - | - | 1.0553 | - |
| - | GS-70 | 50 C | - | - | S 355 JO 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 E 355 | 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 J 2 G 3 Cu + CR | - | - | - | - | - | 1.0585 | - |
| - | C50D | - | - | - | C 50 D | FM 50 | C 50 D | - | - | - | 1.0586 | - |
| - | QSt 52-3 Cu 3 | - | - | - | S 355 J 2 G 3 Cu C | - | - | - | - | - | 1.0587 | - |
| - | D 53-2 | - | SWRH 52 B | - | C 52 D | FM 52 | C 52 D | - | - | - | 1.0588 | - |
| - | FSIE 355 OS 3/S355G03 | - | - | K12000 | S 355 G03 | - | - | - | - | - | 1.0591 | - |
| - | S 355 J 2 G 4 Cu | - | - | - | S 355 J 2 G 4 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 30 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 | — |
| — | SiSch 900 A (R 0900) | — | — | — | R 0900 | — | — | — | — | — | 1.0623 | — |
| — | SiSch 900 B (R 0900 Mn) | — | — | — | R 0900 Mn | — | — | — | — | — | 1.0624 | — |
| 1345 | SiSch 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 | — |
| — | SiSch 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 | — | — | — | 45 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 | 55 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 | — |
| — | SiSch 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 E 340 TM | HR 40/30 | — | — | S 340 MC | E 335 D | — | — | — | — | 1.0974 | — |
| — | QSt E 340 N | — | — | — | S 340 MC | — | Fe E 355 TD | — | — | — | 1.0975 | — |
| — | QSt E 360TM | — | — | — | S 355 MC | E 355 D | Fe E 355 TM | — | — | — | 1.0976 | — |
| — | QSt E 360 N | — | — | — | S 355 NC | — | Fe E 355 TD | — | — | — | 1.0977 | — |
| — | QSt E 380 TM | — | — | — | S 380 MC | E 390 D | — | — | — | — | 1.0978 | — |
| — | QSt E 380 N | — | — | — | S 380 NC | — | Fe E 380 TD | — | — | — | 1.0979 | — |
| — | QSt E 420 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 E 500 TM | — | — | — | S 500 MC | E 490 D | Fe E 490 TM | 2662 | — | — | 1.0984 | — |
| — | QSt E 500 N | — | — | — | S 500 NC | — | — | — | — | — | 1.0985 | — |
| — | QSt E 550 TM | 60/55 HS | — | — | S 550 MC | E 560 D | Fe E 560 TM | — | — | — | 1.0986 | — |
| — | QSt E 550 N | — | — | — | S 550 NC | — | — | — | — | — | 1.0987 | — |
| — | FSIE 355 OS 3/S355G04 | — | — | — | S 355 G04 | — | — | — | — | — | 1.1102 | — |
| — | ESIE 285 | P 275 NL 2 | STK 400 | — | P 275 NL 2 | P 275 NL 2 | P 275 NL 2 | — | — | — | 1.1104 | — |
| — | ESIE 315 | — | — | — | S 315 NL 1 | — | — | — | — | — | 1.1105 | — |
| — | ESIE 355 | P 355 NL 2 | STK 500 | — | P 355 NL 2 | P 355 NL 2 | P 355 NL 2 | — | — | — | 1.1106 | — |
| — | C502 | — | — | — | C 5 D 2 | FM 6 | C 5 D 2 | — | — | — | 1.1111 | — |
| — | USD 5/C 8 E 1 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 E 2 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 | C 48 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 62 D 2 | FM 62 | C 62 D 2 | — | — | — | 1.1222 | — |
| — | C62D2 | — | — | — | C 62 D 2 | FM 62 | C 62 D 2 | — | — | — | 1.1226 | — |
| — | 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 | — | — | — | C 90U | — | — | — | — | — | 1.1535 | — |
| — | C 110 W | — | — | — | C 110 U | — | — | — | — | — | 1.1554 | — |
| — | C 120 U | — | — | — | C 120U | — | — | — | — | — | 1.1555 | — |
| T 8 | C 80 W 2 | BW 1B | SKC 3 | T12008 | — | Y1 80 | C 80 KU | — | — | — | 1.1625 | — |
| — | C 105 W 2 | — | SK 3 | — | — | — | — | — | — | — | 1.1645 | — |
| — | C 135 W | — | SK 1 | — | — | Y2 140 | C 140 KU | — | — | — | 1.1673 | — |

