# INNOVATIONS **CATALOGUE**
# 2014

www.kennametal.com

KENNAMETAL®

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 600+ pages bring you the latest in milling, holemaking, turning, and tooling systems products and superior services — all 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 www.kennametal.com.

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KENNAMETAL 75 YEARS OF ADVANCING INNOVATION 1938–2013

KENNAMETAL
Less
Environmental
Impact
To learn more about our sustainable solutions for your industry,
please contact your Kennametal Representative or
Authorised Kennametal Distributor, or visit www.kennametal.com.

# Environment

Kennametal's intimate understanding of the energy marketplace — including customer processes and applications — allows us to proactively address production and sustainability concerns with 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 at home 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, continually delivering highly innovative ways to enhance productivity. Certification to ISO 9001, QS 9000 TES, and VDA 6.4 provides 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 identify new methods to improve your overall performance.

# New Products

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

## TURNING

**See Section A for more details.**

- ISO Carbide Inserts
- Superhard Materials • PCBN/PCD Inserts
- A4™ Grooving and Turning Inserts
- Top Notch™ Profiling
- Fix-Perfect™ Inserts
- Fix-Perfect Toolholders

## HOLEMAKING

**See Section B for more details.**

- KSEM PLUS™ Modular Drill System
- Expandable Reamers
- Tube Sheet Groover
- Romicron™ AVS
- Setting Fixtures
- Beyond™ HSS-E-PM Taps

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

## SOLID END MILLING

**See Section C for more details.**

- Beyond™ Ceramic EADE Solid End Mills
- High-Performance Solid Carbide End Mills
  - HARVI I™
  - HARVI II™
  - HARVI II Long
  - HARVI III™
  - KC643M™ Key Way Cutter
  - Roughing

## INDEXABLE MILLING

**See Section D for more details.**

- KSOM™ Mini Turbine Blades
- Mill 1–7™ High-Performance Shoulder Mill
- KenFeed™ 2X Platform
- KSSM™ High-Feed Beyond Blast
- Rodeka™ Series
- KSRM™ Line Expansion

## TOOLING SYSTEMS

**See Section E for more details.**

- KM™ Quick Change
- KM4X™
- HSK63A Shank Tools

# Master Catalogues

## Cutting Tools 2013

Kennametal is proud to present the Kennametal Innovations Master Cutting Tools 2013 Catalogue, featuring all of our standard milling, holemaking, and turning products. By compiling our full metalworking portfolio together, and including new application guidelines, tool selectors, and technical information, Kennametal addresses key industry segments and the services that support that vision.

2,000+ pages of Kennametal's best tooling — all in one book! See complete Rotating and Stationary tooling in our new Master 2013 catalogue! Download the INCH or METRIC version from www.kennametal.com, or request a printed copy!

# Tooling Systems 2013

Kennametal is proud to present the latest Kennametal Tooling Systems catalogue, featuring the new KM4X™, proven to offer the best performance from the machine tool and handle the toughest materials. Other products range from ISO standard KM™ Quick Change tooling to ERICKSON™ toolholder systems: HSK, DV, BT, CAT, Shrink Fit, hydraulic chucks, collet systems as well as commodity-type holders to fully support your individual application needs.

*Look for the catalogue on our website www.kennametal.com.*

# Engineered Solutions

## Coordinated global resources with world-class manufacturing process development and implementation capabilities.

Whether it's a single tailored tool required to address a specific part feature or the development of a comprehensive manufacturing process for use on existing or newly acquired production equipment, Kennametal's team can manage the development, personnel training, and successful implementation of the complete solution.

Global implies just that. Globally coordinated manufacturing process development, implementation, and optimisation support at machine tool builders, end user engineering or corporate offices, and end user production facilities, regardless of their respective geographies. Well-organised, highly linked staff reside in the Americas, Europe, and Asia/Pacific regions. Globally standardised design and manufacturing systems enable highly coordinated project management and implementation results.

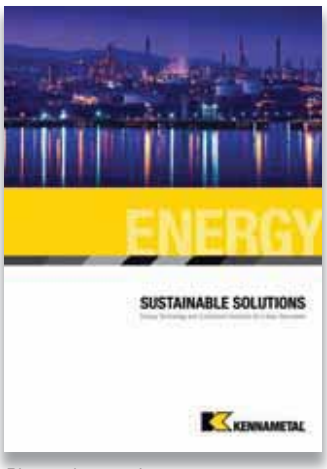
Key alliances with machine tool builders and other leading manufacturing technology enablers ensure a complete solution, optimising the entire process — not just portions of it. This results in the most effective and efficient manufacturing process possible, leading to low implementation time and cost and rapid return on investment.

For more information, please contact us at 1.866.646.7113.

# Energy

## Energy Engineered Solutions

Kennametal is more than a supplier of tooling solutions. With a thorough understanding of the energy segment's process and application challenges, we proactively address production concerns to deliver productivity to customers seeking peak performance in demanding environments. Kennametal's success is based on our capabilities — our ability to work with you on customised solutions to optimise your results and our willingness to engage with a broad spectrum of materials, metalworking solutions, application and custom component manufacturing, and supply expertise. Our drive for success, enabled through our advanced materials sciences, application knowledge, and commitment to a sustainable environment, results in a broad portfolio of innovative, custom, wear-resistant solutions.




Please also see the new Kennametal Energy catalogue (B-11-02786).

# Engineered Solutions

## Automotive

### Automotive Engineered Solutions

Traditionally, Kennametal has been a strong player in the transportation field, pioneering innovative solutions with automotive, shipbuilding, and railroad customers. We deliver global services and products that exceed our customers' expectations and continually push the boundaries of science. In today's competitive world, no one can support our customers better, and in turn, deliver the continued service and quality that has become Kennametal's trademark.

Kennametal's global reach has helped our customers standardise processes and products to improve both cost and quality. We offer an intimate understanding of the economics of the automotive value chain and unparalleled customised solutions tailored to your needs. We can deliver superior value by listening closely and innovating based on what our customers say. Our goal is to help you be more competitive, at home and on a global scale.

*If it rolls, floats, or flies,*

# Aerospace

## Aerospace Engineered Solutions

From lightweight composite materials to exotic alloys, Kennametal is committed to reducing risks and costs in the manufacture of aerospace and defense programs. We partner with customers to implement standard and customised solutions with minimum cost per part and high repeatability in mind. Kennametal has unique capabilities and resources to cover the total manufacturing equation from roughing to automated deburring and finishing. Kennametal's best-in-class technologies and services deliver up to 30% cost reduction and 60% cycle time reduction.

Aerospace component surfaces are one of the key battlegrounds in environmentally friendly manufacturing. Surface treatments not only improve appearance of the part but also enhance wear resistance, provide corrosion protection, and improve friction control. These subtle manufacturing enhancements provide big dividends in the form of fuel efficiency, reliability, performance, and longer part life.

*Kennametal has a solution that delivers innovation and productivity.*

# Service and Support

## Kennametal Extrude Hone™

### Precision Surface Management

- Fuel efficiency through fine flow tuning — Diesel Fuel System (DFS) and Gasoline Direct Injection (GDI).
- Emission reduction due to better spray shaping.
- Noise, friction, and wear reduction for automatic gearbox components.
- Air flow path enhancement to improve jet or helicopter turbine performance.
- Energy savings with centrifugal impeller pump increased efficiency.
- Surface stress relief on high-pressured thin wall component for extreme safety.

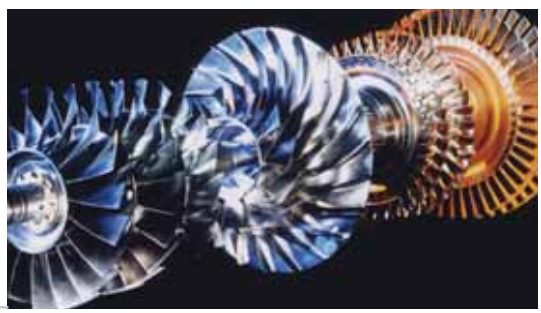
### Core Technologies Offer

- **Electrochemical Machining (ECM): Generator, fixture, and cathodes**
  Radiusing, shaping, polishing, surface stress relief.
- **Abrasive Flow Machining (AFM): Media and fixture design**
  Radiusing, polishing, surface stress relief.
- **Thermal Energy Method (TEM): Controlled combustion**
  Minimising risk of hidden burrs and contamination.

# Proven Solutions

## Easy Access to Service and Support

- Engineering and Feasibility departments.
- Capital equipment solutions.
- Contract Shop activities (ramp up and production).
- Spare parts availability program.
- Metalcutting tooling combined with Precision Surface Management.
- Benefits of worldwide Kennametal logistics.
- Lean expertise to conduct global projects with customers.
- Cost per part solutions/Clic model for equipment.
- Parameters, cathodes, fixture designs.
- Media design to part.
- Global Full Circle Program increases productivity resulting in less downtime of your equipment.



# Service and Support

## Kennametal Extrude Hone™

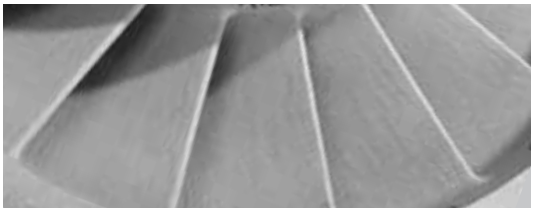
### Proven Solution: Save Energy, Save Money

- Improving closed pump impellers inner flow passage roughness to increase up to 11% peak efficiency and lower energy consumption.
- A coal-powered plant equipped with six boiler feed pumps can reduce parasitic loss, representing at least $500,000 annual savings (driving the pumps) by 1% of the power generated.
- This process and savings can also be applied to natural gas centrifugal closed pump impellers.

### Precision Surface Management Matters

Kennametal Extrude Hone Abrasive Flow Machining (AFM) surface and flow enhancement solutions provide the energy segment with significant savings in pump efficiency improvements.

- The AFM process is the method of choice for material removal at the area of greatest restriction and surface improvement of passages not accessible by other methods.
- AFM has documented efficiency proven solutions in the automotive and aerospace industries.
- Two-way flow AFM process is a natural fit for closed impellers and diffusers.
- Inner flow passages of the impellers and diffusers benefit from AFM's selective material removal as well as surface finish improvement — both contributing to improved pump efficiency.



Before

After

# Proven Solutions • Delivering Results throughout the Value Chain

## Working with You

We have a strong focus on customer solutions, which helps develop an accurate understanding of industry needs. This is achieved through collaborative work with key players throughout the value chain:

### Original Equipment Manufacturer (OEM)
Our business expertise is providing OEMs with key components, such as pumps, that deliver greater efficiency.

### Foundry
Kennametal Extrude Hone™ specialists can bring added value early in the manufacturing chain, so you can deliver more than just a key component and exceed expectations every time.

### End User
Currently in the best position to measure efficiency improvements, end users understand the direct impact of savings — anywhere along the value chain. They help us measure performance of the processed component against non-processed, providing a better understanding of efficiency improvement related to the Kennametal Extrude Hone AFM operation. The AFM Center of Excellence, in Irwin, PA, can perform feasibility testing with customer-specific parts to provide the optimal media needed for each process.

## Media Is the Edge

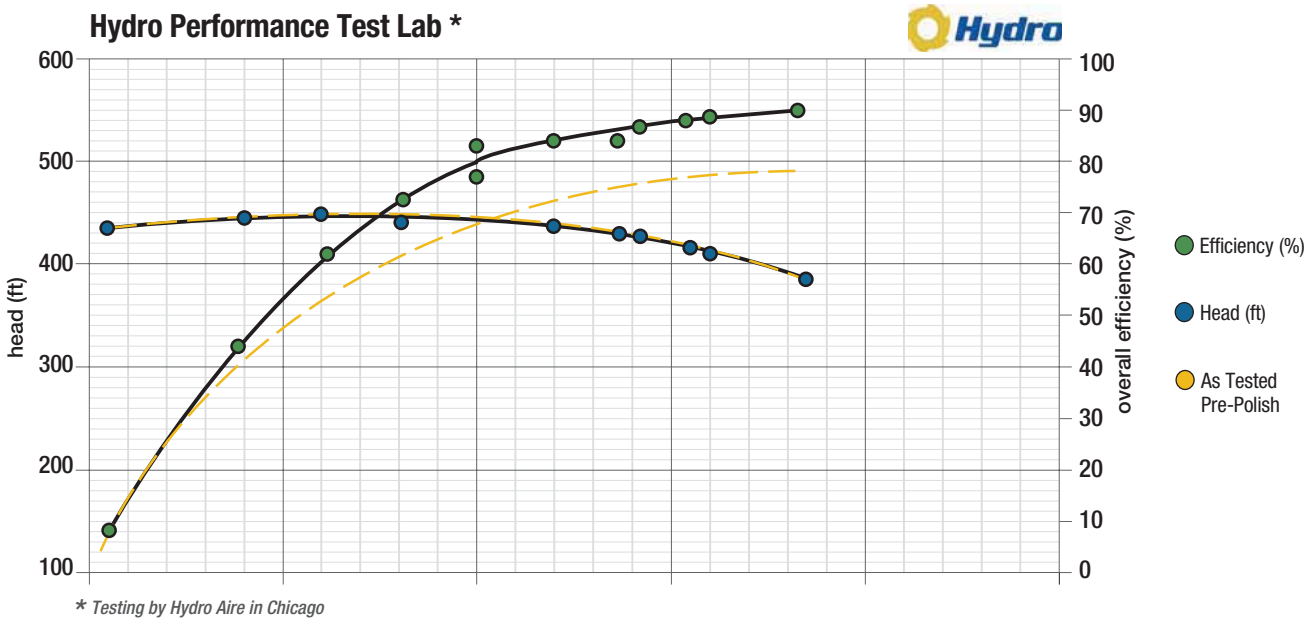
The Kennametal Extrude Hone lab provides the energy industry with specific, engineered medias that deliver the highest performance for closed impeller polishing. We also have specific media with dedicated characteristics to enhance productivity and quality when polishing a closed impeller.

# Service and Support

## Kennametal Extrude Hone™

### Abrasive Flow Machining for Pump Market Validation Testing

Formed in 1969 by a small group of pump engineers in Chicago, Hydro Aire is now the largest independent pump rebuilder with service centres throughout the world. A complete 5000 hp, 42,000 GPM pump test stand, designed in compliance with Hydraulic Institute standard and API 610, is located in Chicago. This is the ONLY independent non-OEM facility with this capability able to generate pump efficiency curves using LabView software.




* *Testing by Hydro Aire in Chicago*

# Proven Solutions • The Energy Story

## Proving the Pump Efficiency Improvement from the AFM Process

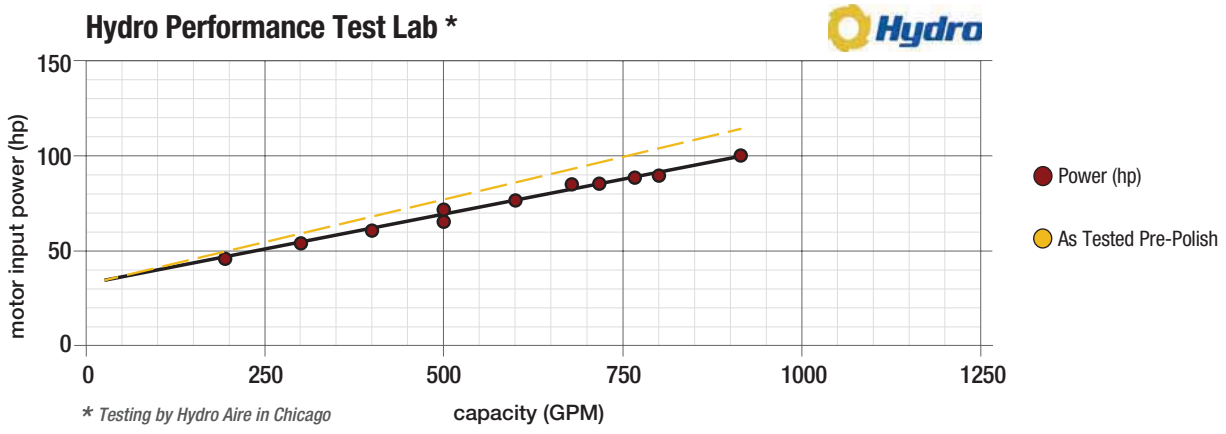
We have selected a 100 hp 1,200 GPM, single impeller overhung process pump as an example to validate the potential efficiency improvement able to be achieved with the AFM process.

1) New PACO™ pump purchased, which is about 79% efficient according to the manufacturer's data.
2) Pump tested and performance curve generated to confirm initial efficiency pre-AFM. Manufacturer data confirmed by our "before AFM" testing.
3) Pump was disassembled and impeller removed to AFM process. Pump was then reassembled.
4) Re-tested pump and generated performance curve.

Results: **Peak efficiency gain of +11%,** bringing the pump to 90% total efficiency! Gains were realised over the full usable range of the pump with **significant power savings** at given pressure and flow rate.

### Test Component

| | |
|---|---|
| **Pump Type:** | ITT Goulds 12BF |
| **Pump Size:** | 3 x 4–10 |
| **Serial No.:** | G1162372 |
| **Stages:** | 1 |
| **SG:** | 1.00 |
| **NPSHr:** | n/a |
| **Speed:** | 3600 RPM |



# Repair Services

Milling cutters

Boring bars — standard, tunable, and de-vibe

Indexable drills

Line boring bars

Feed-out heads

Motion tools

Standard indexable tooling

ModBORE™ boring heads

Romicron™ boring heads

Eccentric toolholders

Electronic tightening fixtures

Floating toolholders

Hydraulic chucks

KM™ clamping units (manual and spring packs)

## Kennametal Repair Services

**Tools are valuable. Protect them and get the most from your investment.**

You can be assured that when your advanced tooling products need to be serviced, the Kennametal Service and Repair Department has the highly trained, experienced staff to provide expert assistance. For about half the cost of a new tool purchase, you can have your existing, damaged tools serviced and repaired to like-new condition.

# Getting Started, and Getting Finished, Is Easy.

**Follow these 4 simple steps and be on your way to restored tools and great savings.**

1. Visit www.kennametal.com to find the tool you're looking to have repaired.
2. Download and complete the form. Mail the completed form and the tooling to the Kennametal Service and Repair Department.
3. Kennametal will quickly respond to your request with a cost estimate and timetable for the completion of the repair.
4. Within 60 days of receiving the estimate, notify Kennametal whether you'd like the tooling repaired, returned, or scrapped.

**Please note that the tap adaptors are not cost effective to repair.*

KM-LOC™ and KM-LOC II™ clamping units

KSEM™ bodies

Live/driven tooling

Bearing milling chucks

Right-angle heads

SEFAS™ combination tools

Tapping holders (excluding tap adaptors*)

Integral tapping tools (excluding tap adaptors*)

Presetters

Tuned tooling units

ToolBOSS™ — Tool Management System

# Service and Support

## Kennametal ToolBOSS™

### Secure, High-Capacity Solutions

ToolBOSS™ quickly and consistently delivers quantifiable savings in hundreds of metalworking companies worldwide. Much more than a vending unit, the Kennametal ToolBOSS system is a secure, electronically locked tool storage cabinet that can establish 24-hour tool control for high-value items. It issues tools, returns tools, sends to re-work, supports EDI ordering, and provides for multi-vendor security.

**Efficiency**
Multiple drawers can be selected in one transaction, minimising the time required to manage large stock volumes.

**Future-Port**
USB interface, as well as a DCS expansion port, for use with RFID and other ancillary equipment.

**High-Speed Access**
Rapid search and selection of an item is enhanced with LED identification system, guiding users to the correct drawer.

**Traceability**
Software provides a complete audit trail, tracking component usage details.

**Expandability**
Expandable up to 10 units per system, providing up to 1.121 secure locations.

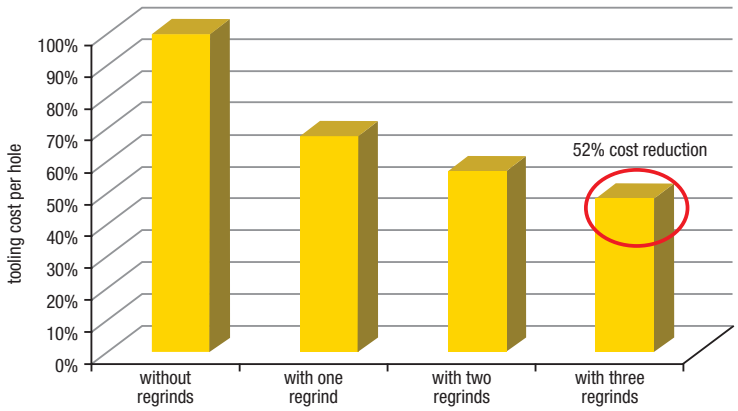
To learn more about ToolBOSS, contact your local Authorised Distributor or visit **www.kennametal.com**

# Reconditioning Services

Our Reconditioning Services help optimise the total value of your metalcutting tools throughout their entire life cycle by giving the “like-new” performance characteristics — with rapid turnaround time — so the tools you need are always on-hand and perform just like new.

## Reduce Tooling Cost by More than 50%

Example: 4" (10,5mm) HP-Drill B225A10500 KC7315  Material: Alloy steel 30 RC




Using Kennametal’s Reconditioning Services provides considerable savings throughout the life of your cutting tools and can reduce your overall tooling costs more than 50%.

**For more information or to find the nearest reconditioning location, contact your local Authorised Distributor or visit www.kennametal.com**

# Service and Support

## Carbide Recycling

### Help Preserve and Protect Our Planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Program.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly. Kennametal accepts any coated or non-coated carbide items, including inserts, drills, reamers, and taps.

By using the Kennametal Carbide Recycling Program, you will receive:

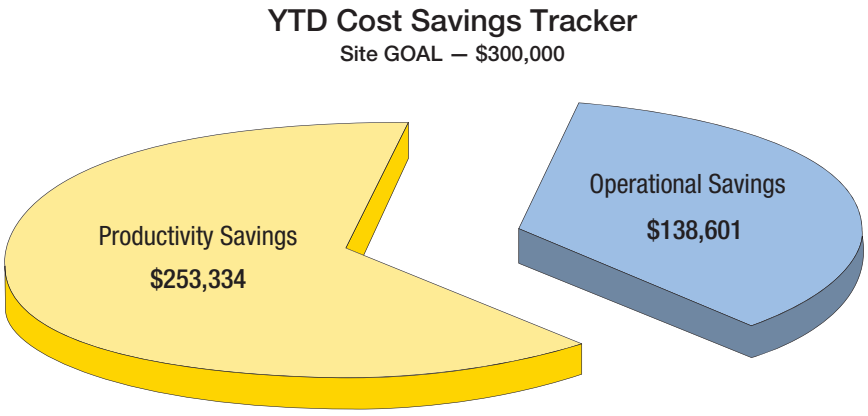
- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

*Program is not currently available in all geographical areas. For more information, please visit* ***www.kennametal.com/carbiderecycling***

# Cost per Part Services Program (CPP)

## Build a Long-Term Relationship with the Leader in Metalworking Solutions that Provides:

- Monthly cost savings documented and captured in standardised KPI reports.
- Availability of Kennametal's latest technology to increase productivity and lower cost of operations.
- Onsite technical support available on a constant basis.
- Billing based on the output of your plant that eliminates inventory risk.




## Cost per Part Services Programs Are Designed to Take Advantage of Our Wear Solutions Expertise by Outsourcing Your Metalworking Requirements that:

- Improve productivity.
- Reduce risk.
- Manage inventory.
- Lower operational costs.

For more information, contact your local Authorised Distributor or visit **www.kennametal.com**

# 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.

**Convenient Access Options:**

| Originating Country | Language | Phone | Fax | E-mail |
|---|---|---|---|---|
| Australia | English | 1800 674037 | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| Austria | German | 0800 202873 * | 0800 202874 | eu-kmt.techsupport@kennametal.com |
| Belgium | English/French | 0800 80850 * | 0800 80868 | eu-kmt.techsupport@kennametal.com |
| China | Chinese | 440-889-2238 | 21-5834-2200 | k-cn.techsupport@kennametal.com |
| Denmark | English | 80889298 * | 80889296 | na-kmt.techsupport@kennametal.com |
| Finland | English | 0800919412 * | 0800919414 | na-kmt.techsupport@kennametal.com |
| France | French | 0805540367 * | 0805540028 * | eu-kmt.techsupport@kennametal.com |
| Germany | German | 0800 0006651 * | 0800 0006649 | eu-kmt.techsupport@kennametal.com |
| India | English | +1-724-539-6830 | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| Israel | English | 1809 449889 | 1809 449918 | na-kmt.techsupport@kennametal.com |
| Italy | Italian | 800 916561 * | 800 917505 | eu-kmt.techsupport@kennametal.com |
| Japan | English | 0120 225429 | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| Korea (South) | English | 080 728 0880 | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| Malaysia | English | 1800 812 990 * | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| Netherlands | English | 0800 0201130 * | 0800 0201132 | eu-kmt.techsupport@kennametal.com |
| New Zealand | English | 0800 450941 * | 0800 450921 | ap-kmt.techsupport@kennametal.com |
| Norway | English | 80010080 * | 80010082 | na-kmt.techsupport@kennametal.com |
| Poland | Polish | 00800 4411887 * | 00800 4411888 | eu-kmt.techsupport@kennametal.com |
| Singapore | English | 1800 6221031 | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| South Africa | English | 0800 981643 * | +1-724-539-6830 | na-kmt.techsupport@kennametal.com |
| Sweden | English | 020799246 | 020795474 | na-kmt.techsupport@kennametal.com |
| Taiwan | English | 0800 666 197 * | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| Thailand | English | 1800 4417820 * | +1-724-539-6830 | ap-kmt.techsupport@kennametal.com |
| United Kingdom | English | 0800 032 8339 * | 0800 028 5803 * | na-kmt.techsupport@kennametal.com |
| USA | English | 800-835-3668 * | 724-539-6830 | na-kmt.techsupport@kennametal.com |

* *Toll-free number.*

# Kennametal QR Codes

## Looking for More Products or Product Information?

Use your smartphone or tablet to scan the QR codes throughout this catalogue.

Throughout the Kennametal Innovations Catalogue 2014, you will find codes like the one shown here that will activate links containing more information about various products and services offered.

The QR codes that you will find within this catalogue are designed to relate to the products or product families on the page where they are found. These codes will link you to expanded product information, such as application videos, informative drawings and animations, extra product charts and graphs, or simply to an expanded online catalogue of products offered by Kennametal for all your drilling, turning, and milling needs.

## Helpful Information to Get You Scanning

QR codes are activated when scanned with a dedicated QR scanning application using the onboard camera of your smartphone or tablet.

If you currently have a QR scanner on your smartphone or tablet, look for codes to learn more information about our products. Don't have a QR scanner on your device? It's simple to get one. Just go to your device's application store, and search for a "QR code scanner". Follow your application store's directions on downloading an application, and then launch your QR scanner.

- With your scanner, centre the QR code in the camera window of your application.
- When the scanner locks onto the image, you will be on your way to the embedded information in the QR code.
- Once the webpage, video, or other information linked to the QR code opens or loads, you can freely interact.

*When you need information quickly on a product or an extended product catalogue, skip the web search and long website URLs and scan the provided QR codes in this catalogue.*

*Scan the code at the top of the page to visit our website and online product catalogue.*

*QR Code is a registered trademark of Denso Wave Incorporated.*

# Service and Support

Shop. Buy. Promote.

## Branded Merchandise

### New Kennametal Branded Merchandise Available! Place Your Order Today!

Introducing a new line of Kennametal merchandise. Place an order for any of the following quality products with your Authorised Kennametal Distributor or visit www.kennametal.corpmerchandise.com.

# Global Online Ordering Made Simple.

## Place Your Online Orders in 3 Easy Steps!

1. Visit **www.kennametal.corpmerchandise.com**.
2. Click on the region to where your merchandise will be delivered.
3. Follow the region-specific instructions for ordering.

*Please note that the prices are adjusted by the region of delivery.*

Visit **www.kennametal.corpmerchandise.com** to see all available merchandise and for ordering details.

# Social Media

## Join Our Conversation

http://www.facebook.com/KennametalInc

http://twitter.com/Kennametal

http://www.linkedin.com/company/kennametal

https://plus.google.com/+kennametal/posts

**Connect with us to get the latest information on our new products and promotions, read success stories, and view product videos.**

http://www.instagram.com/kennametal

http://youtube.com/KennametalSolutions

http://chronicle.kennametal.com

Kennametal blogs can be read at http://chronicle.kennametal.com.

# Kennametal Apps

## The New Kennametal Innovations iPad® Application

Available as a **Free Download** from the iTunes® App Store℠.

### Now Available

The Kennametal Innovations iPad® app features interactive, cutting-edge animations, and real-world demonstrations of Kennametal's productivity-enhancing technologies for machining and industrial processes. With selectable data, it is quick and convenient to compare complimenting and competitive products.

### Easy to Download

Go to the iTunes® App Store, and search for "Kennametal". Then, follow the directions on downloading. It's simple, fast, and free.

### Easy to Use

The simple navigation makes it easy to search via keywords to find specific tooling solutions and product groups. The user-driven navigation map offers drop-down menus with supplemental information, including expandable, and customisable, charts and graphs.

# Grade and Geometry Converter Mobile Application

## Available as a **Free Download** from the iTunes® App Store℠.

### Now Available

Our app is an excellent tool that enables you to input competitor grade and geometry information to find the equivalent Kennametal grades and geometries for a wide range of competitive grades and geometries in your application.

### Easy to Download

Go to your device's application store and search for "Kennametal", and then follow your application store's directions on downloading. It's simple, fast, and free.

### Easy to Use

Once the application is downloaded on your mobile device, launch the application, and select the "convert" tab at the bottom of the screen. Next, choose if you want to convert by competitor grade or geometry.

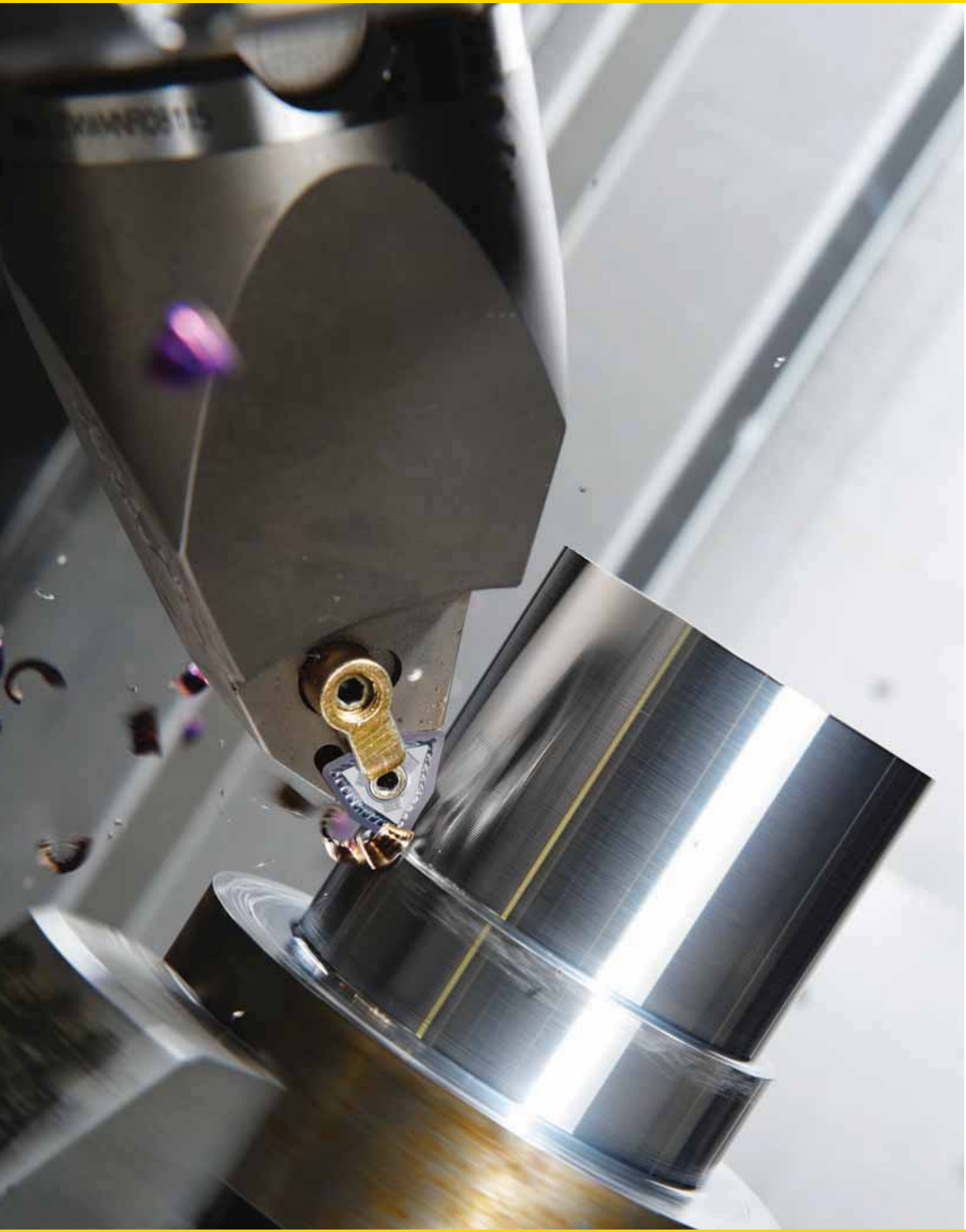
Once you decide, select a manufacturer from the list, and select the grade or geometry. The application will then display all of Kennametal's comparable grades or geometries in different material types.

If you already know your grade or geometry, you can use the search tab at the bottom of the screen to search by competitor grade or geometry and display the Kennametal equivalent.

# Kennametal Interactive Catalogue iPad® Application

## Available as a **Free Download** from the iTunes® App Store℠.

Download and browse all of Kennametal's product catalogues. Search for the products you need, view high-resolution product images, and chat with technical support. Kennametal's Catalogue app allows you to request quotes on any product in our catalogues.



# Turning

ISO Carbide Inserts . . . . . A2–A115
Superhard Materials • PCBN/PCD Inserts . . . . . A116–A182
A4 Grooving and Turning Inserts . . . . . A184–A205
Top Notch Profiling . . . . . A206–A232
Fix-Perfect Inserts . . . . . A234–A251
Fix-Perfect Toolholders . . . . . A252–A259

# Carbide Inserts

## Primary Application

Kennametal offers a complete portfolio of ISO-/ANSI-style inserts. Positive, negative, CVD, PVD, or uncoated, we have the insert to help increase productivity and achieve greater savings.

Plus, our carbide insert line contains Beyond™ technology. Beyond inserts offer you greater versatility, reliability, and up to 30% higher productivity.

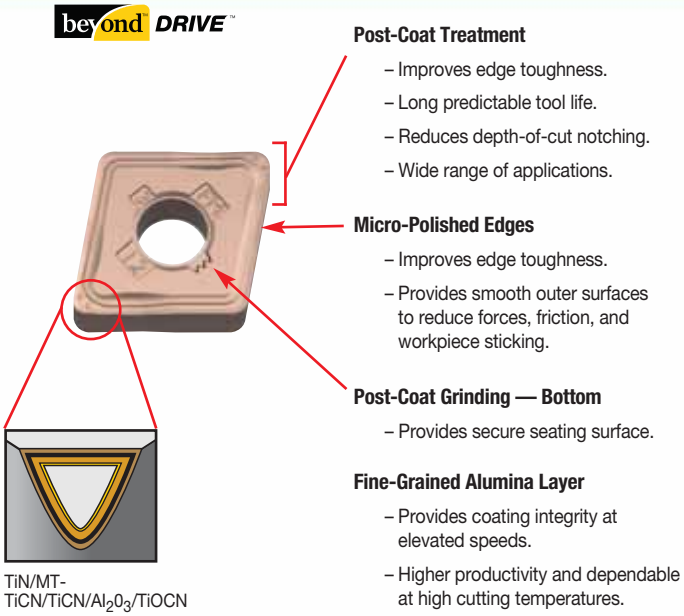
## Beyond™ Drive™ Inserts

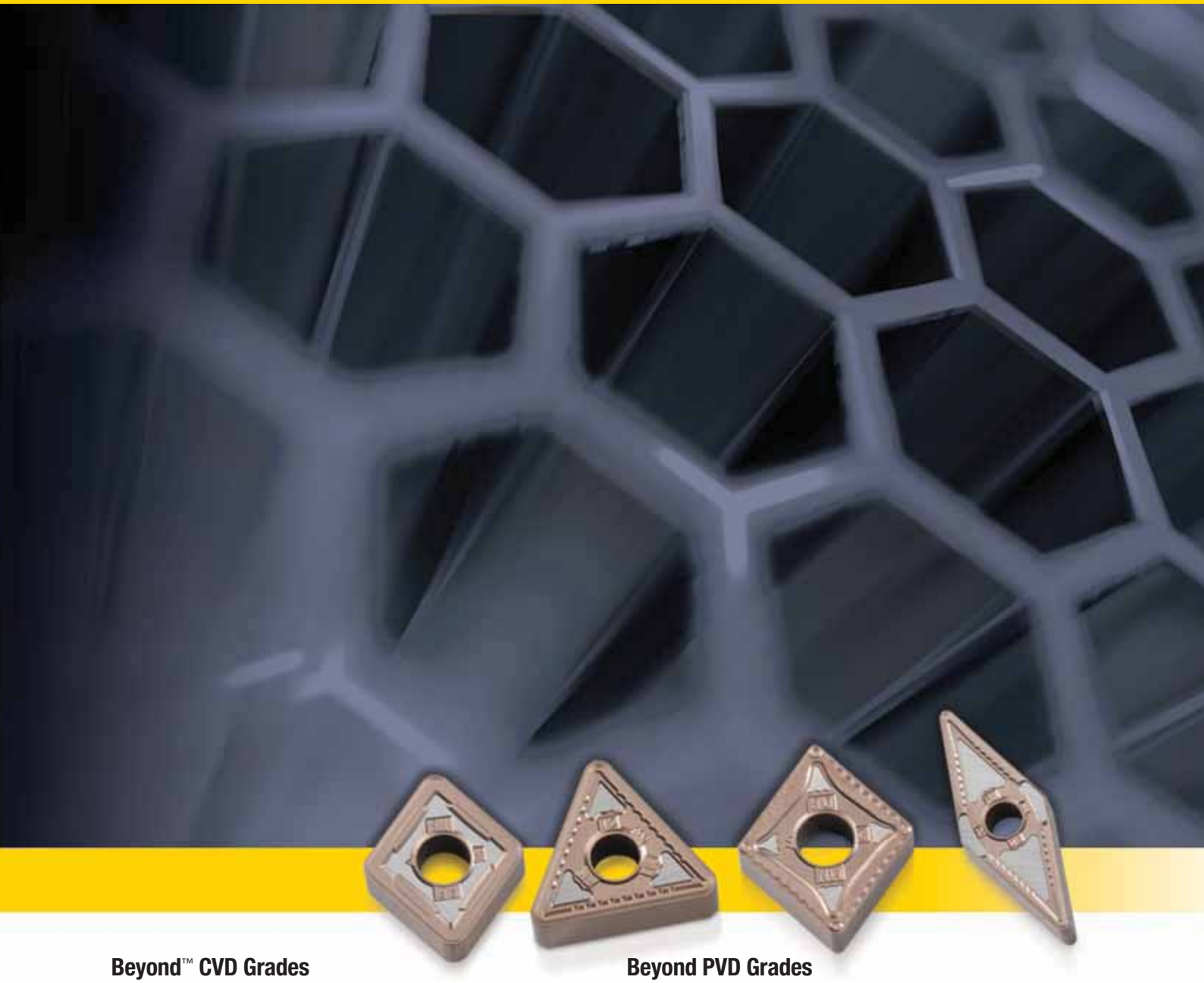
Beyond™ Drive™ offers the same benefits of Kennametal's current market-leading Beyond™ products, but in a bronze color to increase wear identification.

- Increase productivity and process safety with Beyond grade technology.
- Post-coat treatment reduces stress and improves coating adhesion.
- Better toughness and wear resistance.
- Better wear detection.

For use by transportation and general engineering segment customers that are looking for better wear identification.

- Steel materials: Axles, bearings, camshafts, crankshafts, CV joints, and wheels.
- Cast iron materials: Brake drums and rotors, camshafts, crankshafts, motor components, powertrain components, valve bodies, and wheels.





## Beyond™ CVD Grades

- Higher productivity and profitability — up to 300% higher.
- Lower cutting forces — increase speeds and reduce cycle time.
- Extended tool life.
- Predictable tool life/uniform wear.
- Resists chip flow damage.
- Consistent surface finish.
- Products can be applied across a wide range of applications.
- Use it in low speed to high speed applications.
- For finish to rough turning of steel, cast iron, stainless steel, and high-temp alloy turning.

## Beyond PVD Grades

### KCU10™

- PVD-coated grade with superior wear resistance at elevated temperatures, allowing higher metal cutting speeds.
- For use in all materials, especially stainless steels and high-temp alloys.
- Improved depth-of-cut notch resistance.
- Increase speed by 20–30% or feed by 10–15%.
- Use in finishing to medium applications.

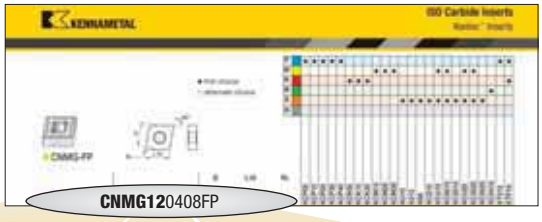
### KCU25™

- PVD-coated grade with superior edge toughness and excellent wear resistance. Medium to roughing applications.
- Use in all materials.
- Increase speed, feed, and depth of cut by 10–20%.

Turning

# How Do Catalogue Numbers Work?

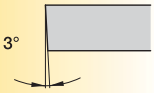
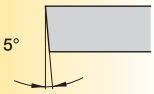
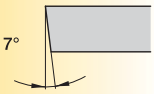
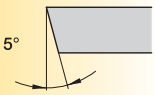
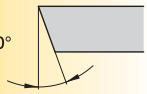
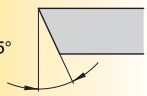
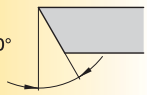
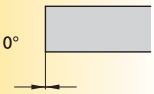
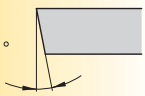
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.




## C — Insert Shape

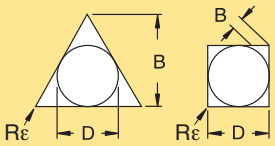
| | | |
|---|---|---|
| H | Hexagon 120° | |
| O | Octagon 135° | |
| P | Pentagon 108° | |
| R | Round — | |
| S | Square 90° | |
| T | Triangular 60° | |
| C<br>D<br>E<br>M<br>V | Rhomboid<br>80°<br>55°<br>75°<br>86°<br>35° | |
| W | Trigon 80° with enlarged corner angles | |
| L | Rectangular 90°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

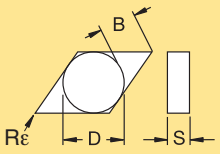
## N — Insert Clearance Angle

| | | |
|---|---|---|
| A | 3° |  |
| B | 5° |  |
| C | 7° |  |
| D | 15° |  |
| E | 20° |  |
| F | 25° |  |
| G | 30° |  |
| N | 0° |  |
| P | 11° |  |
| O | Indicated for other clearance angles requiring descriptions. | |

## M — Tolerance Class

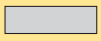
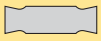
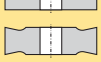
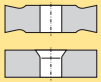
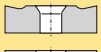
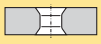
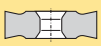
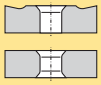
Tolerances apply prior to edge prep and coating




**D** = Theoretical diameter of the insert inscribed circle
**S** = Thickness
**B** = See figures below

## G — Insert Features

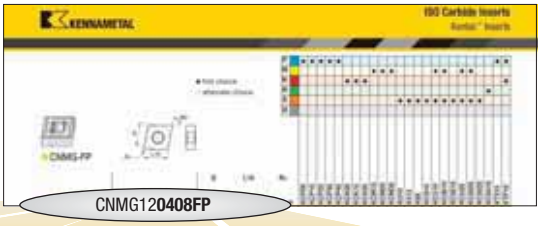
| | |
|---|---|
| N |  |
| R | |
| F |  |
| A | |
| M | |
| G |  |
| W |  |
| T | |
| Q |  |
| U |  |
| B |  |
| H | |
| C | |
| J |  |
| X | Special Design |

## 12 — Size

| | "D" | Code for inch cutting edge length "L10" | | | | | | |
|---|---|---|---|---|---|---|---|---|
| inch | mm | C | D | R | S | T | V | W |
| 1.2 (5) | 3,97 | S4 | 04 | 03 | 03 | 06 | – | – |
| 1.5 (6) | 4,76 | 04 | 05 | 04 | 04 | 08 | 08 | S3 |
| 1.8 (7) | 5,56 | 05 | 06 | 05 | 05 | 09 | 09 | 03 |
| – | 6,00 | – | – | 06 | – | – | – | – |
| 2 | 6,35 | 06 | 07 | 06 | 06 | 11 | 11 | 04 |
| 2.5 | 7,94 | 08 | 09 | 07 | 07 | 13 | 13 | 05 |
| – | 8,00 | – | – | 08 | – | – | – | – |
| 3 | 9,52 | 09 | 11 | 09 | 09 | 16 | 16 | 06 |
| – | 10,00 | – | – | 10 | – | – | – | – |
| 3.5 | 11,11 | 11 | 13 | 11 | 11 | 19 | 19 | 07 |
| – | 12,00 | – | – | 12 | – | – | – | – |
| 4 | 12,70 | 12 | 15 | 12 | 12 | 22 | 22 | 08 |
| 4.5 | 14,29 | 14 | 17 | 14 | 14 | 24 | 24 | 09 |
| 5 | 15,88 | 16 | 19 | 15 | 15 | 27 | 27 | 10 |
| – | 16,00 | – | – | 16 | – | – | – | – |
| 5.5 | 17,46 | 17 | 21 | 17 | 17 | 30 | 30 | 11 |
| 6 | 19,05 | 19 | 23 | 19 | 19 | 33 | 33 | 13 |
| – | 20,00 | – | – | 20 | – | – | – | – |
| 7 | 22,22 | 22 | 27 | 22 | 22 | 38 | 38 | 15 |
| – | 25,00 | – | – | 25 | – | – | – | – |
| 8 | 25,40 | 25 | 31 | 25 | 25 | 44 | 44 | 17 |
| 10 | 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 the next page | | ±0,013 |
| U | See tables on the next page | | ±0,013 |

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




## 04
### Thickness S

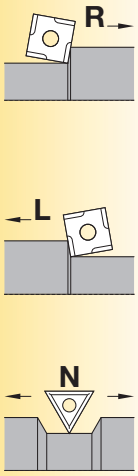
| symbol mm | thickness mm |
|---|---|
| – | 0,79 |
| T0 | 1,00 |
| 01 | 1,59 |
| T1 | 1,98 |
| 02 | 2,38 |
| 03 | 3,18 |
| T3 | 3,97 |
| 04 | 4,76 |
| 05 | 5,56 |
| 06 | 6,35 |
| 07 | 7,94 |
| 9 | 9,52 |
| 11 | 11,11 |
| 12 | 12,70 |

## 08
### Corner Radius "Rε"

| symbol mm | corner radius 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 | round insert |
| M0 | |

### Hand of Insert *(optional)*

**R** = Right hand
**L** = Left hand
**N** = Neutral




### Cutting Edge *(optional)*

**F** Sharp
**E** Rounded
**T** Chamfered
**S** Chamfered and Rounded
**K** Double-Chamfered
**P** Double-Chamfered and Rounded

## FP
### Chipbreaker *(optional)*

**F** = Sharp
**FF** = Fine Finishing
**FN** = Finishing Negative
**MN** = Medium Negative
**RN** = Roughing Negative
**UN** = Universal Medium
**FP** = Finishing Positive
**MP** = Medium Positive
**RP** = Roughing Positive
**RM** = Roughing Medium
**RH** = Roughing Heavy
**FW** = Finishing Wiper
**MW** = Medium Wiper
**FS** = Finishing Sharp
**MS** = Medium Sharp
**RW** = Roughing Wiper
**HP** = High Positive
**UP** = Universal Positive
**K** = Light-Feed Chip Control
**UF** = Ultra-Fine Finishing
**LF** = Light Finishing
**MF** = Medium Finishing
**E** = Hone Only
**T** = Negative Land
**S** = Negative Land Plus Hone
**MP-K** = Medium Positive
**MG-P** = Medium Positive

| "D" mm | ± Tolerance on "D" | | | |
|---|---|---|---|---|
| | Class M Tolerance | | Class U Tolerance | |
| | Shapes S, T, C, R, & W mm | Shape D mm | Shape V mm | Shapes S, T, & C mm |
| 3,97 | 0,05 | – | – | – |
| 4,76 | 0,05 | – | – | 0,06 |
| 5,56 | 0,05 | 0,05 | 0,05 | 0,06 |
| 6,35 | 0,05 | 0,05 | 0,05 | 0,06 |
| 7,94 | 0,05 | 0,05 | 0,05 | 0,06 |
| 9,52 | 0,05 | 0,05 | 0,05 | 0,06 |
| 11,11 | 0,06 | 0,06 | 0,06 | 0,13 |
| 12,70 | 0,06 | 0,06 | 0,06 | 0,13 |
| 14,29 | 0,06 | 0,06 | 0,06 | 0,13 |
| 15,88 | 0,10 | 0,10 | 0,10 | 0,18 |
| 17,46 | 0,10 | 0,10 | 0,10 | 0,18 |
| 19,05 | 0,10 | 0,10 | 0,10 | 0,18 |
| 22,22 | 0,13 | – | – | 0,25 |
| 25,40 | 0,13 | – | – | 0,25 |
| 31,75 | 0,15 | – | – | 0,25 |

| "D" mm | ± Tolerance on "B" | | | |
|---|---|---|---|---|
| | Class M Tolerance | | Class U Tolerance | |
| | Shapes S, T, C, R, & W mm | Shape D mm | Shape V mm | Shapes S, T, & C mm |
| 3,97 | 0,06 | – | – | – |
| 4,76 | 0,06 | – | – | 0,13 |
| 5,56 | 0,06 | 0,11 | – | 0,13 |
| 6,35 | 0,06 | 0,11 | – | 0,13 |
| 7,94 | 0,06 | 0,11 | – | 0,13 |
| 9,52 | 0,06 | 0,11 | 0,18 | 0,13 |
| 11,11 | 0,13 | 0,15 | – | – |
| 12,70 | 0,13 | 0,15 | 0,25 | 0,20 |
| 14,29 | 0,13 | 0,15 | – | – |
| 15,88 | 0,15 | 0,18 | – | 0,27 |
| 17,46 | 0,15 | 0,18 | – | 0,27 |
| 19,05 | 0,15 | 0,18 | – | 0,27 |
| 22,22 | 0,15 | – | – | 0,38 |
| 25,40 | 0,18 | – | – | 0,38 |
| 31,75 | 0,20 | – | – | 0,38 |

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™

| K | C | P | M | 25 | A |
|---|---|---|---|---|---|
| Brand | Insert Material | Primary Workpiece Material (ISO 513) | Secondary Workpiece Material *(optional)* | Application Range | Future Upgrades *(optional)* |

**K** = Kennametal

**Blank** = Carbide, uncoated
**C** = Carbide, coated
**T** = Cermet
**Y** = Ceramic
**D** = PCD
**B** = PCBN
**S** = Steel

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

**U** = Universal Machining

**Hardest**

| | |
|---|---|
| 5 | fine finishing |
| 10 | finishing |
| 15<br>20 | medium to roughing |
| 25<br>30<br>35 | roughing |
| 40<br>45<br>50 | heaviest roughing |

**Toughest**

**A** = Generation 1
**B** = Generation 2
**C** = Generation 3
etc.

NOTE: Application range does not apply to PCBN grades.

## Grade • Kenna Perfect™

| K | C | 9 | 2 | 25 |
|---|---|---|---|---|
| | | Coating Type | Material Group | Wear Application Range/Toughness Range |

**9** = CVD (Chemical Vapor Deposition)
**5** = PVD (Physical Vapor Deposition)

| | | |
|---|---|---|
| 1 = | P | Steel |
| 2 = | M | Stainless Steel |
| 3 = | K | Cast Iron |
| 4 = | N | Non-Ferrous Materials |
| 5 = | S | High-Temp Alloys |
| 6 = | H | Hardened Materials |

**0** = Universal Machining

**Hardest**

| | |
|---|---|
| 10 | highly wear resistant |
| to | |
| 50 | extremely tough |

**Toughest**

NOTE: Application range does not apply to PCBN grades.

# Beyond™ ISO Ceramic Inserts

## KYK10™, KYK25™, KYS25™, and KYS30™

The new Beyond ISO KYK Ceramic Inserts are the first choice for high-speed, continuous, and lightly interrupted turning applications in grey cast iron. These premium ceramic solutions for continuous cast iron turning applications offer improved fracture toughness, better wear resistance, and extended application range. By combining KYK10 and CVD-coated KYK25 with Kennametal's other ceramic grades for cast iron materials, Kennametal provides a complete, high-performance ceramic portfolio that can be optimised to reduce machining cycle times and lower overall manufacturing costs.

**KYK10:**
- Best suited for continuous turning of cast iron materials and in lightly interrupted cuts.

**KYK25:**
- Excellent wear resistance and pre-coat treatment allows for very consistent tool life and performance in a multitude of cast iron applications.

**KYS25:**
- Excellent surface finish, lower cutting forces, higher speeds.

**KYS30:**
- Excellent toughness and depth-of-cut notch resistance.

Experience the advantages at your Authorised Kennametal Distributor or at **www.kennametal.com**.

**www.kennametal.com**

KENNAMETAL®

## Insert Selection System

**How to Use**

Kennametal's 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: KCP25

#### Step 3 • Select the cutting speed

Given: grade KCP25
cutting conditions
material CK15
**Unknown: cutting speed**
Solution: 280 m/min

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

## Step 1 • Select the insert geometry

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

beyond™

### Negative Inserts

-RN



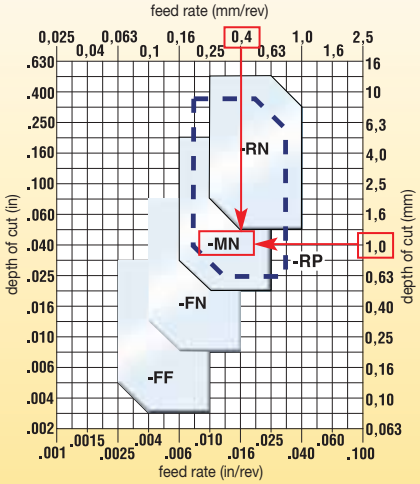
-RP* (positive)

Roughing

-FN Finishing

-MN Medium Machining

-FF Fine Finishing




*-RP – Supplemental geometry for high-strength materials

## Step 2 • Select the grade

| cutting condition | -FF | -FN | -MN | -RN | -RP | -11 | -UF | -LF | -FP | -MF | -MP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| heavily interrupted cut | KCP10 | KCP25 | KCP30 | KCP30/KCP40 | KCP30/KCP40 | — | KC5010/KCP25 | KCP25 | KCU25/KCP25 | KCP40 | KCM25 |
| lightly interrupted cut | KCP10 | KCP25 | KCP25 | KCP30/KCP40 | KCP30/KCP40 | — | KC5010/KCP25 | KCP25 | KCP25 | KCP25 | KCP25 |
| varying depth of cut, casting, or forging skin | KCP05/KT315 | KCP10 | KCP10 | KCP30/KCP40 | KCP30/KCP40 | KT315 | KCP10 | KCP10 | KCP10 | KCP10 | KCP10 |

## Step 3 • Selecting the cutting speed

**Low-Carbon (<0,3% C) and Free-Machining Steel** — speed — m/min (SFM) — starting conditions

| material group | grade | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | KCP05/KTP10 | | | | | | | | | | 435 | 1450 |
| | KCP10 | | | | | | | | | | 395 | 1320 |
| | KCP25 | | | | | | | | | | 275 | 925 |
| | KCP30/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 |

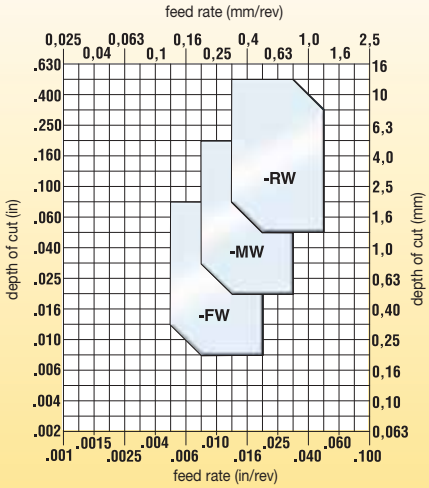
## Step 1 • Select the insert geometry

### Negative Wiper Inserts

-RW
Rough Wiper

-MW
Medium Wiper

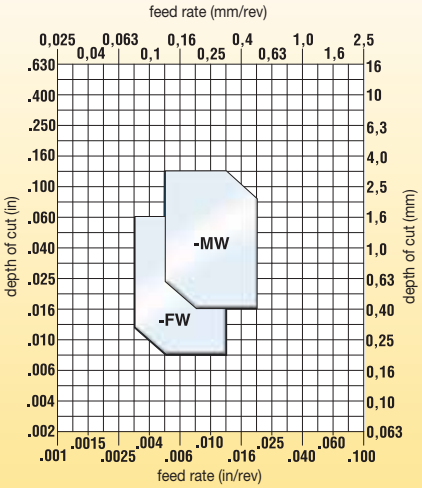
-FW
Finishing Wiper




### Positive Wiper Inserts

-MW
Medium Wiper

-FW
Finishing Wiper



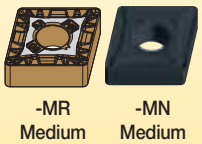

## Step 2 • Select the grade

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

## Step 1 • Select the insert geometry

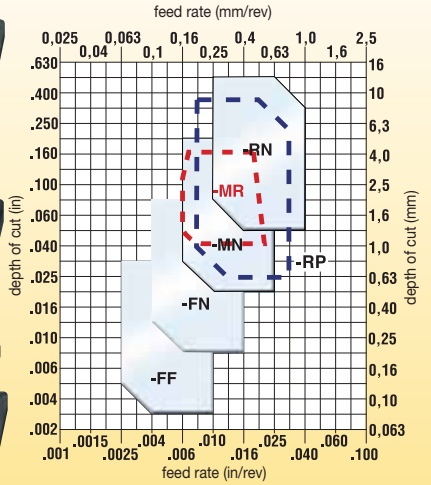
### Negative Inserts

-RN
-RP* (positive)
Roughing



-MR Medium Roughing
-MN Medium Machining

-FN Finishing
-FF Fine Finishing



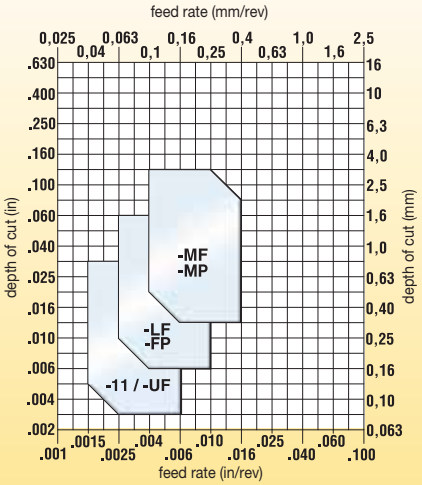

*-RP – Supplemental geometry for high-strength materials

### Positive Inserts

-MF -MP
Positive Medium Machining

-LF -FP
Positive Finishing

-11 Fine Finishing
-UF




## Step 2 • Select the grade

| cutting condition | | -FF | -FN | -MN | -MR | -RN | -RP | -11 | -UF | -LF | -FP | -MF | -MP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| heavily interrupted cut | | KCP10 | KCP25 | KCP30 | — | KCP30/ KCP40 | KCP30/ KCP40 | — | KC5010/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP40 | KCM25 |
| lightly interrupted cut | | KCP10 | KCP25 | KCP25B/ KCP25 | KCP25B | KCP25B/ KCP25 | KCP25B/ KCP25 | — | KC5010/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 | KCP25B/ KCP25 |
| varying depth of cut, casting, or forging skin | | KCP05/ KT315 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B | KCP10B/ KCP10 | KCP10B/ KCP10 | KT315 | KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 | KCP10B/ KCP10 |
| smooth cut, pre-turned surface | | KCP05/ KT315 | KCP05 | KCP05 | KCP10B/ KCK15B | KCP05 | KCP05 | KT315 | KCP05 | KCP05/ KT315 | KCP05/ KTP10 | KCP05 | KCP05 |

## Step 3 • Select the cutting speed

**Low-Carbon (<0.3% C) and Free-Machining Steel** — speed — m/min (SFM) — starting conditions

| material group | grade | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P0/P1 | KCP05/KTP10 | | | | | | | ◁▷ | | | 435 | 1450 |
| | KCP10B/KCP10 | | | | | | | ◁▷ | | | 395 | 1320 |
| | KCP25B/KCP25 | | | | ◁▷ | | | | | | 275 | 925 |
| | KCP30/KCP40 | | | ◁▷ | | | | | | | 210 | 700 |
| | KT315 | | | | | | | | ◁▷ | | 440 | 1450 |
| | KCU10/KC5010 | | | | ◁▷ | | | | | | 280 | 925 |

**Medium- and High-Carbon Steels (>0.3% C)** — speed — m/min (SFM) — starting conditions

| material group | grade | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P2 | KCP05/KTP10 | | | | ◁▷ | | | | | | 240 | 800 |
| | KCP10B/KCP10 | | | | ◁▷ | | | | | | 265 | 880 |
| | KCP25B/KCP25 | | | ◁▷ | | | | | | | 195 | 650 |
| | KCP30/KCP40 | | ◁▷ | | | | | | | | 150 | 500 |
| | KT315 | | | | ◁▷ | | | | | | 270 | 880 |
| | KCU10/KC5010 | | ◁▷ | | | | | | | | 200 | 650 |

**Alloy Steels and Tool Steels (≤330 HB) (≤35 HRC)** — speed — m/min (SFM) — starting conditions

| material group | grade | 135 (450) | 180 (600) | 225 (800) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 455 (1500) | 495 (1650) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P3 | KCP05/KTP10 | | | ◁▷ | | | | | | | 205 | 680 |
| | KCP10B/KCP10 | | | ◁▷ | | | | | | | 190 | 630 |
| | KCP25B/KCP25 | | ◁▷ | | | | | | | | 155 | 510 |
| | KCP30/KCP40 | ◁▷ | | | | | | | | | 120 | 400 |
| | KT315 | | | ◁▷ | | | | | | | 210 | 680 |
| | KCU10/KC5010 | | ◁▷ | | | | | | | | 155 | 510 |

**Alloy Steels and Tool Steels (340–450 HB) (36–48 HRC)** — speed — m/min (SFM) — starting conditions

| material group | grade | 60 (200) | 90 (300) | 120 (400) | 150 (500) | 180 (600) | 210 (700) | 240 (800) | 270 (900) | 300 (1000) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P4 | KCP05/KTP10 | | | | ◁▷ | | | | | | 160 | 530 |
| | KCP10B/KCP10 | | | | ◁▷ | | | | | | 145 | 480 |
| | KCP25B/KCP25 | | | ◁▷ | | | | | | | 105 | 360 |
| | KCP30/KCP40 | | ◁▷ | | | | | | | | 95 | 325 |
| | KT315 | | | | ◁▷ | | | | | | 210 | 530 |
| | KCU10/KC5010 | | | ◁▷ | | | | | | | 110 | 360 |

**Ferritic, Martensitic, and PH Stainless Steels (≤330 HB) (≤35 HRC)** — speed — m/min (SFM) — starting conditions

| material group | grade | 120 (400) | 150 (500) | 180 (600) | 210 (700) | 240 (800) | 270 (900) | 300 (1000) | 330 (1100) | 360 (1200) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P5 | KCP05/KTP10 | | | | | ◁▷ | | | | | 240 | 800 |
| | KCP10B/KCP10 | | | | ◁▷ | | | | | | 215 | 720 |
| | KCP25B/KCP25 | | | | ◁▷ | | | | | | 195 | 650 |
| | KCP30/KCP40 | | ◁▷ | | | | | | | | 135 | 450 |
| | KT315 | | | | | ◁▷ | | | | | 250 | 800 |
| | KCU10/KC5010 | | | | ◁▷ | | | | | | 200 | 660 |

**Ferritic, Martensitic, and PH Stainless Steels (340–450 HB) (36–48 HRC)** — speed — m/min (SFM) — starting conditions

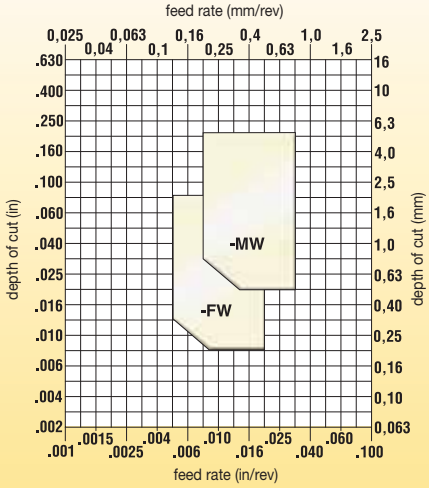
| material group | grade | 105 (350) | 135 (450) | 165 (550) | 195 (650) | 225 (750) | 255 (850) | 285 (950) | 315 (1050) | 345 (1150) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P6 | KCP05/KTP10 | | | | ◁▷ | | | | | | 200 | 660 |
| | KCP10B/KCP10 | | | | ◁▷ | | | | | | 180 | 600 |
| | KCP25B/KCP25 | | | | | ◁▷ | | | | | 150 | 500 |
| | KCP30/KCP40 | ◁▷ | | | | | | | | | 105 | 350 |
| | KT315 | | | | ◁▷ | | | | | | 200 | 660 |
| | KCU10/KC5010 | | | | | ◁▷ | | | | | 150 | 500 |

## Step 1 • Select the insert geometry

### Negative Wiper Inserts

-MW
Medium Wiper

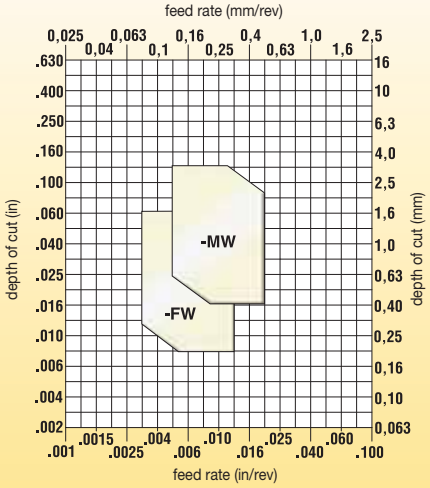
-FW
Finishing Wiper




### Positive Wiper Inserts

-MW
Medium Wiper

-FW
Finishing Wiper




## Step 2 • Select the grade

| cutting condition | | Negative Insert Geometry -FW | Negative Insert Geometry -MW | Positive Insert Geometry -FW | Positive Insert Geometry -MW |
|---|---|---|---|---|---|
| heavily interrupted cut | | — | — | — | — |
| lightly interrupted cut | | KCM15 | KCM25 | KCM15 | KCM15 |
| varying depth of cut, casting, or forging skin | | KCM15/KCU10/KC5010 | KCM15 | KCU10/KC5010 | KCU10/KC5010 |
| smooth cut, pre-turned surface | | KCM15/KT315 | KCM15 | KT315 | KT315 |

## Step 1 • Select the insert geometry

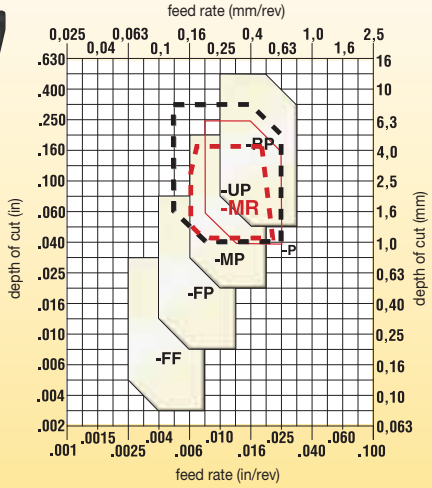
### Negative Inserts

-RP -P
Roughing

-MR
Medium Roughing

-MP -UP
Medium Machining

-FP -FF
Finishing

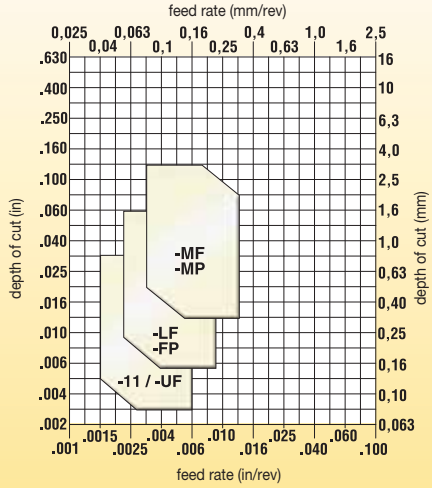



### Positive Inserts

-MP
Medium Machining

-LF ..GT-LF
Finishing

-11 -UF
Fine Finishing




## Step 2 • Select the grade

| cutting condition | | Negative Insert Geometry -FF | -FP | -MP/-UP | -P/-RP | -MR |
|---|---|---|---|---|---|---|
| heavily interrupted cut | | KCU10/KC5010 | KCM15 | KCM35 | KCM35 | KCM35 |
| lightly interrupted cut | | KCU10/KC5010 | KCM15 | KCM25 | KCM25 | KCM25 |
| varying depth of cut, casting, or forging skin | | KT315 | KCM15/KC5010 | KCM15 | KCM15/KCM25 | KCM15 |
| smooth cut, pre-turned surface | | KT315 | KCM15/KT315 | KCM15/KU10 | KCU10 | KCM15 |

*(continued)*

## Step 2 • Select the grade *(continued)*

| | Positive Insert Geometry | | | | | |
|---|---|---|---|---|---|---|
| **cutting condition** | **-11** | **-UF** | **-LF** | **-MP/-MF** | **-FP** | **..GT-LF** |
| heavily interrupted cut | — | KCU25/KC5025 | KCM35 | KCM25 | KCU25/KCM25 | KCU25/KC5025 |
| lightly interrupted cut | — | KCU10/KC5010 | KCM25 | KCM25 | KCM15 | KCU25/KC5025 |
| varying depth of cut, casting, or forging skin | KT315 | — | KCM15/KCU10 | KCM15 | KCU10 | KCU10/KC5010 |
| smooth cut, pre-turned surface | KT315 | — | KCM15/KT315 | KCM15 | KTP10 | KCU10/KC5010 |

## Step 3 • Select the cutting speed

**Austenitic Stainless Steel** — **speed — m/min (SFM)** — **starting conditions** ◁▷

| material group | grade | 90 (300) | 135 (450) | 180 (600) | 225 (800) | 270 (900) | 315 (1050) | 360 (1200) | 405 (1350) | 450 (1500) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M1 | KCM15 | | | ◁▷ | | | | | | | 180 | 600 |
| | KCM25 | | | ◁▷ | | | | | | | 150 | 500 |
| | KCM35 | | ◁▷ | | | | | | | | 120 | 400 |
| | KT315 | | | | ◁▷ | | | | | | 230 | 750 |
| | KCU10/KC5010 | | | | ◁▷ | | | | | | 215 | 700 |
| | KCU25/KC5025 | | | ◁▷ | | | | | | | 180 | 550 |

**Austenitic Stainless Steel** — **speed — m/min (SFM)** — **starting conditions** ◁▷

| material group | grade | 90 (300) | 135 (450) | 180 (600) | 225 (800) | 270 (900) | 315 (1050) | 360 (1200) | 405 (1350) | 450 (1500) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M2 | KCM15 | | | ◁▷ | | | | | | | 165 | 550 |
| | KCM25 | | | ◁▷ | | | | | | | 140 | 450 |
| | KCM35 | | ◁▷ | | | | | | | | 105 | 350 |
| | KT315 | | | | ◁▷ | | | | | | 215 | 700 |
| | KCU10/KC5010 | | | ◁▷ | | | | | | | 200 | 650 |
| | KCU25/KC5025 | | | ◁▷ | | | | | | | 165 | 500 |

**Austenitic Stainless Steel: Duplex (Ferritic and Austenitic Mixture)** — **speed — m/min (SFM)** — **starting conditions** ◁▷

| material group | grade | 90 (300) | 135 (450) | 180 (600) | 225 (800) | 270 (900) | 315 (1050) | 360 (1200) | 405 (1350) | 450 (1500) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3 | KCM15 | | | ◁▷ | | | | | | | 150 | 500 |
| | KCM25 | | | ◁▷ | | | | | | | 120 | 400 |
| | KCM35 | | ◁▷ | | | | | | | | 90 | 300 |
| | KT315 | | | | ◁▷ | | | | | | 200 | 650 |
| | KCU10/KC5010 | | | ◁▷ | | | | | | | 185 | 600 |
| | KCU25/KC5025 | | | ◁▷ | | | | | | | 150 | 450 |

## Step 1 • Select the insert geometry

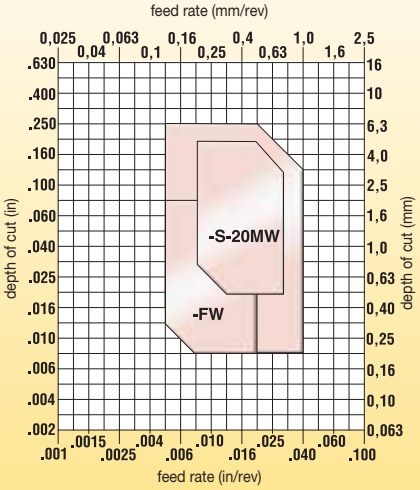
### Negative Wiper Inserts

-MW -S...MW

Medium Wiper

-FW -FW -T-20FW

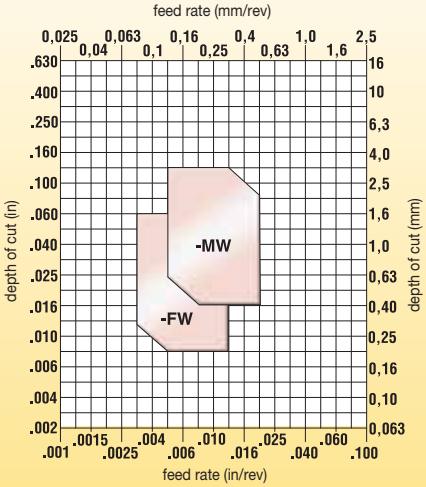
-FW -T-20FW Finishing Wiper




### Positive Wiper Inserts

..MW Medium Wiper

-FW Finishing Wiper




## Step 2 • Select the grade

### Grey Iron

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

### Ductile Iron

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

## Step 3 • Select the cutting speed

**Grey Cast Iron** — speed — m/min (SFM) — starting conditions

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

**Ductile, Compacted Graphite, and Malleable Cast Irons (<80 KSI tensile strength)** — speed — m/min (SFM) — starting conditions

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

**Ductile, Compacted Graphite, and Malleable Cast Irons (>80 KSI tensile strength)** — speed — m/min (SFM) — starting conditions

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

## Step 1 • Select the insert geometry

beyond

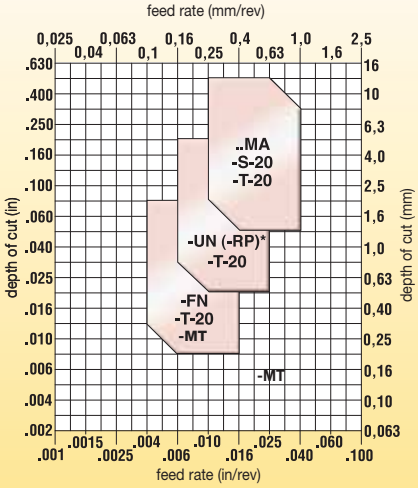
### Negative Inserts

..MA -S-20 | -T-20

-MR Medium Roughing | -S-20 Roughing

-UN | -RP

-T-20 Medium Machining




-FN | -T-20 | -MT

Finishing

### Positive Inserts

-MF | -T-20

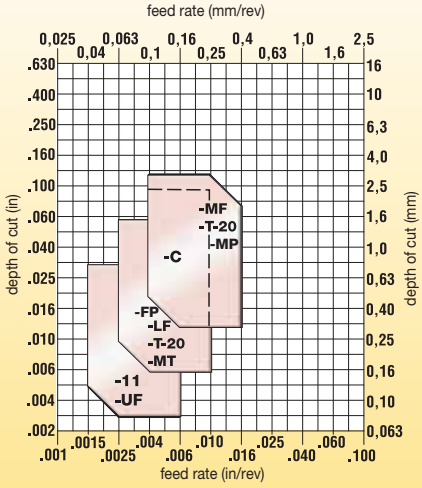
-MP | -C

Medium Machining

-LF | -T-20

..MT-FP | -MT

Finishing




-11 | -UF

Fine Finishing

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

## Step 2 • Select the grade

### Carbide Grades

#### Grey Iron

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

#### Ductile Iron

| | Negative Insert Geometry | | |
|---|---|---|---|
| **cutting condition** | **-FN** | **-UN(-RP)** | **-MA** |
| heavily interrupted cut | KCK15 | KCK20 | KCK20 |
| lightly interrupted cut | KCK15 | KCK20 | KCK20 |
| varying depth of cut, casting, or forging skin | KCK05/KT315 | KCK15 | KCK15 |
| smooth cut, pre-turned surface | KCK05/KT315 | KCK05 | KCK05 |

| | Positive Insert Geometry | | | | |
|---|---|---|---|---|---|
| **cutting condition** | **-11/-UF** | **-LF** | **-MF** | **-FP** | **-MP** |
| heavily interrupted cut | — | KCK20 | KCK20 | KCK20 | KCK20 |
| lightly interrupted cut | KCU10/KC5010 | KCK20 | KCK20 | KCK20 | KCK20 |
| varying depth of cut, casting, or forging skin | KCU10/KC5010 | KCK15 | KCK15 | KCK20 | KCK20 |
| smooth cut, pre-turned surface | KT315 | KCU10/KC5010 | KCK15 | KCK20 | KCK20 |

*(continued)*

## Step 2 • Select the grade *(continued)*

### Ceramic and PCBN Grades

#### Grey Iron

| | Negative Insert Geometry | | | | |
|---|---|---|---|---|---|
| cutting condition | -T-20 Finishing | MT | -T-20 Medium | -T-20 Roughing | -S20 |
| heavily interrupted cut | KY3500 | KCK20 | KY3500 | KY3500 | KB1340 |
| lightly interrupted cut | KY3500 | KB1345 | KYK10 | KY3500 | KB1340 |
| varying depth of cut, casting, or forging skin | KYK10 | KB1345 | KYK10 | KYK10 | KB1340 |
| smooth cut, pre-turned surface | KYK25 | KB1345 | KYK25 | KYK25 | KB1340 |

| | Positive Insert Geometry | | | |
|---|---|---|---|---|
| cutting condition | -T-20 Fine Finishing | -T-20 Medium | MT | C |
| heavily interrupted cut | — | KY3500 | KB1630/KB1345 | KB1630/KB1345 |
| lightly interrupted cut | — | KY3500 | KB1630/KB1345 | KB1630/KB1345 |
| varying depth of cut, casting, or forging skin | KY3500 | KY3500 | KB1630/KB1345 | KB1630/KB1345 |
| smooth cut, pre-turned surface | KY3500 | KY3500 | KB1630/KB1345 | KB1630/KB1345 |

#### Ductile Iron

| | Negative Insert Geometry | | | Positive Insert Geometry | | |
|---|---|---|---|---|---|---|
| cutting condition | -T-20 Finishing | -T-20 Medium | -T-20 Roughing | -T-20 Fine Finishing | -T-20 Finishing | -T-20 Medium |
| heavily interrupted cut | — | KY3500 | KY3500 | — | KY3500 | KY3500 |
| lightly interrupted cut | — | KYK25 | KYK25 | — | KYK25 | KYK25 |
| varying depth of cut, casting, or forging skin | KYK25 | KYK25 | KYK25 | KYK25 | KYK25 | KYK25 |
| smooth cut, pre-turned surface | KYK25 | KYK25 | KYK25 | KYK25 | KYK25 | KYK25 |

## Step 3 • Select the cutting speed (Optimal speed depends on casting quality and disposition.)

**Grey Cast Iron** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 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 |
| | KYK25 | | | | | | | ◁▷ | | | | 760 | 2500 |
| | KY3500 | | | | | | | ◁▷ | | | | 760 | 2500 |
| | KYK10 | | | | | | | ◁▷ | | | | 760 | 2500 |
| | KCK05 | | | | ◁▷ | | | | | | | 450 | 1500 |
| | KCK15B/KCK15 | | | | ◁▷ | | | | | | | 360 | 1200 |
| | KCK20 | | | | ◁▷ | | | | | | | 300 | 1000 |

**Ductile, Compacted Graphite, and Malleable Cast Irons (<600 MPa tensile strength)** — 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) | 500 (1650) | 550 (1800) | 600 (1950) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K2 | KT315 | | | | | ◁▷ | | | | | | | | 275 | 900 |
| | KCU10/KC5010 | | | | ◁▷ | | | | | | | | | 200 | 650 |
| | KYK25 | | | | | | | | ◁▷ | | | | | 430 | 1400 |
| | KY3500 | | | | | | | ◁▷ | | | | | | 365 | 1200 |
| | KYK10 | | | | | | | ◁▷ | | | | | | 365 | 1200 |
| | KCK05 | | | | | | ◁▷ | | | | | | | 360 | 1200 |
| | KCK15B/KCK15 | | | | | ◁▷ | | | | | | | | 270 | 900 |
| | KCK20 | | | | ◁▷ | | | | | | | | | 240 | 800 |

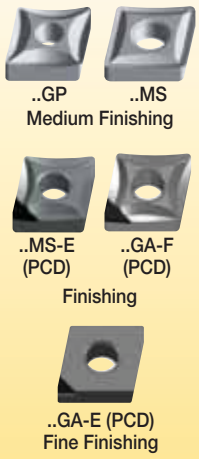
**Ductile, Malleable, and Austempered Cast Irons (>600 MPa tensile strength)** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 90 (300) | 135 (450) | 180 (600) | 225 (750) | 275 (900) | 320 (1050) | 360 (1200) | 410 (1350) | 460 (1500) | 500 (1650) | 550 (1800) | 600 (1950) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K3 | KT315 | | | | ◁▷ | | | | | | | | | 230 | 750 |
| | KCU10/KC5010 | | | ◁▷ | | | | | | | | | | 150 | 500 |
| | KYK25 | | | | | | ◁▷ | | | | | | | 365 | 1200 |
| | KCK05 | | | | ◁▷ | | | | | | | | | 240 | 800 |
| | KCK15B/KCK15 | | | ◁▷ | | | | | | | | | | 215 | 725 |
| | KCK20 | | ◁▷ | | | | | | | | | | | 210 | 700 |

## Step 1 • Select the insert geometry

beyond

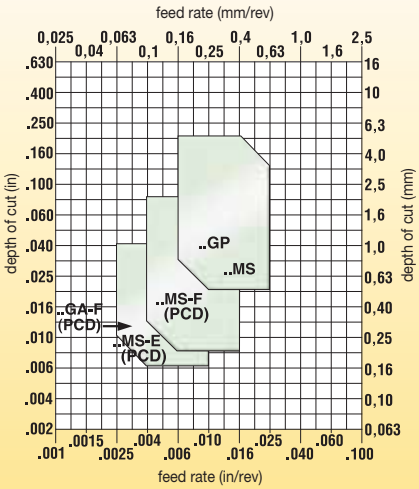
### Negative Wiper Inserts



..GP ..MS
Medium Finishing

..MS-E (PCD) ..GA-F (PCD)
Finishing

..GA-E (PCD)
Fine Finishing

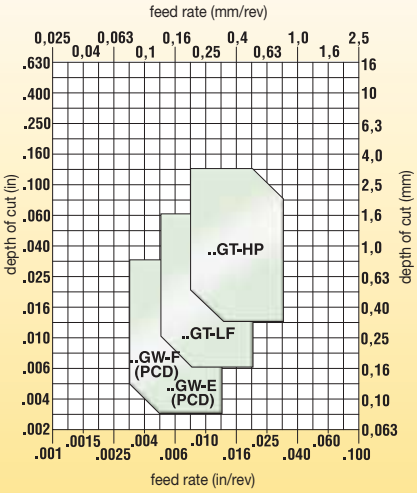



### Positive Wiper Inserts

..GT-HP
Medium Finishing

..GT-LF
Finishing

..GW-F (PCD) ..GW-E (PCD)




## Step 2 • Select the grade

| cutting condition | | Negative Insert Geometry ..GA-E (PCD) | ..MS-E (PCD) | ..GA-F (PCD) | ..GP | ..MS | Positive Insert Geometry ..GW-E (PCD) | ..GW-F (PCD) | ..GT-LF | ..GT-HP |
|---|---|---|---|---|---|---|---|---|---|---|
| heavily interrupted cut | | — | — | KD1400 | KC5410/K313 | KC5410 | — | KD1400 | — | KC5410 |
| lightly interrupted cut | | KD1405 | KD1405 | KD1400 | KC5410/K313 | KC5410 | KD1405 | KD1400 | KC5410 | KC5410 |
| varying depth of cut, casting, or forging skin | | KD1405 | KD1405 | KD1425 | KC5410/K313 | KC5410 | KD1405 | KD1425 | KC5410 | KC5410 |
| smooth cut, pre-turned surface | | KD1405 | KD1405 | KD1425 | KC5410/K313 | KC5410 | KD1405 | KD1425 | KC5410 | KC5410 |

## Step 3 • Select the cutting speed

**Low-Silicon Aluminium Alloys**
**(hypoeutectic <12,2% Si) and Magnesium Alloys**

speed — m/min (SFM)

starting conditions ◁▷

| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | 1250 (4000) | 1500 (4800) | 1750 (5600) | 2000 (6400) | 2250 (7200) | 2500 (8000) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N2 | KC5410 | | ◁▷ | | | | | | | | | 550 | 1800 |
| | KD1400 | | | ◁▷ | | | | | | | | 765 | 2500 |

**High-Silicon Aluminium Alloys**
**(hypereutectic >12,2% Si) and Magnesium Alloys**

speed — m/min (SFM)

starting conditions ◁▷

| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | m/min | SFM |
|---|---|---|---|---|---|---|---|
| N3 | KD1405 | | ◁▷ | | | 580 | 2000 |
| | KD1425 | | ◁▷ | | | 520 | 1700 |

## 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 | KD1400/ KD1405 | | ◁▷ | | | 520 | 1700 |
| | KD1425 | ◁▷ | | | | 500 | 1600 |
| | 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 | KD1400/ KD1405 | ◁▷ | | | | 400 | 1300 |
| | KD1425 | ◁▷ | | | | 365 | 1200 |
| | 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 | KD1400/ KD1405 | | | ◁▷ | | 760 | 2500 |
| | KC5410 | ◁▷ | | | | 200 | 650 |

**MMCs (Aluminium-Based Metal Matrix Composites)** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | m/min | SFM |
|---|---|---|---|---|---|---|---|
| N7 | KD1405 | | ◁▷ | | | 460 | 1500 |
| | KD1400 | | ◁▷ | | | 365 | 1200 |

**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 |
|---|---|---|---|---|---|---|---|
| N | KC5410 | ◁▷ | | | | 215 | 700 |
| | K313 | ◁▷ | | | | 180 | 600 |

## Step 1 • Select the insert geometry

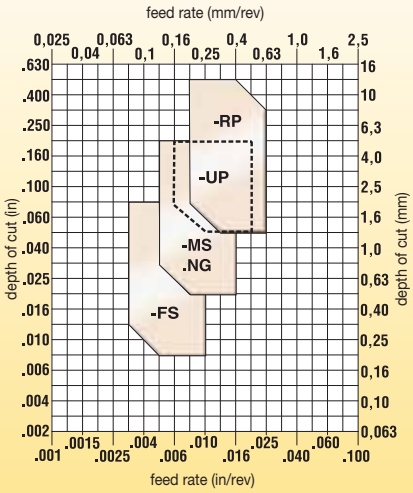
### Negative Inserts

-RP
Roughing

-MS .NG

-UP
Medium Machining

-FS
Finishing

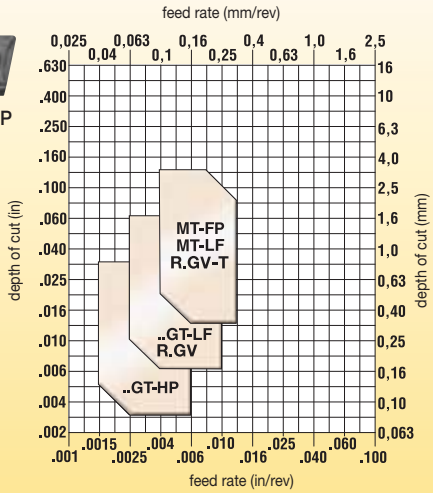



### Positive Inserts

MT-LF R.GV-T MT-FP
Medium Machining

..GT-LF R.GV

..GT-HP
Fine Finishing




## Step 2 • Select the grade

**Negative Insert Geometry**

| cutting condition | | -FS | .NG | -MS | -UP | -RP |
|---|---|---|---|---|---|---|
| heavily interrupted cut | | KCU25/KC5525 | — | KCU25/KC5525 | KCM35 | KCM25/KCM35 |
| lightly interrupted cut | | KCU10/KC5510 | KYS30/KY1540 | KCU25/KC5525 | KCM25 | KCM15KC5525 |
| varying depth of cut, casting, or forging skin | | KCU10/KC5510 | KYS30/KY1540/ KYS25/KY4300 | KCU10/KC5510 | KCM15 | KCU25/KC5525 |
| smooth cut, pre-turned surface | | KCU10/KC5510/ K313 | KYS25/KY4300 | KCU10/KC5510 K313 | KCU10/KC5510 | KCU10/KC5510 |

**Positive Insert Geometry**

| cutting condition | | -FP | ..GT-HP | MT-LF | R.GV-T | ..GT-LF | R.GV |
|---|---|---|---|---|---|---|---|
| heavily interrupted cut | | KCU25 | — | KCU25/KC5025 | — | KCU25/KC5025 | — |
| lightly interrupted cut | | KCU25 | KCU25/KC5025 | KCU25/KC5025 | KYS30/KY1540 | KCU25/KC5025 | KYS30/KY1540 |
| varying depth of cut, casting, or forging skin | | KCU10/KU10 | KCU10/KC5510 | KCU10/KC5510 | KYS30/KY1540/ KYS25/KY4300 | KCU10/KC5510 | KYS30/KY1540/ KYS25/KY4300 |
| smooth cut, pre-turned surface | | KCU10/KU10 | KCU10/KC5510 K313 | KCU10/KC5510 K313 | KYS25/KY4300 | KCU10/KC5510 K313 | KYS25/KY4300 |

## Step 3 • Select the cutting speed

**Iron-Based, Heat-Resistant Alloys (135–320 HB) (≤34 HRC)** — speed — m/min (SFM) — starting conditions

| material group | grade | 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/KC5510/KC5010 | | | ◁▷ | | | | | | | | | | | 55 | 180 |
| | KCU25/KC5525/KC5025 | | ◁▷ | | | | | | | | | | | | 40 | 125 |
| | KYS25/KY4300 | | | | | | | ◁▷ | | | | | | | 200 | 650 |
| | KYS30/KY1540 | | | | | | ◁▷ | | | | | | | | 170 | 550 |
| | KCM15 | | | ◁▷ | | | | | | | | | | | 55 | 180 |
| | KCM25/KCM35 | | ◁▷ | | | | | | | | | | | | 40 | 125 |

**Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤45 HRC)** — speed — m/min (SFM) — starting conditions

| material group | grade | 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 |
| | KC5510/KC5010 | | | ◁▷ | | | | | | | | | | | 60 | 195 |
| | KC5525/KC5025 | | ◁▷ | | | | | | | | | | | | 30 | 100 |
| | KYS25/KY4300 | | | | | | | ◁▷ | | | | | | | 220 | 720 |
| | KYS30/KY1540 | | | | | | ◁▷ | | | | | | | | 185 | 600 |
| | KCM15 | | | ◁▷ | | | | | | | | | | | 60 | 195 |
| | KCM25/KCM35 | | ◁▷ | | | | | | | | | | | | 30 | 100 |

**Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤48 HRC)** — speed — m/min (SFM) — starting conditions

| material group | grade | 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/KC5510/KC5010 | | | ◁▷ | | | | | | | | | | | 70 | 225 |
| | KCU25/KC5525/KC5025 | | ◁▷ | | | | | | | | | | | | 40 | 125 |
| | KYS25/KY4300 | | | | | | | ◁▷ | | | | | | | 250 | 820 |
| | KYS30/KY1540 | | | | | | | ◁▷ | | | | | | | 215 | 700 |
| | KCM15 | | | ◁▷ | | | | | | | | | | | 70 | 225 |
| | KCM25/KCM35 | | ◁▷ | | | | | | | | | | | | 40 | 125 |

**Titanium and Titanium Alloys (110–450 HB) (≤48 HRC)** — speed — m/min (SFM) — starting conditions

| material group | grade | 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 |
| | KC5510/KC5010/KC9225 | | | | ◁▷ | | | | | | | | | | 70 | 225 |
| | KC5525/KC50225/KC9240 | | | ◁▷ | | | | | | | | | | | 55 | 175 |
| | KCM15 | | | | ◁▷ | | | | | | | | | | 70 | 225 |
| | KCM25/KCM35 | | ◁▷ | | | | | | | | | | | | 55 | 175 |

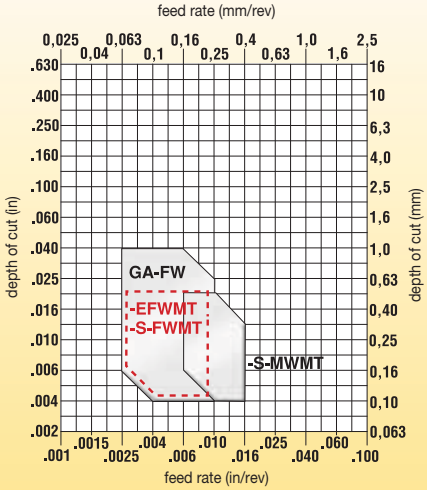
## Step 1 • Select the insert geometry

### Negative Wiper Inserts

-S..MWMT
(multitipped)
Medium Wiper

-EFWMT
(multitipped)

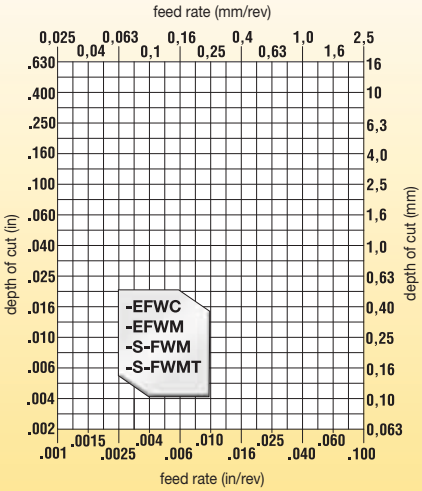
-S..FWMT (multitipped) GA-FW
Finishing Wiper




### Positive Wiper Inserts

-EFWC (full face)
-EFWM (single tipped)
Finishing Wiper

-S..FWM
(single tipped)
-S..FWMT
(multitipped)
Fine Finishing Wiper




## Step 2 • Select the grade

| cutting condition | | Negative Insert Geometry GA-FW | -S..FWMT | -EFWMT | Positive Insert Geometry -S..FWMT | -S..FWM -S..FWMT | -EFWC -EFWM |
|---|---|---|---|---|---|---|---|
| heavily interrupted cut | | — | KB5630 | KB1625 | — | — | — |
| lightly interrupted cut | | — | KB1610/KB5610 | KB5625 | KB9610 | KB1610 | KB5610 |
| varying depth of cut, casting, or forging skin | | KY4400 | KB1610/KB5610 | KB1610/KB5610 | KB9610 | KB1610 | KB5610 |
| smooth cut, pre-turned surface | | KY4400 | KB9610 | KB9610 | KB9610 | KB9610 | KB9610 |

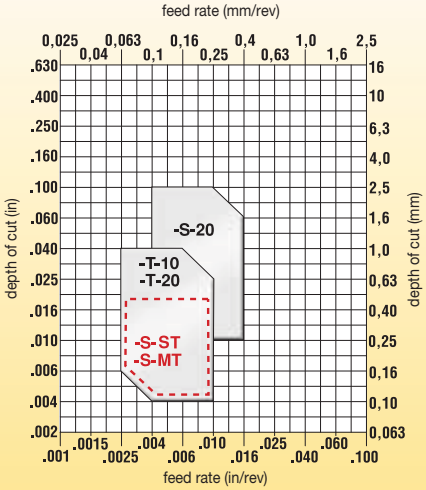
## Step 1 • Select the insert geometry

### Negative Inserts

-S-20
Medium Machining

-S..ST (single tipped)
-S..MT (multitipped)
Finishing

-T..10 -T.10
-T.20 -T.20
Fine Finishing

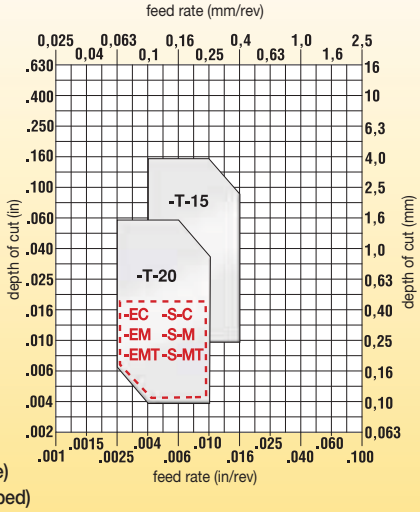



### Positive Inserts

-T-15
Medium Machining

-EC (full face)
-EM (single tipped)
-EMT (multitipped)
Finishing

-T-20 -S....C (full face)
-S....M (single tipped)
-S....MT (multitipped)
Fine Finishing



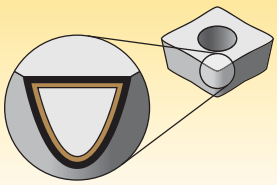

## Step 2 • Select the grade

| cutting condition | | Negative Insert Geometry -T.10 -T.20 | -S..ST -S..MT | -S-20 | Positive Insert Geometry -S..C/-S..M -S..MT | -T-20 | -EC/-EM -EMT | -T-15 |
|---|---|---|---|---|---|---|---|---|
| heavily interrupted cut | | — | KB1630/KB5630 | KB1340 | KB1630/KB5630 | — | KB1630/KB5630 | — |
| lightly interrupted cut | | — | KB1625/KB5625 | KB1340 | KB1625/KB5625 | KY4400 | KB1625/KB5625 | KY1615 |
| varying depth of cut, casting, or forging skin | | KY1615/KY4400 | KB1625/KB5625 | — | KB1625/KB5625 | KY4400 | KB1625/KB5625 | KY1615 |
| smooth cut, pre-turned surface | | KY1615/KY4400 | KB1610/KB5610 | — | KB1610/KB5610 | KY4400 | KB1610/KB5610 | KY1615 |

## Step 3 • Select the cutting speed

speed — m/min (SFM) | starting conditions ◁▷

| material group | grade | 15 (50) | 45 (150) | 75 (250) | 110 (350) | 140 (450) | 170 (550) | 200 (650) | 230 (750) | 260 (850) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H1 | KY4400 | | | | | ◁▷ | | | | | 135 | 450 |
| | KY1615 | | | | ◁▷ | | | | | | 100 | 325 |
| | KB1610 | | | | | ◁▷ | | | | | 140 | 460 |
| | KB1625 | | | | ◁▷ | | | | | | 110 | 360 |
| | KB1630 | | | ◁▷ | | | | | | | 90 | 295 |
| | KB5610 | | | | | ◁▷ | | | | | 150 | 490 |
| | KB5625 | | | | ◁▷ | | | | | | 120 | 400 |
| | KB5630 | | | ◁▷ | | | | | | | 105 | 345 |

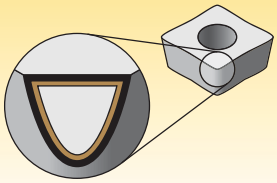


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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 | KU10 C3 | **Composition:** A hard, low binder content, WC/Co fine-grain grade. **Application:** The KU10 grade has excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys. Use as a general-purpose grade for non-ferrous materials. beyond | | M | M | M | | | | | |
| | | | | K | K | K | | | | | |
| | | | | N | N | N | | | | | |
| | | | | S | S | S | | | | | |
| | K313 C3–C4 | **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-temperature 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 | M | M | | | | | |
| | | | | K | K | K | | | | | |
| | | | | N | N | N | | | | | |
| | | | | S | S | S | | | | | |
| | K68 C3 | **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 most high-temperature alloys. Use as a general-purpose grade for non-ferrous materials. | | M | M | M | | | | | |
| | | | | K | K | K | | | | | |
| | | | | N | N | N | | | | | |
| | | | | S | S | S | | | | | |
| PVD-Coated Carbide Grades | KCU10 C3–C4 | **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. beyond | | P | P | P | | | | | |
| | | | | M | M | M | | | | | |
| | | | | K | K | K | | | | | |
| | | | | N | N | N | | | | | |
| | | | | S | S | S | | | | | |
| | | | | H | H | | | | | | |
| | KCU25 C2, C6 | **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. beyond | | P | P | P | P | P | P | | |
| | | | | M | M | M | M | M | M | | |
| | | | | K | K | K | K | K | K | | |
| | | | | N | N | N | N | N | N | | |
| | | | | S | S | S | S | S | S | | |
| | KC5010 C3–C4 | **Composition:** An advanced PVD AlTiN coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating enables speeds to be increased by 50–100%. **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 super alloys under stable conditions. It also performs well machining hardened and short chipping materials. | | P | P | P | | | | | |
| | | | | M | M | M | | | | | |
| | | | | K | K | K | | | | | |
| | | | | N | N | N | | | | | |
| | | | | S | S | S | | | | | |
| | | | | H | H | | | | | | |



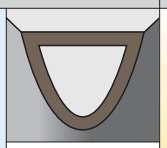
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

wear resistance ⟷ toughness

## PVD-Coated Carbide Grades

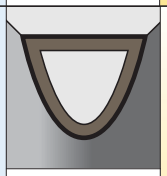
### KC5025



C2, C6

**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.

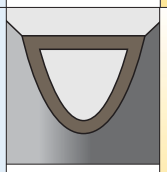
### KC5410



C3–C4

**Composition:** A PVD $TiB_2$ coating over a very deformation-resistant unalloyed substrate.
**Application:** Designed for roughing, semi-finishing, and finishing of free machining (hypoeutectic <12,2% Si) aluminium, aluminium alloys, and magnesium alloys. The $TiB_2$ 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.

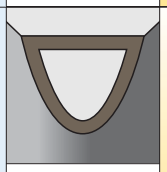
### KC5510



C3–C4

**Composition:** An advanced PVD AlTiN-coated fine-grain tungsten carbide grade.
**Application:** The KC5510 grade is specifically engineered for the productive machining of high-temp alloys. The fine-grain tungsten carbide 6% cobalt substrate has excellent toughness and deformation resistance while the advanced PVD coating enables metalcutting speeds double those of conventional PVD-coated cutting tools.

### KC5525

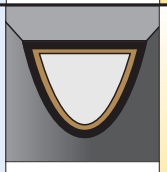


C2–C6

**Composition:** Advanced PVD AlTiN-coated fine-grain high-cobalt carbide grade.
**Application:** The KC5525 grade utilises the same advanced PVD coating as the KC5510 grade in conjunction with a fine-grained tungsten carbide 10% cobalt substrate. The higher cobalt enables added security in interrupted cuts while the fine-grained WC maintains hardness-resisting deformation at higher speeds. Designed for medium to heavy interruptions in high-temp alloys.

## CVD-Coated Carbide Grades

### KCP05

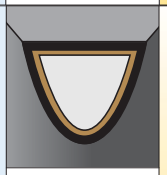


C3–C4

**Composition:** An innovative, highly deformation-resistant, cobalt-enriched substrate with a specially designed, adherent MTCVD-TiCN-$Al_2O_3$ 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.

beyond

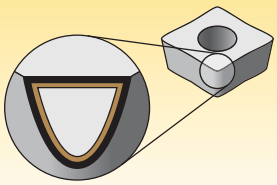
### KCP10



C3, C7

**Composition:** A specially engineered cobalt-enriched carbide grade with thick MTCVD-TiCN-$Al_2O_3$ 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.

beyond

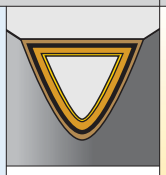
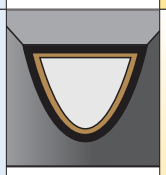


**Coatings provide high-speed capability and are engineered for finishing to heavy roughing.**

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

wear resistance ⟷ toughness

## CVD-Coated Carbide Grades

| Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|---|---|---|
| **KCP10B**  | **Composition:** A specially engineered cobalt-enriched carbide grade with thick MTCVD-TiCN-$Al_2O_3$-TiOCN coating for maximum wear resistance.<br>**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.<br>beyond DRIVE™ | P | | ■ | ■ | ■ | | | | | |
| | | | | | | | | | | |
| | | K | | ■ | ■ | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| **KCP25**  **C2–C3, C6–C7** | **Composition:** A tough cobalt-enriched carbide grade with a newly designed multilayer MTCVD-TiCN-$Al_2O_3$ coating with superior interlayer adhesion.<br>**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.<br>beyond | P | | | | ■ | ■ | ■ | | | |
| | | | | | | | | | | |
| | | K | | | | ■ | ■ | ■ | | |
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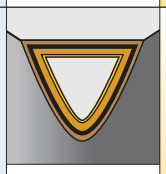
| | | | | | | | | | | |
| | | | | | | | | | | |
| **KCP25B**  | **Composition:** A tough cobalt-enriched carbide grade with a newly designed multilayer MTCVD-TiCN-$Al_2O_3$-TiOCN coating with superior interlayer adhesion.<br>**Application:** Best general-purpose turning grade for most steels and ferritic 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.<br>beyond DRIVE™ | P | | | | ■ | ■ | ■ | | | |
| | | | | | | | | | | |
| | | K | | | | ■ | ■ | ■ | | |
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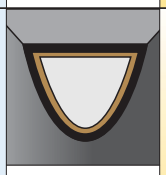
| **KCP30**  **C5–C6** | **Composition:** A newly engineered, tough cobalt-enriched carbide grade with an advanced multilayer TiN-MT-TiCN-$Al_2O_3$ coating.<br>**Application:** For medium to rough machining of all carbon, alloy, and stainless steels. The substrate design provides superior insert strength that is required for this application, and the multilayer coating adds wear resistance to the insert resulting in long tool life.<br>beyond | P | | | | | ■ | ■ | ■ | | |
| | | | | | | | | | | |
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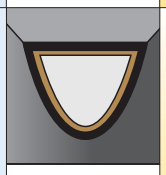
| **KCP40**  **C5–C6** | **Composition:** A tough carbide grade with a moderately thick TiN-MT-TiCN-$Al_2O_3$ coating.<br>**Application:** For heavy roughing of carbon, alloy, and stainless steels. The substrate-coating combination provides unbelievable toughness and operational security allowing high metal removal rates even in most demanding interrupted cuts.<br>beyond | P | | | | | | ■ | ■ | ■ |
| | | M | | | | | ■ | ■ | ■ | |
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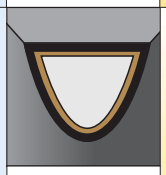
| **KCK05**  **C3–C4** | **Composition:** A multilayered coating with moderately thick MTCVD TiCN-$Al_2O_3$ layers over a highly deformation-resistant carbide substrate.<br>**Application:** Designed for high-speed machining of grey and ductile irons. The substrate and coating architecture together with CW5 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 straight and varied depths of cut.<br>beyond | P | ■ | | | | | | | |
| | | | | | | | | | | |
| | | K | ■ | ■ | ■ | | | | | |
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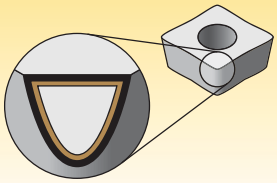
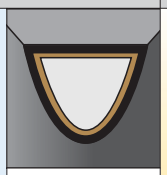
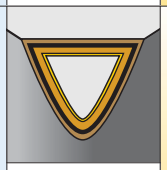
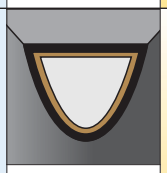
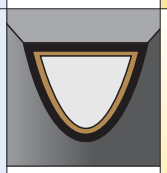
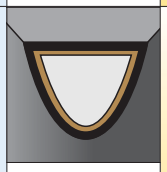
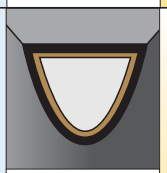


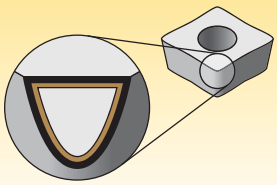
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

wear resistance ⟷ toughness

## CVD-Coated Carbide Grades

| Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|---|---|---|
| **KCK15**  C3–C4 | **Composition:** A multilayered coating with thick MTCVD TiCN-$Al_2O_3$ 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 straight and lightly interrupted cuts. beyond | P | P | | | | | | | |
| **KCK15B**  | **Composition:** A multilayered coating with thick MTCVD TiCN-$Al_2O_3$-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. beyond DRIVE | P | P | | | | | | | |
| **KCK20**  C2–C3 | **Composition:** A specially toughened MTCVD-TiCN-$Al_2O_3$ coating over a wear-resistant substrate. **Application:** The KCK20 grade is 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 | K | P | K | | | | | |
| **KCM15**  C2–C3 | **Composition:** A multilayer MTCVD-TiCN-$Al_2O_3$ 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 P20–25 range. KCM15 grade in combination with unique geometries have been designed to resist depth-of-cut notching and minimise burr formation. The post-coat treatment reduces coating stresses, improves coating adhesion, minimises microchipping and edge build-up, and improves workpiece finish. beyond | P | M | P | M | | | | | |
| **KCM25**  C1–C2 | **Composition:** A multilayer CVD coating comprised of TiN-MT-TiCN-$Al_2O_3$ 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. KCM25 inserts offer an extraordinary combination of toughness, built-up edge resistance, and wear resistance in stainless steel applications. beyond | P | M | P | M | | | | | |
| **KCM35**  C1–C2 | **Composition:** A multilayer TiN-MT-TiCN-$Al_2O_3$ CVD coating over a super-tough substrate. **Application:** The KCM35 grade is 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. KCM35 grade is available in insert sizes and geometries appropriate for heavy feeds and large depths of cut. beyond | P | M | P | M | | | | | |

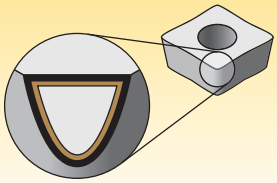


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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 | C3, C7 | **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, K | | | | | | | | |
| | KTP10 | C3, C7 | **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, K | | | | | | | | |
| Ceramic Grades | KYS25 | C4 | **Composition:** SiAlON ceramic with a multilayered alumina-TiCN CVD coating. **Application:** Compliments 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. beyond | S | | S | S | S | | | | |
| | KYS30 | C4 | **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. beyond | S | | | S | S | S | | | |
| | KYK10 | — | **Composition:** An advanced SiAlON ceramic grade. **Application:** Provides maximum wear resistance. Use for high-speed continuous turning of grey cast iron, including through scale. beyond | K | | K | K | | | | | |
| | KYK25 | C3 | **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. beyond | K | | K | K | K | | | | |

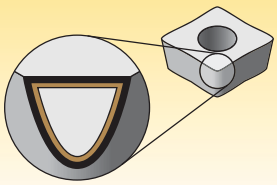


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

wear resistance ⟷ toughness

| | Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ceramic Grades | KY4300 C4 | **Composition:** Whisker ceramic with a matrix of $Al_2O_3$ + SiCW. **Application:** The SiC whiskers embedded in the micro structure give this ceramic excellent toughness for cutting high-temp alloys and cast materials with high Brinell hardness. | M | | | | | | | | |
| | | | S | | | | | | | | |
| | | | H | | | | | | | | |
| | KY3500 C2 | **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 | | | | | | | | |
| | KY4400 C4, C8 | **Composition:** A PVD TiN coating over an aluminium oxide and titanium carbonitride composite ceramic ($Al_2O_3$/TiCN). **Application:** Used for finish turning of hardened steels and irons (greater than 45 HRC). Where possible, use under dry conditions in smooth or varied depths of cut. Can also be applied in finish turning of nickel alloys, cobalt alloys, and powder metals. | H | | | | | | | | |
| PCBN – Polycrystalline Cubic Born Nitride 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, sintered powdered metals, and heavy cuts in hardened steels (>45 HRC). Also use 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 | | | | | | | | |
| | KBK35 — | **Composition:** A high CBN content, solid PCBN insert having multiple cutting edges with a CVD coating for increased tool life and speed capability. **Application:** Applied in roughing to finishing of unaged and aged cast iron, chilled irons, high-chrome alloyed steels, sintered powdered metals, and heavy cuts in hardened steels (>45 HRC). Also use 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 | | | | | | | | |

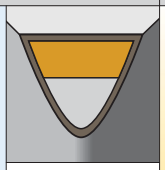
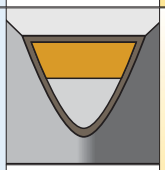
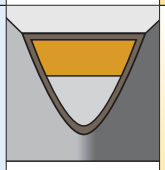
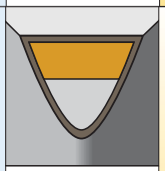


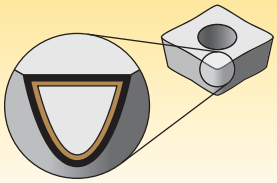
**Coatings provide high-speed capability and are engineered for finishing to heavy roughing.**

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

wear resistance ⟷ toughness

## PCBN – Polycrystalline Cubic Born Nitride Grades

| Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|---|---|---|
| **KB5610**  C4, C8 | **Composition:** A low content PCBN grade with a PVD TiAlN coating for added wear resistance. **Application:** Designed for the precision machining of hardened steels (>45 HRC). The PVD coating offers improved wear resistance and excellent surface finish capabilities. It can be very 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 multitip format with a tremendous breadth of edge preps, insert styles, and wiper geometries. | H | H | H | | | | | | |
| **KBH20**  — | **Composition:** A low-content PCBN grade with nano-composite coating for added wear resistance. **Application:** KBH20 is the ideal PCBN hard turning grade in continuous to lightly interrupted applications. The structure, as well as the different edge preparations, enable tight and repeatable workpiece tolerances, excellent surface finishes, and surface integrity — even at elevated speeds. Typical applications are case-hardened components, such as gears, shafts, and other drive train components. | P | P | P | P | | | | | |
| | | H | | H | H | H | | | | |
| **KB5625**  C4, C8 | **Composition:** A PVD TiAlN coating over a medium content, PCBN tip brazed onto a carbide insert. **Application:** Designed for roughing to finishing of hardened steels (>45 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburised and nitrided irons, and some hard coatings. | H | | | H | H | H | | | |
| **KB5630**  C4, C8 | **Composition:** A high content PCBN grade with a PVD AlTiN coating for added wear resistance. **Application:** Designed for roughing to finishing in hardened steels (>45 HRC), abrasive workpiece materials such as sintered valve seat materials, powder metallurgy tool steels, and hard high-alloy cast irons. The PVD coating provides resistance to crater wear and increased resistance to chipping. 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 | | | | | | |
| | | S | S | S | | | | | | |
| | | H | | | | H | H | H | | |

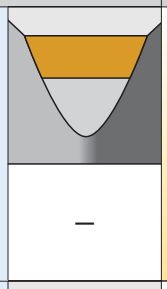
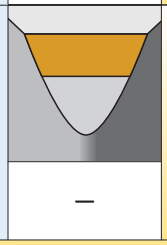


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

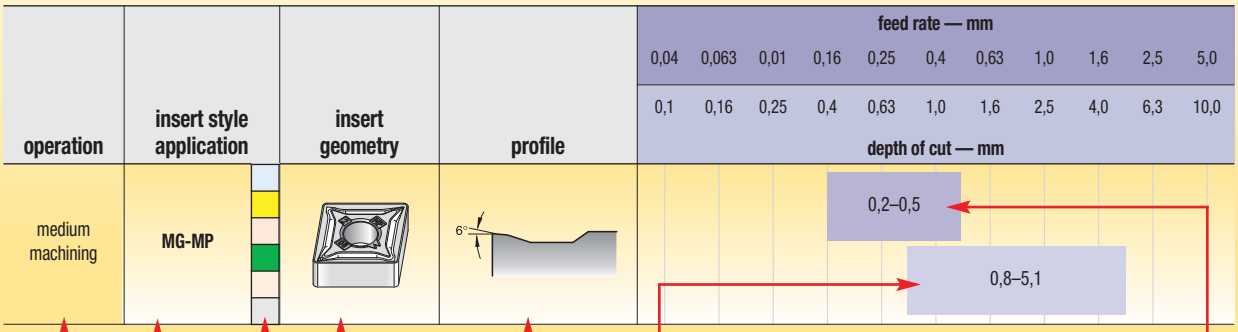
wear resistance ⟷ toughness

## PCD – Polycrystalline Diamond Grades

| 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 zinc-based alloys. The ultra-fine-grain diamond particle size enables superior surface finishes while ensuring the best mechanical shock resistance of any PCD cutting tool. | | | | | | | | | |
| 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/GCI) materials, MMC, carbon-fibre reinforced plastics, and other abrasive non-metallic materials. | | | | | | | | | |

## Select the geometry — based on feed rate and depth of cut

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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 program, select smaller inserts for lighter cuts and larger inserts for heavy cuts

**Pictorial View of Insert**

**Chipbreaker Geometry —**
section is through nose radius of insert

**Primary Workpiece Material Group**

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

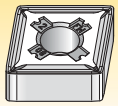
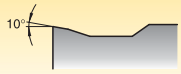
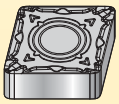
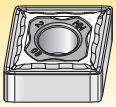
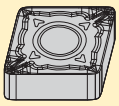
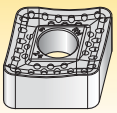
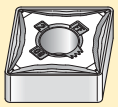
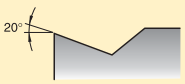
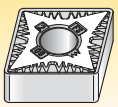
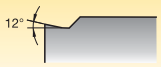
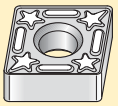
**Chip Control Geometry Designation —**
example: MG-MP = CNMG-432MP

**Machining Operation —**
for what the insert geometry is designed

NOTE: For detailed grade and geometry recommendations, reference the Kennametal Beyond™ Selection System in the Innovations Master Catalogue Cutting Tools 2013, pages B8–B23.

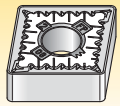
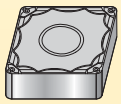
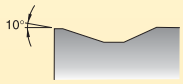
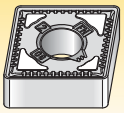
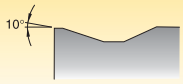
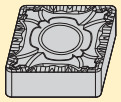
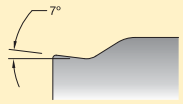
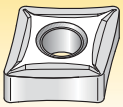
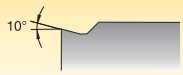
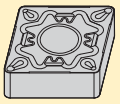
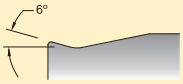
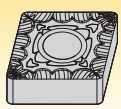
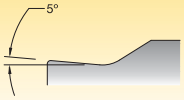
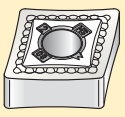
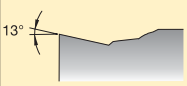
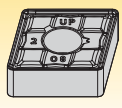
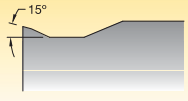
## Select the geometry — based on feed rate and depth of cut

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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<br>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** |  |   | 0,2–2,0<br>0,3–2,0 |
| | **MG-FW1** |  | | 0,1–1,5<br>0,1–1,5 |
| wiper medium machining | **MG-MW** |  | | 0,3–0,6<br>0,8–5,1 |
| | **MG-MW1** |  | | 0,15–0,5<br>0,5–3 |
| wiper roughing | **MM-RW** |  | | 0,3–1,3<br>1,3–12,7 |
| fine finishing | **MG-FF** |  |   | 0,1–0,3<br>0,1–2,0 |
| finishing sharp | **GG-FS** precision ground |  |   | 0,07–0,25<br>0,20 - 2,0 |
| finishing | **GG-LF** precision ground |  | | 0,1 - 0,5<br>0,5–3,0 |

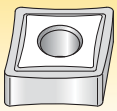
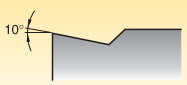
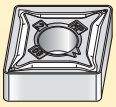
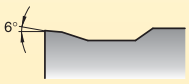
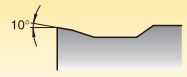
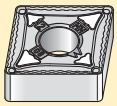
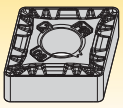
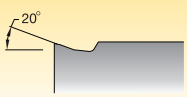
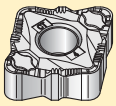
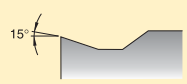
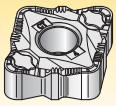
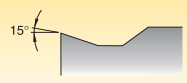
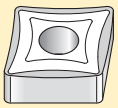
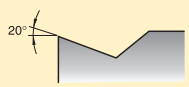
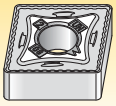
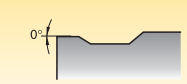
## Select the geometry — based on feed rate and depth of cut

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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<br>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 | MG-FP |  | | 0,1–0,3<br>0,3–2,5 |
| | MG-FH |  |  | 0,05–0,25<br>0,25–1 |
| | MG-FN |  |  | 0,1–0,3<br>0,3–2,5 |
| | MG-FX |  |  | 0,07–0,22<br>0,2–1 |
| | MP-K |  |  | 0,1–0,3<br>0,2–2,5 |
| medium machining | MG-MH |  |  | 0,15–0,5<br>0,3–2 |
| | MG-MX |  |  | 0,15–0,35<br>0,5–1,5 |
| medium sharp | MG-MS |  |  | 0,12–0,35<br>0,76–5,0 |
| medium machining | MG-UP |  |  | 0,2–0,6<br>1–6,4 |

## Select the geometry — based on feed rate and depth of cut

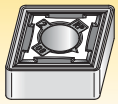
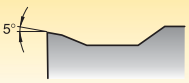
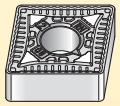
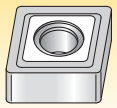
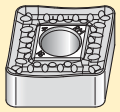
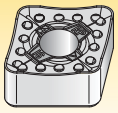
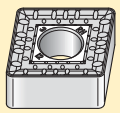
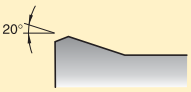
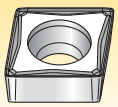
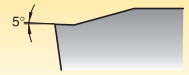
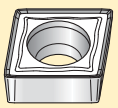
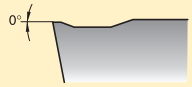
| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

| 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<br>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 |
|---|---|---|---|---|
| medium machining | __GP* |  |   | 0,1–0,35<br>0,5–3,2 |
| | MG-MP |  |   | 0,2–0,5<br>0,8–5,1 |
| | MG-P | |   | 0,15–0,5<br>0,75–5,0 |
| | MG-MN |  | | 0,2–0,5<br>0,5–5,1 |
| | MG-MR |  |   | 0,15–0,55<br>1.5–6.3 |
| | MG-CT<br>O.D. turning |  |   | 0,13–0,5<br>1,0–3,0 |
| | MG-CT<br>outward facing |  |   | 0,25–0,5<br>0,25–1,0 |
| | -MS<br>single sided |  |   | 0,2–0,4<br>0,6–2,3 |
| | MG-UN |  |   | 0,2–0,5<br>0,8–3,8 |

*35° and 55° geometries are single sided.

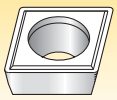
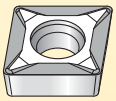
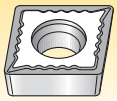
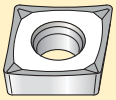
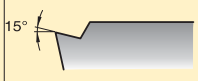
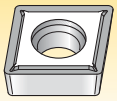
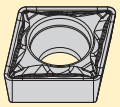
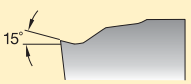
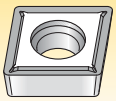
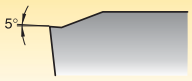
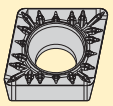
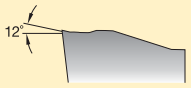
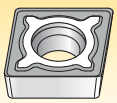
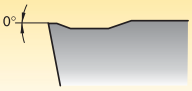
## Select the geometry — based on feed rate and depth of cut

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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<br>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 |
|---|---|---|---|---|
| roughing | **MG-RP** |  |   | 0,2–0,6<br>1,1–6,4 |
| | **MG-RN** |  | | 0,3–0,63<br>1,1–5,7 |
| heavy roughing | **MG** |  | | 0,3–0,8<br>1,1–5,7 |
| | **MM-RM** single sided |  | | 0,3–1,0<br>1,3–12,7 |
| | **MM-RP** |  | | 0,2–1,0<br>1,3–10,0 |
| | **MM-RH** single sided |  |   | 0,4–1,3<br>1,3–12,7 |
| wiper finishing | **MT-FW** |  |   | 0,1–0,3<br>0,2–1,5 |
| wiper, medium finishing | **MT-MW** |  |   | 0,1–0,5<br>0,4–3,3 |

## Select the geometry — based on feed rate and depth of cut

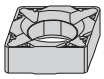
| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

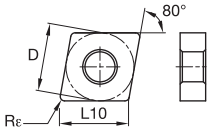
| operation | insert style application | insert geometry | profile | feed rate — mm: 0,04 / 0,063 / 0,01 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 5,0<br>depth of cut — mm: 0,1 / 0,16 / 0,25 / 0,4 / 0,63 / 1,0 / 1,6 / 2,5 / 4,0 / 6,3 / 10,0 |
|---|---|---|---|---|
| fine finishing | **__GM** precision ground |  | | 0,1–0,2<br>0,2–1,0 |
| | **MT-11** |  | | 0,1–0,3<br>0,2–1,3 |
| | **.MT-UF** |  | | 0,1–0,3<br>0,1–1,3 |
| finishing | **GT-HP** precision ground |  |  | 0,2–0,4<br>0,6–2,3 |
| | **GT-LF** precision ground |  | | 0,2–0,4<br>0,8–2,3 |
| | **MT-FP** |  |  | 0,063–0,25<br>0,16–1,6 |
| | **MT-LF** |  |  | 0,2–0,4<br>0,8–2,3 |
| medium machining | **MT-MP** |  |  | 0,01–0,4<br>0,4–2,3 |
| | **MT-MF** |  |  | 0,2–0,4<br>1,1–2,3 |

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | | ● | ● | | ● | ● | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## CNGG-FBB

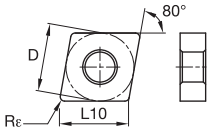





beyond BLAST™

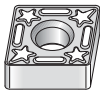
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNGG120404FBB | 12,70 | 12,90 | 0,4 |
| CNGG120408FBB | 12,70 | 12,90 | 0,8 |

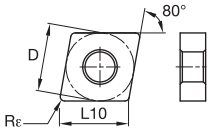
## CNGG-FS




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNGG120401FS | 12,70 | 12,90 | 0,1 |
| CNGG120402FS | 12,70 | 12,90 | 0,2 |
| CNGG120404FS | 12,70 | 12,90 | 0,4 |
| CNGG120408FS | 12,70 | 12,90 | 0,8 |
| CNGG120412FS | 12,70 | 12,90 | 1,2 |

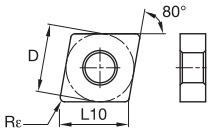
## CNGG-LF






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNGG120401LF | 12,70 | 12,90 | 0,1 |
| CNGG120402LF | 12,70 | 12,90 | 0,2 |
| CNGG120404LF | 12,70 | 12,90 | 0,4 |
| CNGG120408LF | 12,70 | 12,90 | 0,8 |
| CNGG120412LF | 12,70 | 12,90 | 1,2 |
| CNGG160608LF | 15,88 | 16,12 | 0,8 |
| CNGG160612LF | 15,88 | 16,12 | 1,2 |

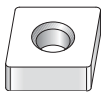
## CNGP

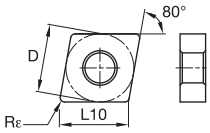



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNGP120401 | 12,70 | 12,90 | 0,1 |
| CNGP120402 | 12,70 | 12,90 | 0,2 |
| CNGP120404 | 12,70 | 12,90 | 0,4 |
| CNGP120408 | 12,70 | 12,90 | 0,8 |
| CNGP120412 | 12,70 | 12,90 | 1,2 |
| CNGP120416 | 12,70 | 12,90 | 1,6 |

● first choice
○ alternate choice

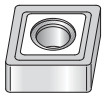
## CNMA

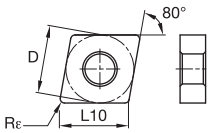





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | ● | | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CNMA120404** | 12,70 | 12,90 | 0,4 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA120408** | 12,70 | 12,90 | 0,8 | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | | | |
| **CNMA120412** | 12,70 | 12,90 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA120416** | 12,70 | 12,90 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA160608** | 15,88 | 16,12 | 0,8 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA160612** | 15,88 | 16,12 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA160616** | 15,88 | 16,12 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA190608** | 19,05 | 19,34 | 0,8 | | | | | | ● | | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA190612** | 19,05 | 19,34 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **CNMA190616** | 19,05 | 19,34 | 1,6 | | | | | | ● | | ● | | | | | | | | | | | | | | | | | | | |

## CNMG






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CNMG120404B** | 12,70 | 12,90 | 0,4 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| **CNMG120408** | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | | ● | ● | | | | | | | | | | | | | |
| **CNMG120412** | 12,70 | 12,90 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| **CNMG190608** | 19,05 | 19,34 | 0,8 | | | ● | | ● | | | | | | | | | | | | | | | | | | | | | | |
| **CNMG190612** | 19,05 | 19,34 | 1,2 | | | ● | | ● | | | | | | | | | ● | | ● | ● | | | | | | | | | | |
| **CNMG190616** | 19,05 | 19,34 | 1,6 | | | ● | | ● | | | | | | | | | | | | | | | | | | | | | | |
| **CNMG250924** | 25,40 | 25,79 | 2,4 | | | ● | | ● | | | | | | | | | | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

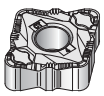
A24–A31

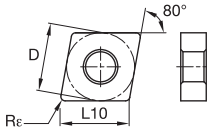
A32–A37

Turning

● first choice
○ alternate choice

## CNMG-CT



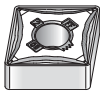


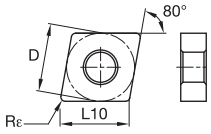

beyond DRIVE

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG120408CT | 12,70 | 12,90 | 0,8 | ● | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| CNMG120412CT | 12,70 | 12,90 | 1,2 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMG120416CT | 12,70 | 12,90 | 1,6 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |

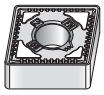
## CNMG-FF

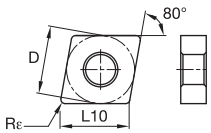





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |

## CNMG-FN





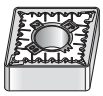

beyond DRIVE

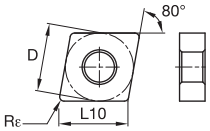
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG090304FN | 9,53 | 9,67 | 0,4 | | ● | | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| CNMG090308FN | 9,53 | 9,67 | 0,8 | | ● | | | | ● | | | | | | | | | | | | | | | | | | | | | |
| CNMG120402FN | 12,70 | 12,90 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| CNMG120404FN | 12,70 | 12,90 | 0,4 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| CNMG120408FN | 12,70 | 12,90 | 0,8 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | ● |
| CNMG120412FN | 12,70 | 12,90 | 1,2 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| CNMG120416FN | 12,70 | 12,90 | 1,6 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

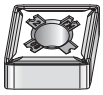
## CNMG-FP

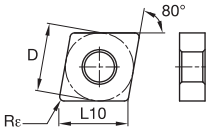





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG120404FP | 12,70 | 12,90 | 0,4 | | ● | | | | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |
| CNMG120408FP | 12,70 | 12,90 | 0,8 | | ● | ● | | | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |
| CNMG120412FP | 12,70 | 12,90 | 1,2 | | | | | | | | | ● | | | | | | | ● | | | | | | | | | | | |

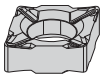
## CNMG-FW

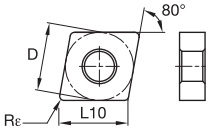





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG120404FW | 12,70 | 12,90 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| CNMG120408FW | 12,70 | 12,90 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| CNMG120412FW | 12,70 | 12,90 | 1,2 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |

## CNMG-MBB






beyond BLAST™

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG120404MBB | 12,70 | 12,90 | 0,4 | | | | | | | | | | | | ● | | | | ● | | | | | | | | | | | |
| CNMG120408MBB | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | ● | | | | ● | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

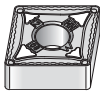
A24–A31

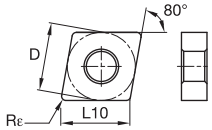
A32–A37

Turning

● first choice
○ alternate choice

## CNMG-MN



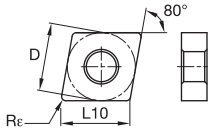



beyond DRIVE™

NEW!