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 | SMC 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 CrMoTiB 4 10 | - | - | - | 20 CrMoTiB 4-10 | 20 CrMoTiB 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 G 1 M | - | - | - | S 355 G 1 M | - | - | - | - | - | 1.8822 | - |
| - | BTSE 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 | - |
| - | FSIE 355 OS 4/ S42065Q | - | - | - | 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 | StE 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 | E 460 | S 460 NL | - | - | - | 1.8903 | - |
| - | S 550 Q | - | - | - | S 550 Q | E 550 | S 550 Q | - | - | - | 1.8904 | - |
| A 633 Gr. E | StE 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 | - |
| - | StE 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 | - |
| - | ESIE 420/ S420NL1 | - | STK 540 | - | - | - | - | - | - | - | 1.8913 | - |
| - | S 620 Q | - | - | - | S 620 Q | E 620 | S 620 Q | - | - | - | 1.8914 | - |
| - | T StE 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 StE 500 | - | - | K02001 | - | E 500 T-I | - | - | - | - | 1.8917 | - |
| - | ESIE 460/ P460NI2 | P 460 NL 2 | - | - | P 460 NL 2 | P 460 NL 2 | P 460 NL 2 | - | - | - | 1.8918 | - |
| - | ESIE 500/ S500NL1 | - | - | - | S 500 NL 1 | - | - | - | - | - | 1.8919 | - |
| - | TSIE 690 VB/ S690G2QL | - | - | K11646 | S 690 G 2 QL | - | - | - | - | - | 1.8921 | - |
| - | S 690 G 4 QL/ TSIE 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 (StE 90 V) | - | - | - | S 890 QL 1 | - | - | - | - | - | 1.8925 | - |
| - | S 690 QL (TSIE 690 V) | - | SHY 685 NS | - | S 690 QL | - | - | - | - | - | 1.8928 | - |
| - | TSIE 690 VD/ S690G3QL | - | - | - | S 690 G 3 QL | - | - | - | - | - | 1.8929 | - |
| - | S 690 Q/SIE 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 | - |
| - | TSIE 770 V/ S770QL | - | - | - | S 770 QL | - | - | - | - | - | 1.8938 | - |
| - | ESIE 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/ ESIE 550 VA | - | - | - | S 550 G 1 QL 1 | - | - | - | - | - | 1.8944 | - |
| - | S 355 J 0 WP | WR 50 A | - | - | S 355 J 0 WP | E 36 W-A3 | S 355 J 0 WP | - | - | - | 1.8945 | - |
| - | S 355 J 2 WP | S 355 J 2 WP | - | - | S 355 J 2 WP | E 36W-A4 | S 355 J 2 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 | - |
| - | ESIE620VA/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 | - |
| - | ESIE 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 | - | - | - | 1.8965 | - |
| - | S 355 K 2 G 1 W | SMA 490 CW | - | - | S 355 K 2 G 1 W | S 355 K 2 G 1 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 MB | - | - | - | 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 (OSIE 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 (OSIE 690 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 | — |
| — | ZSt E 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 | — |
| — | TSIE 380/ S380NL | — | — | S 380 NL | — | Fe E 390 KT | 2117 | — | — | — | 1.8910 | — |
| — | TSIE 690 VA/ S690G1QL | — | — | S 690 G 1 QL | — | — | — | — | — | — | 1.8920 | — |
| — | WSI 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 CrMoG 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 6 CrMo 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 CrMoTi 18 2 | X2CrMoTi18-2 | — | — | — | — | 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 NiCrMoCu 25 20 5 | 904 S 13 | — | N08904 | X 1 NiCrMoCu 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 42 20 | — | — | — | — | — | 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 CrNiSiCe 21 11 2 | - | - | - | X 9 CrNiSiCe 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 | X 10 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 CrMoW 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 CNKDNBn | - | - | - | - | 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 17 | Z 8 CT 17 | 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 Jethe™ 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 | Z8CND15.07 | 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 CrNiSi 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 19 | 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.

Workpiece Materials Overview Listing

Stainless Steel



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 | G X 2 CrNiMo 19-11-2 | — | — | — | 1.4409 | — |
| — | ERO 4412 AHMo | — | — | J92900 | GX 5 CrNiMo 19-11-3 | GX 5 CrNiMo 19-11-3 | — | — | — | A743CF8M | 1.4412 | — |
| — | ERO 4416 AHCRMo | — | — | — | GX 2 CrNiMoN 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 CrNb 18 9 | 347 C 17 | SCS 21 | J92710 | GX 5 CrNb 19-11 | Z 4 CNNB 19.10 M | G-X 5 CrNb 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 CrNiCuMo 17 11 3 2 | X3CrNiCuMo 17-11-3-2 | X 3 CrNiCuMo 17-11-3-2 | — | — | — | 1.4578 | — |
| — | GX 5 CrNb 18 10 | 318 C 17 | SCS 22 | — | GX 5 CrNb 19-11-2 | Z 4 CNNB 18.12 M | GX 6 CRMONB 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 CrNb 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 CrNiAI 20 20 | — | — | S33400 | — | — | — | — | — | — | 1.4847 | ATI 334™ |
| — | GX 40 NiCrSiN 38 18 | — | N08004 | — | — | — | — | — | — | — | 1.4849 | — |
| — | GX 40 NiCrSiNb 35 25 | — | — | — | — | — | — | — | — | — | 1.4852 | — |
| 105 MA | BGH 4892 | — | — | — | — | — | — | — | — | — | 1.4892 | — |
| — | X 3 CrNi 18 11 | — | — | — | — | — | X 2 CrNi 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 6 CrNi 20 10 KE | — | — | — | — | — | 1.4302 | — |
| 305 | X 4 CrNi 18 12 | 305 S 19 | SUS 305 | S30500 | X 4 CrNi 18 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 CrNi 18 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 | — | — | — | 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 3CrNiMnN 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 CrMnNiN 17-7-5 | X 12 CrMnNiN 17-7-5 | — | — | — | 1.4372 | ACX060 |
| 316 | X 5 CrNiMo 17 12 2 | 316 S 16 | SUS 316 | S31600 | X 6 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 | — |
| — | X1CrNiMoS18-11 | — | — | — | — | 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 13 3 | 316 S 16 | SUS 316 | S31600 | X 6 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 | - | - | - | 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 | - | - | - | X 1 CrNiMoCuN 25-25 | X 1 CrNiMoCuN 25-25 | X 1 CrNiMoCuN 25-25 | - | - | - | 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 CrNiMn 23 8 | - | - | - | X 33 CrNiMn 23-8 | X 33 CrNiMn 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 CrNiMoNbN 16 16 | - | - | - | X 7 CrNiMoNbN 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 | - | - | 1.4910 | ATI 301™ | |
| - | GX 40 CrNi 27 4 | - | - | J92615 | - | - | GX 35 CrNi 28 05 | - | - | - | 1.4940 | - | |
| 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 316LN | |
| - | - | - | - | S31675 | - | - | - | - | F1586 | - | - | ATI REX 734™ | |
| - | - | - | - | - | - | - | - | - | - | - | - | P558 | |
| - | X 1 NiCrMoCu 22 24 6 | - | - | - | - | - | - | - | - | - | - | Uranus B66 | |
| - | - | - | - | - | - | - | - | - | - | - | - | ATI Datalloy 2® | |
| - | - | - | - | - | - | - | - | - | - | - | - | ATI Stab alloy 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 CrNiMoCuWN 25 6 3 | - | - | - | X 2 CrNiMoCuWN 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 | Nordur® |
| 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)
 Hardness (HB): 130–260 (HRC): <28