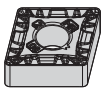
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG090304MN | 9,53 | 9,67 | 0,4 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG090308MN | 9,53 | 9,67 | 0,8 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG090312MN | 9,53 | 9,67 | 1,2 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG120404MN | 12,70 | 12,90 | 0,4 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG120408MN | 12,70 | 12,90 | 0,8 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMG120412MN | 12,70 | 12,90 | 1,2 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMG120416MN | 12,70 | 12,90 | 1,6 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG160608MN | 15,88 | 16,12 | 0,8 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG160612MN | 15,88 | 16,12 | 1,2 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMG160616MN | 15,88 | 16,12 | 1,6 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG190608MN | 19,05 | 19,34 | 0,8 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG190612MN | 19,05 | 19,34 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMG190616MN | 19,05 | 19,34 | 1,6 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | |

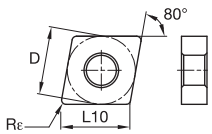
## CNMG-MP




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG090308MP | 9,53 | 9,67 | 0,8 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| CNMG120404MP | 12,70 | 12,90 | 0,4 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| CNMG120408MP | 12,70 | 12,90 | 0,8 | | ● | ● | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| CNMG120412MP | 12,70 | 12,90 | 1,2 | | ● | ● | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| CNMG120416MP | 12,70 | 12,90 | 1,6 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| CNMG160608MP | 15,88 | 16,12 | 0,8 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| CNMG160612MP | 15,88 | 16,12 | 1,2 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| CNMG160616MP | 15,88 | 16,12 | 1,6 | | | | | | | | | | | ● | | | | | ● | ● | | | | | | | | | | |
| CNMG190608MP | 19,05 | 19,34 | 0,8 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| CNMG190612MP | 19,05 | 19,34 | 1,2 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| CNMG190616MP | 19,05 | 19,34 | 1,6 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |

## CNMG-MR





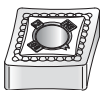

beyond DRIVE™

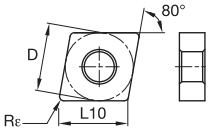
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG120408MR | 12,70 | 12,90 | 0,8 | | | | | ● | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | ● |
| CNMG120412MR | 12,70 | 12,90 | 1,2 | | | | | ● | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | ● |
| CNMG120416MR | 12,70 | 12,90 | 1,6 | | | | | | | | | | ● | | | | | | | | | | | | | | | ● | ● | ● |
| CNMG160612MR | 15,88 | 16,12 | 1,2 | | | | | ● | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | ● |
| CNMG160616MR | 15,88 | 16,12 | 1,6 | | | | | | | | | | ● | | | | | | | | | | | | | | | ● | ● | ● |
| CNMG190612MR | 19,05 | 19,34 | 1,2 | | | | | ● | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | ● |

● first choice
○ alternate choice

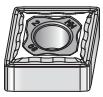
## CNMG-MS

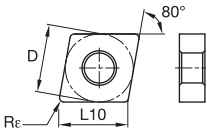





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CNMG120401MS** | 12,70 | 12,90 | 0,1 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG120402MS** | 12,70 | 12,90 | 0,2 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG120404MS** | 12,70 | 12,90 | 0,4 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG120408MS** | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG120412MS** | 12,70 | 12,90 | 1,2 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG120416MS** | 12,70 | 12,90 | 1,6 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG160608MS** | 15,88 | 16,12 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG160612MS** | 15,88 | 16,12 | 1,2 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG190612MS** | 19,05 | 19,34 | 1,2 | | | | | | | | | | | | | | | | | | ● | ● | | ● | | | | | | |
| **CNMG190608MS** | 19,05 | 19,34 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| **CNMG190616MS** | 19,05 | 19,34 | 1,6 | | | | | | | | | | | | | ● | | | ● | | | ● | | ● | | | | | | |

## CNMG-MW



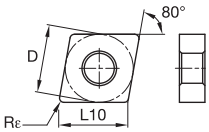



beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CNMG120408MW** | 12,70 | 12,90 | 0,8 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | ● | ● | ● |
| **CNMG120412MW** | 12,70 | 12,90 | 1,2 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | ● |

## CNMG-P




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CNMG120404P** | 12,70 | 12,90 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| **CNMG120408P** | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | | | | | | | | | |
| **CNMG120412P** | 12,70 | 12,90 | 1,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| **CNMG120416P** | 12,70 | 12,90 | 1,6 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| **CNMG190612P** | 19,05 | 19,34 | 1,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

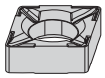
A24–A31

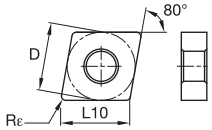
A32–A37

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## CNMG-RBB

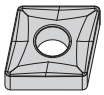


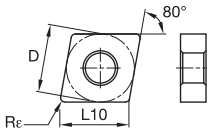



beyond BLAST™

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNMG120408RBB | 12,70 | 12,90 | 0,8 |

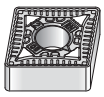
## CNMG-RM

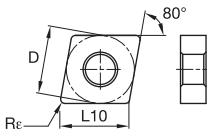





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNMG190612RM | 19,05 | 19,34 | 1,2 |
| CNMG190616RM | 19,05 | 19,34 | 1,6 |
| CNMG250924RM | 25,40 | 25,79 | 2,4 |

## CNMG-RN



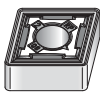


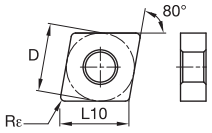

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| 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 |

## CNMG-RP





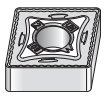

beyond DRIVE™

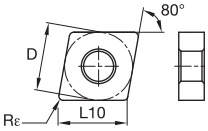
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| 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



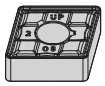


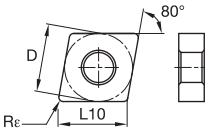

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | | | ● | ● | ● | | | | | | ● | ● | | ● | ● | | | | | | |
| K | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CNMG120404UN | 12,70 | 12,90 | 0,4 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| CNMG120408UN | 12,70 | 12,90 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| CNMG120412UN | 12,70 | 12,90 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| CNMG120416UN | 12,70 | 12,90 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| CNMG160608UN | 15,88 | 16,12 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| CNMG160612UN | 15,88 | 16,12 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| CNMG160616UN | 15,88 | 16,12 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| CNMG190608UN | 19,05 | 19,34 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| CNMG190612UN | 19,05 | 19,34 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| CNMG190616UN | 19,05 | 19,34 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |

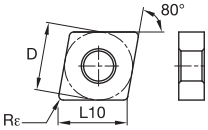
## CNMG-UP






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMG120404UP | 12,70 | 12,90 | 0,4 | | | | | | | | | ● | ● | | | | | | | ● | | | | | | | | | | |
| CNMG120408UP | 12,70 | 12,90 | 0,8 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| CNMG120412UP | 12,70 | 12,90 | 1,2 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| CNMG160608UP | 15,88 | 16,12 | 0,8 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | |
| CNMG160612UP | 15,88 | 16,12 | 1,2 | | | | | | | | | ● | ● | ● | | | | | ● | | | | | | | | | | | |
| CNMG190608UP | 19,05 | 19,34 | 0,8 | | | | | | | | | ● | ● | | | | | | | | | | | | | | | | | |
| CNMG190612UP | 19,05 | 19,34 | 1,2 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | |
| CNMG190616UP | 19,05 | 19,34 | 1,6 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | |

## CNMM-RH




beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMM190612RH | 19,05 | 19,34 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| CNMM190616RH | 19,05 | 19,34 | 1,6 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| CNMM190624RH | 19,05 | 19,34 | 2,4 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | ● | |
| CNMM250924RH | 25,40 | 25,79 | 2,4 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

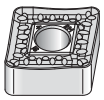
beyond
A8–A23

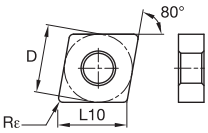
A24–A31

A32–A37

● first choice
○ alternate choice

## CNMM-RM



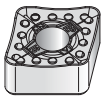


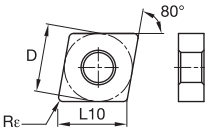

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMM120408RM | 12,70 | 12,90 | 0,8 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| CNMM120412RM | 12,70 | 12,90 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMM120416RM | 12,70 | 12,90 | 1,6 | | | ● | | ● | | | | | | | | | | | | | | | | | | | | | | |
| CNMM160612RM | 15,88 | 16,12 | 1,2 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMM160616RM | 15,88 | 16,12 | 1,6 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| CNMM160624RM | 15,88 | 16,12 | 2,4 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| CNMM190612RM | 19,05 | 19,34 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| CNMM190616RM | 19,05 | 19,34 | 1,6 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMM190624RM | 19,05 | 19,34 | 2,4 | | | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| CNMM250924RM | 25,40 | 25,79 | 2,4 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | |

## CNMM-RP



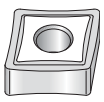


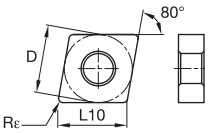

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ● | ● | ● | | | | | | ● | | | | | | | | | | | | | | | ● | ● | |
| 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 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

## CNMP

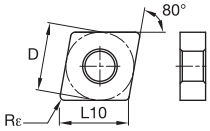





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMP120404 | 12,70 | 12,90 | 0,4 | | | | | | | | | | | | | ● | ● | | | | | | | | ● | | | | | |
| CNMP120408 | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | | ● | ● | | | | | | | | ● | | | | | |
| CNMP120412 | 12,70 | 12,90 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| CNMP190612 | 19,05 | 19,34 | 1,2 | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |

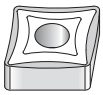
● first choice
○ alternate choice

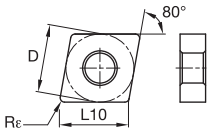
## CNMP-K




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CNMP120404K** | 12,70 | 12,90 | 0,4 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| **CNMP120408K** | 12,70 | 12,90 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| **CNMP120412K** | 12,70 | 12,90 | 1,2 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

## CNMS






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CNMS120408** | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | ● | | | | | |
| **CNMS160608** | 15,88 | 16,12 | 0,8 | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| **CNMS190608** | 19,05 | 19,34 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | ● | | | | | |
| **CNMS190612** | 19,05 | 19,34 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

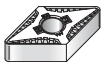
beyond
A8–A23

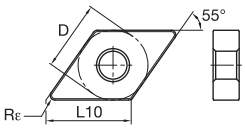
A24–A31

A32–A37

● first choice
○ alternate choice

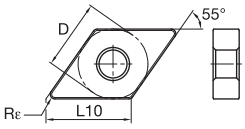
## DNGG-FS





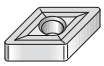

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNGG110401FS | 9,52 | 11,63 | 0,1 | | | | | | | | | | | | | | | | | | ● | | | ● | | | | | | |
| DNGG110402FS | 9,52 | 11,63 | 0,2 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | | | | | | | |
| DNGG110404FS | 9,52 | 11,63 | 0,4 | | | | | | | | | | | | | ● | | | ● | | | | | ● | | | | | | |
| DNGG110408FS | 9,52 | 11,63 | 0,8 | | | | | | | | | | | | | | | | ● | | ● | | | ● | | | | | | |
| DNGG150401FS | 12,70 | 15,50 | 0,1 | | | | | | | | | | | | | | | | ● | | | | | ● | | | | | | |
| DNGG150402FS | 12,70 | 15,50 | 0,2 | | | | | | | | | | | | | | | | ● | | ● | ● | | | | | | | | |
| DNGG150404FS | 12,70 | 15,50 | 0,4 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| DNGG150604FS | 12,70 | 15,50 | 0,4 | | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| DNGG150408FS | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| DNGG150608FS | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | ● | | | ● | | | | | | | | | | | |
| DNGG150412FS | 12,70 | 15,50 | 1,2 | | | | | | | | | | | | | | | | ● | | ● | | | | | | | | | |
| DNGG150416FS | 12,70 | 15,50 | 1,6 | | | | | | | | | | | | | ● | | | ● | | | | | ● | | | | | | |

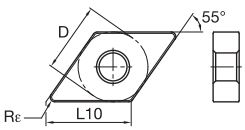
## DNGG-LF




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNGG150402LF | 12,70 | 15,50 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| DNGG150404LF | 12,70 | 15,50 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| DNGG150408LF | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

## DNGP

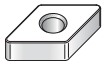


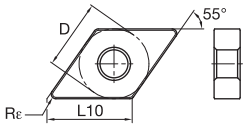



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNGP150401 | 12,70 | 15,50 | 0,1 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| DNGP150402 | 12,70 | 15,50 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | |
| DNGP150404 | 12,70 | 15,50 | 0,4 | | | | | | | | | | | | | ● | | | ● | ● | | | | | ● | | | | | |
| DNGP150408 | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | | | | ● | | | | | |
| DNGP150604 | 12,70 | 15,50 | 0,4 | | | | | | | | | | | | | ● | | | ● | | | | | | ● | | | | | |
| DNGP150608 | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | |

● first choice
○ alternate choice

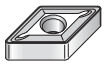
## DNMA

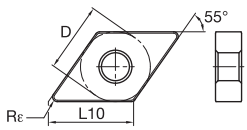





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | ● | ● | ● | ● | | |
| M | | | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | ● | | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **DNMA110408** | 9,53 | 11,63 | 0,8 | | | | | | ● | | ● | | | | | | | | | | | | | | | | | | | |
| **DNMA110412** | 9,53 | 11,63 | 1,2 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |
| **DNMA150408** | 12,70 | 15,50 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **DNMA150412** | 12,70 | 15,50 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **DNMA150416** | 12,70 | 15,50 | 1,6 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |
| **DNMA150608** | 12,70 | 15,50 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **DNMA150612** | 12,70 | 15,50 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **DNMA150616** | 12,70 | 15,50 | 1,6 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |

## DNMG





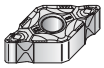

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **DNMG150408B** | 12,70 | 15,50 | 0,8 |

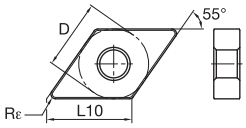
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

● first choice
○ alternate choice

## DNMG-CT



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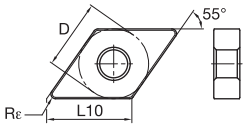
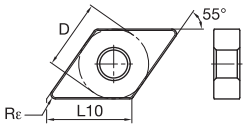
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110408CT | 9,53 | 11,63 | 0,8 | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150404CT | 12,70 | 15,50 | 0,4 | | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | | ● | |
| DNMG150408CT | 12,70 | 15,50 | 0,8 | ● | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| DNMG150412CT | 12,70 | 15,50 | 1,2 | | ● | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| DNMG150604CT | 12,70 | 15,50 | 0,3 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150608CT | 12,70 | 15,50 | 0,7 | ● | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| DNMG150612CT | 12,70 | 15,50 | 1,1 | ● | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | ● | ● | |

## DNMG-FF




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110404FF | 9,53 | 11,63 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG110408FF | 9,53 | 11,63 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150404FF | 12,70 | 15,50 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150408FF | 12,70 | 15,50 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150604FF | 12,70 | 15,50 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150608FF | 12,70 | 15,50 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |

## DNMG-FN

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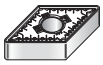
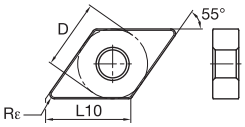
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110404FN | 9,53 | 11,63 | 0,4 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| DNMG110408FN | 9,53 | 11,63 | 0,8 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| DNMG110412FN | 9,53 | 11,63 | 1,2 | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | | | | |
| DNMG150404FN | 12,70 | 15,50 | 0,4 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| DNMG150408FN | 12,70 | 15,50 | 0,8 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | ● |
| DNMG150412FN | 12,70 | 15,50 | 1,2 | ● | ● | | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| DNMG150604FN | 12,70 | 15,50 | 0,4 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| DNMG150608FN | 12,70 | 15,50 | 0,8 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | ● | | |
| DNMG150612FN | 12,70 | 15,50 | 1,2 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |

● first choice
○ alternate choice

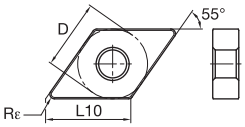
## DNMG-FP





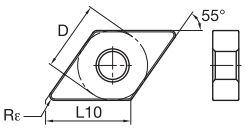

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110404FP | 9,53 | 11,63 | 0,4 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| DNMG110408FP | 9,53 | 11,63 | 0,8 | | ● | | | | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150404FP | 12,70 | 15,50 | 0,4 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150408FP | 12,70 | 15,50 | 0,8 | | ● | ● | | | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150412FP | 12,70 | 15,50 | 1,2 | | | | | | | | | ● | | | | | | | ● | | | | | | | | ● | | | |
| DNMG150604FP | 12,70 | 15,50 | 0,4 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| DNMG150608FP | 12,70 | 15,50 | 0,8 | | ● | ● | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| DNMG150612FP | 12,70 | 15,50 | 1,2 | | | | | | | | | ● | | | | | | | ● | | | | | | | ● | | | | |

## DNMG-FW




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110404FW | 9,53 | 11,63 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | | | | | | | ● | | | | |
| DNMG110408FW | 9,53 | 11,63 | 0,8 | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | | | | |
| DNMG150404FW | 12,70 | 15,50 | 0,4 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150408FW | 12,70 | 15,50 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| DNMG150604FW | 12,70 | 15,50 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| DNMG150608FW | 12,70 | 15,50 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | | |

## DNMG-MN

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| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110404MN | 9,53 | 11,63 | 0,4 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG110408MN | 9,53 | 11,63 | 0,8 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG110412MN | 9,53 | 11,63 | 1,2 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| DNMG150404MN | 12,70 | 15,50 | 0,4 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | | |
| DNMG150408MN | 12,70 | 15,50 | 0,8 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| DNMG150412MN | 12,70 | 15,50 | 1,2 | ● | ● | ● | | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| DNMG150416MN | 12,70 | 15,50 | 1,6 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150604MN | 12,70 | 15,50 | 0,4 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150608MN | 12,70 | 15,50 | 0,8 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| DNMG150612MN | 12,70 | 15,50 | 1,2 | ● | ● | ● | | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| DNMG150616MN | 12,70 | 15,50 | 1,6 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG190612MN | 15,88 | 19,38 | 1,2 | | ● | | ● | | | | | | | | | | | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

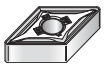
A24–A31

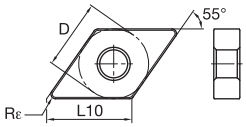
A32–A37

Turning

● first choice
○ alternate choice

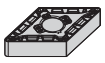
## DNMG-MP

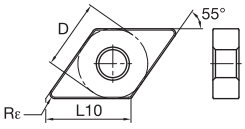





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110408MP | 9,53 | 11,63 | 0,8 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| DNMG110412MP | 9,53 | 11,63 | 1,2 | | | | | | | | | ● | ● | | | | | | | | | | | | | | | | | |
| DNMG150404MP | 12,70 | 15,50 | 0,4 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| DNMG150408MP | 12,70 | 15,50 | 0,8 | | ● | ● | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| DNMG150412MP | 12,70 | 15,50 | 1,2 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| DNMG150604MP | 12,70 | 15,50 | 0,4 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| DNMG150608MP | 12,70 | 15,50 | 0,8 | | ● | ● | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| DNMG150612MP | 12,70 | 15,50 | 1,2 | | ● | | | | | | | ● | ● | | | | | | ● | ● | | ● | ● | | | | | | | |

## DNMG-MR






beyond DRIVE™

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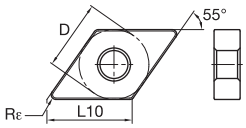
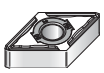
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG150408MR | 12,70 | 15,50 | 0,8 | | | | | ● | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | |
| DNMG150412MR | 12,70 | 15,50 | 1,2 | | | | | ● | | | | ● | ● | | | | | | | | | | | | | | | ● | ● | ● |
| DNMG150608MR | 12,70 | 15,50 | 0,8 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | ● |
| DNMG150616MR | 12,70 | 15,50 | 1,6 | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | |

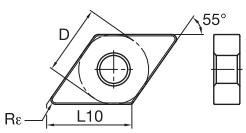
## DNMG-MS




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110408MS | 9,53 | 11,63 | 0,8 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| DNMG110412MS | 9,53 | 11,63 | 1,2 | | | | | | | | | | | | | | | | | | ● | | | | | | | | | |
| 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 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| DNMG150608MS | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| DNMG150408MS | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| DNMG150412MS | 12,70 | 15,50 | 1,2 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| DNMG150612MS | 12,70 | 15,50 | 1,2 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |

## DNMG-MW



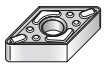


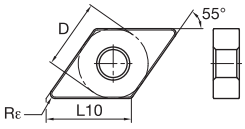

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG150408MW | 12,70 | 15,50 | 0,4 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150412MW | 12,70 | 15,50 | 1,2 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150608MW | 12,70 | 15,50 | 0,4 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150612MW | 12,70 | 15,50 | 1,2 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

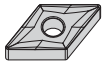
## DNMG-P

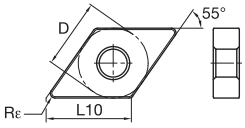





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNMG150404P | 12,70 | 15,50 | 0,4 |
| DNMG150408P | 12,70 | 15,50 | 0,8 |
| DNMG150608P | 12,70 | 15,50 | 0,8 |

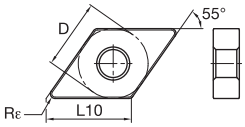
## DNMG-RM






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNMG190608RM | 15,88 | 19,38 | 0,8 |
| DNMG190612RM | 15,88 | 19,38 | 1,2 |

## DNMG-RN

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| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNMG150408RN | 12,70 | 15,50 | 0,8 |
| DNMG150412RN | 12,70 | 15,50 | 1,2 |
| DNMG150416RN | 12,70 | 15,50 | 1,6 |
| DNMG150608RN | 12,70 | 15,50 | 0,8 |
| DNMG150612RN | 12,70 | 15,50 | 1,2 |
| DNMG150616RN | 12,70 | 15,50 | 1,6 |
| DNMG190608RN | 15,88 | 19,38 | 0,8 |
| DNMG190612RN | 15,88 | 19,38 | 1,2 |

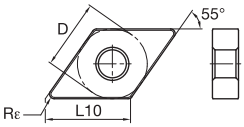
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

Turning

● first choice
○ alternate choice

## DNMG-RP

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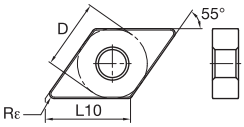
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110408RP | 9,53 | 11,63 | 0,8 | | ● | ● | | | | | ● | ● | | | | | | | ● | | ● | ● | | | | | | | | |
| DNMG110412RP | 9,53 | 11,63 | 1,2 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DNMG150408RP | 12,70 | 15,50 | 0,8 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | ● | | | | | | |
| DNMG150412RP | 12,70 | 15,50 | 1,2 | | ● | ● | ● | ● | | ● | ● | | ● | ● | | | | | ● | ● | | ● | | ● | | | | ● | ● | |
| DNMG150416RP | 12,70 | 15,50 | 1,6 | | | | | | | | | | | | | | | | ● | ● | ● | | | | | | | | | |
| DNMG150608RP | 12,70 | 15,50 | 0,8 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | ● | | | | ● | ● | |
| DNMG150612RP | 12,70 | 15,50 | 1,2 | ● | ● | ● | | | ● | ● | ● | | ● | ● | | | | | ● | | | ● | | | | | | ● | ● | |
| DNMG150616RP | 12,70 | 15,50 | 1,6 | | ● | ● | | | | | ● | | | | | | | | | | | ● | | | | | | ● | ● | |

## DNMG-UN

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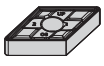
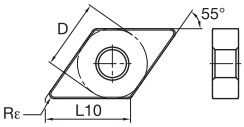
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110408UN | 9,53 | 11,63 | 0,8 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| DNMG110412UN | 9,53 | 11,63 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| DNMG150408UN | 12,70 | 15,50 | 0,8 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| DNMG150412UN | 12,70 | 15,50 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| DNMG150416UN | 12,70 | 15,50 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| DNMG150608UN | 12,70 | 15,50 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| DNMG150612UN | 12,70 | 15,50 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| DNMG150616UN | 12,70 | 15,50 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | ● |

## DNMG-UP



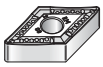


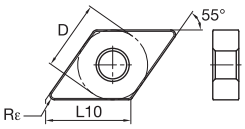

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMG110408UP | 9,53 | 11,63 | 0,8 | | | | | | | | | ● | ● | | | | | | ● | | | | | | | | | | | |
| DNMG110412UP | 9,53 | 11,63 | 1,2 | | | | | | | | | ● | ● | | | | | | | | | | | | | | | | | |
| DNMG150404UP | 12,70 | 15,50 | 0,4 | | | | | | | | | ● | ● | | | | | | ● | | | | | | | | | | | |
| DNMG150408UP | 12,70 | 15,50 | 0,8 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| DNMG150412UP | 12,70 | 15,50 | 1,2 | | | | | | | | | ● | ● | ● | | | | | ● | | | | | | | | | | | |
| DNMG150604UP | 12,70 | 15,50 | 0,4 | | | | | | | | | ● | ● | | | | | | | ● | | | | | | | | | | |
| DNMG150608UP | 12,70 | 15,50 | 0,8 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| DNMG150612UP | 12,70 | 15,50 | 1,2 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | |

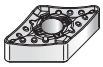
## DNMM-RM

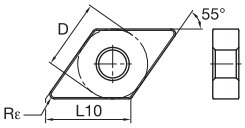





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNMM150408RM | 12,70 | 15,50 | 0,8 |
| DNMM150412RM | 12,70 | 15,50 | 1,2 |
| DNMM150608RM | 12,70 | 15,50 | 0,8 |
| DNMM150612RM | 12,70 | 15,50 | 1,2 |
| DNMM150616RM | 12,70 | 15,50 | 1,6 |

## DNMM-RP



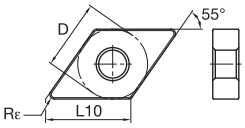



beyond DRIVE™

NEW!

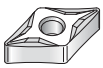
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNMM150608RP | 12,70 | 15,50 | 0,8 |
| DNMM150612RP | 12,70 | 15,50 | 1,2 |
| DNMM150616RP | 12,70 | 15,50 | 1,6 |

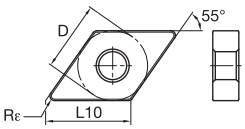
## DNMP




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNMP150404 | 12,70 | 15,50 | 0,4 |
| DNMP150408 | 12,70 | 15,50 | 0,8 |
| DNMP150412 | 12,70 | 15,50 | 1,2 |

## DNMP-K






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNMP110408K | 9,53 | 11,63 | 0,8 |
| DNMP150404K | 12,70 | 15,50 | 0,4 |
| DNMP150408K | 12,70 | 15,50 | 0,8 |
| DNMP150412K | 12,70 | 15,50 | 1,2 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

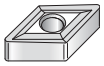
beyond
A8–A23

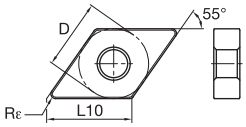
A24–A31

A32–A37

● first choice
○ alternate choice

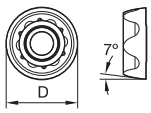
## DNMS






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMS150408 | 12,70 | 15,50 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | ● | | | | | |

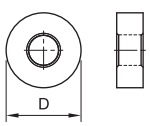
## RCGX-LF




beyond BLAST™

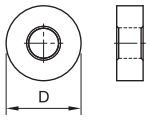
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGX190600ELF | 19,05 | – | – | | | | | | | | | | | | ● | | | | ● | | | | | | | | | | | |

## RNMA



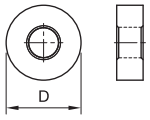

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RNMA120400 | 12,70 | – | – | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | | | |
| RNMA150600 | 15,88 | – | – | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |

## RNMG




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RNMG190600 | 19,05 | – | – | | | ● | | ● | | | | | | | | ● | | | | | | | | | | | | | | |
| RNMG250900 | 25,40 | – | – | | | | | ● | | | | | | | | | | | | | | | | | | | | | | |

## RNMG-RN




beyond DRIVE™

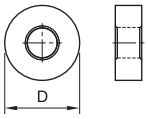
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RNMG090300RN | 9,53 | – | – | | ● | ● | | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| RNMG120400RN | 12,70 | – | – | | ● | ● | ● | | | | | | | | | | | | ● | ● | ● | | | | | | | ● | ● | |
| RNMG150600RN | 15,88 | – | – | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| RNMG190600RN | 19,05 | – | – | | ● | ● | ● | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| RNMG250900RN | 25,40 | – | – | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## RNMG-UN

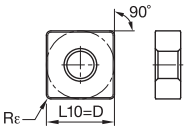



beyond DRIVE™

NEW!

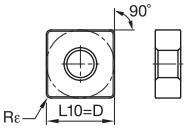
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| RNMG120400UN | 12,70 | – | – |

## SNGG-FS



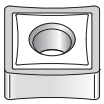

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SNGG090308FS | 9,53 | 9,53 | 0,8 |
| SNGG120408FS | 12,70 | 12,70 | 0,8 |

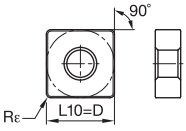
## SNGG-LF




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SNGG090308LF | 9,53 | 9,53 | 0,8 |
| SNGG120408LF | 12,70 | 12,70 | 0,8 |
| SNGG150612LF | 15,88 | 15,88 | 1,2 |

## SNGP






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SNGP120404 | 12,70 | 12,70 | 0,4 |
| SNGP120408 | 12,70 | 12,70 | 0,8 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

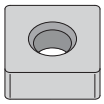
beyond
A8–A23

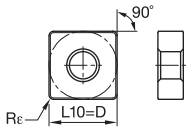
A24–A31

A32–A37

● first choice
○ alternate choice

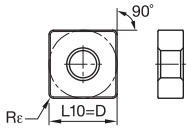
## SNMA





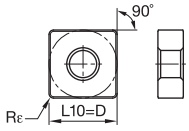

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMA120408 | 12,70 | 12,70 | 0,8 | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | | | |
| SNMA120412 | 12,70 | 12,70 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMA120416 | 12,70 | 12,70 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMA150612 | 15,88 | 15,88 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMA150616 | 15,88 | 15,88 | 1,6 | | | | | | ● | | ● | | | | | | | | | | | | | | | | | | | |
| SNMA190612 | 19,05 | 19,05 | 1,2 | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | | | |
| SNMA190616 | 19,05 | 19,05 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |

## SNMG



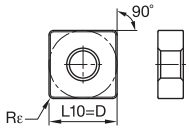

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120408 | 12,70 | 12,70 | 0,8 | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| SNMG120412 | 12,70 | 12,70 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| SNMG120416B | 12,70 | 12,70 | 1,6 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| SNMG190612 | 19,05 | 19,05 | 1,2 | | | ● | | ● | | | | | | | | | ● | | ● | | | | | | | | | | | |
| SNMG190616 | 19,05 | 19,05 | 1,6 | | | ● | | ● | | | | | | | | | | | ● | | | | | | | | | | | |
| SNMG250924 | 25,40 | 25,40 | 2,4 | | | ● | | ● | | | | | | | | | | | ● | | | | | | | | | | | |

## SNMG-FF




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG090304FF | 9,53 | 9,53 | 0,4 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| SNMG090308FF | 9,53 | 9,53 | 0,8 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| SNMG120404FF | 12,70 | 12,70 | 0,4 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| SNMG120408FF | 12,70 | 12,70 | 0,8 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

## SNMG-FN

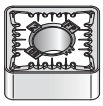


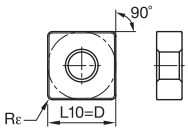

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG090304FN | 9,53 | 9,53 | 0,4 | | ● | ● | | | ● | | | | | | | | | | | | | | | | | | | | | |
| SNMG090308FN | 9,53 | 9,53 | 0,8 | | ● | ● | | | ● | | | | | | | | | | | | | | | | | | | | | |
| SNMG120404FN | 12,70 | 12,70 | 0,4 | ● | ● | | | | ● | | | | | | | | | | | | | | | | | | | | | |
| SNMG120408FN | 12,70 | 12,70 | 0,8 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| SNMG120412FN | 12,70 | 12,70 | 1,2 | | ● | ● | | | ● | | | | | | | | | | | | | | | | | | | | | |
| SNMG120416FN | 12,70 | 12,70 | 1,6 | | ● | | | | ● | | | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

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

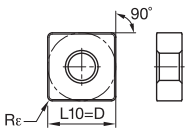
## SNMG-FP





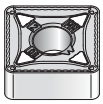

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120404FP | 12,70 | 12,70 | 0,4 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | | |
| SNMG120408FP | 12,70 | 12,70 | 0,8 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | | |
| SNMG120412FP | 12,70 | 12,70 | 1,2 | | | | | | | | | ● | | | | | | | ● | | | | | | | | | | | | |

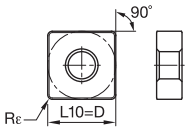
## SNMG-FW




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120408FW | 12,70 | 12,70 | 0,8 | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| SNMG120412FW | 12,70 | 12,70 | 1,2 | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | | |

## SNMG-MN



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| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG090304MN | 9,53 | 9,53 | 0,4 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG090308MN | 9,53 | 9,53 | 0,8 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| SNMG090312MN | 9,53 | 9,53 | 1,2 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG120404MN | 12,70 | 12,70 | 0,4 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG120408MN | 12,70 | 12,70 | 0,8 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| SNMG120412MN | 12,70 | 12,70 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| SNMG120416MN | 12,70 | 12,70 | 1,6 | | ● | ● | | ● | | | | | | | | | | | | | | | | | | | | | | |
| SNMG150612MN | 15,88 | 15,88 | 1,2 | | ● | ● | | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| SNMG150616MN | 15,88 | 15,88 | 1,6 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG190612MN | 19,05 | 19,05 | 1,2 | | ● | ● | | ● | | | | | | | | | | | | | | | | | | | | | | |
| SNMG190616MN | 19,05 | 19,05 | 1,6 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

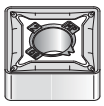
A24–A31

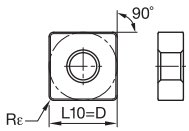
A32–A37

Turning

● first choice
○ alternate choice

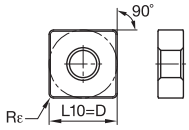
## SNMG-MP






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | ● | ● | | | | | ● | ● | | | | | | | | | | |

## SNMG-MR

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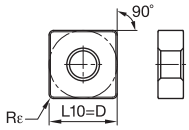
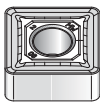
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120412MR | 12,70 | 12,70 | 1,2 | | | | | ● | | | | | ● | ● | | | | | | | | | | | | | | ● | ● | ● |

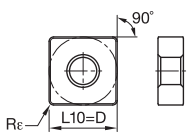
## SNMG-MS




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120408MS | 12,70 | 12,70 | 0,8 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| SNMG120412MS | 12,70 | 12,70 | 1,2 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| SNMG150608MS | 15,88 | 15,88 | 0,8 | | | | | | | | | | | | | | | | | | | ● | | | | | | | | |
| SNMG150612MS | 15,88 | 15,88 | 1,2 | | | | | | | | | | | | | | | | | | | ● | | | | | | | | |
| SNMG190612MS | 19,05 | 19,05 | 1,2 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |

## SNMG-MW



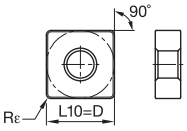



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120408MW | 12,70 | 12,70 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG120412MW | 12,70 | 12,70 | 1,2 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

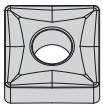
| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

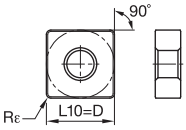
## SNMG-P




| ISO catalogue number | D mm | L10 mm | Rε mm | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120408P | 12,70 | 12,70 | 0,8 | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | | |
| SNMG120412P | 12,70 | 12,70 | 1,2 | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | | |

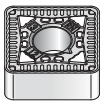
## SNMG-RM

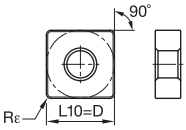





| ISO catalogue number | D mm | L10 mm | Rε mm | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG190612RM | 19,05 | 19,05 | 1,2 | | | ● | | ● | | | | | | | | | | ● | | | | | | | | | | | | |
| SNMG190616RM | 19,05 | 19,05 | 1,6 | | | ● | ● | ● | | | | | | | | | | ● | | | | | | | | | | | | |
| SNMG250924RM | 25,40 | 25,40 | 2,4 | | | ● | | ● | | | | | | | | | | ● | ● | | | | | | | | | | | |

## SNMG-RN



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| ISO catalogue number | D mm | L10 mm | Rε mm | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG090412RN | 9,53 | 9,53 | 1,2 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG120408RN | 12,70 | 12,70 | 0,8 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| SNMG120412RN | 12,70 | 12,70 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● | ● | | |
| SNMG120416RN | 12,70 | 12,70 | 1,6 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● | ● | | |
| SNMG150608RN | 15,88 | 15,88 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG150612RN | 15,88 | 15,88 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● | ● | | |
| SNMG150616RN | 15,88 | 15,88 | 1,6 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| SNMG190608RN | 19,05 | 19,05 | 0,8 | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG190612RN | 19,05 | 19,05 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| SNMG190616RN | 19,05 | 19,05 | 1,6 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| SNMG190624RN | 19,05 | 19,05 | 2,4 | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| SNMG250924RN | 25,40 | 25,40 | 2,4 | | | | ● | | | | | | | | | | | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

A8–A23

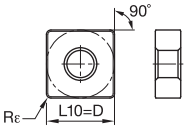
A24–A31

A32–A37

Turning

● first choice
○ alternate choice

## SNMG-RP

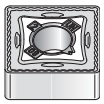


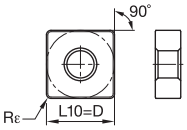

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ● | ● | | ● | | | ● | | ● | ● | | | | | ● | | | ● | | ● | | | | | | |

## SNMG-UN



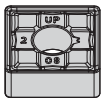


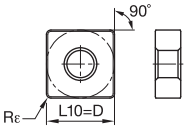

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120408UN | 12,70 | 12,70 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMG120412UN | 12,70 | 12,70 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| SNMG120416UN | 12,70 | 12,70 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMG150612UN | 15,88 | 15,88 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMG150616UN | 15,88 | 15,88 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMG190612UN | 19,05 | 19,05 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| SNMG190616UN | 19,05 | 19,05 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |

## SNMG-UP



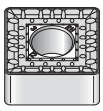


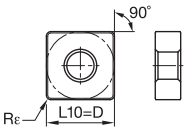

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMG120408UP | 12,70 | 12,70 | 0,8 | | | | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | |
| SNMG120412UP | 12,70 | 12,70 | 1,2 | | | | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | |
| SNMG120416UP | 12,70 | 12,70 | 1,6 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | |
| SNMG150612UP | 15,88 | 15,88 | 1,2 | | | | | | | | | ● | ● | ● | | | | | ● | | | | | | | | | | | |
| SNMG190612UP | 19,05 | 19,05 | 1,2 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## SNMM-RH



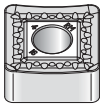


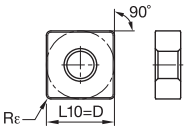

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SNMM190612RH | 19,05 | 19,05 | 1,2 |
| SNMM190616RH | 19,05 | 19,05 | 1,6 |
| SNMM190624RH | 19,05 | 19,05 | 2,4 |
| SNMM250724RH | 25,40 | 25,40 | 2,4 |
| SNMM250732RH | 25,40 | 25,40 | 3,2 |
| SNMM250924RH | 25,40 | 25,40 | 2,4 |

## SNMM-RM



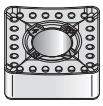


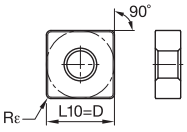

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SNMM120408RM | 12,70 | 12,70 | 0,8 |
| SNMM120412RM | 12,70 | 12,70 | 1,2 |
| SNMM120416RM | 12,70 | 12,70 | 1,6 |
| SNMM150612RM | 15,88 | 15,88 | 1,2 |
| SNMM150616RM | 15,88 | 15,88 | 1,6 |
| SNMM190612RM | 19,05 | 19,05 | 1,2 |
| SNMM190616RM | 19,05 | 19,05 | 1,6 |
| SNMM190624RM | 19,05 | 19,05 | 2,4 |
| SNMM250724RM | 25,40 | 25,40 | 2,4 |
| SNMM250924RM | 25,40 | 25,40 | 2,4 |

## SNMM-RP






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SNMM120408RP | 12,70 | 12,70 | 0,8 |
| SNMM120412RP | 12,70 | 12,70 | 1,2 |
| SNMM150612RP | 15,88 | 15,88 | 1,2 |
| SNMM150616RP | 15,88 | 15,88 | 1,6 |
| SNMM190612RP | 19,05 | 19,05 | 1,2 |
| SNMM190616RP | 19,05 | 19,05 | 1,6 |
| SNMM190624RP | 19,05 | 19,05 | 2,4 |
| SNMM250724RP | 25,40 | 25,40 | 2,4 |
| SNMM250924RP | 25,40 | 25,40 | 2,4 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

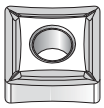
beyond
A8–A23

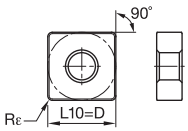
A24–A31

A32–A37

● first choice
○ alternate choice

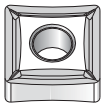
## SNMP

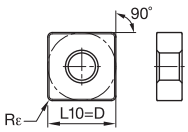





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMP120408 | 12,70 | 12,70 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| SNMP190612 | 19,05 | 19,05 | 1,2 | | | | | | | | | | | | | ● | ● | | | | | | | | | | | | | |

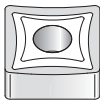
## SNMP-K

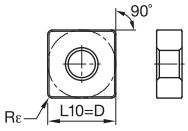





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMP120408K | 12,70 | 12,70 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |

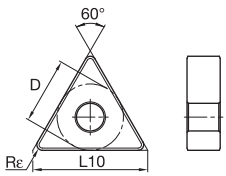
## SNMS






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMS120408 | 12,70 | 12,70 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| SNMS190612 | 19,05 | 19,05 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | ● | | | | | |

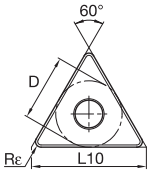
## TNGG-FS




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNGG160402FS | 9,53 | 16,50 | 0,2 | | | | | | | | | | | | | | | | | | | ● | | ● | | | | | | |
| TNGG160404FS | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| TNGG160408FS | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | | | | | | ● | | ● | | | | | | |
| TNGG220408FS | 12,70 | 22,00 | 0,8 | | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |

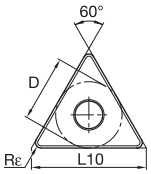
● first choice
○ alternate choice

## TNGG-LF



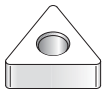
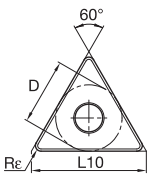
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TNGP160402** | 9,53 | 16,50 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| **TNGP160404** | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | |
| **TNGP160408** | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | |

## TNMA

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TNMA160408** | 9,53 | 16,50 | 0,8 | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | | | |
| **TNMA160412** | 9,53 | 16,50 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **TNMA160416** | 9,53 | 16,50 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| **TNMA220408** | 12,70 | 22,00 | 0,8 | | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | | | |
| **TNMA220412** | 12,70 | 22,00 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| **TNMA220416** | 12,70 | 22,00 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| **TNMA270616** | 15,88 | 27,50 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*
beyond
A8–A23

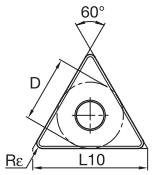
A24–A31

A32–A37

Turning

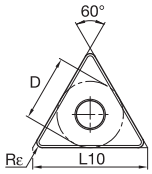
● first choice
○ alternate choice

## TNMG



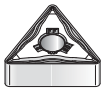
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG220412 | 12,70 | 22,00 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| TNMG220416 | 12,70 | 22,00 | 1,6 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| TNMG330924 | 19,05 | 33,00 | 2,4 | | | ● | | ● | | | | | | | | | | | | | | | | | | | | | | |

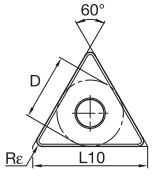
## TNMG-CT



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG220408CT | 12,70 | 22,00 | 0,8 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMG220412CT | 12,70 | 22,00 | 1,2 | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | |

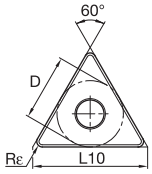
## TNMG-FF





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG110304FF | 6,35 | 11,00 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| TNMG110308FF | 6,35 | 11,00 | 0,8 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| TNMG160404FF | 9,53 | 16,50 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| TNMG160408FF | 9,53 | 16,50 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |

## TNMG-FN



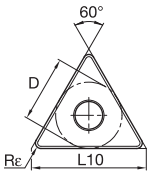
beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG110304FN | 6,35 | 11,00 | 0,4 | | ● | ● | | | ● | | | | | | | | | | | | | | | | | | | | | |
| TNMG110308FN | 6,35 | 11,00 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMG160404FN | 9,53 | 16,50 | 0,4 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| 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 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |

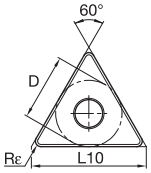
● first choice
○ alternate choice

## TNMG-FP



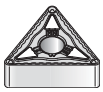
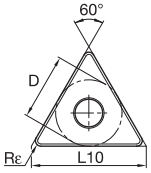
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160404FP | 9,53 | 16,50 | 0,4 | | ● | | | | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |
| TNMG160408FP | 9,53 | 16,50 | 0,8 | | ● | | | | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |
| TNMG160412FP | 9,53 | 16,50 | 1,2 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| TNMG220404FP | 12,70 | 22,00 | 0,4 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| TNMG220408FP | 12,70 | 22,00 | 0,8 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |

## TNMG-FW



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160404FW | 9,53 | 16,50 | 0,2 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| TNMG160408FW | 9,53 | 16,50 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| TNMG160412FW | 9,53 | 16,50 | 1,2 | ● | ● | | | | | | | | | | | | | | ● | | | | | | | ● | | | | |

## TNMG-MN

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160404MN | 9,53 | 16,50 | 0,4 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| TNMG160408MN | 9,53 | 16,50 | 0,8 | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| TNMG160412MN | 9,53 | 16,50 | 1,2 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| TNMG220404MN | 12,70 | 22,00 | 0,4 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| TNMG220408MN | 12,70 | 22,00 | 0,8 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| TNMG220412MN | 12,70 | 22,00 | 1,2 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| TNMG220416MN | 12,70 | 22,00 | 1,6 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

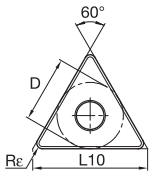
C116–C147*
beyond
A8–A23

A24–A31

A32–A37

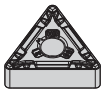
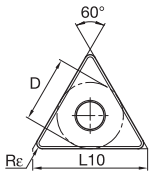
Turning

● first choice
○ alternate choice



## TNMG-MP

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160404MP | 9,53 | 16,50 | 0,4 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| TNMG160408MP | 9,53 | 16,50 | 0,8 | | ● | ● | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| TNMG160412MP | 9,53 | 16,50 | 1,2 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| TNMG220408MP | 12,70 | 22,00 | 0,8 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| TNMG220412MP | 12,70 | 22,00 | 1,2 | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | |
| TNMG220416MP | 12,70 | 22,00 | 1,6 | | | | | | | | | | ● | | | | | | ● | ● | | | | | | | | | | |

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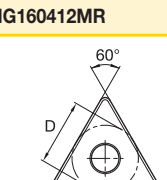
## TNMG-MR

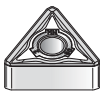
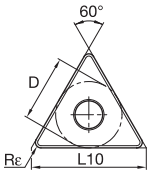
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160408MR | 9,53 | 16,50 | 0,8 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | ● |
| TNMG160412MR | 9,53 | 16,50 | 1,2 | | | | | | | | | | ● | | | | | | | | | | | | | | | ● | ● | ● |



## TNMG-MS

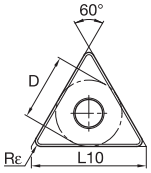
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160402MS | 9,53 | 16,50 | 0,2 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| TNMG160404MS | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| TNMG160408MS | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| TNMG220404MS | 12,70 | 22,00 | 0,4 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| TNMG220408MS | 12,70 | 22,00 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| TNMG220412MS | 12,70 | 22,00 | 1,2 | | | | | | | | | | | | | | | | ● | | ● | ● | | | | | | | | |
| TNMG270608MS | 15,88 | 27,50 | 0,8 | | | | | | | | | | | | | | | | | | | ● | | ● | | | | | | |
| TNMG270616MS | 15,88 | 27,50 | 1,6 | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |

● first choice
○ alternate choice

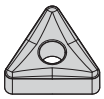
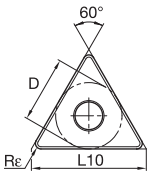
## TNMG-MW

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160408MW | 9,53 | 16,50 | 0,8 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMG160412MW | 9,53 | 16,50 | 1,2 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |



## TNMG-P

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-RM

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG330924RM | 19,05 | 32,99 | 2,4 | | | ● | ● | | | | | | | | | | | | ● | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*
beyond
A8–A23

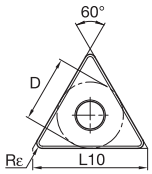
A24–A31

A32–A37

Turning

● first choice
○ alternate choice

## TNMG-RN

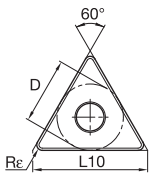


beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |

## TNMG-RP

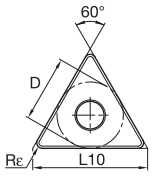


beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160408RP | 9,53 | 16,50 | 0,8 | ● | ● | ● | ● | | ● | ● | ● | ● | ● | | | | | | ● | ● | ● | ● | | ● | | | | | | ● |
| TNMG160412RP | 9,53 | 16,50 | 1,2 | ● | ● | ● | | | | | ● | | ● | ● | | | | | | | | ● | | ● | | | | ● | ● | |
| TNMG160416RP | 9,53 | 16,50 | 1,6 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMG220408RP | 12,70 | 22,00 | 0,8 | | ● | ● | ● | ● | | ● | ● | ● | ● | | | | | | ● | ● | ● | ● | | ● | | | | | | |
| TNMG220412RP | 12,70 | 22,00 | 1,2 | | ● | ● | ● | ● | | ● | ● | ● | ● | | | | | | ● | | ● | ● | | ● | | | | | | |
| TNMG220416RP | 12,70 | 22,00 | 1,6 | | ● | ● | | | | ● | | | ● | | | | | | ● | | | ● | | | | | | ● | ● | |
| TNMG220432RP | 12,70 | 22,00 | 3,2 | | | ● | ● | | | | ● | | | | | | | | ● | | ● | | | | | | | ● | | |
| TNMG270612RP | 15,88 | 27,50 | 1,2 | | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | | ● | ● | | ● | | | | | | |
| TNMG270616RP | 15,88 | 27,50 | 1,6 | | | ● | | | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | |
| TNMG330924RP | 19,05 | 33,00 | 2,4 | | | ● | | ● | | | | | ● | | | | | | ● | ● | | | | | | | | | | |

## TNMG-UN



beyond DRIVE™

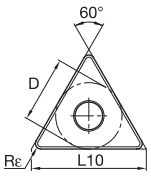
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160408UN | 9,53 | 16,50 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| TNMG160412UN | 9,53 | 16,50 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| TNMG160416UN | 9,53 | 16,50 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| TNMG220408UN | 12,70 | 22,00 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| TNMG220412UN | 12,70 | 22,00 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| TNMG220416UN | 12,70 | 22,00 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | ● | ● | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

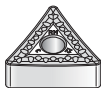
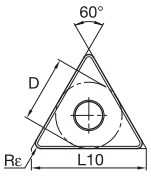
## TNMG-UP