Tensile Strength RM (MPa)*: <600

| 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 2 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 | FCMW 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-SIM3.08 | - | - | - | - | - | - | - | - | - | - | - |
| - | GGG-SIM4.10 | - | - | - | - | - | - | - | - | - | - | - |
| - | GGG-SIM5.10 | - | - | - | - | - | - | - | - | - | - | 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 | AlMg0,25 | — | 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 | AlZnMgCu 0,5 | L 86 | — | — | AZ 4 GU/9051 | 811-04 | — | — | — | — | 3.4144 | — |
| 7020 | AlZn4,5Mg1 | — | H17 | — | — | A-Z5G | — | — | — | — | 3.4335 | — |
| 7022 | AlZnMgCu 0,5 | — | — | — | — | — | — | — | — | — | 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 | — |

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-AISI 12(Cu) | LM 20 | - | - | - | - | - | 4260 | - | - | 3.2583 | - |
| A 413.2 | G-AISI 12 | LM 6 | - | - | - | - | - | 4261 | - | - | 3.2581 | - |
| - | G-AISI17Cu4Mg | - | - | - | - | - | - | - | - | - | - | - |
| - | GK-AISI18Cu11Mg | - | - | - | - | - | - | - | - | - | - | - |
| - | GK-AISI21CuNiMg | - | - | - | - | - | - | - | - | - | - | - |
| - | GK-AISI22CuNiMg | - | - | - | - | - | - | - | - | - | - | - |
| - | GK-AISI25CuNiMg | - | - | - | - | - | - | - | - | - | - | - |
| - | G-AISI 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-CuCr 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 12 | 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 | Z2NND18.8 | — | — | — | 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 | — | — | — | UNS R30155 | — | Z12CNKDW20 | — | — | Invar | ASTM F30 | — | Invar 42 |
| 5768 | — | — | — | — | — | — | — | — | — | — | — | Multimet N-155 |
| — | — | — | — | — | — | Z42CKNDW | — | — | — | — | — | Multimet N-156 |
| 5533 | X 40 CoCrNi 20 20 | — | — | — | — | — | — | — | — | — | — | 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 | - | - | N06985 | - | - | - | - | - | - | 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 | NCKV15ATD | - | - | - | - | - | 2.4636 | Nimonic 115 |
| AISI 687 | NiCo 15 Cr 15 MoAlTi | - | - | - | - | NCKD20AT | - | - | - | - | 2.4636 | Udimet® 700 |
| - | NiCr 22 Mo 8 AlCrTi | - | - | - | - | - | - | - | - | - | 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 263 |
| - | 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 6 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 |
| - | G-NiCr 50 Nb | - | - | N10276 | - | NC 17 D | - | - | - | - | 2.4819 | Nimonic C276 |
| ASME SB575 | NiMo 16 Cr 15 W | - | - | - | - | - | - | - | - | - | (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 AISI | — | — | — | — | — | — | — | — | — | 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 | Mone® 400 | |
| — | NiCu 30 Ti | — | — | — | — | — | — | — | — | — | 2.4370 | Mone 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 | — | — | — | — | — | — | — | — | Mone® R405 |

NOTE: For legend, see page Y217.

(continued)

Workpiece Materials Overview Listing

High-Temp Alloys


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 |
| — | — | — | — | — | — | NK10C8W7AtTD | — | — | — | — | — | 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 | — | — | — | — | NC18Fe18Nb6DW | — | — | — | — | — | 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 Al-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 V 4 | — | 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 V 2.5 | — | — | UNS R56320 | — | — | — | — | Ti-3Al-2.5V | ASTM Grade 9 | 3.7195 | ATI 3-2.5-MIL™ |
| R 52250 | Ti 1 Pd | TP 1 | — | UNS R52250 | — | — | — | — | — | ASTM Grade 11 | 3.7225 | — |
| R 52400 | Ti 2 Pd | — | — | UNS R52400 | — | — | — | — | — | 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) |
| — | TiAl2Sn2Zr4Cr4Mo | — | — | 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® |
| — | — | — | — | UNS R54620 | — | — | — | — | 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 5-5-3 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 V 4 | — | — | UNS R56400 | TA10 TA11 TA12 TA13 TA28 TA56 | TA6V: AIR:9183 | — | — | Ti-6Al-4V MIL | — | — | ATI 6-4-MIL™ |
| — | TiAl 6 V 4 | — | — | 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 | — | — | — |
| — | TiAl6Zr5Mo0.5Si0.25 | — | — | — | — | TAGZ 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 | — | — | — |
| Ti 98.8 | Ti 98.8 | — | — | UNS % 58210 | — | — | — | — | Ti Beta 21 S | ASTM Grade 21 | — | — |
| Ti 99.9 | Ti 99.9 | — | — | — | — | — | — | — | — | — | — | — |
| — | TiAl 6 Sn 2 Zr 4 Mo 2 | — | — | — | — | — | — | — | — | — | — | — |

NOTE: For legend, see page Y217.



kennametal.com

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 NCKD 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 IIIC15% 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-X300CrMoNi 15-2-1 | — | — | — | — | — | 0.9640 | — |
| A 532 IID20% CrMo-LC | GX 260 CrMoNi 20 2 1 | Grade 3 C | — | F45007 | GJH-X260CrMoNi 20-2-1 | — | — | — | — | — | 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 MnCrV 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 |
| K12 (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 CrMo 12 1 | BD 2 | SKD 8S | 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 | T 30403 | X 210 Cr 12 | Z 200 C 12 | X 205 Cr 12 KU | — | — | — | 1.2080 | — |
| 0 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

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.

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|---|---|---|
| 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. | |

| Originating Country | Language | Phone | E-mail |
|---------------------|----------------|-----------------|-----------------------------------|
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| Belgium | English/French | 0800 80850 | eu.techsupport@kennametal.com |
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| Denmark | English | 808 89298 | na.techsupport@kennametal.com |
| Finland | English | 0800 919412 | na.techsupport@kennametal.com |
| France | French | 080 5540 367 | eu.techsupport@kennametal.com |
| Germany | German | 0800 0006651 | eu.techsupport@kennametal.com |
| India | English | 1 800 103 5227 | in.techsupport@kennametal.com |
| Israel | English | 1809 449889 | na.techsupport@kennametal.com |
| Italy | Italian | 800 916561 | eu.techsupport@kennametal.com |
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| 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 |
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| 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 |
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Numbers shown only serve the originating country listed.

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.

Kennametal, the stylised K, A2, A4, AluMill, Beyond, Beyond Blast, Beyond Drive, Beyond Evolution, Blue Box, CTR, DFC, DFR, DFS, DFSP, DFT, Dodeka, Dodeka MAX, Drill Fix, ERICKSON, Fix-Perfect, GOdrill, GOMILL, GOTAP, Green Box, HARVI, HexaCut, HTS, HydroForce, K10, K715, KB1345, KB5630, KBK45, KC5010, KC5025, KC522M, KC625M, KC633M, KC635M, KC637M, KC639M, KC643M, KC7135, KC7210, KC7225, KC725M, KC7315, KC7320, KC7325, KC7410, KC9105, KCK10, KCM15, KCMS, KCMS35, KCN05, KCP15, KCPK10, KCPK15, KCPK20, KCPK30, KCPM15, KCPM40, KCPM45, KCSM15, KCU10, KCU25, KCU40, KCU45, KD1400, KD1405, KD1415, KD1420, KD1425, KDF400, KDMB, KDMT, KenClamp, Kendex, KenFeed, Kenlever, Kenloc, Kenna Perfect, Kenna Universal, KenTIP, KF1, KGEM, KIPR, K-Lock, KM, KM25, KM40, KM40TS, KM4X, KM4X100, KM-TS, KN25, KNS, KP6505, KP6525, KSCM, KSEM, KSEM PLUS, KSOM, KSRM, KSSM, KSSM8+, KSSR, KSSS, KTMIS, KTP10, KU25T, KVNS, KY1310, KY3500, KYK10, KYK25, KYS40, Load Optimised Insert Spacing, MaxiMet, MEGA, Mill 1-7, Mill 1-10, Mill 1-14, Mill 1-18, Mill 1-25, Mill 4, Mill 4-11, Mill 4-15, Mill 16, ModBORE, NOVO, RIQ, RHR, Rodeka, Romicron, RMS, SIF, SEFAS, Stellite, Stellram, Top Notch, Wedgelock, X-Grade, and Y-TECH are trademarks of Kennametal, Inc. and are used as such herein. The absence of a product, service name, or logo from this list does not constitute a waiver of the Kennametal trademark or other intellectual property rights concerning that name or logo.

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