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TNMG160404UP | 9,53 | 16,50 | 0,4 |
| TNMG160408UP | 9,53 | 16,50 | 0,8 |
| TNMG160412UP | 9,53 | 16,50 | 1,2 |
| TNMG220408UP | 12,70 | 22,00 | 0,8 |
| TNMG220412UP | 12,70 | 22,00 | 1,2 |

| ISO catalogue number | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMG160404UP | | | | | | | | | ● | ● | | | | | | | | | | | | | | | | | |
| TNMG160408UP | | | | | | | | | | ● | | | | | | | ● | | | | | | | | | | |
| TNMG160412UP | | | | | | | | | | ● | | | | | | | | | | | | | | | | | |
| TNMG220408UP | | | | | | | | | | ● | ● | | | | | | | | | | | | | | | | |
| TNMG220412UP | | | | | | | | | | ● | ● | | | | | | | | | | | | | | | | |

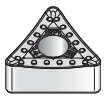
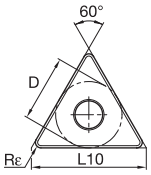
## TNMM-RM

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TNMM160408RM | 9,53 | 16,50 | 0,8 |
| TNMM160412RM | 9,53 | 16,50 | 1,2 |
| TNMM220408RM | 12,70 | 22,00 | 0,8 |
| TNMM220412RM | 12,70 | 22,00 | 1,2 |
| TNMM220416RM | 12,70 | 22,00 | 1,6 |
| TNMM270612RM | 15,88 | 27,50 | 1,2 |
| TNMM270616RM | 15,88 | 27,50 | 1,6 |

| ISO catalogue number | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMM160408RM | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM160412RM | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM220408RM | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM220412RM | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM220416RM | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM270612RM | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM270616RM | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |

## TNMM-RP

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TNMM160408RP | 9,53 | 16,50 | 0,8 |
| TNMM160412RP | 9,53 | 16,50 | 1,2 |
| TNMM220408RP | 12,70 | 22,00 | 0,8 |
| TNMM220412RP | 12,70 | 22,00 | 1,2 |
| TNMM220416RP | 12,70 | 22,00 | 1,6 |
| TNMM270616RP | 15,88 | 27,50 | 1,6 |

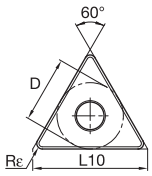
| ISO catalogue number | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TNMM160408RP | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM160412RP | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM220408RP | | ● | | | | | | | ● | | | | | | | | | | | | | | | | | | |
| TNMM220412RP | | ● | ● | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | |
| TNMM220416RP | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| TNMM270616RP | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

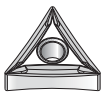
● first choice
○ alternate choice

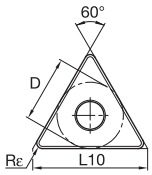
## TNMP



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TNMP160404** | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| **TNMP160408** | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| **TNMP220416** | 12,70 | 22,00 | 1,6 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |

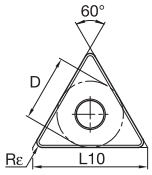
## TNMP-K





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TNMP160404K** | 9,53 | 16,50 | 0,4 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| **TNMP160408K** | 9,53 | 16,50 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| **TNMP220408K** | 12,70 | 22,00 | 0,8 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

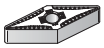
## TNMS

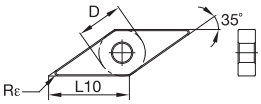


| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TNMS160404** | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| **TNMS160408** | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| **TNMS220408** | 12,70 | 22,00 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | ● | | | | | |

● first choice
○ alternate choice

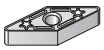
## VNGG-FS

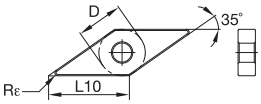





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **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 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| **VNGG160412FS** | 9,53 | 16,61 | 1,2 | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | | |

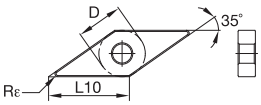
## VNGG-LF






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VNGP160401** | 9,53 | 16,61 | 0,1 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | |
| **VNGP160402** | 9,53 | 16,61 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | |
| **VNGP220404** | 12,70 | 22,14 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| **VNGP220408** | 12,70 | 22,14 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

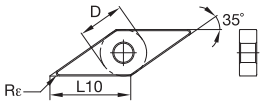
beyond
A8–A23

A24–A31

A32–A37

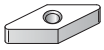
● first choice
○ alternate choice

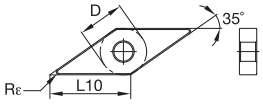
## VNGP-K




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNGP160404K | 9,53 | 16,61 | 0,4 | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |
| VNGP160408K | 9,53 | 16,61 | 0,8 | | | | | | | | | | | | | ● | | | | | | | | | | | | | | |

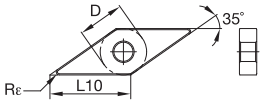
## VNMA





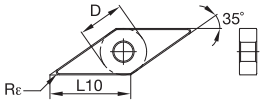

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNMA160408 | 9,53 | 16,61 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |

## VNMG




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNMG160408 | 9,53 | 16,61 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| VNMG160412 | 9,53 | 16,61 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| VNMG220408 | 12,70 | 22,14 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |
| VNMG220412 | 12,70 | 22,14 | 1,2 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |

## VNMG-FF

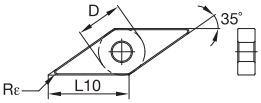



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNMG160404FF | 9,53 | 16,61 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| VNMG160408FF | 9,53 | 16,61 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## VNMG-FN

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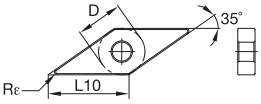
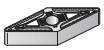
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMG160404FN | 9,53 | 16,61 | 0,4 |
| VNMG160408FN | 9,53 | 16,61 | 0,8 |

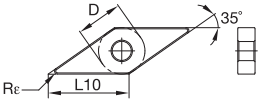
## VNMG-FP




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMG160404FP | 9,53 | 16,61 | 0,4 |
| VNMG160408FP | 9,53 | 16,61 | 0,8 |

## VNMG-MN



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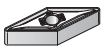
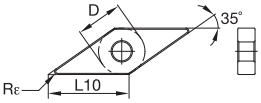
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMG160404MN | 9,53 | 16,61 | 0,4 |
| VNMG160408MN | 9,53 | 16,61 | 0,8 |
| VNMG160412MN | 9,53 | 16,61 | 1,2 |

## VNMG-MP






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMG160404MP | 9,53 | 16,61 | 0,4 |
| VNMG160408MP | 9,53 | 16,61 | 0,8 |
| VNMG160412MP | 9,53 | 16,61 | 1,2 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

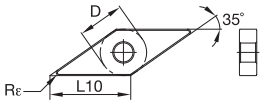
beyond
A8–A23

A24–A31

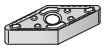
A32–A37

● first choice
○ alternate choice

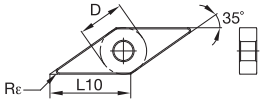
## VNMG-MS



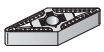

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNMG160401MS | 9,53 | 16,61 | 0,1 | | | | | | | | | | | | | | | | ● | | ● | ● | | ● | | | | | | |
| VNMG160402MS | 9,53 | 16,61 | 0,2 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| VNMG160404MS | 9,53 | 16,61 | 0,4 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| VNMG160408MS | 9,53 | 16,61 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| VNMG220404MS | 12,70 | 22,14 | 0,4 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | | | | | | | |
| VNMG220408MS | 12,70 | 22,14 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |



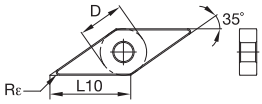
## VNMG-P




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNMG160404P | 9,53 | 16,61 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| VNMG160408P | 9,53 | 16,61 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | | | | | | | | | |

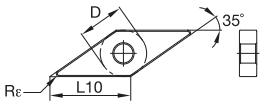


## VNMG-RN




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNMG160408RN | 9,53 | 16,61 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| VNMG160412RN | 9,53 | 16,61 | 1,2 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| VNMG220408RN | 12,70 | 22,14 | 0,8 | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| VNMG220412RN | 12,70 | 22,14 | 1,2 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |

## VNMG-RP

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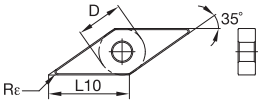
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VNMG160408RP | 9,53 | 16,61 | 0,8 | | ● | ● | | | | ● | ● | ● | | | | | | | ● | ● | ● | ● | | ● | | | | | | |
| VNMG160412RP | 9,53 | 16,61 | 1,2 | | ● | ● | | | | ● | ● | ● | ● | | | | | | ● | | ● | ● | | | | | | | | ● |
| WNMG080412RP | 12,70 | 8,69 | 1,2 | | | | | | | | | | | | | | | | | | | | | | | | | | | ● |

● first choice
○ alternate choice

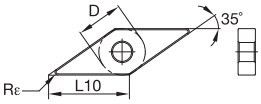
| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## VNMG-UN



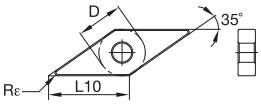

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMG160404UN | 9,53 | 16,61 | 0,4 |
| VNMG160408UN | 9,53 | 16,61 | 0,8 |

## VNMG-UP



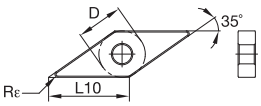

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMG160404UP | 9,53 | 16,61 | 0,4 |
| VNMG160408UP | 9,53 | 16,61 | 0,8 |
| VNMG160412UP | 9,53 | 16,61 | 1,2 |

## VNMP



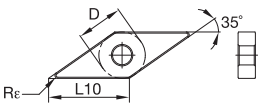

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMP160404 | 9,53 | 16,61 | 0,4 |
| VNMP160408 | 9,53 | 16,61 | 0,8 |

## VNMP-K




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMP160404K | 9,53 | 16,61 | 0,4 |
| VNMP160408K | 9,53 | 16,61 | 0,8 |

## VNMS




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNMS160404 | 9,53 | 16,61 | 0,4 |
| VNMS160408 | 9,53 | 16,61 | 0,8 |

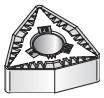
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

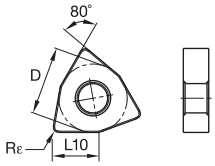
C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

Turning

● first choice
○ alternate choice

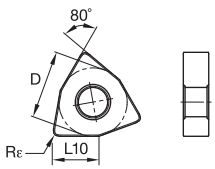
## WNGG-FS





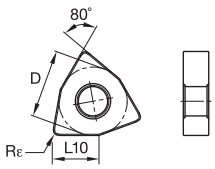

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNGG080404FS | 12,70 | 8,69 | 0,4 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| WNGG080408FS | 12,70 | 8,69 | 0,8 | | | | | | | | | | | | | | | | ● | | ● | | | | | | | | | |

## WNGG-LF



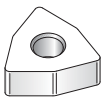

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNGG080401LF | 12,70 | 8,69 | 0,1 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| WNGG080402LF | 12,70 | 8,69 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| WNGG080404LF | 12,70 | 8,69 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| WNGG080408LF | 12,70 | 8,69 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

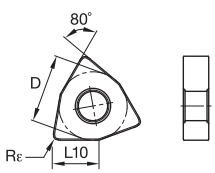
## WNGP-K




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNGP080408K | 12,70 | 8,69 | 0,8 | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |

## WNMA



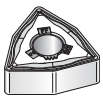
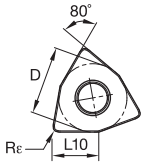



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMA060408 | 9,53 | 6,52 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMA060412 | 9,53 | 6,52 | 1,2 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMA080408 | 12,70 | 8,69 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMA080412 | 12,70 | 8,69 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMA080416 | 12,70 | 8,69 | 1,6 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

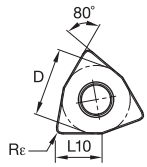
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | | | | |
| M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

## WNMG-FF

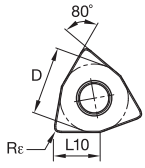
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060404FF | 9,53 | 6,52 | 0,4 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| WNMG060408FF | 9,53 | 6,52 | 0,8 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| WNMG080404FF | 12,70 | 8,69 | 0,4 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| WNMG080408FF | 12,70 | 8,69 | 0,8 | | ● | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

## WNMG-FN



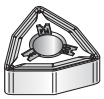
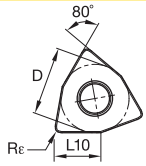
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060404FN | 9,53 | 6,52 | 0,4 | | ● | | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| WNMG060408FN | 9,53 | 6,52 | 0,8 | | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| WNMG080404FN | 12,70 | 8,69 | 0,4 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |
| WNMG080408FN | 12,70 | 8,69 | 0,8 | ● | ● | ● | | | ● | | | | | | | | | | | | | | | | | ● | | | | |

## WNMG-FP



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060404FP | 9,53 | 6,52 | 0,4 | | | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| WNMG060408FP | 9,53 | 6,52 | 0,8 | | ● | | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| WNMG080404FP | 12,70 | 8,69 | 0,4 | | ● | ● | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| WNMG080408FP | 12,70 | 8,69 | 0,8 | | ● | ● | | | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| WNMG080412FP | 12,70 | 8,69 | 1,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

## WNMG-FW

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060404FW | 9,53 | 6,52 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | | | | | | | ● | | | | |
| WNMG060408FW | 9,53 | 6,52 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| WNMG060412FW | 9,53 | 6,52 | 1,2 | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| WNMG080404FW | 12,70 | 8,69 | 0,4 | ● | ● | | | | | | | | | | | | | | ● | | | | | | | ● | | | | |
| WNMG080408FW | 12,70 | 8,69 | 0,8 | ● | ● | | | | | | | | | | | | | | ● | ● | | | | | | ● | | | | |
| WNMG080412FW | 12,70 | 8,69 | 1,2 | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | |

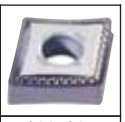
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

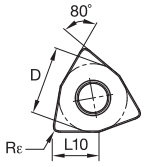
C116–C147*
beyond
A8–A23

A24–A31

A32–A37

Turning

● first choice
○ alternate choice

## WNMG-MN

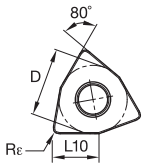



beyond DRIVE™

NEW!

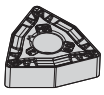
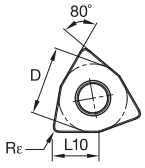
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060404MN | 9,53 | 6,52 | 0,4 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| WNMG060408MN | 9,53 | 6,52 | 0,8 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| WNMG060412MN | 9,53 | 6,52 | 1,2 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| WNMG080408MN | 12,70 | 8,69 | 0,8 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| WNMG080412MN | 12,70 | 8,69 | 1,2 | ● | ● | ● | | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| WNMG080416MN | 12,70 | 8,69 | 1,6 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |

## WNMG-MP




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ● | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |

## WNMG-MR

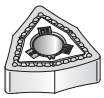
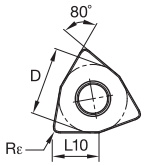




beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG080408MR | 12,70 | 8,69 | 0,8 | | | | | ● | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | ● |
| WNMG080412MR | 12,70 | 8,69 | 1,2 | | | | | | | | | ● | ● | ● | | | | | | | | | | | | | | ● | ● | |

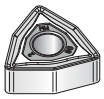
## WNMG-MS

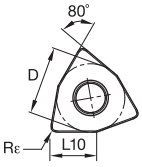




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060408MS | 9,53 | 6,52 | 0,8 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |
| WNMG060412MS | 9,53 | 6,52 | 1,2 | | | | | | | | | | | | | ● | | | | | | | | ● | | | | | | |
| 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 | | | | | | | | | | | | | ● | | | ● | | ● | ● | | ● | | | | | | |

● first choice
○ alternate choice

## WNMG-MW



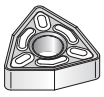


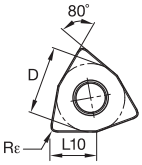
beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060408MW | 9,53 | 6,52 | 0,8 | ● | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | ● | ● | |
| WNMG060412MW | 9,53 | 6,52 | 1,2 | | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | ● | ● | |
| WNMG080408MW | 12,70 | 8,69 | 0,8 | ● | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | ● | ● | |
| WNMG080412MW | 12,70 | 8,69 | 1,2 | ● | ● | ● | | | | | | | | | | | | | ● | ● | | | | | | | | ● | ● | |

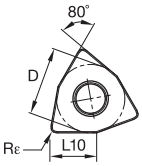
## WNMG-P





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG080404P | 12,70 | 8,69 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| WNMG080408P | 12,70 | 8,69 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

## WNMG-RN



beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060408RN | 9,53 | 6,52 | 0,8 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| WNMG060412RN | 9,53 | 6,52 | 1,2 | | ● | ● | | | | | | | | | | | | | | | | | | | | | | ● | ● | |
| WNMG080408RN | 12,70 | 8,69 | 0,8 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | |
| WNMG080412RN | 12,70 | 8,69 | 1,2 | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | | | ● | ● | |
| WNMG080416RN | 12,70 | 8,69 | 1,6 | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | ● | ● | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

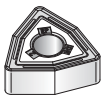
A24–A31

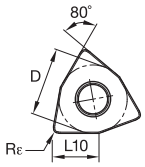
A32–A37

Turning

● first choice
○ alternate choice

## WNMG-RP



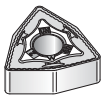


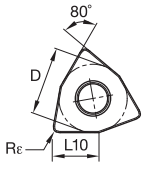
beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ● | ● | ● | | | | | ● | | | | | | | | ● | | | ● | | | | | | ● | ● | |

## WNMG-UN



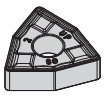


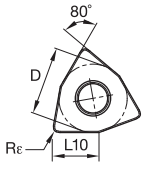
beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060404UN | 9,53 | 6,52 | 0,4 | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | | |
| WNMG060408UN | 9,53 | 6,52 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMG060412UN | 9,53 | 6,52 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMG080404UN | 12,70 | 8,69 | 0,4 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMG080408UN | 12,70 | 8,69 | 0,8 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | ● |
| WNMG080412UN | 12,70 | 8,69 | 1,2 | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | | | |
| WNMG080416UN | 12,70 | 8,69 | 1,6 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | ● |

## WNMG-UP

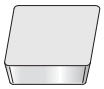


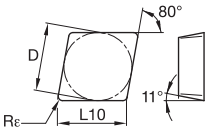


| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WNMG060408UP | 9,53 | 6,52 | 0,8 | | | | | | | | | | ● | | | | | | | | | | | | | | | | | |
| WNMG080408UP | 12,70 | 8,69 | 0,8 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |
| WNMG080412UP | 12,70 | 8,69 | 1,2 | | | | | | | | | ● | ● | ● | | | | | ● | ● | | | | | | | | | | |

● first choice
○ alternate choice

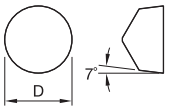
## CPGN





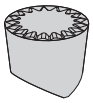

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CPGN120304 | 12,70 | 12,90 | 0,4 | | | | | | | | | | | | | ● | ● | | | | | | | | | | | | | |
| CPGN120308 | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | | ● | ● | | | | | | | | | | | | | |

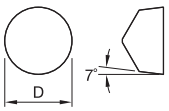
## RCGV




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGV060400 | 6,35 | – | – | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| RCGV090700 | 9,53 | – | – | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| RCGV120700 | 12,70 | – | – | | | | | | | | | | | | | ● | | | ● | ● | | | | | | | | | | |

## RCGV-MP






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGX060400MP | 6,35 | – | – | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| RCGX090700MP | 9,53 | – | – | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| RCGX120700MP | 12,70 | – | – | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

A24–A31

A32–A37

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | ● | | | | ● |
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| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
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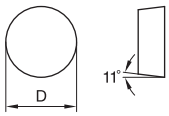
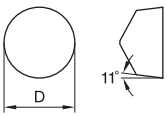
## RPGN



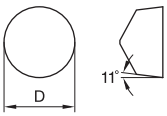

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| RPGN120300 | 12,70 | – | – |

## RPGV



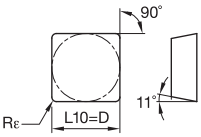

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| RPGV060400 | 6,35 | – | – |
| RPGV090700 | 9,53 | – | – |
| RPGV120700 | 12,70 | – | – |

## RPGV-MP




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| RPGX090700MP | 9,53 | – | – |
| RPGX120700MP | 12,70 | – | – |

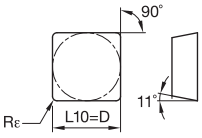
## SPGN



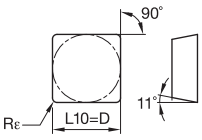

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SPGN090304 | 9,53 | 9,53 | 0,4 |
| SPGN090308 | 9,53 | 9,53 | 0,8 |
| SPGN090312 | 9,53 | 9,53 | 1,2 |
| SPGN120304 | 12,70 | 12,70 | 0,4 |
| SPGN120308 | 12,70 | 12,70 | 0,8 |
| SPGN120312 | 12,70 | 12,70 | 1,2 |
| SPGN120316 | 12,70 | 12,70 | 1,6 |
| SPGN120412 | 12,70 | 12,70 | 1,2 |
| SPGN190408 | 19,05 | 19,05 | 0,8 |
| SPGN190412 | 19,05 | 19,05 | 1,2 |

● first choice
○ alternate choice

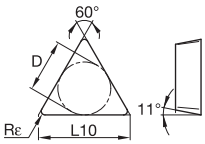
## SPGR–K




## SPUN




## TPGN




| | | | | P | M | K | N | S | H |
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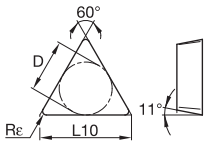
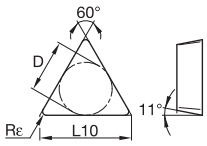
● first choice
○ alternate choice

## TPGR–K




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | |

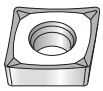
## TPUN

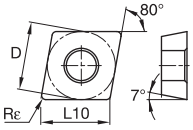



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |

● first choice
○ alternate choice

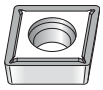
## CCGT-HP

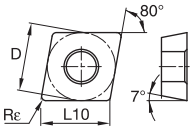





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | | | | | |
| CCGT09T316HP | 9,53 | 9,67 | 1,6 | | | | | | | | | | | | | | | | | | | | ● | | | | | | | |
| CCGT120401HP | 12,70 | 12,90 | 0,1 | | | | | | | | | | | | | | | | | | | | ● | | | | | | | |
| CCGT120402HP | 12,70 | 12,90 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | ● | | | | | | | | |
| CCGT120404HP | 12,70 | 12,90 | 0,4 | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | ● | | ● | | | | | |
| CCGT120408HP | 12,70 | 12,90 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | | |

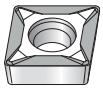
## CCGT-LF

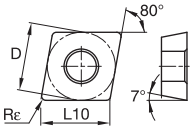





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCGT0602X0LF | 6,35 | 6,45 | 0,0 | | | | | | | | | | | | | | | | | | | | ● | | | | | | | |
| CCGT060201LF | 6,35 | 6,45 | 0,1 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CCGT060202LF | 6,35 | 6,45 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | ● | | | | | | | |
| CCGT060204LF | 6,35 | 6,45 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CCGT060208LF | 6,35 | 6,45 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | | ● | | | | | | | |
| CCGT09T3X0LF | 9,53 | 9,67 | 0,0 | | | | | | | | | | | | | | | | | | | | ● | | | | | | | |
| CCGT09T301LF | 9,53 | 9,67 | 0,1 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CCGT09T302LF | 9,53 | 9,67 | 0,2 | | | | | | | | | | | | | ● | | | ● | ● | | | ● | | | | | | | |
| CCGT09T304LF | 9,53 | 9,67 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CCGT09T308LF | 9,53 | 9,67 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | | ● | | | | | | | |

## CCMT-11






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCMT06020411 | 6,35 | 6,45 | 0,4 | | | | | | | | | | | | | | | | | | | | | | | ● | | | | |
| CCMT09T30411 | 9,53 | 9,67 | 0,4 | | | | | | | | | | | | | | | | | | | | | | | ● | | | | |
| CCMT09T30811 | 9,53 | 9,67 | 0,8 | | | | | | | | | | | | | | | | | | | | | | | ● | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

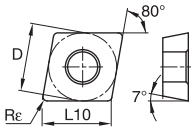
beyond
A8–A23

A24–A31

A32–A37

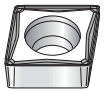
● first choice
○ alternate choice

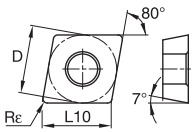
## CCMT-FP




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | | | ● | ● | ● | | | | | | ● | | ● | ● | | | | | | |
| K | | | | | | | | | ● | ● | ● | | | | | | | | | ● | | ● | ● | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | ● | ● | ● | | | | | ● | | ● | | | | | | | | | | | | | | | | | |

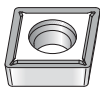
## CCMT-FW

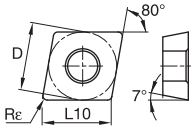





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | ● | | | | | ● | | | | | | | | ● | ● | | | | | | ● | | | | |

## CCMT-LF






beyond DRIVE™

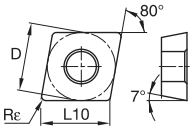
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCMT060202LF | 6,35 | 6,45 | 0,2 | | | | | | | | | | | | | | | | | ● | | | ● | | | ● | | | | |
| CCMT060204LF | 6,35 | 6,45 | 0,4 | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | ● | | | | ● | | | ● | | | ● | | | | |
| CCMT060208LF | 6,35 | 6,45 | 0,8 | ● | ● | ● | ● | | ● | ● | ● | ● | ● | | | | | | | ● | | | ● | | | ● | | | | |
| CCMT09T302LF | 9,53 | 9,67 | 0,2 | | | | | | | | | | | | | ● | | | | ● | | | ● | | | ● | | | | |
| CCMT09T304LF | 9,53 | 9,67 | 0,4 | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | ● | ● | | | ● | | | ● | | | ● | | ● | ● | |
| CCMT09T308LF | 9,53 | 9,67 | 0,8 | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | ● | | | | ● | | | | | | ● | | ● | ● | |
| CCMT120404LF | 12,70 | 12,90 | 0,4 | | ● | ● | ● | | ● | | ● | ● | ● | | | | | | | ● | | | ● | | | | | | | |
| CCMT120408LF | 12,70 | 12,90 | 0,8 | | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | | | | | ● | | | ● | | | | | | | |
| CCMT120412LF | 12,70 | 12,90 | 1,2 | | ● | ● | | | ● | | ● | | ● | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

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

## CCMT-MF

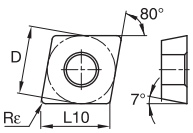



beyond DRIVE

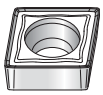
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCMT060204MF | 6,35 | 6,45 | 0,4 | | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | |
| CCMT09T304MF | 9,53 | 9,67 | 0,4 | | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | |
| CCMT09T308MF | 9,53 | 9,67 | 0,8 | | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | | | | | | ● | | | | | ● | ● | |
| CCMT09T312MF | 9,53 | 9,67 | 1,2 | | ● | ● | | | | ● | ● | | ● | | | | | | | | | | | | | | | ● | ● | |
| CCMT120408MF | 12,70 | 12,90 | 0,8 | | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | ● | ● | |
| CCMT120412MF | 12,70 | 12,90 | 1,2 | | ● | ● | | | | ● | ● | ● | | | | | | | | | | | ● | | | | | | | |

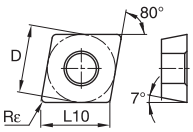
## CCMT-MP



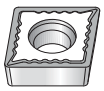

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | ● | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | |



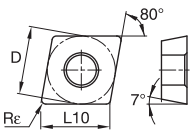
## CCMT-MW




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCMT09T304MW | 9,53 | 9,67 | 0,40 | | | ● | | | | | ● | | | | | | | | ● | ● | | | | | | ● | | | | |
| CCMT09T308MW | 9,53 | 9,67 | 0,80 | | | ● | | | | | ● | | | | | | | | ● | ● | | | | | | ● | | | | |
| CCMT120404MW | 12,70 | 12,90 | 0,40 | | | ● | | | | | ● | | | | | | | | ● | ● | | | | | | | | | | |
| CCMT120408MW | 12,70 | 12,90 | 0,80 | | | ● | | | | | ● | | | | | | | | ● | ● | | | | | | ● | | | | |



## CCMT-UF




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCMT060204UF | 6,35 | 6,45 | 0,4 | ● | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |
| CCMT09T302UF | 9,53 | 9,67 | 0,2 | ● | ● | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| CCMT09T304UF | 9,53 | 9,67 | 0,4 | ● | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |
| CCMT09T308UF | 9,53 | 9,67 | 0,8 | ● | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

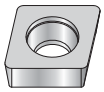
beyond
A8–A23

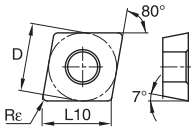
A24–A31

A32–A37

● first choice
○ alternate choice

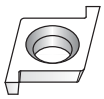
## CCMW

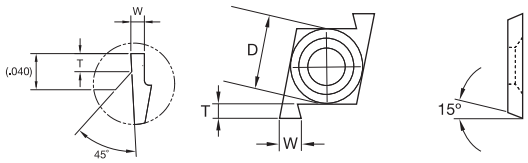





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCMW060204 | 6,35 | 6,45 | 0,4 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |
| CCMW09T304 | 9,53 | 9,67 | 0,4 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |
| CCMW09T308 | 9,53 | 9,67 | 0,8 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |
| CCMW120408 | 12,70 | 12,90 | 0,8 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |
| CCMW120412 | 12,70 | 12,90 | 1,2 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |

## CDG

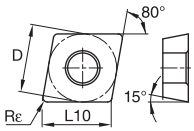





Detail of 0,38mm (0.015") insert.

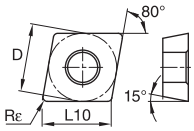
| ISO catalogue number | D mm | T mm | W mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CDG127038R | 3,96 | 0,51 | 0,38 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| CDG127050R | 3,96 | 0,64 | 0,51 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| CDG127064R | 3,96 | 1,02 | 0,64 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| CDG127076R | 3,96 | 1,02 | 0,76 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| CDG127102R | 3,96 | 1,02 | 1,02 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

## CDHB




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDHBS4T0S0 | 3,97 | 4,03 | 0,1 | | | | | | | | | | | | | | | | | ● | | ● | ● | | | | | | | |
| CDHBS4T0X0 | 3,97 | 4,03 | 0,1 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| CDHBS4T002 | 3,97 | 4,03 | 0,2 | | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | | ● | | | | |
| CDHBS4T004 | 3,97 | 4,03 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | ● | | | | |

## CDHH



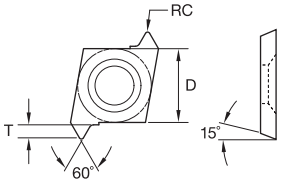

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CDHHS4T002R | 3,97 | 4,03 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | ● | | | | |
| CDHHS4T004R | 3,97 | 4,03 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | | | | | |
| left hand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CDHHS4T002L | 3,97 | 4,03 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | ● | | | | |
| CDHHS4T004L | 3,97 | 4,03 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | | | | | |

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

● first choice
○ alternate choice

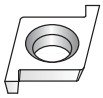
| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | |

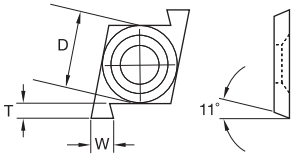
## CDT




| ISO catalogue number | D mm | T mm | RC mm |
|---|---|---|---|
| right hand | | | |
| CDT127005R | 3,96 | 0,64 | 0,05 |

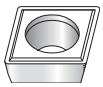
## CPG

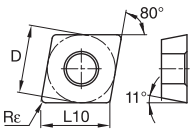





| ISO catalogue number | D mm | T mm | W mm |
|---|---|---|---|
| right hand | | | |
| CPG190150R | 6,35 | 1,65 | 1,52 |
| left hand | | | |
| CPG190150L | 6,35 | 1,65 | 1,52 |

## CPGH (T)





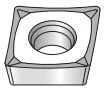

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CPGT060202K | 6,35 | 6,45 | 0,2 |
| CPGT060204K | 6,35 | 6,45 | 0,4 |
| CPGT060208K | 6,35 | 6,45 | 0,8 |
| CPGH09T301 | 9,53 | 9,67 | 0,1 |
| CPGH09T302 | 9,53 | 9,67 | 0,2 |
| CPGH09T304 | 9,53 | 9,67 | 0,4 |
| CPGH09T308 | 9,53 | 9,67 | 0,8 |

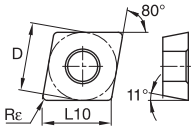
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

● first choice
○ alternate choice

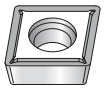
## CPGT-HP

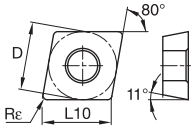





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CPGT060202HP | 6,35 | 6,45 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | | | | | |
| CPGT060204HP | 6,35 | 6,45 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | | | | | |
| CPGT060208HP | 6,35 | 6,45 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | | | | | |
| CPGT09T302HP | 9,53 | 9,67 | 0,2 | | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | | |
| CPGT09T304HP | 9,53 | 9,67 | 0,4 | | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | | |
| CPGT09T308HP | 9,53 | 9,67 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | | | | | |

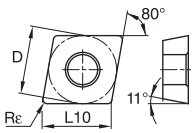
## CPGT-LF






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CPGT060201LF | 6,35 | 6,45 | 0,1 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CPGT060202LF | 6,35 | 6,45 | 0,2 | | | | | | | | | | | | | ● | | | ● | ● | | | ● | | | | | | | |
| CPGT060204LF | 6,35 | 6,45 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CPGT060208LF | 6,35 | 6,45 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CPGT09T302LF | 9,53 | 9,67 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | ● | | | | | | | |
| CPGT09T304LF | 9,53 | 9,67 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |
| CPGT09T308LF | 9,53 | 9,67 | 0,8 | | | | | | | | | | | | | ● | | | ● | ● | | | ● | | | | | | | |

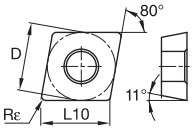
## CPMT-FP




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ● | ● | | | | | ● | ● | ● | | ● | | | | ● | | | ● | | | | | ● | | | |

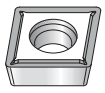
● first choice
○ alternate choice

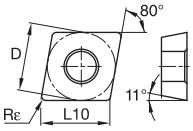
## CPMT-FW




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | ● | | | | | ● | | | | | | | | ● | ● | | | | | | ● | | | | | |

## CPMT-LF



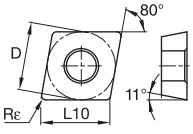



beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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

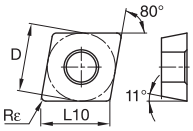



beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CPMT060208MF | 6,35 | 6,45 | 0,8 | | ● | ● | | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | |
| CPMT09T308MF | 9,53 | 9,67 | 0,8 | | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | ● | ● | |
| CPMT09T312MF | 9,53 | 9,67 | 1,2 | | ● | ● | | | | | ● | ● | ● | | | | | | | | | | | | | | | | | |

## CPMT-MP




beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CPMT060208MP | 6,35 | 6,45 | 0,8 | | ● | ● | | | | | | ● | ● | | | | | | ● | | | | | | | | | | ● | |
| CPMT09T308MP | 9,53 | 9,67 | 0,8 | | ● | ● | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | |
| CPMT09T312MP | 9,53 | 9,67 | 1,2 | | | | | | | | ● | ● | | | | | | | | | | | | | | | | | ● | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

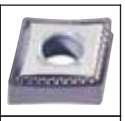
C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

A24–A31

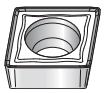

A32–A37

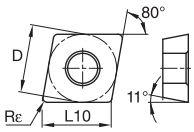
Turning

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | ● | ● | ● | ● | ● | | ● | ● | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

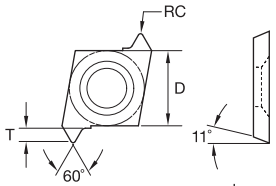
## CPMT-MW





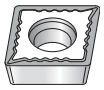

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CPMT09T304MW | 9,53 | 9,67 | 0,4 | | | ● | | | | ● | | | | | | | ● | ● | | | | | | | | | | |
| CPMT09T308MW | 9,53 | 9,67 | 0,8 | | | ● | | | | ● | | | | | | | ● | ● | | | | | | ● | | | | |

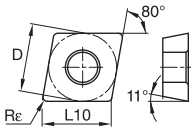
## CPT




| ISO catalogue number | D mm | T mm | RC mm |
|---|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CPT190013R | 6,35 | 1,65 | 0,13 | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| left hand | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CPT190013L | 6,35 | 1,65 | 0,13 | | | | | | | | | | | | | | ● | | | | | | | | | | | |

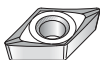
## CPMT-UF

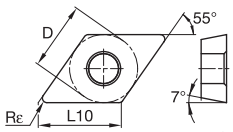





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CPMT060204UF | 6,35 | 6,45 | 0,4 | ● | ● | ● | | | | | | | | | | | | ● | | | | | | | | | | |
| CPMT09T304UF | 9,53 | 9,67 | 0,4 | ● | ● | ● | | | | | | | | | | | | ● | | | | | | | | | | |

## DCGT-HP



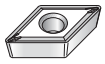


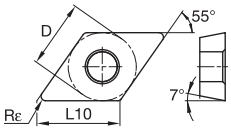

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DCGT070202HP | 6,35 | 7,75 | 0,2 | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | |
| DCGT070204HP | 6,35 | 7,75 | 0,4 | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | |
| DCGT070208HP | 6,35 | 7,75 | 0,8 | | | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | | | | |
| DCGT11T302HP | 9,53 | 11,63 | 0,2 | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | |
| DCGT11T304HP | 9,53 | 11,63 | 0,4 | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | |
| DCGT11T308HP | 9,53 | 11,63 | 0,8 | | | | | | | | | | | | ● | | | ● | ● | | ● | ● | | ● | | | | |

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

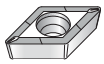
## DCGT-LF

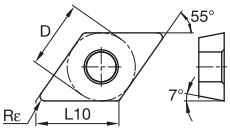





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DCGT0702X0LF | 6,35 | 7,75 | 0,0 |
| DCGT070201LF | 6,35 | 7,75 | 0,1 |
| DCGT11T3X0LF | 9,53 | 11,63 | 0,0 |
| DCGT11T301LF | 9,53 | 11,63 | 0,1 |
| DCGT150408LF | 12,70 | 15,50 | 0,8 |

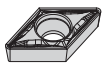
## DCMT-11

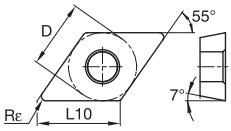





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DCMT07020211 | 6,35 | 7,75 | 0,2 |
| DCMT07020411 | 6,35 | 7,75 | 0,4 |
| DCMT11T30411 | 9,53 | 11,63 | 0,4 |
| DCMT11T30811 | 9,53 | 11,63 | 0,8 |

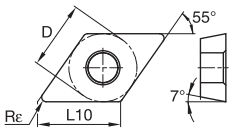
## DCMT-FP






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| 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 mm | L10 mm | Rε mm |
|---|---|---|---|
| DCMT11T304FW | 9,53 | 11,63 | 0,2 |
| DCMT11T308FW | 9,53 | 11,63 | 0,8 |

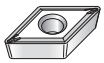
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

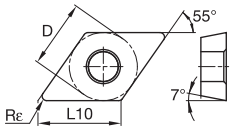
C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

Turning

● first choice
○ alternate choice

## DCMT-LF






beyond DRIVE™

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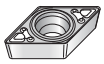
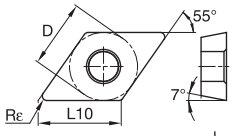
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ● | ● | | | ● | | ● | | | | | | | | | ● | | | ● | | | | | | | |

## DCMT-MF






beyond DRIVE™

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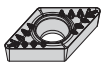
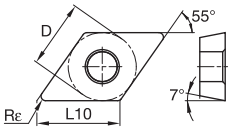
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCMT11T304MF | 9,53 | 11,63 | 0,4 | | ● | ● | ● | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | |
| DCMT11T308MF | 9,53 | 11,63 | 0,8 | | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | ● | ● |
| DCMT11T312MF | 9,53 | 11,63 | 1,2 | | ● | ● | | | | ● | ● | | | | | | | | | | | | | | | | | | ● | ● |

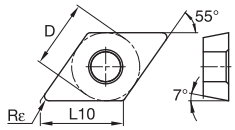
## DCMT-MP






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCMT11T304MP | 9,53 | 11,63 | 0,4 | | ● | ● | | | | | ● | | | | | | | | ● | | | | | | | | | | | |
| DCMT11T308MP | 9,53 | 11,63 | 0,8 | | ● | ● | | | | | ● | ● | ● | | | | | | ● | | | | | | | | | | | |
| DCMT11T312MP | 9,53 | 11,63 | 1,2 | | ● | ● | | | | | | | | | | | | | ● | | | | | | | | | | | |

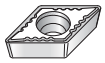
## DCMT-MW

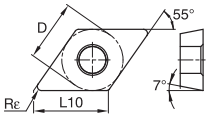



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCMT11T304MW | 9,53 | 11,63 | 0,4 | | | ● | | | | | ● | | | | | | | | ● | | | | | | | | | | | |
| DCMT11T308MW | 9,53 | 11,63 | 0,8 | | | ● | | | | | ● | | | | | | | | ● | | | | | | | | | | | |

● first choice
○ alternate choice

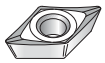
## DCMT-UF

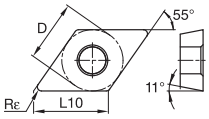





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCMT070204UF | 6,35 | 7,75 | 0,4 | ● | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |
| DCMT11T302UF | 9,53 | 11,63 | 0,2 | ● | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |
| DCMT11T304UF | 9,53 | 11,63 | 0,4 | ● | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |
| DCMT11T308UF | 9,53 | 11,63 | 0,8 | ● | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |

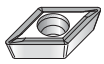
## DPGT-HP

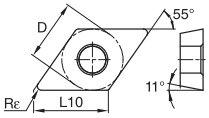





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | | | ● | ● | | ● | | | | | | | | |

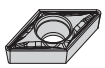
## DPGT-LF

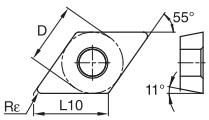





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPMT070202FP | 6,35 | 7,75 | 0,2 | | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| DPMT070204FP | 6,35 | 7,75 | 0,4 | | ● | ● | | | | | | ● | ● | | | | | | ● | | | ● | | | | | ● | | | |
| DPMT070208FP | 6,35 | 7,75 | 0,8 | | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| DPMT11T302FP | 9,53 | 11,63 | 0,2 | | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| DPMT11T304FP | 9,53 | 11,63 | 0,4 | | ● | ● | | | | | | ● | ● | | | | | | ● | | | ● | | | | | ● | | | |
| DPMT11T308FP | 9,53 | 11,63 | 0,8 | ● | ● | ● | | | | | ● | | ● | | | | | | ● | | | ● | | | | | ● | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

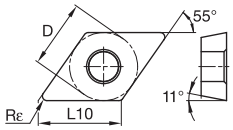
A24–A31

A32–A37

Turning

● first choice
○ alternate choice

## DPMT-FW

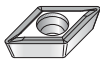


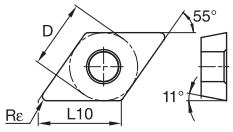

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPMT070204FW | 6,35 | 7,75 | 0,4 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DPMT070208FW | 6,35 | 7,75 | 0,8 | | | ● | | | | | ● | | | | | | | | ● | ● | | | | | | | | | | |
| DPMT11T304FW | 9,53 | 11,63 | 0,2 | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| DPMT11T308FW | 9,53 | 11,63 | 0,8 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | |

## DPMT-LF

beyond DRIVE™

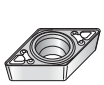
NEW!

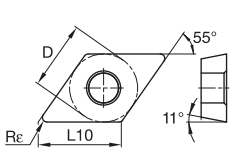





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ● | ● | ● | ● | | ● | | ● | | ● | | | | | | | ● | | | ● | | | | | ● | ● | |

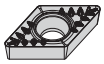
## DPMT-MF

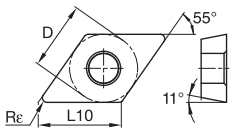





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPMT11T308MF | 9,53 | 11,63 | 0,8 | | ● | ● | | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | |

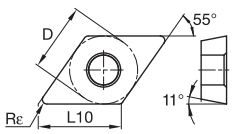
## DPMT-MP






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPMT11T308MP | 9,53 | 11,63 | 0,8 | | | ● | | | | | ● | | | | | | | | ● | | | | | | | | | | | |

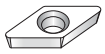
## DPMT-UF

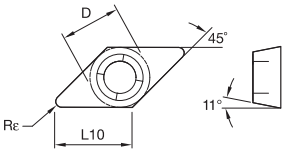



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPMT070204UF | 6,35 | 7,75 | 0,4 | | ● | ● | | | | | | | | | | | | | | ● | | | | | | | | | | |
| DPMT11T304UF | 9,53 | 11,63 | 0,4 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| DPMT11T308UF | 9,53 | 11,63 | 0,8 | | ● | | | | | | | | | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

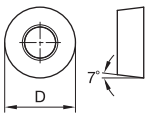
## GPCD





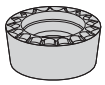

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GPCD050102 | 3,97 | 5,61 | 0,2 | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | |
| GPCD050104 | 3,97 | 5,61 | 0,4 | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | |

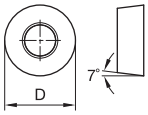
## RCGH




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGH120400 | 12,70 | – | – | | | | | | | | | | | | | | | | ● | | ● | | | | | | | | | |

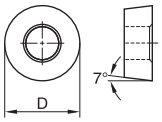
## RCGH-MP





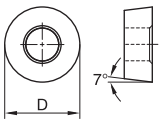

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGH120400MP | 12,70 | – | – | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |

## RCGT-HP




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGT0803M0HP | 8,00 | – | – | | | | | | | | | | | | | ● | ● | | ● | ● | | ● | ● | | ● | | | | | |
| RCGT10T3M0HP | 10,00 | – | – | | | | | | | | | | | | | ● | | | | ● | | ● | ● | | ● | | | | | |
| RCGT1204M0HP | 12,00 | – | – | | | | | | | | | | | | | ● | | | | ● | | ● | ● | | | | | | | |

## RCGT-MS




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGT0803M0MS | 8,00 | – | – | | | | | | | | | | | | | | | | ● | ● | | ● | | | | | | | | |
| RCGT1204M0MS | 12,00 | – | – | | | | | | | | | | | | | | | | ● | ● | | ● | | | | | | | | |
| RCGT1606M0MS | 16,00 | – | – | | | | | | | | | | | | | | | | ● | | | ● | ● | | | | | | | |
| RCGX1003M0MS | 10,00 | – | – | | | | | | | | | | | | | | | | | | | ● | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

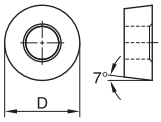
C116–C147*

beyond
A8–A23

A24–A31

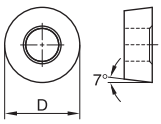
A32–A37

● first choice
○ alternate choice



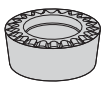

## RCGT-RP

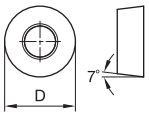
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCGT0803M0RP | 8,00 | – | – | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| RCGT1204M0RP | 12,00 | – | – | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| RCGX1003M0RP | 10,00 | – | – | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |
| RCMT1204M0RP | 12,00 | – | – | | ● | ● | | | | ● | ● | | | | | | | | | | | | | | | | | | | |
| RCMT1606M0RP | 16,00 | – | – | | ● | ● | | | | ● | | | | | | | | | | | | | | | | | | | | |
| RCMT2006M0RP | 20,00 | – | – | | | ● | | | | | ● | | ● | | | | | | | | | | | | | | | | | |
| RCMX1003M0RP | 10,00 | – | – | | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| RCMX2507M0RP | 25,00 | – | – | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| RCMX3209M0RP | 32,00 | – | – | | | ● | | | | | | | | | | | | | | | | | | | | | | | | |




## RCMT

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCMT0602M0 | 6,00 | – | – | | | ● | ● | | | | ● | | ● | | | ● | ● | | | ● | | | | | | | | | | |
| RCMT0803M0 | 8,00 | – | – | | | ● | ● | | | | ● | | ● | | | ● | | | | ● | | | | | | | | | | |
| RCMT10T3M0 | 10,00 | – | – | | | ● | ● | | | | ● | | ● | | | | | | | ● | | | | | | | | | | |
| RCMT1204M0 | 12,00 | – | – | | | | ● | | | | ● | | ● | | | ● | | | | ● | | | | | | | | | | |
| RCMT1605M0 | 16,00 | – | – | | | ● | | | | | ● | | ● | | | ● | | | | ● | | | | | | | | | | |
| RCMT2006M0 | 20,00 | – | – | | | ● | ● | | | | ● | | ● | | | ● | | | | ● | | | | | | | | | | |
| RCMT060200 | 6,35 | – | – | | | ● | | | | | | | ● | | | | | | | ● | | | | | | | | | | |
| RCMT09T300 | 9,53 | – | – | | | ● | | | | | ● | | ● | | | ● | | | | ● | | | | | ● | | | | | |
| RCMT120400 | 12,70 | – | – | | | | | | | | ● | | ● | | | | | | | | | | | | | | | | | |





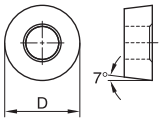

## RCMT-MP

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCMT0803M0MP | 8,00 | – | – | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| RCMT10T3M0MP | 10,00 | – | – | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| RCMT1606M0MP | 16,00 | – | – | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |

● first choice
○ alternate choice

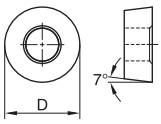
| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## RCMT-RH



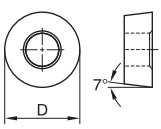

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| RCMT2006M0RH | 20,00 | – | – |
| RCMX2507M0RH | 25,00 | – | – |
| RCMX3209M0RH | 32,00 | – | – |

## RCMT-RM



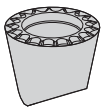
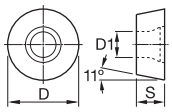

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| RCMT2006M0RM | 20,00 | – | – |

## RCMT-RP




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| RCGT0803M0RP | 8,00 | – | – |
| RCMT1204M0RP | 12,00 | – | – |
| RCMT1606M0RP | 16,00 | – | – |
| RCMT2006M0RP | 20,00 | – | – |
| RCMX1003M0RP | 10,00 | – | – |
| RCMX2507M0RP | 25,00 | – | – |
| RCMX3209M0RP | 32,00 | – | – |

## RPGT-MP

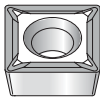



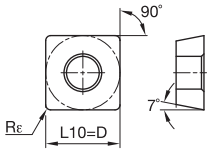

| ISO catalogue number | D mm | D1 mm | S mm |
|---|---|---|---|
| RPGT060400MP | 6,35 | 2,80 | 4,76 |
| RPGT090700MP | 9,53 | 4,40 | 7,94 |
| RPGT120700MP | 12,70 | 5,50 | 7,94 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

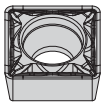
● first choice
○ alternate choice

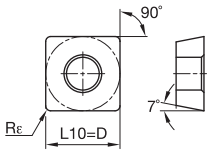





## SCMT-11

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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

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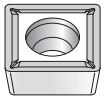
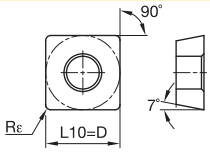
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCMT09T304FP | 9,53 | 9,53 | 0,4 | | ● | ● | | | | | ● | ● | ● | | | | | | ● | | | ● | | | | | | | | |
| 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 | | ● | ● | | | | | ● | | ● | | | | | | ● | | | | | | | | | | | |



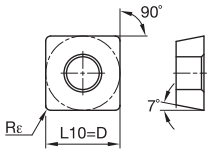



## SCMT-LF

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCMT09T304LF | 9,53 | 9,53 | 0,4 | | ● | ● | ● | | ● | | ● | ● | ● | | | | | | | ● | | | ● | | | ● | | | ● | ● |
| 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 | | ● | ● | | | ● | | ● | | | | | | | | | ● | | | ● | | | | | | ● | ● |




## SCMT-MF

beyond DRIVE™

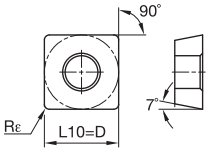
NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCMT09T308MF | 9,53 | 9,53 | 0,8 | | ● | ● | | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | ● | ● |
| SCMT09T312MF | 9,52 | 9,52 | 1,2 | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● |
| SCMT120408MF | 12,70 | 12,70 | 0,8 | | ● | ● | ● | | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | ● | ● |
| SCMT120412MF | 12,70 | 12,70 | 1,2 | | ● | ● | | | | ● | ● | | ● | | | | | | | | | | | | | | | ● | ● |

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## SCMT-MP

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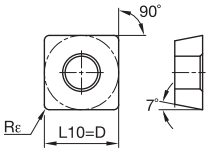
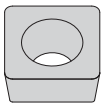
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SCMT09T304MP | 9,53 | 9,53 | 0,4 |
| SCMT09T308MP | 9,53 | 9,53 | 0,8 |
| SCMT120404MP | 12,70 | 12,70 | 0,4 |
| SCMT120408MP | 12,70 | 12,70 | 0,8 |
| SCMT120412MP | 12,70 | 12,70 | 1,2 |

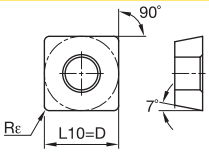
## SCMT-UF




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SCMT09T308UF | 9,53 | 9,53 | 0,8 |

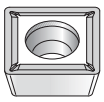
## SCMW

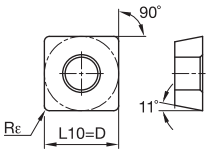





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SCMW09T304 | 9,53 | 9,53 | 0,4 |
| SCMW09T308 | 9,53 | 9,53 | 0,8 |
| SCMW120408 | 12,70 | 12,70 | 0,8 |
| SCMW120412 | 12,70 | 12,70 | 1,2 |

## SPGH






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| SPGH070208 | 7,94 | 7,00 | 0,8 |
| SPGH090308 | 9,53 | 9,53 | 0,8 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

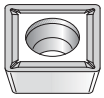
beyond
A8–A23

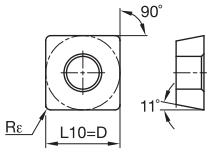
A24–A31

A32–A37

● first choice
○ alternate choice

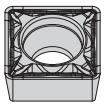
## SPGT-LF

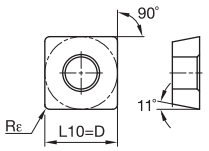





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPGT09T304LF | 9,53 | 9,53 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | ● | | | | | | | |
| SPGT09T308LF | 9,53 | 9,53 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | |

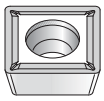
## SPMT-FP

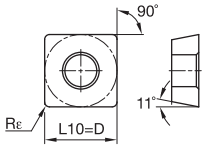





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPMT09T304FP | 9,53 | 9,53 | 0,4 | ● | ● | ● | | | | | ● | | ● | | | | | | ● | | | ● | | | | | | | | |
| SPMT09T308FP | 9,53 | 9,53 | 0,8 | ● | ● | ● | | | | | ● | | | | ● | | | | ● | | | ● | | | | | ● | | | |

## SPMT-LF



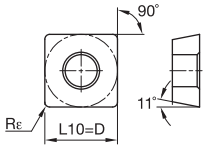



beyond DRIVE™

NEW!

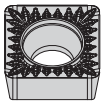
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPMT09T304LF | 9,53 | 9,53 | 0,4 | | ● | ● | | | ● | ● | ● | | | | | | ● | | | ● | | | ● | | | ● | | | | |
| SPMT09T308LF | 9,53 | 9,53 | 0,8 | | ● | ● | | | ● | ● | ● | | | | | | ● | | | ● | | | ● | | | | | ● | ● | |

## SPMT-MF

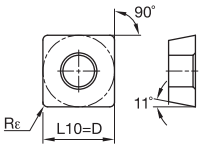



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPMT09T308MF | 9,53 | 9,53 | 0,8 | | ● | ● | | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | |
| SPMT120408MF | 12,70 | 12,70 | 0,8 | | ● | ● | ● | | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | |

● first choice
○ alternate choice

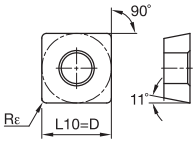


## SPMT-MP

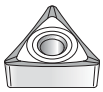



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPMT09T308MP | 9,53 | 9,53 | 0,8 | | | ● | | | | | ● | ● | | | | | | | ● | | | | | | | | | | | |
| SPMT120408MP | 12,70 | 12,70 | 0,8 | | | ● | | | | | ● | | | | | | | | ● | | | | | | | | | | | |

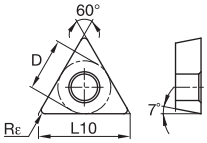
## SPMT-UF




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPMT09T304UF | 9,53 | 9,53 | 0,4 | | ● | | | | | | | | | | | | | | | ● | | | | | | | | | | |

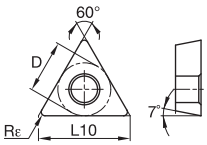


## TCGT-HP




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TCGT16T304HP | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| 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 mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TCGT110201LF | 6,35 | 11,00 | 0,1 | | | | | | | | | | | | | | | | ● | | | | ● | | | | | | | |
| TCGT110204LF | 6,35 | 11,00 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | ● | | | | | | | |
| TCGT16T302LF | 9,53 | 16,50 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| TCGT16T304LF | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |
| TCGT16T308LF | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

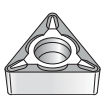
A24–A31

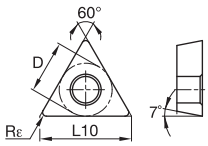
A32–A37

Turning

● first choice
○ alternate choice

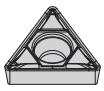
## TCMT-11

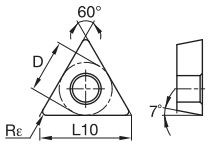





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TCMT11020411 | 6,35 | 11,00 | 0,4 | | | | | | | | | | | | | | | | | | | | | | | ● | | | | |
| TCMT16T30411 | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | | | | | | | | ● | | | | |
| TCMT16T30811 | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | | | | | | | | | | ● | | | | |

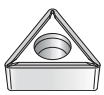
## TCMT-FP

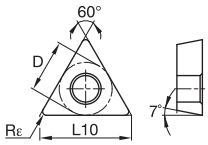





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ● | ● | ● | | | | | ● | ● | ● | | ● | | | | ● | | | ● | | | | | ● | | | |
| TCMT110208FP | 6,35 | 11,00 | 0,8 | | ● | ● | | | | | ● | ● | ● | | | | | | ● | | | ● | | | | | ● | | | |
| TCMT110304FP | 6,35 | 11,00 | 0,4 | ● | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| TCMT110308FP | 6,35 | 11,00 | 0,8 | ● | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| TCMT110312FP | 6,35 | 11,00 | 1,2 | ● | | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| TCMT16T302FP | 9,53 | 16,50 | 0,2 | | | | | | | | | | | | | | | | ● | | | ● | | | | | ● | | | |
| 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



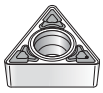


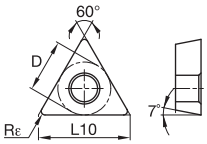

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

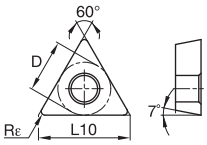
## TCMT-MF





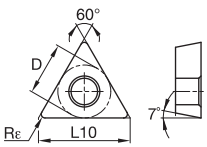

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TCMT110208MF** | 6,35 | 11,00 | 0,8 |
| **TCMT16T308MF** | 9,53 | 16,50 | 0,8 |
| **TCMT16T312MF** | 9,53 | 16,50 | 1,2 |

## TCMT-MP



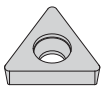

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TCMT110208MP** | 6,35 | 11,00 | 0,8 |
| **TCMT16T304MP** | 9,53 | 16,50 | 0,4 |
| **TCMT16T308MP** | 9,53 | 16,50 | 0,8 |
| **TCMT16T312MP** | 9,53 | 16,50 | 1,2 |

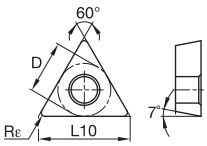
## TCMT-UF




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TCMT110204UF** | 6,35 | 11,00 | 0,4 |
| **TCMT110208UF** | 6,35 | 11,00 | 0,8 |
| **TCMT16T308UF** | 9,53 | 16,50 | 0,8 |

## TCMW





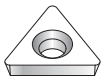

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TCMW16T304** | 9,53 | 16,50 | 0,4 |
| **TCMW16T308** | 9,53 | 16,50 | 0,8 |

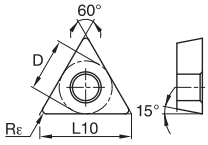
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

● first choice
○ alternate choice

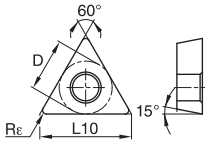
## TDHB






| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | | | | | | | | | | | | | | | | ● | | | ● | ● | | | | | | | |

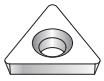
## TDHH

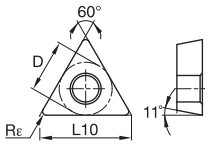



| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TDHH07T1202R** | 4,06 | 7,04 | 0,2 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | |
| **TDHH07T1204R** | 4,06 | 7,04 | 0,4 | | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| left hand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TDHH07T1202L** | 4,06 | 7,04 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | | | | | |
| **TDHH07T1204L** | 4,06 | 7,04 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | ● | ● | | | | | | | |

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

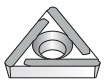
## TPCB

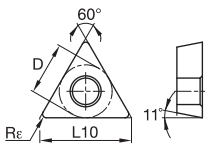





| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TPCB160302** | 9,53 | 16,50 | 0,2 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| **TPCB160304** | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | | ● | | ● | | | | | | | | |
| **TPCB160308** | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | | | | ● | | ● | | | | | | | | |
| **TD6P** | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | ● | | | | | | | | | | | | | |

## TPCG



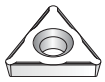


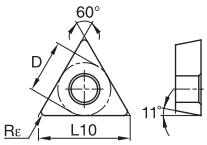

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TPCG110202L** | 6,35 | 11,00 | 0,2 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |
| **TPCG110204L** | 6,35 | 11,00 | 0,4 | | | | | | | | | | | | | | | | | ● | | ● | ● | | | | | | | |
| **TPCG110208L** | 6,35 | 11,00 | 0,8 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | |

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

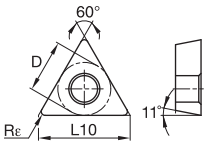
## TPCH





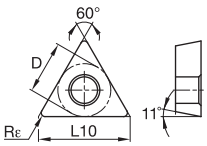

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TPCH110202 | 6,50 | 11,26 | 0,2 |
| TPCH110204 | 6,50 | 11,26 | 0,4 |

## TPGM



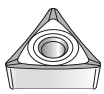

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TPGT110204K | 6,35 | 11,00 | 0,4 |
| TPGT110208K | 6,35 | 11,00 | 0,8 |
| TPGH16T304 | 9,53 | 16,50 | 0,4 |

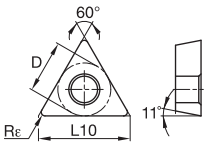
## TPGH




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TPGH160304 | 9,53 | 16,50 | 0,4 |
| TPGH160308 | 9,53 | 16,50 | 0,8 |

## TPGT-HP






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| 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 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

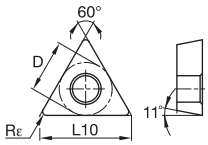
beyond
A8–A23

A24–A31

A32–A37

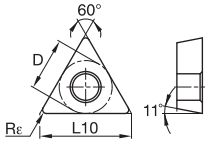
● first choice
○ alternate choice

## TPGT-LF



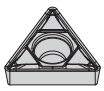

| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPGT090202LF | 5,56 | 9,63 | 0,2 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | | |
| TPGT090204LF | 5,56 | 9,63 | 0,4 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | | |
| 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 | | | | | | | | | | | | | | | | ● | ● | | | ● | | ● | | | | | | |
| TPGT16T304LF | 9,53 | 16,50 | 0,8 | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | | | |

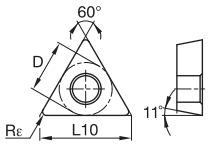
## TPHB




| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPHB110202 | 6,35 | 11,00 | 0,2 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| TPHB160304 | 9,53 | 16,50 | 0,4 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |

## TPMT-FP






beyond DRIVE™

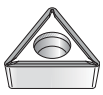
NEW!

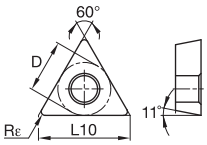
| ISO catalogue number | D mm | L10 mm | Rε mm | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | ● | ● | | | | | ● | ● | ● | | | | | | ● | | | ● | | | | | | | | |
| TPMT110208FP | 6,35 | 11,00 | 0,8 | | ● | ● | | | | | ● | ● | ● | | | | | | ● | | | | | | | | ● | | | |
| TPMT110304FP | 6,35 | 11,00 | 0,4 | | | | | | | | | | | | | | | | ● | | | ● | | | | | | | | |
| TPMT110308FP | 6,35 | 11,00 | 0,8 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| TPMT16T304FP | 9,53 | 16,50 | 0,4 | | ● | ● | | | | | ● | | ● | | | | | | ● | | | ● | | | | | | | | |
| TPMT16T308FP | 9,53 | 16,50 | 0,8 | ● | ● | ● | | | | | ● | | ● | | | | | | ● | | | ● | | | | | ● | | | |
| TPMT16T312FP | 9,53 | 16,50 | 1,2 | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | |
| TPMT220408FP | 12,70 | 22,00 | 0,8 | | | ● | | | | | | | | | | | | | ● | | | | | | | | | | | | |

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## TPMT-LF



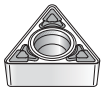


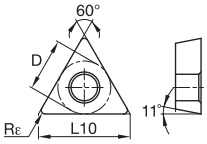

beyond DRIVE

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| 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 |
| TPMT16T312LF | 9,53 | 16,50 | 1,2 |
| TPMT220408LF | 12,70 | 22,00 | 0,8 |

## TPMT-MF



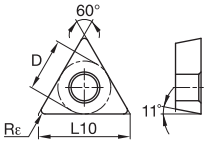



beyond DRIVE

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TPMT110208MF | 6,35 | 11,00 | 0,8 |
| TPMT16T308MF | 9,53 | 16,50 | 0,8 |
| TPMT16T312MF | 9,53 | 16,50 | 1,2 |

## TPMT-MP




beyond DRIVE

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TPMT110208MP | 6,35 | 11,00 | 0,8 |
| TPMT16T308MP | 9,53 | 16,50 | 0,8 |
| TPMT16T312MP | 9,53 | 16,50 | 1,2 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

C2–C71*

C72–C109*

C110–C115*

C116–C147*

beyond
A8–A23

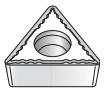
A24–A31

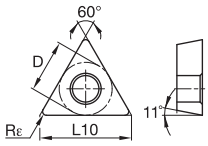
A32–A37

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | ● | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | ● | | | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

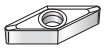
## TPMT-UF

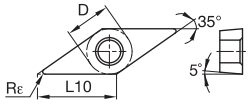





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TPMT110202UF** | 6,35 | 11,00 | 0,2 |
| **TPMT110204UF** | 6,35 | 11,00 | 0,4 |
| **TPMT16T304UF** | 9,53 | 16,50 | 0,4 |
| **TPMT16T308UF** | 9,53 | 16,50 | 0,8 |

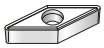
## VBGT-HP

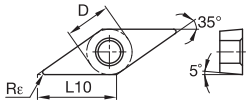





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **VBGT110302HP** | 6,35 | 11,07 | 0,2 |
| **VBGT110304HP** | 6,35 | 11,07 | 0,4 |
| **VBGT160404HP** | 9,53 | 16,61 | 0,4 |
| **VBGT160408HP** | 9,53 | 16,61 | 0,8 |

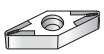
## VBGT-LF

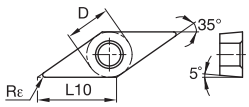





| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **VBGT1103X0LF** | 6,35 | 11,07 | 0,0 |
| **VBGT110301LF** | 6,35 | 11,07 | 0,1 |
| **VBGT110302LF** | 6,35 | 11,07 | 0,2 |
| **VBGT110304LF** | 6,35 | 11,07 | 0,4 |
| **VBGT1604X0LF** | 9,53 | 16,61 | 0,0 |
| **VBGT160401LF** | 9,53 | 16,61 | 0,1 |
| **VBGT160402LF** | 9,53 | 16,61 | 0,2 |
| **VBGT160404LF** | 9,53 | 16,61 | 0,4 |

## VBMT-11



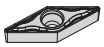


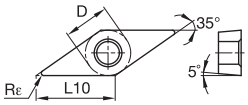

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **VBMT11030211** | 6,35 | 11,07 | 0,2 |
| **VBMT11030411** | 6,35 | 11,07 | 0,4 |
| **VBMT16040411** | 9,53 | 16,61 | 0,4 |
| **VBMT16040811** | 9,53 | 16,61 | 0,8 |

● first choice
○ alternate choice

| | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | ● | ● | ● | ● | |
| M | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## VBMT-FP



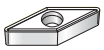


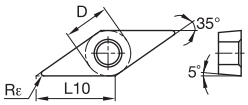

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| 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 |
| VBMT160402FP | – | – | – |

## VBMT-LF



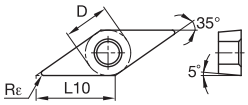



beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VBMT110302LF | 6,35 | 11,07 | 0,2 |
| VBMT110304LF | 6,35 | 11,07 | 0,4 |
| VBMT110308LF | 6,35 | 11,07 | 0,8 |
| 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

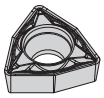


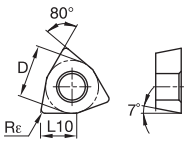

beyond DRIVE™

NEW!

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VBMT160404MP | 9,53 | 16,61 | 0,4 |
| VBMT160408MP | 9,53 | 16,61 | 0,8 |

## WCMT-FP






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| WCMT040204FP | 6,35 | 4,34 | 0,4 |
| WCMT06T308FP | 9,53 | 6,52 | 0,8 |

*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.

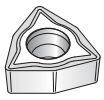
C2–C71* | C72–C109* | C110–C115* | C116–C147* | A8–A23 | A24–A31 | A32–A37

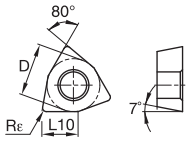
Turning

● first choice
○ alternate choice

| | | KCP05 | KCP10 | KCP25 | KCP30 | KCP40 | KCK05 | KCK15 | KCK20 | KCM15 | KCM25 | KCM35 | KU10 | K313 | K68 | KCS10 | KCU10 | KC5010 | KC5510 | KCU25 | KC5025 | KC5525 | KC5410 | KT315 | KTP10 | KCP10B | KCP25B | KCK15B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | |
| M | | | | | | | | | | ● | ● | ● | | | | | ● | ● | | ● | ● | | | | | | | |
| K | | | | | | | ● | ● | ● | | | | | | | | | | | | | | | | ● | | | ● |
| N | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| S | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

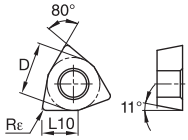
## WCMT-LF





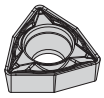

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| WCMT040204LF | 6,35 | 4,34 | 0,4 | ● |
| WCMT06T308LF | 9,53 | 6,52 | 0,8 | ● ● |

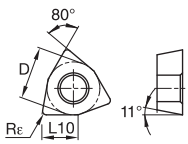
## WPGT-UF




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| WPGTS30101UF | 4,76 | 3,26 | 0,1 | ● ● |
| WPGTS30102UF | 4,76 | 3,26 | 0,2 | ● ● |
| WPGT040202UF | 6,35 | 4,34 | 0,2 | ● |

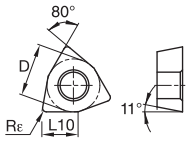
## WPMT-FP






| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| WPMTS3T104FP | 4,76 | 3,25 | 0,4 | ● | ● |
| WPMT040204FP | 6,35 | 4,34 | 0,4 | ● | ● |
| WPMT06T304FP | 9,53 | 6,52 | 0,4 | ● | ● | ● |
| WPMT06T308FP | 9,53 | 6,52 | 0,8 | ● | ● | ● |

## WPMT-LF




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| WPMTS3T104LF | 4,76 | 3,25 | 0,4 | ● | ● |
| WPMT040204LF | 6,35 | 4,34 | 0,4 | ● | ● | ● | ● |
| WPMT06T304LF | 9,53 | 6,52 | 0,4 | ● | ● | ● | ● | ● | ● |
| WPMT06T308LF | 9,53 | 6,52 | 0,8 | ● | ● | ● | ● | ● | ● |

## -MR Geometry

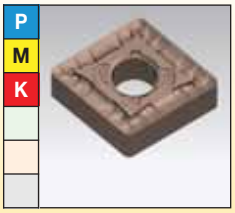
NEW!

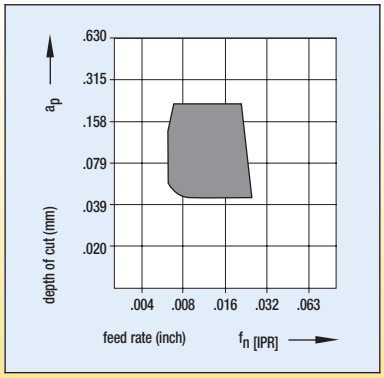
Geometry for medium to rough cutting with smooth chip forming and improved coolant flow for increased tool life. Positive geometry reduces cutting forces and improves depth-of-cut notching resistance.

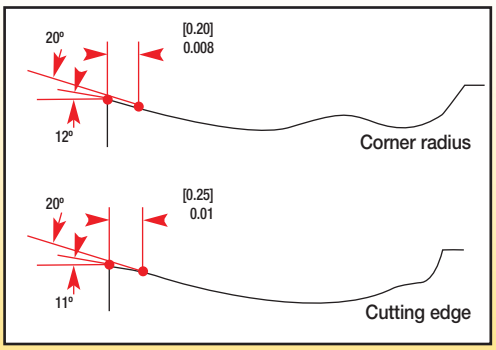
MR (11° land) is more positive than the -RP (5° land) and -MN (0° land), providing a freer cutting action (lower cutting forces) and potentially improved tool life in some applications. It is less positive than the -UP (15° land), so the -MR bridges the gap between the -RP and -UP.

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

### CNMG-MR




**Feed 0,15–0,50mm**
**DOC 1,50–6,35mm**

**MR** : **M**edium **R**oughing
**08** : Corner radius (ISO) 0,8mm
▼ : Application Symbol – Rough machining
**2** : Corner radius (ANSI) 2/64 (0.03125")


## Looking for a product that's not shown in this catalogue?
## Check the Kennametal website!

### Online product catalogue available 24/7

Visit **http://www.kennametal.com/turning/** to browse our electronic catalogue any time you're looking for Kennametal's best tooling solutions. It's fast, free, and always available. The online e-catalogue is updated weekly with products and solutions for milling, turning, holemaking, and tooling systems applications.

## PCBN

**Increased productivity can be achieved with PCBN tools through:**

- Higher cutting speeds.
- Higher feed rates.
- Longer tool life.
- Less machine downtime.

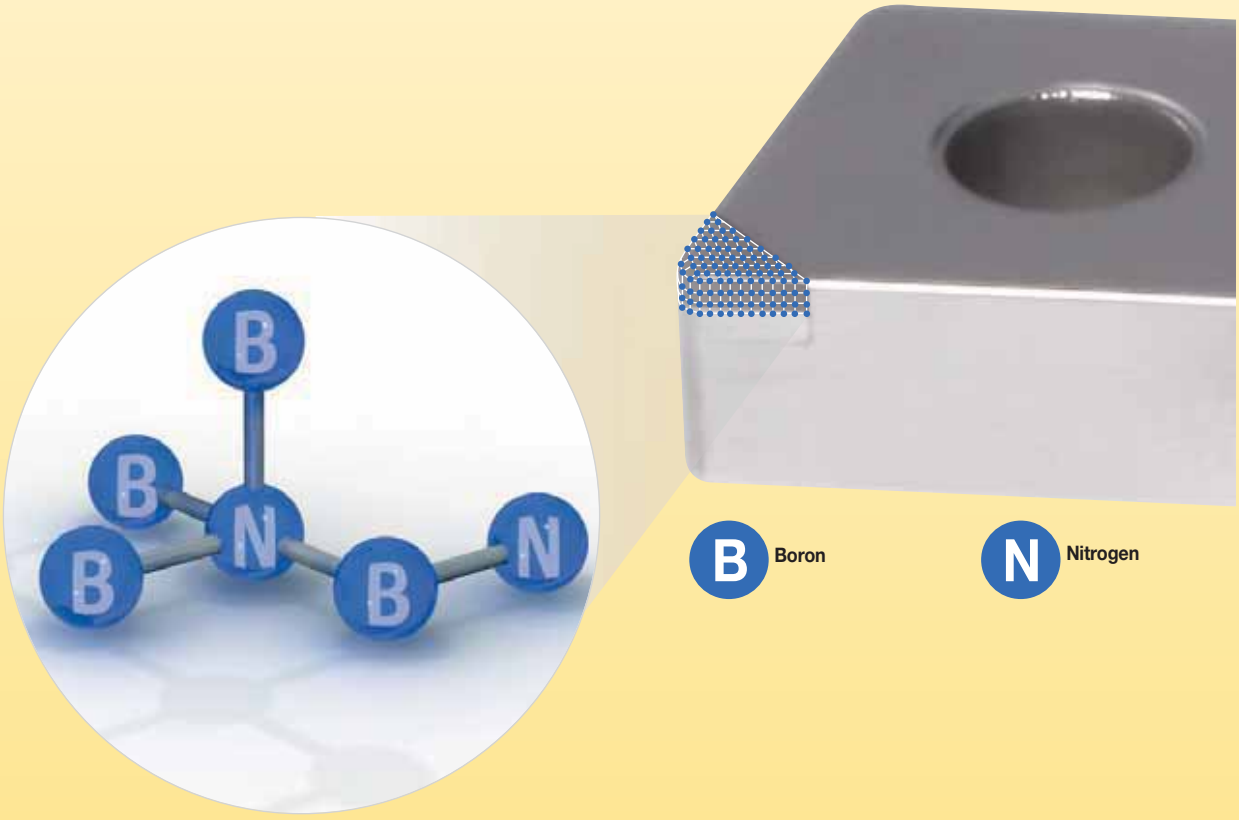
- More parts per machine means direct tool costs can be reduced.

- Very tight workpiece surface finish tolerances can be achieved on difficult-to-machine materials.

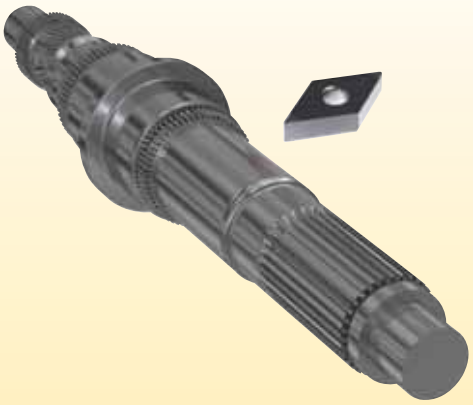
- PCBN can be used to machine ferrous materials in the hardened condition as an alternative to grinding, making it possible to substantially reduce component machining times.

- PCBN offers environmental benefits — the generation of grinding sludge is eliminated and the chips can be recycled.

- Improved surface integrity of critical components.



## Grinding vs. hard turning



### Grinding

- Size tolerance specifications beyond the capability of turning.
- Surface finish requirements too tight for hard turning.

vs.

### Hard Turning

- Size tolerance specifications beyond the capability of turning.
- Complex geometry that makes single-point turning more practical.
- Relatively high metal removal rates.
- Possible dry machining.
- Faster machine setup.
- Faster cycle times.
- I.D. and O.D. machining on one machine.

## Where does PCBN work?

PCBN is suitable for machining a wide variety of workpiece materials, mainly ferrous alloys.

The application areas may be broadly categorised as follows:

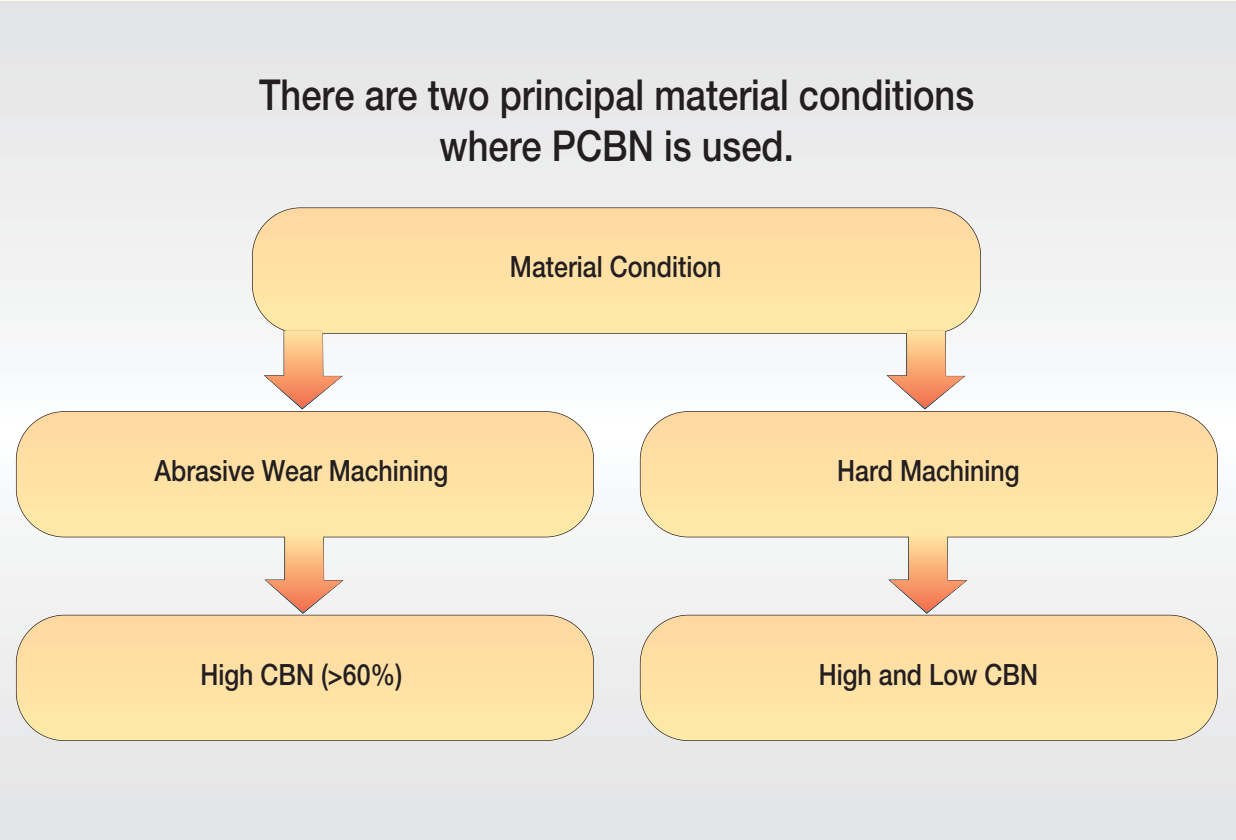
| Hardened Steels | Cast Irons | Superalloys | Powder Metallurgy Steels |
|---|---|---|---|

Certain classes of PCBN materials are associated with each particular application.

For best cost performance, proper selection of the following is essential:

- Format of the insert.
- Grade.
- Edge prep.
- Application data.

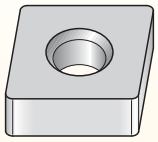
## PCBN is known as the second hardest material



## PCBN insert formats

### Solid Inserts

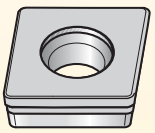
- Inserts are made only from PCBN.
- No material joint.
- Best heat absorption capacity.
- Can work at highest temperatures.



solid

### Full-Face Inserts

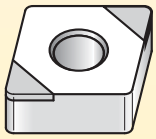
- Inserts are made from a presintered carbide/PCD or PCBN joint.
- Elimination of the brazing joint. Less delamination.
- Better heat absorption capacity.
- Can work at higher temperatures than tipped tools.
- Facilitate larger depth of cut compared to the same size tipped insert.
- The blanks are available with “A” and “W” ISO-style pin-lock holes.



full-face

### Tipped Inserts

- Require a carrier and substrate for the insert.
- The tips are brazed to the substrate. Various brazing methods are applied.
- The substrate has to have a pocket that will accommodate and support the tip.
- In these types of tools, the braze joint represents the weak link, so the brazing operation is very important and should be carefully controlled and executed.
- The main advantage of tipped tools over full-faced inserts is the lower cost.



tipped

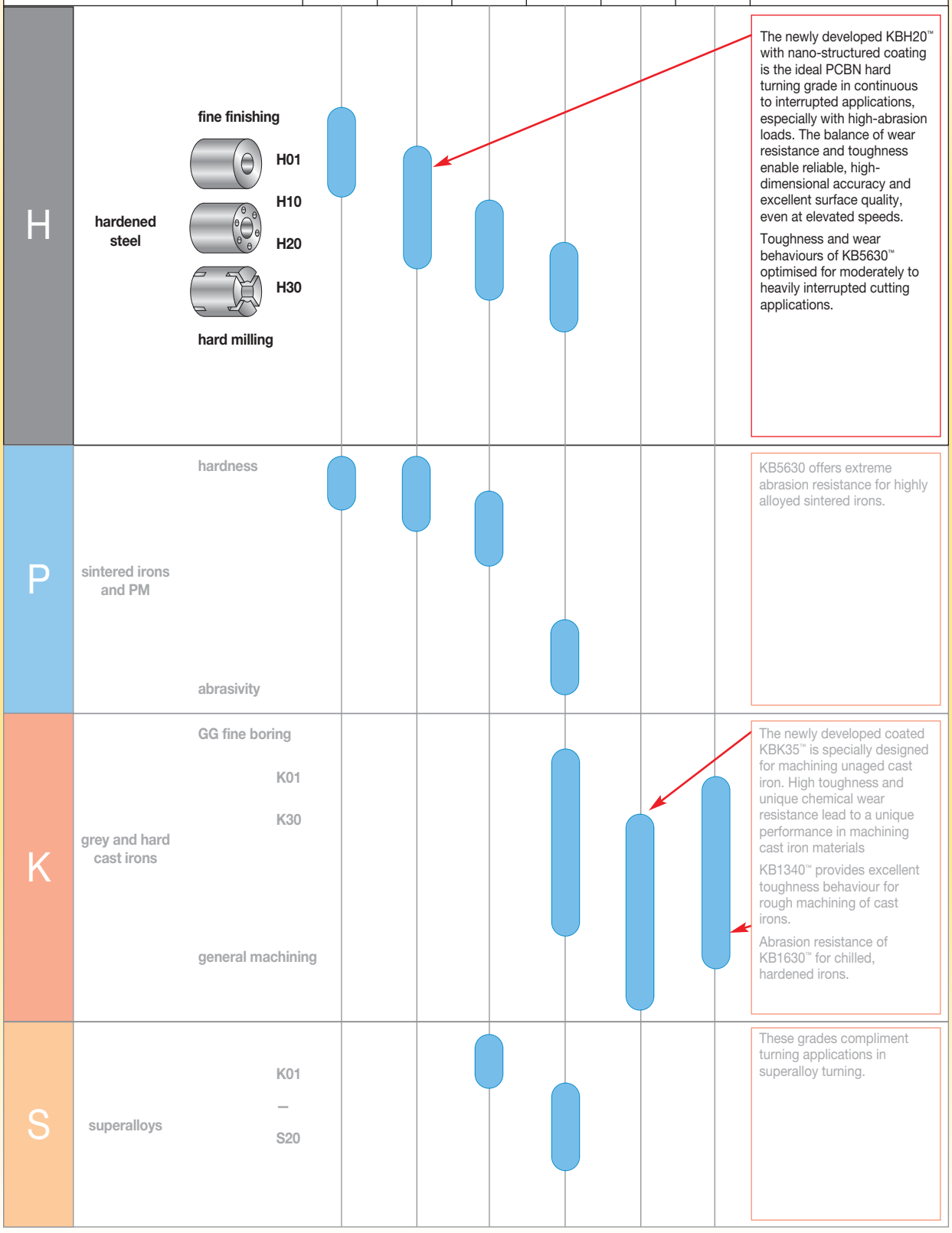
## Kennametal inserts

This table shows approximate tip sizes of Kennametal CBN inserts depending on style and corner radius. Please note that the maximum cutting depth is not more than 80% of the tip length.

| radius | insert shape | | | | |
|---|---|---|---|---|---|
| | S | C, W | T | D, K | V |
| R 0,2mm | 3,1 | 3,0 | 3,3 | 3,3 | 4,9 |
| R 0,4mm | 3,1 | 3,0 | 3,2 | 3,1 | 4,4 |
| R 0,8mm | 3,1 | 2,9 | 2,9 | 2,7 | 3,6 |
| R 1,2mm | 3,1 | 2,8 | 2,6 | 2,4 | 2,7 |
| R 1,6mm | 3,1 | 2,3 | 2,3 | 2,0 | 1,8 |

## PCBN portfolio

| Grade | KB5610 | KBH20 | KB5625 | KB5630 | KBK35 | KB1340 | Grade |
|---|---|---|---|---|---|---|---|
| CBN% | 50 | 60 | 65 | 90 | 90 | 90 | CBN% |



# PCBN Hard Turning Selection System

## Introduction

This guide will help you choose the PCBN grade, edge preparations, nose radius, feed, and recommended speed range for your hard turning applications. These recommendations will establish a starting point for optimisation of the application. Where possible, this guide will lead you to standard line items. If this is not the case, the items can still be obtained through the QTSP (Quick-Turn Solutions Program) or ordered as specials.

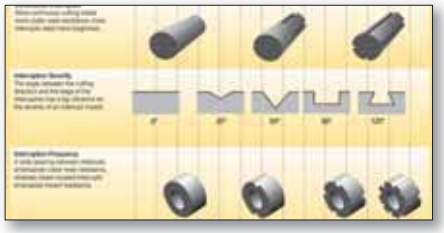
We will classify hard turning operations as any turning or boring of ferrous-based workpiece materials with a hardness (HRC) higher than 45. For workpieces with lower hardness values, PCBN is not recommended.

## To use the guide, you will need this application information:

- Workpiece design: interruptions, shape, and frequency.
- Workpiece material specifications: hardness, superficial or through treatment, and carbide forming alloying elements (that increase the abrasivity of the material).
- Depth of cut.
- Surface finish requirements.
- Preset conditions, such as specific nose radius, limited feed, etc.
- Setup limitations related to machine tool, fixturing, etc.
- Tool life criteria, e.g., surface finish, dimensional tolerance, cutting force, etc.

# PCBN Hard Turning • Selection System Overview

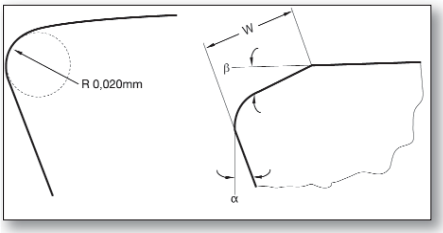
## Step 1 • Choosing the PCBN grade



Step 1, reference pages A124–A125.

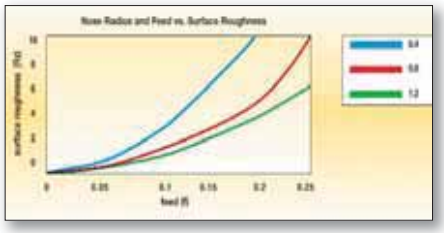
## Step 2 • PCBN edge preparation features

| Edge Preparation Specifications | | |
|---|---|---|
| E | Hone Only | 0,020mm |
| S01015 | W x β = 0,1mm x 15° | |
| S01025 | W x β = 0,1mm x 25° | |




Step 2, reference page A125.

## Step 3 • Selection of T-land angle

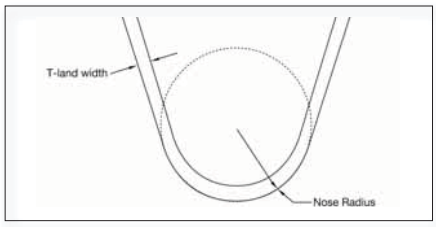


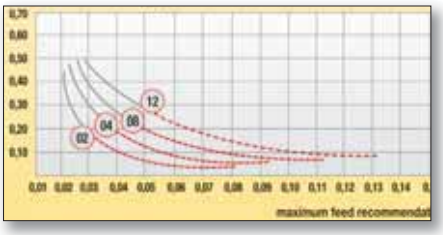
Selection of Preparation Angle

| Input from Step 1 | | | |
|---|---|---|---|
| KB5610 | E (15°/25°) | 20°/25° | NA |
| KBH20 | E (15°/25°) | 25° | 35° |
| KB5625 | 15°/25° | 15°/25° | 20°/25° |
| KB5630 | 15°/25° | 15°/25° | 20°/25° |

Step 3, reference page A125.

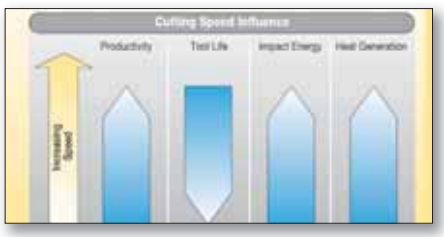
## Step 4 • Selection of T-land width

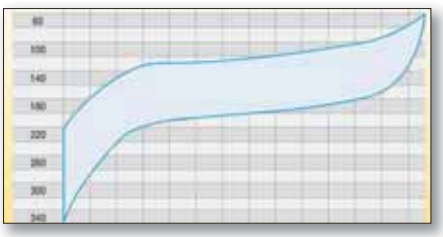



Step 4, reference page A126.

## Step 5 • Choosing the speed range



Step 5, reference page A127.

## Grade Selection for Hard Turning

### How to Use

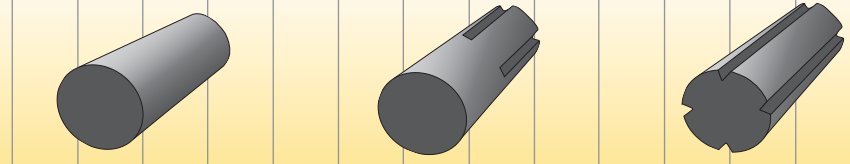
Identify your application conditions. The most far right parameter will then determine the recommended grade(s). If more than one grade is intersected, it is recommended to first select the grade with the highest toughness before optimising using the Troubleshooting Guide (pages A134–A135).

### Step 1 • Choosing the PCBN grade

**Depth of Cut (mm)**
Larger depths of cut need stronger grades.

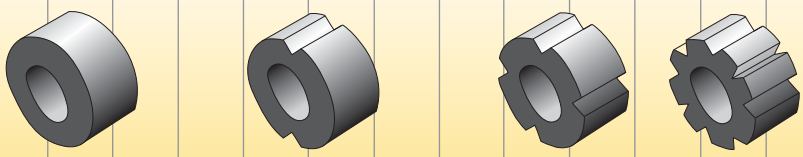
0.10 0.20 0.30 0.40 0.50 0.60 0.70

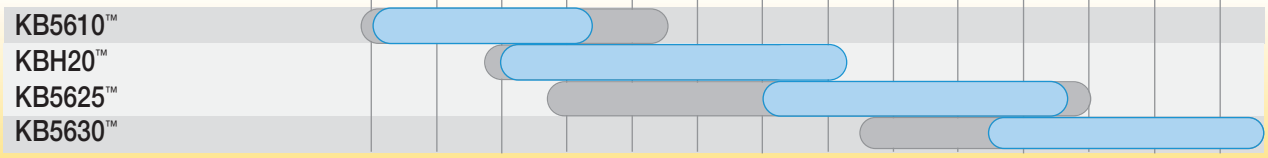
**Continuous/Interrupted**
More continuous cutting needs, more crater wear resistance; more interrupts need more toughness.



**Interruption Severity**
The angle between the cutting direction and the edge of the interruption has a big influence on the severity of an interrupt impact.

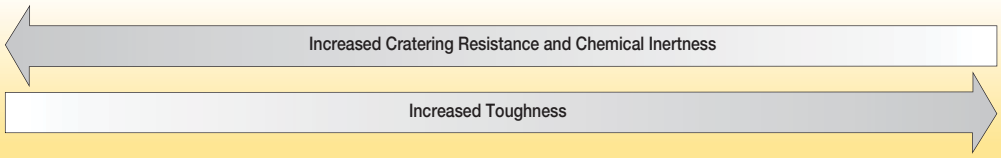
**Interruption Frequency**
A wide spacing between interrupts emphasises crater wear resistance, whereas closer-located interrupts emphasise impact resistance.






**ISO Class Hard Turning**
H10 H15 H20 H25 H30

**Tool Wear Type**




*(continued)*

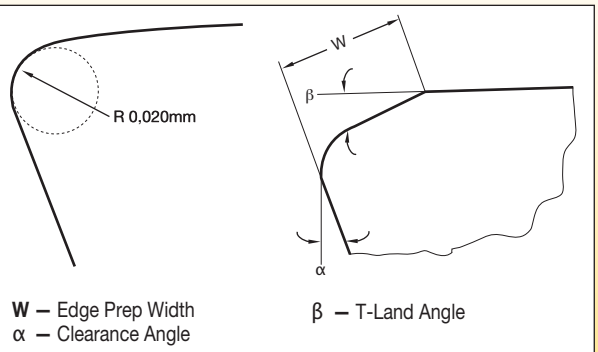
## Step 1 • Choosing the PCBN grade *(continued)*

| | cratering resistance | abrasive resistance | impact resistance | surface finish |
|---|---|---|---|---|
| KB5610™ | **** | * | * | **** |
| KBH20™ | *** | ** | ** | *** |
| KB5625™ | ** | *** | *** | ** |
| KB5630™ | * | **** | **** | ** |

**** = Best

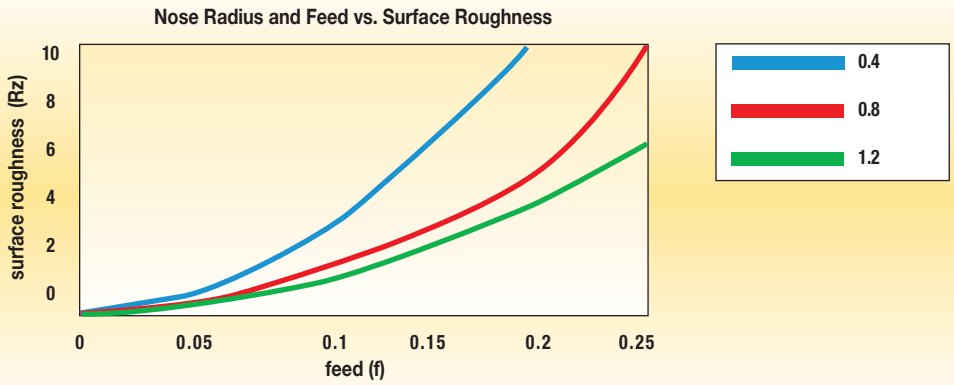
## Step 2 • PCBN edge preparation features

| Edge Preparation Specifications | | |
|---|---|---|
| E | hone only | 0,020mm |
| S01015 | W x β = 0,1mm x 15° | |
| S01025 | W x β = 0,1mm x 25° | |




**W** – Edge Prep Width
α – Clearance Angle

β – T-Land Angle




## Step 3 • Selection of T-land angle

**How to Use**

Using the grade selection and the Interruption Severity from **Step 1**, select edge preparation angle or hone only, E, from the table **below**. Solutions in parenthesis are second options.

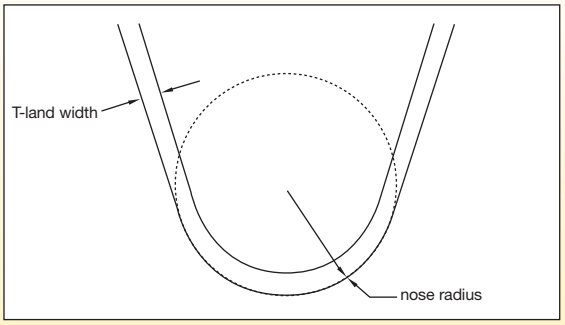
| Selection of Preparation Angle | | | | | |
|---|---|---|---|---|---|
| input from Step 1 ↓ | | | | | |
| KB5610 | E (15°/25°) | 20°/25° | NA | NA | NA |
| KBH20 | E (15°/25°) | 25° | 35° | 35° | NA |
| KB5625 | 15°/25° | 15°/25° | 20°/25° | 25° | NA |
| KB5630 | 15°/25° | 15°/25° | 20°/25° | 25° | 25°/35° |

## Step 4 • Selection of T-land width

**How to Use**

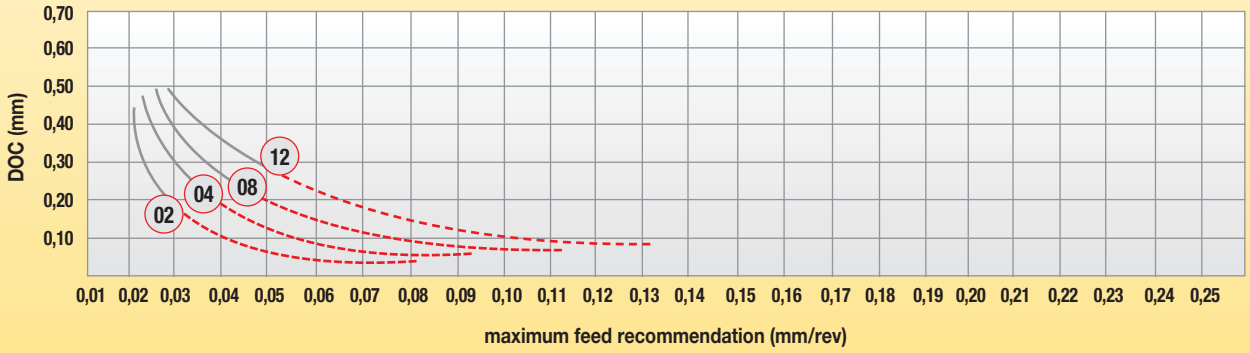
**Example 1:** If the feed, depth of cut, and the tool nose radius are fixed, use these values to see what T-land width should be used.

**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.



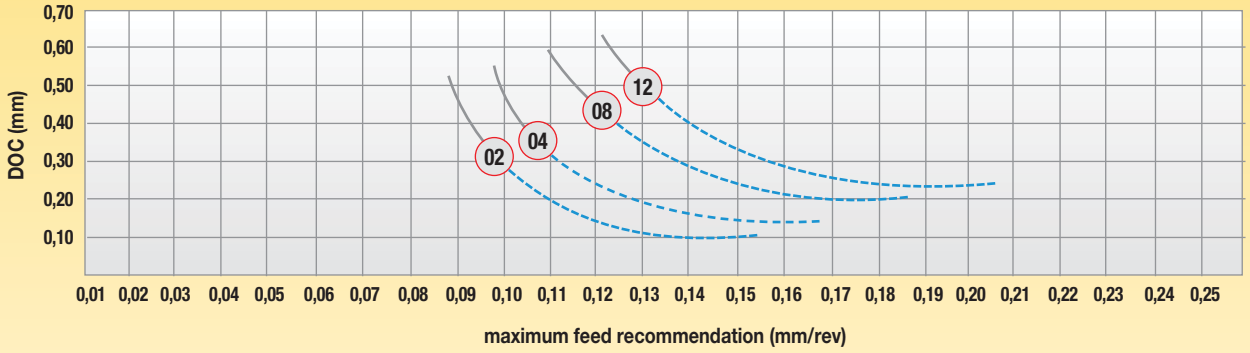

### T-Land Width (W): E

Number in circle is NOSE RADIUS*



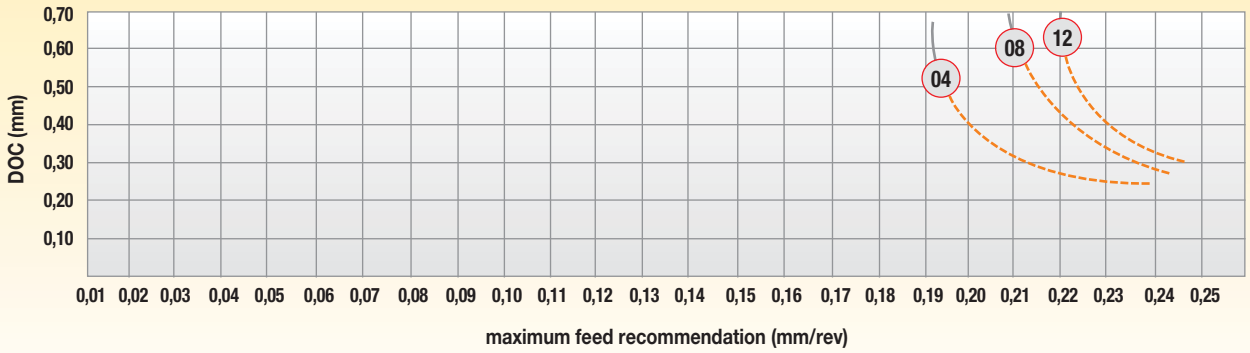

### T-Land Width (W): 0,1mm

Number in circle is NOSE RADIUS*




### T-Land Width (W): 0,2mm

Number in circle is NOSE RADIUS*



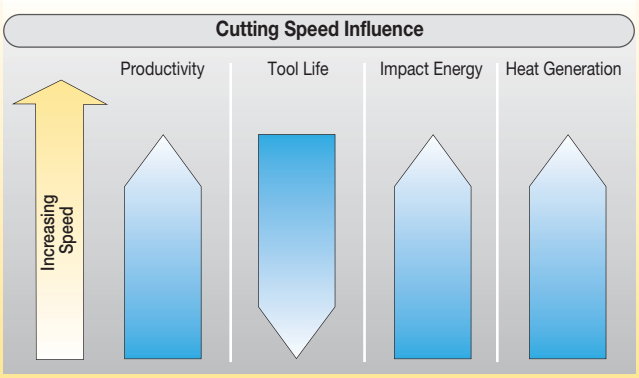

*NOTE: Coloured lines represent proven solutions; grey lines represent theoretically possible solutions.

## Step 5 • Choosing the speed range

### How to Use

Using the application information, determine your position in the INPUT DATA table below and select the speed range area with which it intersects for each input parameter. If different speed ranges result, choose the lowest speed range.

The shaded area extends to the minimum and maximum speeds for the application. The suggested starting speeds can be taken as the minimum line of this range.



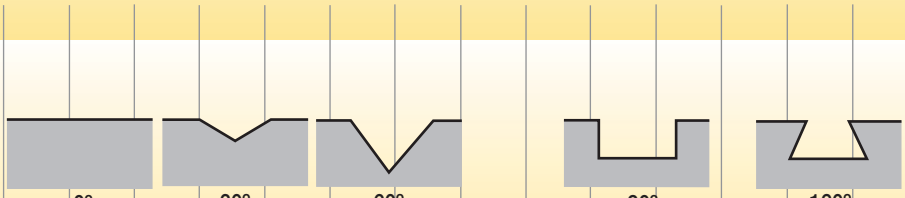

## Speed Range Selection for Hard Turning

INPUT DATA

**Depth of Cut (mm)**
Larger depths of cut need stronger grades.

0,10 | 0,20 | 0,30 | 0,40 | 0,50 | 0,60 | 0,70

**Interruption Severity**
The angle between the cutting direction and the edge of the interruption has a big influence on the severity of an interrupt impact.

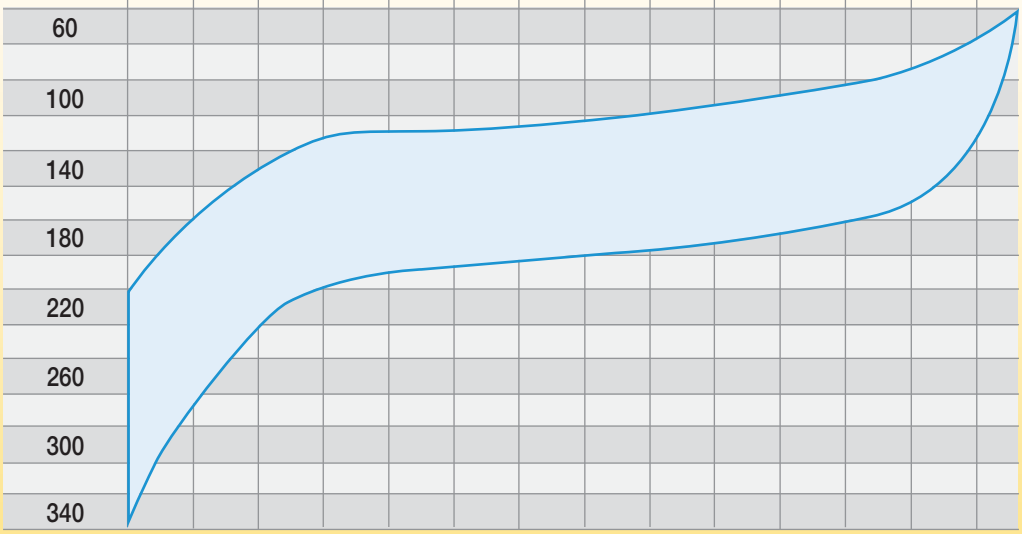



**Workpiece Hardness (HRC)**

45 | 50 | 55 | 60 | 65

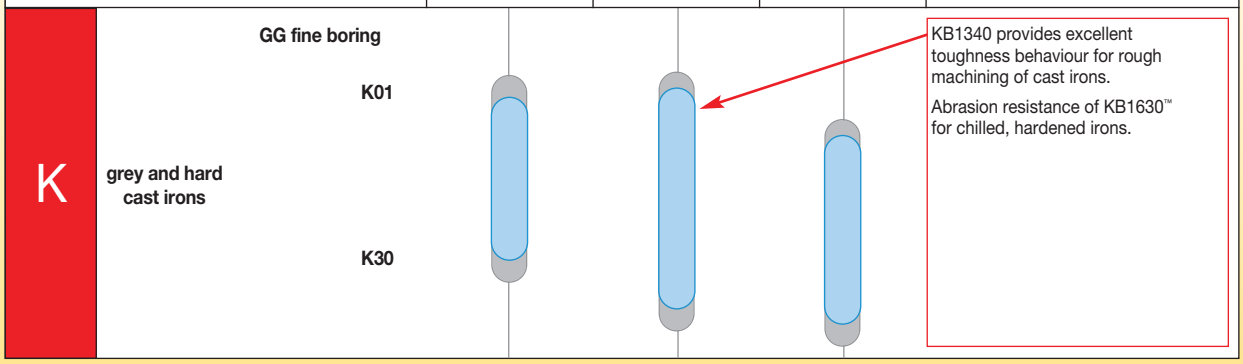
OUTPUT DATA

**Speed Range (m/min)**



## PCBN portfolio

| Grade | KB5630 | KB1340 | KBK35 | Grade |
|---|---|---|---|---|
| CBN% | 90 | 90 | 90 | CBN% |




## High content PCBN grades: KBK35™, KB1340™, and KB5630™

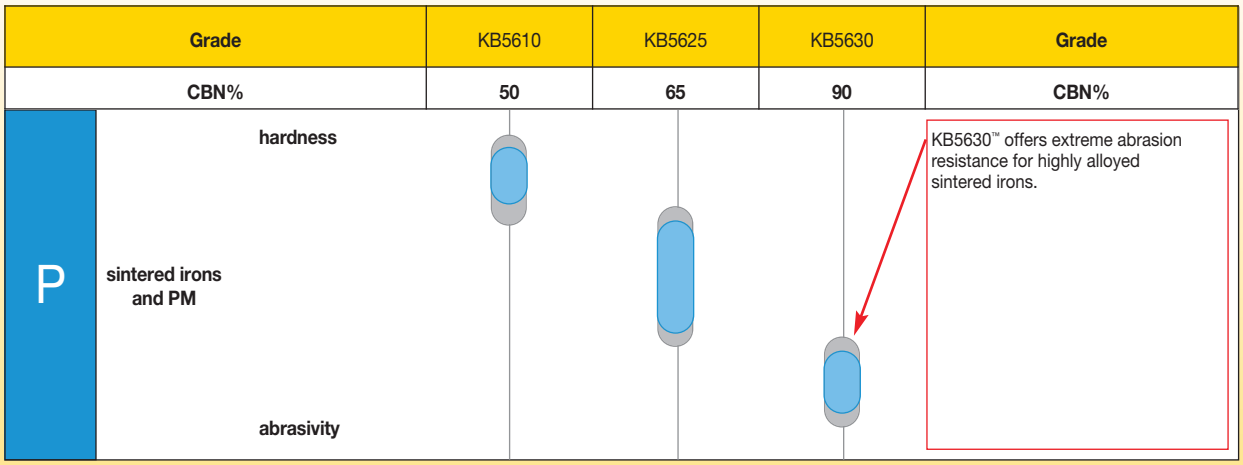
### General Application Area

Continuous and interrupted machining of ferrous alloys where the main wear mode is abrasive and a strong edge is required.

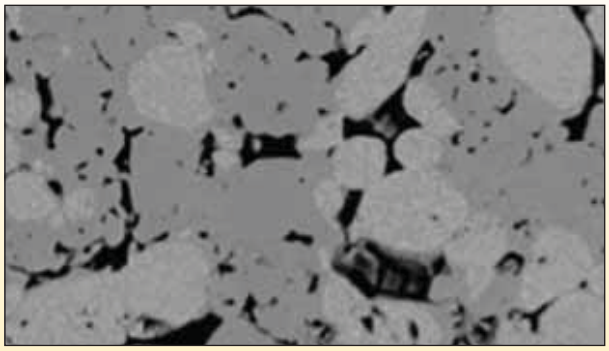
### Primary Target Workpiece Materials

- Grey cast irons.
- High Cr content irons.
- Chilled and hardened irons.
- Co-, Ni-, and Fe-based hard facing alloys.
- Other alloys in which there is a high concentration of carbide forming elements, and the primary wear is abrasive.

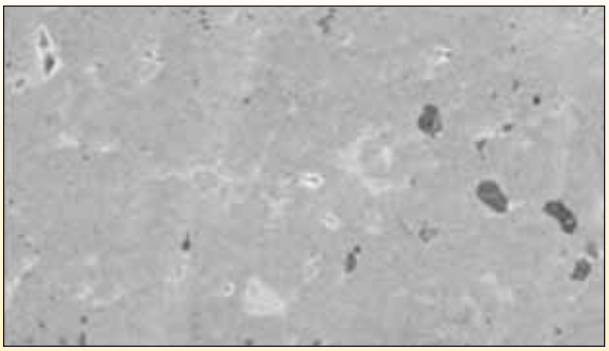
## PCBN portfolio




## PM machining • Inlet/outlet valve



50 µm



50 µm

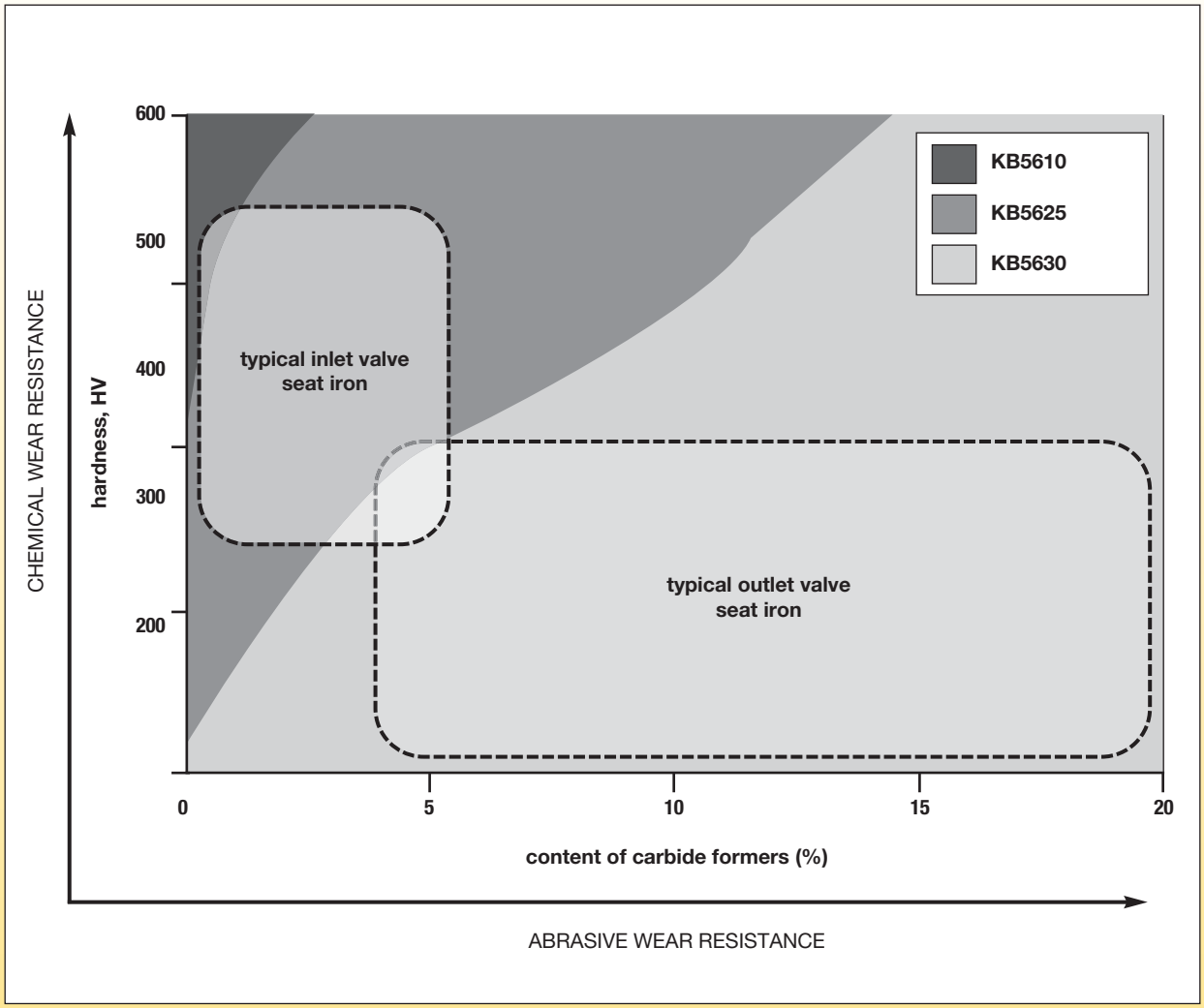
**Exhaust**

- Abrasive with hard particle content:
  Martensite — 800 HK
  WMoC — 1600 HK
  VC — 2800 HK
- High porosity/Cu infiltrated.
- Co increases hot hardness.
- Macro-hardness <400 HV (<41 HRC).
- Derives wear resistance from hard particles.

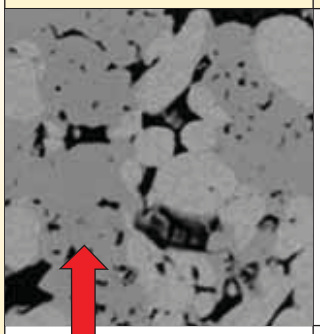
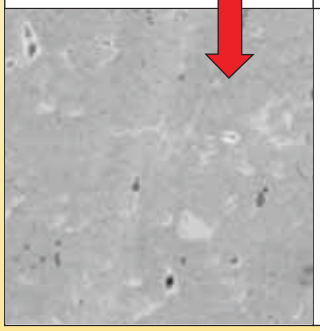
**Intake**

- Principally, structure is hard steel.
- Minimal porosity on well sintered.
- Low/medium alloy content.
- Macro-hardness >400 HV (>41 HRC).
- Derives wear resistance from hardened matrix structure.

## PCBN grade selection for valve seat machining



## PCBN grade selection for valve seat machining

| | material to be machined | short engagement (e.g., plunging) | long engagement (e.g., generating) |
|---|---|---|---|
|  | Soft matrix (≤300 HV), hard carbides, high porosity | 1. Abrasion resistance<br>2. Strength<br>**#1 Choice: KB5630™** | 1. Abrasion resistance<br>2. Strength<br>3. Chemical wear resistance<br>**#1 Choice: KB5630** |
| Highly Abrasive<br>High Hardness | Both material types with single insert | 1. Abrasion resistance<br>2. Chemical wear resistance<br>3. Strength<br>**#1 Choice: KB5630**<br>#2 Choice: KB5625™ | 1. Abrasion and chemical wear resistance<br>2. Strength<br>**#1 Choice: KB5625**<br>#2 Choice: KB5630 |
|  | Hard matrix (≥400 HV), few carbides, low porosity | 1. Chemical wear resistance<br>2. Strength<br>3. Abrasion resistance<br>**#1 Choice: KB5625**<br>#2 Choice: KB5610™ | 1. Chemical wear resistance<br>2. Abrasion resistance<br>3. Strength<br>**#1 Choice: KB5625**<br>#2 Choice: KB5610 |

# A4™ Grooving and Turning System

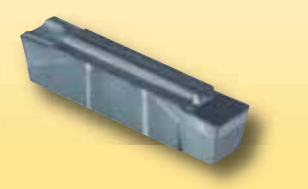
- One tool for turning, facing, grooving, and face grooving in O.D. and I.D. applications — that means exceptionally fast cycle times and no turret indexes.
- Extra-long clamping area, ground 120° bottom prism seating surface, and an exclusive top guide rail combine to deliver unsurpassed grooving and side-turning stability!
- Precise insert positioning is ensured for accurate cuts!

**Clamping Design**

## Applications

### Test result • A4

**Tool:** A4R0400M04800E KB1630™
**Material:** INCONEL® 718
**Diameter:** 983mm



| Cutting Data | Competitor | Kennametal |
|---|---|---|
| **Speed:** | 180 m/min | 180 m/min |
| **Feed:** | 0,3 mm/rev | 0,3 mm/rev |
| **DOC:** | 8mm | 8mm |
| **Diameter:** | 30mm | 30mm |
| **Performance:** | 70–140 pieces | 160–200 pieces |

# Top Notch™ Grooving System

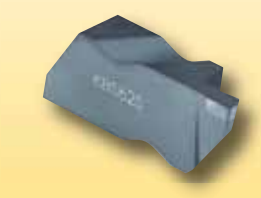
Our rigid clamping design prevents insert movement. This benefit ensures excellent surface finish, improved productivity, and superior tool life and promotes perfect concentricity. The rugged bridge clamp generates locking forces in three directions to provide superior resistance to side thrust and tangential forces.

**Clamping Design**

## Applications

### Test result • Top Notch

**Tool:** WSP 4121129 Top Notch KB5625™
**Material:** DIN 16MnCr5/AISI 5115, 59–63 HRC
**Machine:** Hard/soft machining



| Cutting Data | Competitor | Kennametal |
|---|---|---|
| Speed: | 160 m/min | 160 m/min |
| Feed: | 0,06 mm/rev | 0,06 mm/rev |
| DOC: | 2mm | 2mm |
| Diameter: | 39,5mm | 39,5mm |
| Performance: | 70 pieces | 90 pieces |

# Quick Optimisation Guide: Troubleshooting for Catastrophic Failure

Tool Failure Criteria

Example of catastrophic failure

Catastrophic Failure (loss of cutting edge)

Spalling on Rake Face

Chipping on Flank Face

Preceded by Extensive Crater Wear

Example of crater wear

Yes

No

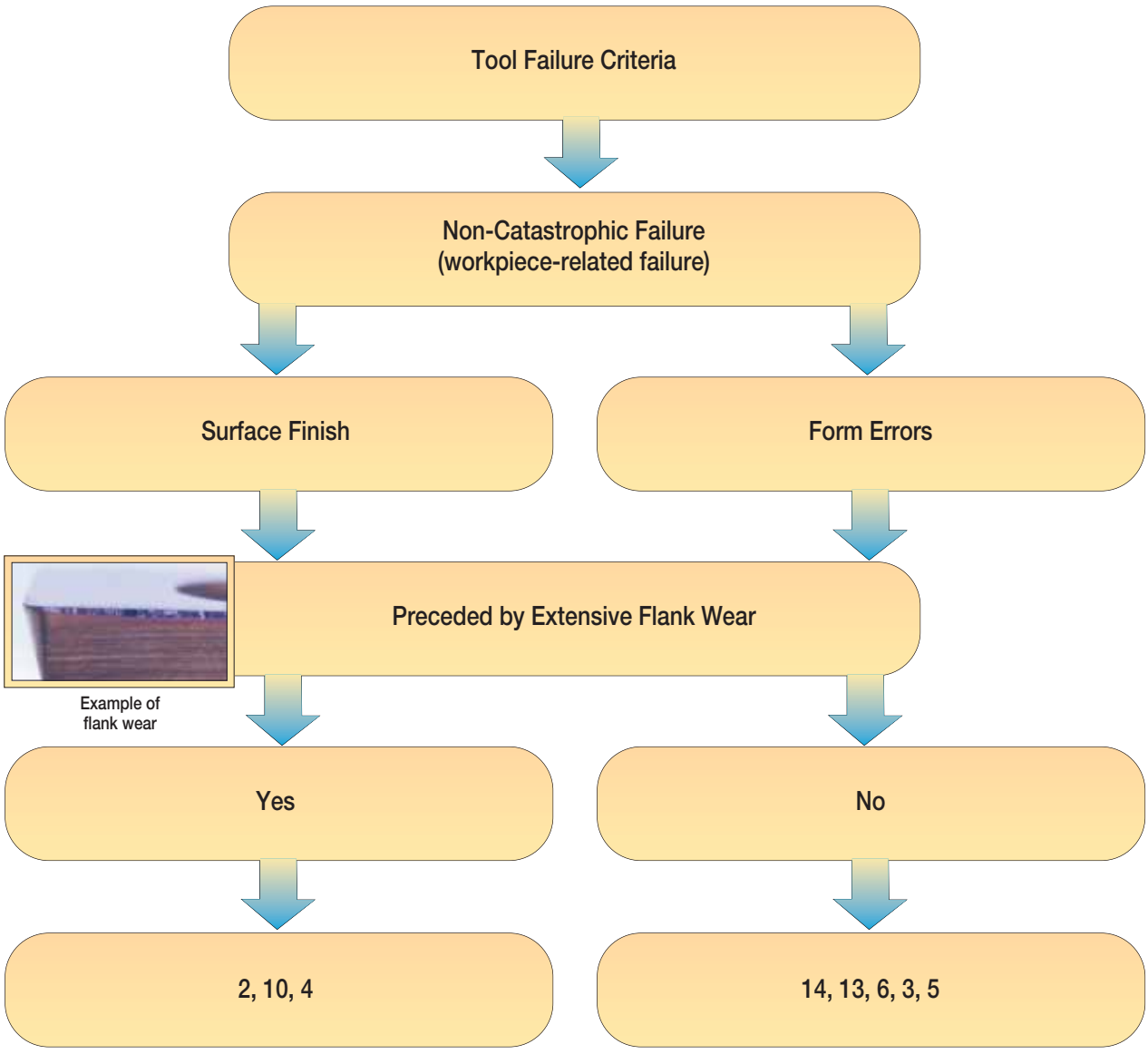
1, 4, 12, 3

3, 8, 7, 12, 11, 14, 5

## Remedial Action

**1.** Select more inert PCBN grade.
**2.** Select more abrasion-resistant PCBN grade.
**3.** Select stronger PCBN grade.
**4.** Reduce cutting speed.
**5.** Increase cutting speed.
**6.** Reduce nose radius.
**7.** Increase nose radius.
**8.** Increase chamfer angle.
**9.** Decrease chamfer angle.
**10.** Increase clearance angle.
**11.** Reduce clearance angle.
**12.** Increase edge hone dimension.
**13.** Reduce edge hone dimension.
**14.** Reduce feed and/or depth of cut.
**15.** Increase feed and/or depth of cut.

# Quick Optimisation Guide: Troubleshooting for Non-Catastrophic Failure




## Remedial Action

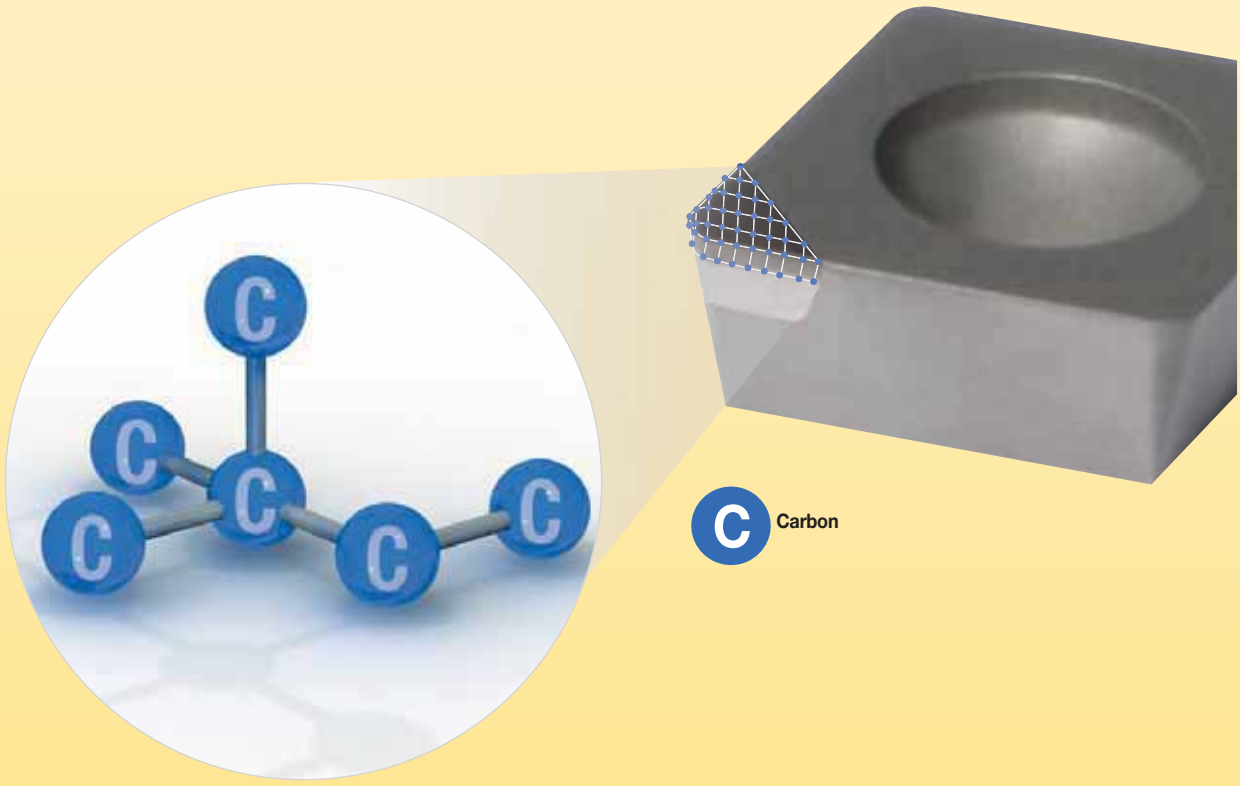
**1.** Select more inert PCBN grade.
**2.** Select more abrasion-resistant PCBN grade.
**3.** Select stronger PCBN grade.
**4.** Reduce cutting speed.
**5.** Increase cutting speed.
**6.** Reduce nose radius.
**7.** Increase nose radius.
**8.** Increase chamfer angle.
**9.** Decrease chamfer angle.
**10.** Increase clearance angle.
**11.** Reduce clearance angle.
**12.** Increase edge hone dimension.
**13.** Reduce edge hone dimension.
**14.** Reduce feed and/or depth of cut.
**15.** Increase feed and/or depth of cut.

## PCD

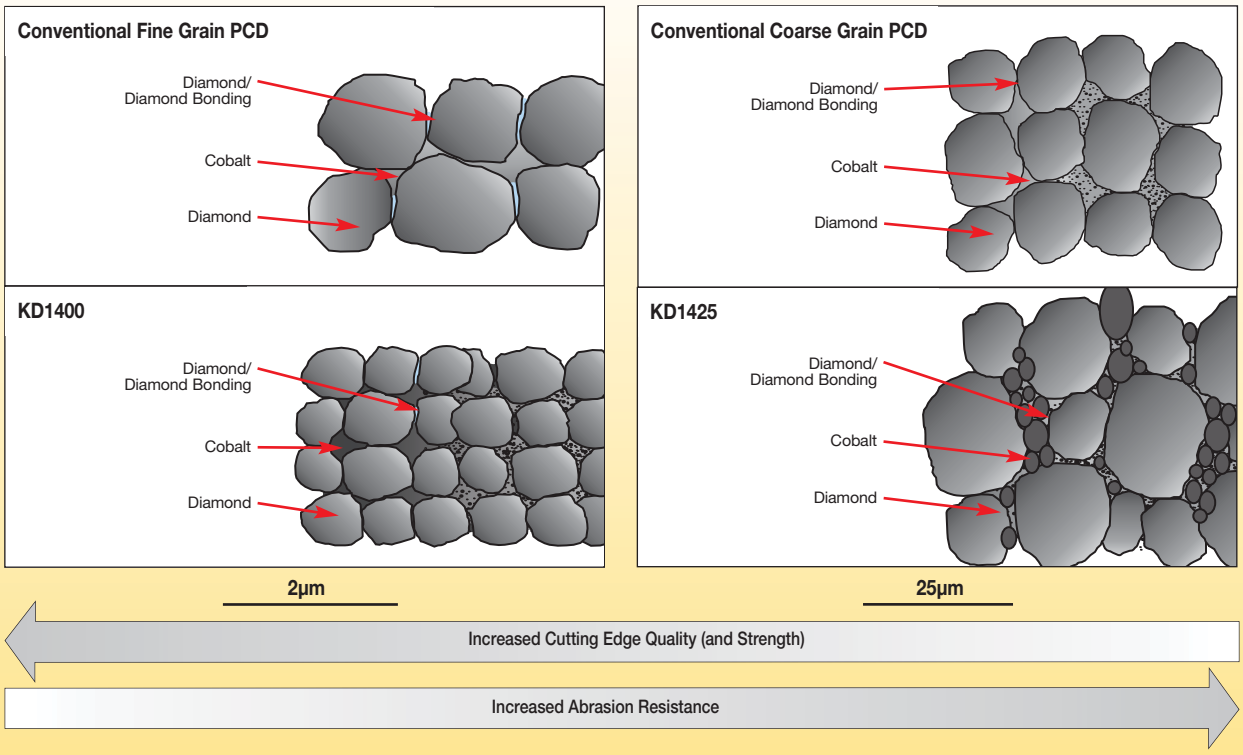
The current global metalcutting climate has put increased focus on high productivity and cost reductions coming from cutting tools. These requirements lead to the rapid growth and implementation of cutting tools using superhard materials. As the name implies, these materials have a significant advantage in hardness over conventional tool materials, which from the end user point of view, translates into increased productivity (higher cutting speeds, longer tool life, etc.), lower tooling cost per part, and also, the ability to process materials previously un-machinable with conventional tooling.

The most widely known superhard materials are diamond and cubic boron nitride. Our industry uses the polycrystalline forms of these materials, i.e., polycrystalline diamond (PCD) and polycrystalline boron nitride (PCBN). PCD tooling is mainly targeted at the machining of non-ferrous materials (e.g., aluminium alloys, plastics, CFRPs, composites, titanium alloys, ceramics, carbides, etc.) whereas PCBN targets iron-based alloys (e.g., cast irons, hard steels, iron-based composites, etc.).

Kennametal is at the forefront of developing and implementing superhard materials in our standard and special tooling solutions across all our product lines. Kennametal's approach to superhard tooling starts with customer needs and constraints. We then use fundamental research to develop the best superhard solutions that would make available the best value for the customer and respond to their specific demands.



## Different kinds of PCD grades




## Comparison of different PCD grades

**Behaviour in Applications**

| | | | |
|---|---|---|---|
| grade characteristics: | KD1400™ | fine grain | medium grain |
| grain size: | 0,5–1 µm | 2 µm | 10 µm |
| chip resistance: | ●●●●●●●●●●○ | ●●●●●●●●●○ | ●●●●●●●●○○ |
| abrasion resistance: | ●●●●●○○○○○ | ●●●○○○○○○○ | ●●●●●○○○○○ |

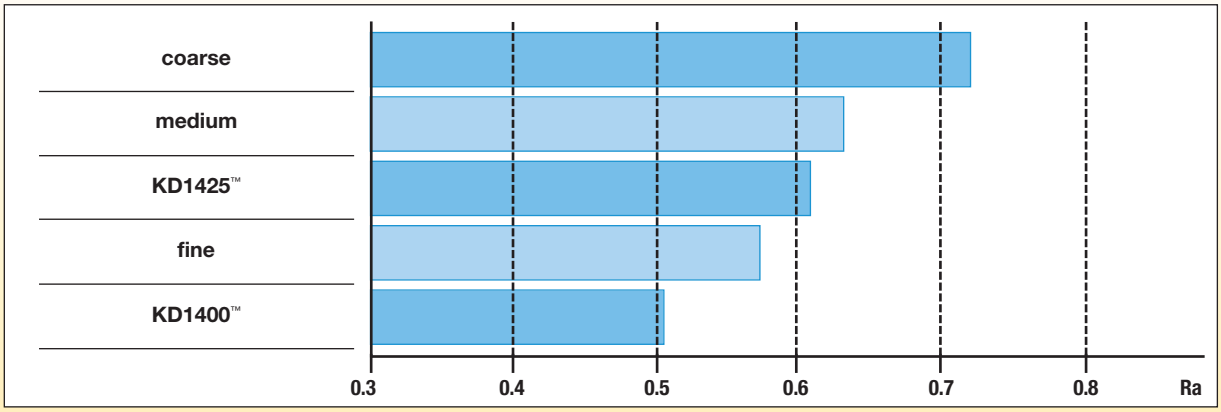
**Behaviour in Applications**

| | | | |
|---|---|---|---|
| grade characteristics: | coarse grain | KD1425™ | KD1405™ |
| grain size: | 25 µm | 2–30 µm | 0 µm |
| chip resistance: | ●●●●●●●○○○ | ●●●●●●○○○○ | ●●●●●●●○○○ |
| abrasion resistance: | ●●●●●●●○○○ | ●●●●●●●●○○ | ●●●●●●●●●○ |

Chipping can be defined as the formation of small notches on the cutting edge and generally occurs when the load at the cutting edge exceeds the strength of the material. An A390 alloy was used in edge milling tests to assess the chip resistance of the different PCD grades.

Abrasion is characterised by the development of grooves and ridges on the flank of the tool in the direction of sliding. The abrasion resistance of PCD was evaluated on a high silicon aluminium alloy, A390, in a continuous cutting operation.

## PCD grain size • Workpiece surface finish

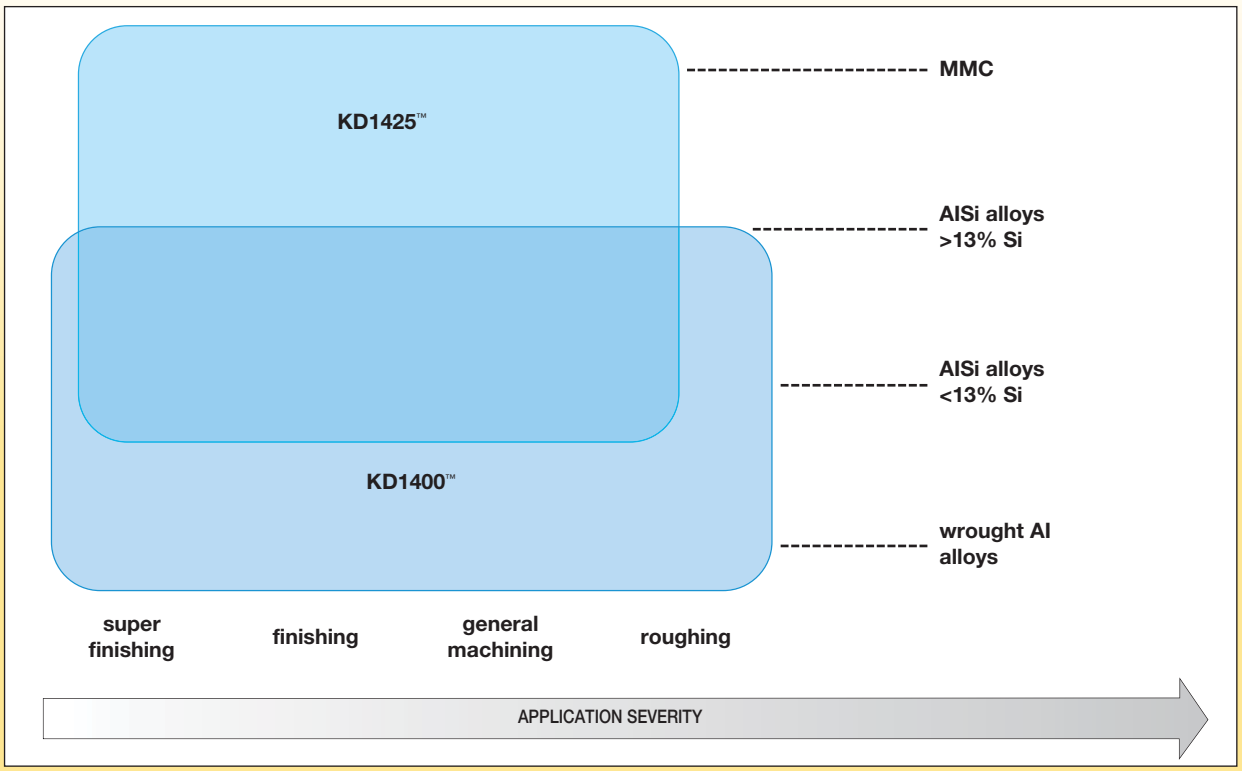



This chart illustrates the influence of the PCD grain size on surface finish in turning 18% silicon aluminium alloys. The best finish is obtained with the submicron grade KD1400. While the grade KD1425 contains grains as large as 30 microns, this material's unique multimodal grain size distribution results in a microstructure of closely packed diamond grains resulting in a smoother ground edge.

## KD1400 advantages at a glance • Summary

| | |
|---|---|
| **A sharper cutting edge** | • Clean cuts on carbon fibres.<br>• Permits larger nose radii for increased feed and productivity without loss in finish. |
| **A less serrated (smoother) cutting edge** | • Improved surface finish — potentially reducing rough and intermediate honing. |
| **Permits a more positive rake** | • Reduced cutting forces, delamination, and burr formation. |
| **Permits increased clearance** | • Providing for lower tool wear rates and lower push-off forces — thereby improving process capability. |
| **Provides unparalleled chip resistance** | • Suitable for heavy milling and interrupted turning with positive edge geometries and longest tool life. |
| **Comparable abrasion resistance to a coarse grade PCD** | • Covers the widest range of applications with a single grade — reduce inventory and complexity. |

## PCD grades application/workpiece material




## PCD application areas and parameter range

| material machined | operation | PCD grade | speed | | | | feed rate | | | | DOC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | m/min | | SFM | | mm/rev | | in/rev | | mm | | in | |
| | | | min | max | min | max | min | max | min | max | min | max | min | max |
| aluminium alloy | turning | KD1400 | 1000 | 4000 | 3300 | 13200 | 0,1 | 0,4 | 0,004 | 0,016 | 0,1 | 4,0 | 0,004 | 0,157 |
| 4–8% Si | milling | | 2000 | 5000 | 6600 | 16500 | 0,1 | 0,3 | 0,004 | 0,012 | 0,1 | 0,3 | 0,004 | 0,012 |
| 9–12% Si | turning | | 700 | 3000 | 2310 | 9900 | 0,1 | 0,4 | 0,004 | 0,016 | 0,1 | 4,0 | 0,004 | 0,157 |
| >13 Si | milling | KD1400/KD1425 | 1000 | 3000 | 3300 | 9900 | 0,1 | 0,3 | 0,004 | 0,012 | 0,1 | 0,3 | 0,004 | 0,012 |
| | turning | KD1425 | 300 | 1000 | 990 | 3300 | 0,1 | 0,4 | 0,004 | 0,016 | 0,1 | 4,0 | 0,004 | 0,157 |
| | milling | KD1400 | 500 | 1500 | 1650 | 4950 | 0,1 | 0,3 | 0,004 | 0,012 | 0,1 | 0,3 | 0,004 | 0,012 |
| cast iron | roughing | KD1425 | 50 | 300 | 165 | 990 | 0,2 | 0,5 | 0,008 | 0,020 | 0,5 | 3,0 | 0,020 | 0,118 |
| CGI/NCI | finishing | | 50 | 400 | 165 | 1320 | 0,1 | 0,3 | 0,004 | 0,012 | – | 0,5 | – | 0,020 |
| MMC | turning/milling | | 300 | 700 | 990 | 2310 | 0,1 | 0,4 | 0,004 | 0,016 | 0,2 | 1,5 | 0,008 | 0,059 |
| 20% Sic/Al | | | | | | | | | | | | | | |
| copper alloys | turning/milling | KD1400 | 400 | 1300 | 1320 | 4290 | 0,03 | 0,3 | 0,001 | 0,012 | 0,05 | 2,0 | 0,002 | 0,079 |
| copper, zinc, brass | | | | | | | | | | | | | | |
| tungsten carbide <16% Co | turning | KD1425 | 30 | 120 | 99 | 396 | 0,1 | 0,4 | 0,004 | 0,016 | 0,2 | 1,0 | 0,008 | 0,039 |
| unsintered (green) | | | 20 | 60 | 66 | 198 | 0,1 | 0,25 | 0,004 | 0,010 | 0,1 | 0,5 | 0,004 | 0,020 |
| sintered | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| ceramics | turning | KD1425 | 70 | 120 | 231 | 396 | 0,1 | 0,4 | 0,004 | 0,016 | 0,2 | 1,0 | 0,008 | 0,039 |
| unsintered | | | 50 | 100 | 165 | 330 | 0,1 | 0,25 | 0,004 | 0,010 | 0,1 | 0,5 | 0,004 | 0,020 |
| sintered | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| plastics/composites | turning/milling | KD1400/KD1425 | 300 | 990 | 990 | 8250 | 0,05 | 0,3 | 0,002 | 0,012 | 0,2 | 3,0 | 0,004 | 0,118 |
| carbon/graphite | | | 200 | 660 | 660 | 3300 | 0,05 | 0,5 | 0,002 | 0,020 | 0,1 | 3,0 | 0,004 | 0,118 |

## PCD tool failure modes

The gradual wear observed on diamond cutting tools can be divided into:

- Mechanically activated wear (abrasion, adhesion, and wear by microfracture).
- Tribochemical wear (dissolution/diffusion wear and formation of new chemical compounds).

### Abrasion

The primary mode of mechanically activated wear for diamond cutting tools is abrasion, which is the removal of tool material by a scoring action of protruding asperities and hard phase inclusions in the workpiece and chip (e.g., silicon grains in aluminium-silicon alloys).

Abrasion is characterised by the development of grooves and ridges in the direction of the tool sliding against a newly machined surface of the workpiece or chip sliding against the rake face.

The severity of abrasion can be increased in cases where the workpiece material contains hard inclusions or when there is hard wear debris from the workpiece or the tool at the interface.

### Tribochemical

Tribochemical wear is particularly relevant in the machining of titanium alloys when the carbon in the tool material diffuses into the adhered titanium layer to form a TiC boundary layer on the rake face of the tool.

This boundary quickly becomes saturated with tool constituents and can then act as a protective barrier against any further diffusion.

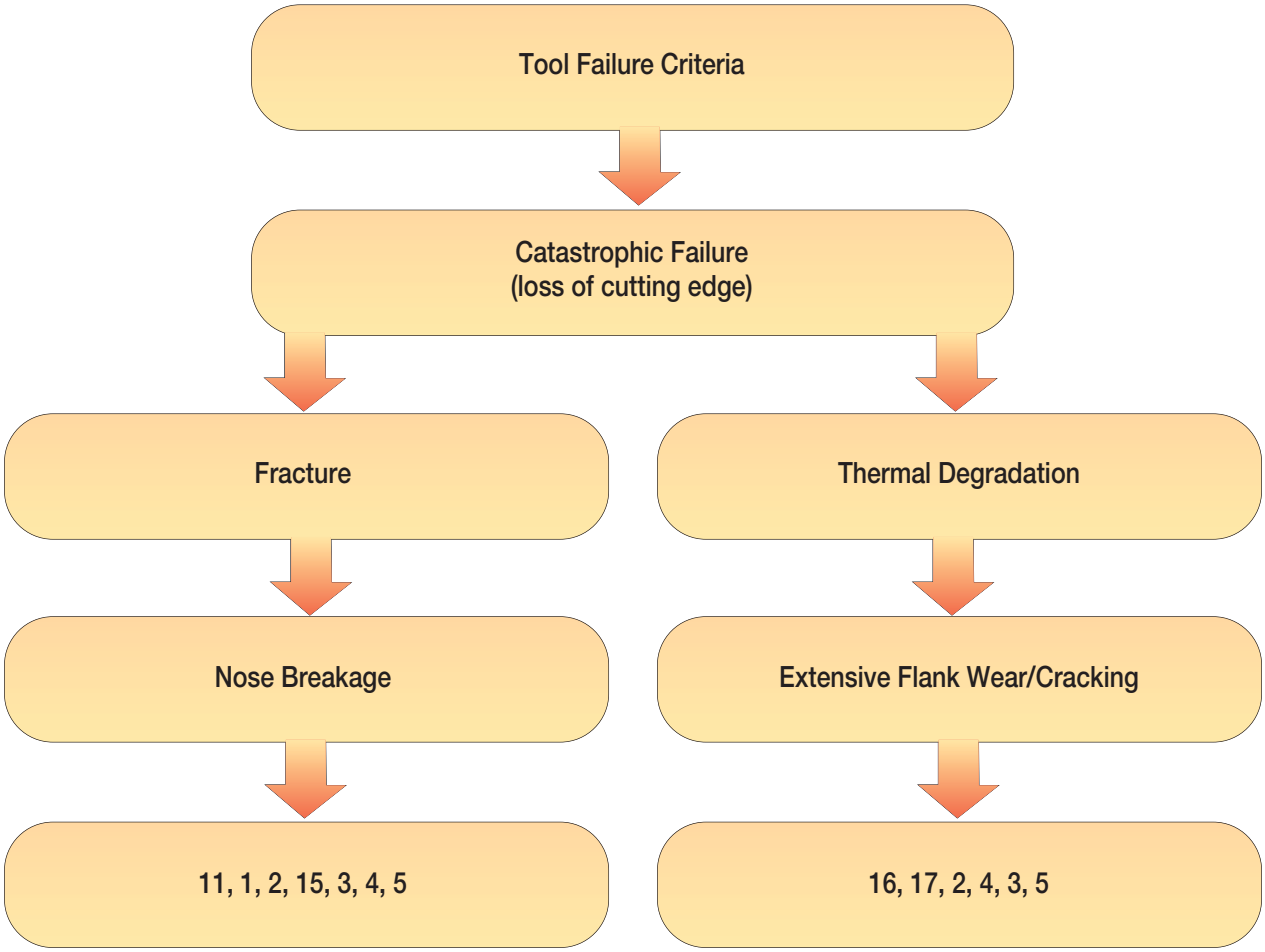
### Attrition

When two surfaces slide over each other, particularly in the absence of a lubricant, some adhesion can occur at the points of contact. Adhesive wear (often called attrition) in cutting tools involves the mechanism in which individual grains or small grain aggregates are pulled out of the tool surfaces and are carried away at the underside of the chip or are torn away by the adherent workpiece. The term “plucking” is also used to describe the loss of tool particles from the edge or faces. For example, when the forces are high enough, the TiC boundary layer that forms in titanium machining can be removed from the rake face of the tool transporting with it a pulled-out diamond grain, to form a crater. Once this crater becomes excessive, fracture of the tool could occur due to the geometrical weakening of the edge. Negative geometries tend to enhance the possibility of adhesive wear and built-up edge formation. Subsequent break-up (fracture) of the adhesive tool/workpiece joints results in attrition wear. The wear scars produced by attrition are rough, as opposed to the usually smooth wear surfaces generated by tribochemical wear.

### Microfracture

When cutting tools are employed for continuous machining of high hardness materials or interrupted machining, small fractures can appear on the cutting edge. If fracturing is small, the cutting tool can usually still be used. Wear by microfracture involves a less severe form of fracture and includes chipping, spalling, and cracking whereby the cutting tool can be reused.

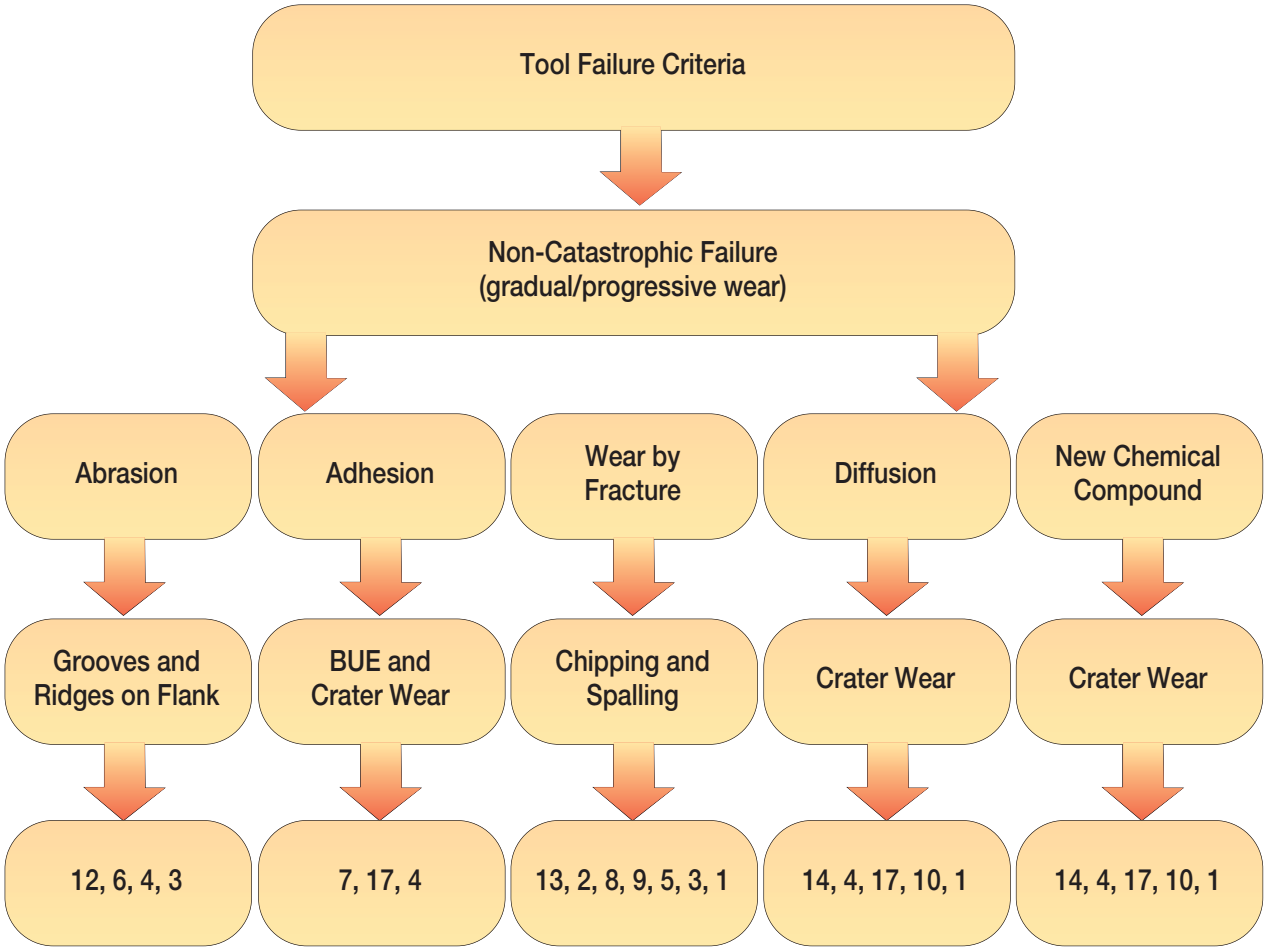
## Tool Failure and Wear:




## Remedial Action

**1.** Increase nose radius.
**2.** Reduced clearance angle.
**3.** Reduce feed.
**4.** Reduce cutting speed.
**5.** Reduce DOC.
**6.** Increase clearance angle.
**7.** Use a positive rake angle.
**8.** Add a small edge hone.
**9.** Use neutral rake angle.
**10.** Increase lead angle.
**11.** Select a tougher grade.
**12.** Select more abrasion-resistant grade.
**13.** Select a higher TRS grade.
**14.** Choose a more chemically inert grade.
**15.** Increase thickness.
**16.** Select a more thermally stable grade.
**17.** Use coolant.

# Tool Failure and Wear:




## Remedial Action

**1.** Increase nose radius.
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**16.** Select a more thermally stable grade.
**17.** Use coolant.

# KBH20™ • Developed for Your Hard Turning Application Requirements

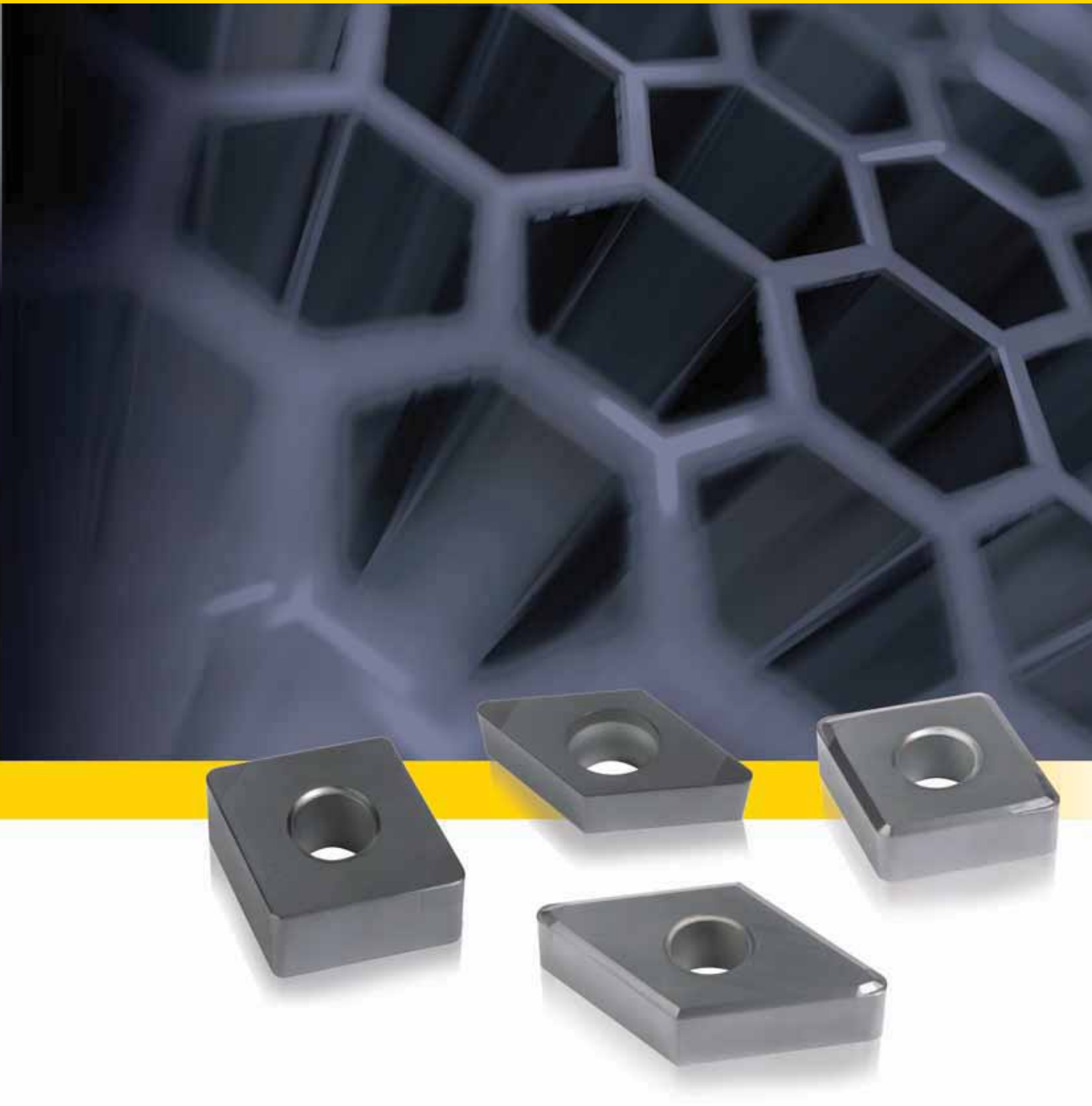
## Primary Application

KBH20 is the ideal PCBN hard turning grade in continuous to lightly interrupted applications with up to medium severity interruption. The structure, as well as the different edge preparations, enable tight and repeatable workpiece tolerances, excellent surface finishes, and surface integrity — even at elevated speeds. Typical applications are case-hardened components, such as gears, shafts, and other drive train components.

# Features and Benefits

## Higher Productivity and Profitability

- Newly developed substrate that allows application in a wide variety of demanding applications.
- Nano-composite coating that 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 chip breaking and chip control issues.



# KBH20 for Enhanced Performance — 5 Unique Features

## 1

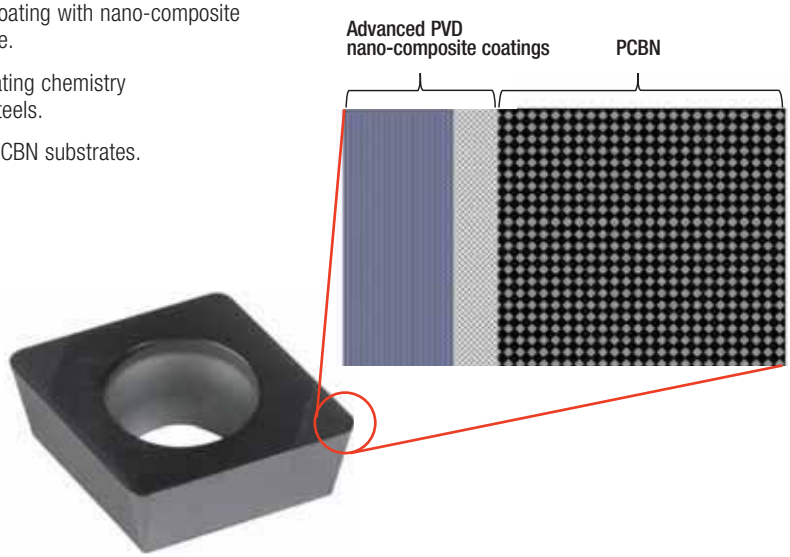
### Newly developed substrate enables application in a wide variety of demanding situations.

The substrate contains superhard grains with a uniquely formulated size distribution and nano-structured binder phase. This unique combination provides an unparalleled balance of wear resistance and toughness. The net result is a robust hard turning tooling solution for a wide range of applications, including continuous to interrupted cutting.

## 2

### Nano-composite coating that enhances speed capabilities and tool life.

- Specially developed, advanced PVD coating with nano-composite architecture for improved performance.
- Improved wear resistance by PVD coating chemistry technology for machining hardened steels.
- Enhanced PVD coating adhesion on PCBN substrates.




## 3

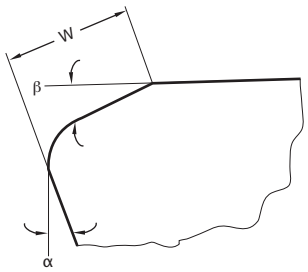
### Improved edge preparation technology for longer tool life, reliable performance, better surface finish, and tighter workpiece tolerances.

A critical performance factor is the edge preparation itself. The grind direction, surface roughness, hone sizes, and tolerances have great impact on performance and process reliability. Kennametal has performed significant research work and optimised edge preparation to improve your overall machining effectiveness.

## Large standard portfolio.

Standard edge preparation — the optimum combination of T-land angle, T-land width, and hone size — is paramount in achieving maximum performance.

Kennametal has developed 3 standard edge configurations, including wiper inserts.



β – T-Land Angle

- Light machining edge prep S01015 — **S01015:** W x ß = 0,10mm x 15°
- Medium machining edge prep S01225 — **S01225:** W x ß = 0,12mm x 25°
- Heavy machining edge prep S01735 — **S01735:** W x ß = 0,17mm x 35°

4

These edge preps are available in common styles, sizes, and nose radii in both positive and negative geometries.

## CB1 chipbreaker in positive and negative geometries, solving chip breaking and chip control issues.

Chipbreaker – when machining case-hardened steel with a hard outer skin and a tough and softer core, a chipbreaker provides a great advantage. The CB1 chipbreaker is a proven solution to effectively breaking chips. Long chips can form bird nests, causing machine malfunctions, increasing scrap-rates, and reducing the overall equipment effectiveness

Available in Kenloc™ (negative) and Screw-On (positive) insert styles.

5

**Insert without Chipbreaker**

- Long chips.
- Bird-nest formation.

**Insert with Chipbreaker**

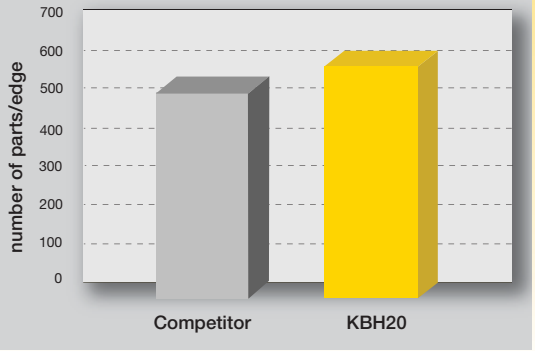
- Chips are broken.

## Case study: Gear machining

**Component:** Gear
**Application:** I.D. turning
**Material:** Case-hardened steel, pre-machined
**Results:** 15% more parts machined

| | COMPETITOR | KBH20 |
|---|---|---|
| **insert:** | CNGA120408 | CNGA120408S0132504MT |
| **material:** | Case-hardened steel, pre-machined | Case-hardened steel, pre-machined |
| **depth of cut:** | 0,2mm | 0,2mm |
| **cutting speed:** | 160 m/min | 160 m/min |
| **feed rate:** | 0,10mm | 0,10mm |
| **coolant:** | Dry | Dry |
| **parts machined:** | 521 | 600 |

**15% Longer Life over Competition!**

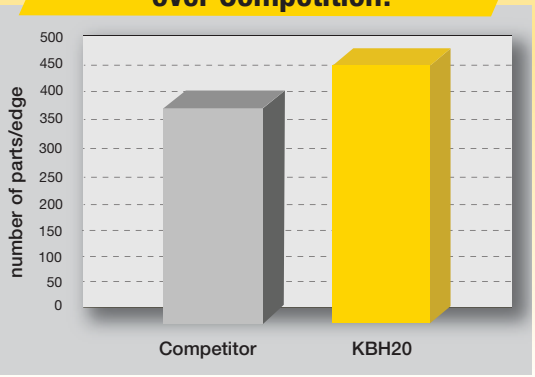



## Case study: Drive train component machining

**Component:** Drive train component
**Application:** O.D. turning
**Material:** Case-hardened steel — forged skin
**Results:** 18% more parts machined

| | COMPETITOR | KBH20 |
|---|---|---|
| **insert:** | DCMW11T308S-01035-LO | DCGW11T308S01215MT |
| **material:** | Case-hardened steel — forged skin | Case-hardened steel — forged skin |
| **depth of cut:** | 0,2mm | 0,2mm |
| **cutting speed:** | 140 m/min | 140 m/min |
| **feed rate:** | 0,11mm | 0,11mm |
| **coolant:** | Dry | Dry |
| **parts machined:** | 400 | 473 |

**18% Longer Life over Competition!**

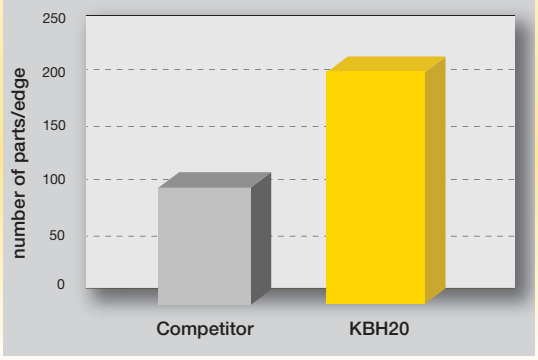


## Case study: Differential shaft machining

**Component:** Differential shaft
**Application:** O.D. turning
**Material:** Case-hardened steel, pre-machined
**Results:** 95% more parts machined

| | COMPETITOR | KBH20 |
|---|---|---|
| **insert:** | CNGA120408 | CNGA120408S01225MT |
| **material:** | Case-hardened steel, pre-machined | Case-hardened steel, pre-machined |
| **depth of cut:** | 0,15mm | 0,15mm |
| **cutting speed:** | 180 m/min | 180 m/min |
| **feed rate:** | 0,12mm | 0,12mm |
| **coolant:** | External emulsion | External emulsion |
| **parts machined:** | 110 | 215 |

**95% Longer Life over Competition!**

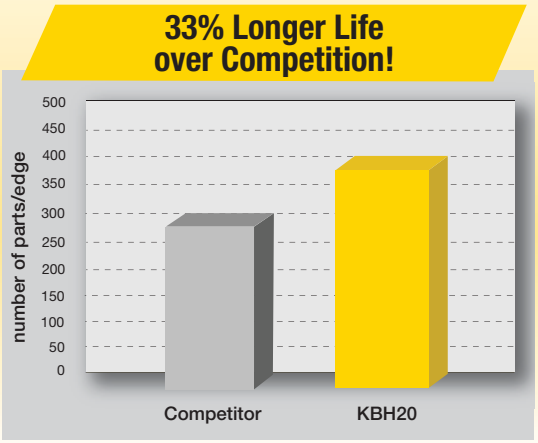



## Case study: Drive train component

**Component:** Drive Train Component
**Application:** I.D. turning and facing
**Material:** Hardened steel — light interruptions
**Results:** 33% more parts machined

| | COMPETITOR | KBH20 |
|---|---|---|
| **insert:** | CNGA120408 | CNGA120408S01735MT |
| **material:** | Hardened steel — light interruptions | Hardened steel — light interruptions |
| **depth of cut:** | 0,2mm | 0,2mm |
| **cutting speed:** | 140 m/min | 140 m/min |
| **feed rate:** | 0,15mm | 0,15mm |
| **coolant:** | Dry | Dry |
| **parts machined:** | 300 | 400 |

**33% Longer Life over Competition!**

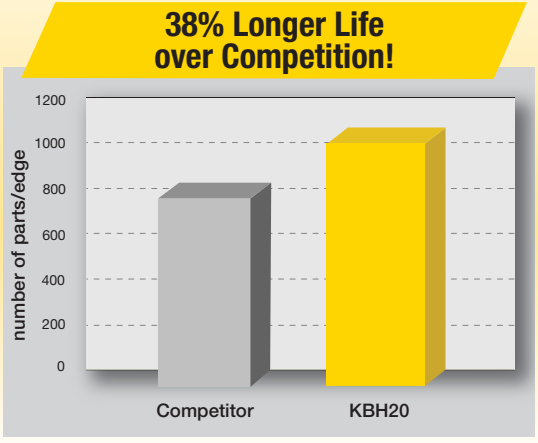



## Case study: Gear machining

**Component:** Gear
**Application:** O.D. turning
**Material:** Case-hardened steel, pre-machined 58–62 HRC
**Results:** 38% more parts machined

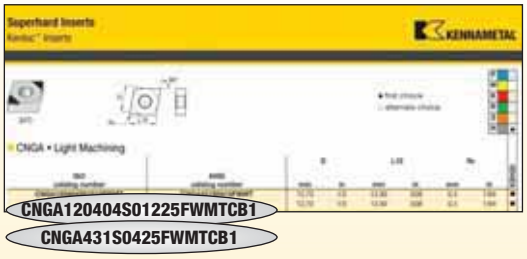
| | COMPETITOR | KBH20 |
|---|---|---|
| **insert:** | DNGA431GAWS2JL | DNGA431EFWMT |
| **material:** | Case-hardened steel, pre-machined 58–62 HRC | Case-hardened steel, pre-machined 58–62 HRC |
| **depth of cut:** | 0,18mm | 0,18mm |
| **cutting speed:** | 128 m/min | 128 m/min |
| **feed rate:** | 0,076mm | 0,076mm |
| **coolant:** | External emulsion | External emulsion |
| **parts machined:** | 800 | 1104 |

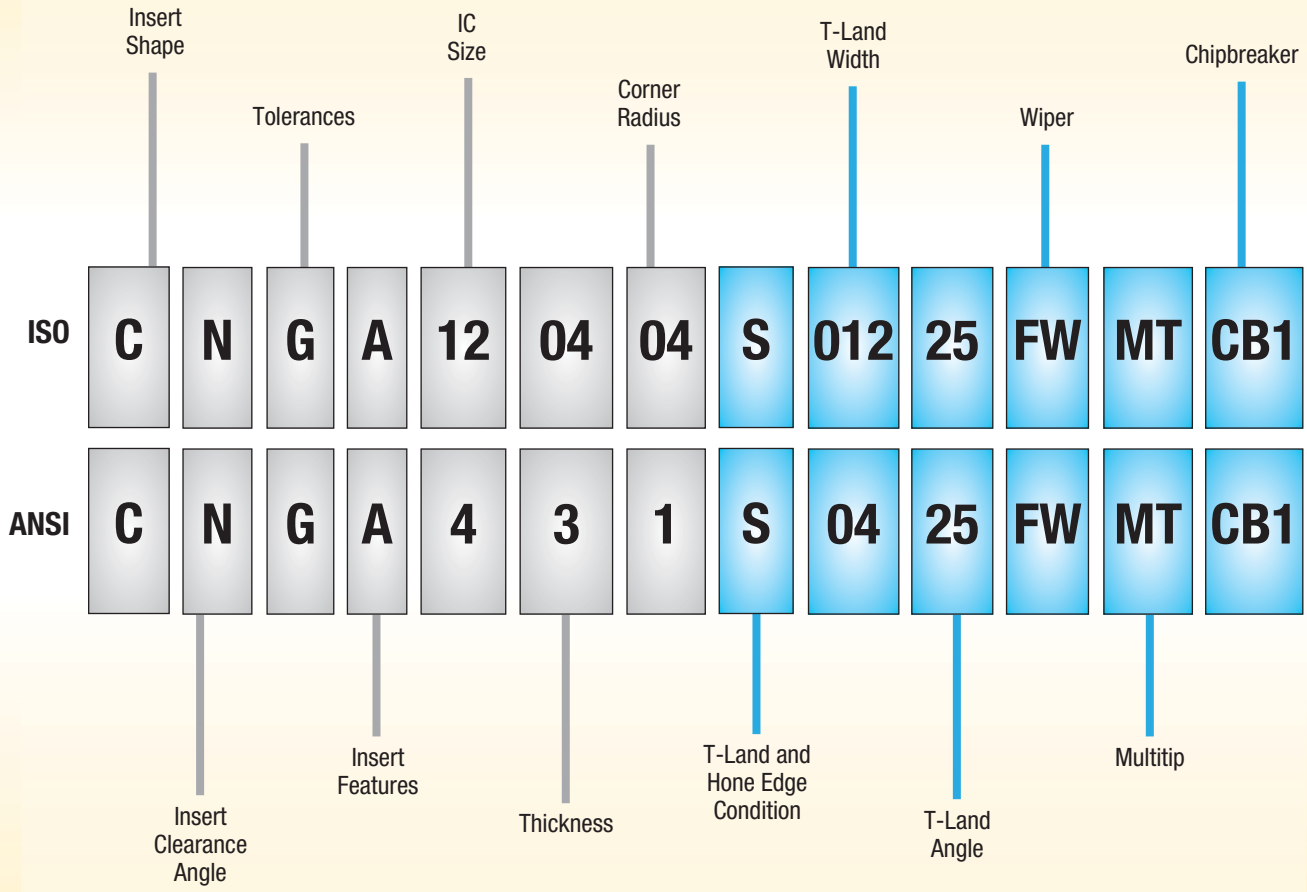
**38% Longer Life over Competition!**



## 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.



# INTRODUCING

## The New Kennametal Innovations iPad® Application

Available as a **Free Download** from the iTunes® App Store℠.

### Now Available

The Kennametal Innovations iPad® app features interactive, cutting-edge animations and real-world demonstrations of Kennametal's productivity-enhancing technologies for machining and industrial processes. With selectable data, it is quick and convenient to compare complimenting and competitive products.

### Easy to Download

Go to the iTunes® App Store℠, and search for "Kennametal". Then follow the directions on downloading. It's simple, fast, and free.

### Easy to Use

The simple navigation makes it easy to search via keywords to find specific tooling solutions and product groups. The user-driven navigation map offers drop-down menus with supplemental information, including expandable, and customisable, charts and graphs.

# Beyond Shield™ and KBK35™ • A New, Innovative PCBN Tooling System and Grade

## Primary Application

Beyond Shield is the combination of a new clamping mechanism and grades KBK35™ and KB1340™ that enables efficient machining of grey cast iron parts such as brake disks, flywheels, and belt pulleys.

## Features and Benefits

- New clamping mechanism that holds the insert tight and secure in the pocket.
- Kennametal Conforma Clad™ armoured clamp to extend clamp life up to 15x.
- Grade KB1340 — industry benchmark for years.
- New grade KBK35 — solid PCBN insert with CVD coating and post-coat treatment for excellent performance especially in unaged cast iron.
- Large standard portfolio.

KENNAMETAL
KENNAMETAL
5186606 NC2

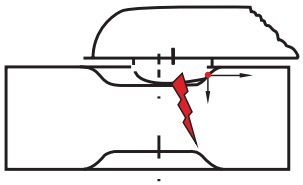
# Beyond Shield — 5 Unique Features

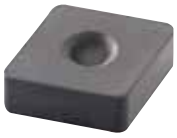
## Beyond Shield Clamping Mechanism for Better Insert Seating in the Steel Pocket

**The Challenge:**

To ensure tight and secure clamping of the insert in grey cast iron machining, the inserts are often provided with a dimple.

**However,** dimpled inserts are weak in the middle. They easily break — especially when tightening up the clamp.





**The Solution:**

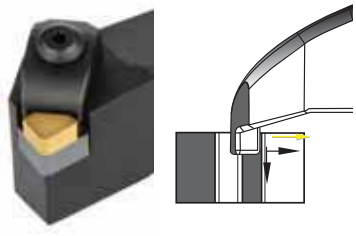
1

Specially shaped inserts in grades KB1340™ or KBK35™ have a push-back pocket for the clamp.

+

Armoured or steel clamps with 2 anchors that push back and hold down the insert in the holder.

=



Very rigid tooling system specially designed for the needs of PCBN inserts in demanding applications.

### Tool Life Comparison — KB1340 Solid PCBN Grade

GCI 30 – 1060 m/min, 0.4 mm/rev, and 2mm DOC
GCI 30 – 3500 SFM, .016" IPR, and .080" DOC

| | standard 12,7mm or 1/2" dimple insert | 12,7mm or 1/2" Beyond Shield | 9,5mm or 3/8" Beyond Shield | 6,35mm or 1/4" Beyond Shield |
|---|---|---|---|---|
| Tool Life (min) | 9 | 11 | 10 | 9 |

## Kennametal Conforma Clad™ Armoured Clamp to Extend Clamp Life up to 15x

2

- Tough steel base with Kennametal Conforma Clad on top ensures highest wear resistance against chip flow.
- Steel base ensures toughness to secure the inserts in demanding environment.

Kennametal Conforma Clad Clamp

Standard Steel Clamp

## Industry Benchmark Grade KB1340™

- Over 93% PCBN content with a multi-module structure ensures best performance in demanding environments.
- Can be applied in light (finishing) and medium (roughing) machining.
- Preferably used in aged cast iron.

## 3 Proven Solutions

**Workpiece:** Brake disk
**Material:** GG 25

| | Competitor CBN | Kennametal KB1340 |
|---|---|---|
| **insert:** | N/A | SNMN120416502020 |
| **vc:** | 1100 m/min | 1100 m/min |
| **f:** | 0,4 mm/rev | 0,4 mm/rev |
| **ap:** | 2mm | 2mm |
| **performance:** | 1500 pieces | 1700 pieces |

| | Competitor Ceramic | Kennametal CBN KB1340 |
|---|---|---|
| **insert:** | N/A | CNGX433S0415FW |
| **vc:** | 800 m/min | 1500 m/min |
| **f:** | 0,5 mm/rev | 0,5 mm/rev |
| **ap:** | 1,5mm | 1,5mm |
| **performance:** | 120 pieces | 4200 pieces |

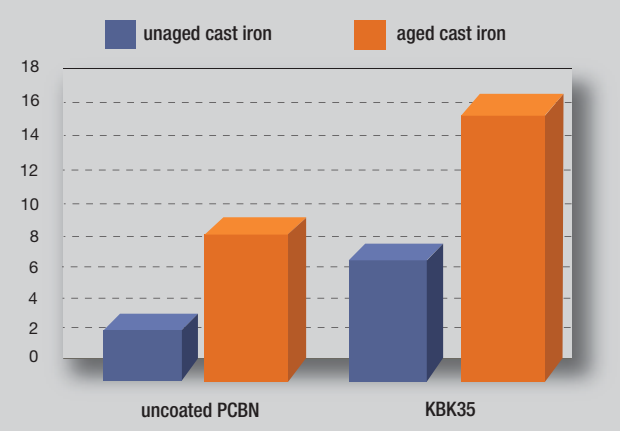
## NEW Grade KBK35™ — Solid PCBN Insert

**Post-Coat Treatment**
- Improves edge toughness.
- Longer predictable tool life.

**CVD Coating**
- Increases tool life in tough applications.
- Improves speed capabilities.

**High Content PCBN Substrate**
- Tough and wear resistant in demanding applications, such as unaged cast iron. Ideal for medium (roughing) machining.

## 4 KBK35 Exhibits Excellent Performance in Aged and in Unaged Cast Iron!

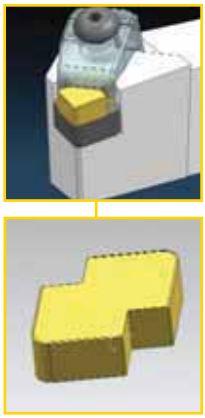



*(continued)*

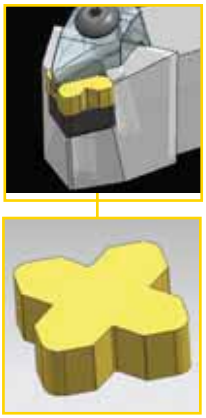
# Beyond Shield — 5 Unique Features *(continued)*

## Standard Portfolio

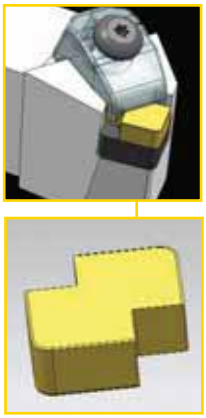
### C-Style
4 Edges



### S-Style
8 Edges



4 Edges



5

## Most Types Are Available in 3 Sizes and 2 Grades:

## Depth of cut capability

| | standard 12,7mm dimple insert | 12,7mm Beyond Shield | 9,5mm Beyond Shield | 6,35mm Beyond Shield |
|---|---|---|---|---|
| DOC Capability mm | 4 | 4 | 3 | 2 |

## Application recommendations

| workpiece material | speed | | | | feed | | | | depth of cut | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m/min | | SFM | | mm | | in | | mm | | in | |
| | min | max | min | max | min | max | min | max | min | max | min | max |
| hot-work tool steels — roughing | 50 | 150 | 165 | 495 | 0,2 | 0,5 | 0,008 | 0,020 | 0,8 | 3,0 | 0,031 | 0,118 |
| cold-work tool steels — roughing | 50 | 150 | 165 | 495 | 0,2 | 0,5 | 0,008 | 0,020 | 0,8 | 3,0 | 0,031 | 0,118 |
| grey cast iron — roughing | 700 | 1200 | 2310 | 3960 | 0,2 | 0,6 | 0,008 | 0,024 | 0,5 | 3,0 | 0,020 | 0,118 |
| grey cast iron — finishing | 750 | 1500 | 2475 | 4950 | 0,1 | 0,3 | 0,004 | 0,012 | 0,5 | 0,5 | 0,020 | 0,020 |
| CGI and NCI — roughing | 50 | 300 | 165 | 990 | 0,2 | 0,5 | 0,008 | 0,020 | 0,5 | 2,0 | 0,020 | 0,079 |
| chilled cast iron — roughing | 30 | 150 | 99 | 495 | 0,2 | 0,6 | 0,008 | 0,024 | 0,5 | 3,0 | 0,020 | 0,118 |
| chilled cast iron — finishing | 30 | 150 | 99 | 495 | 0,1 | 0,3 | 0,004 | 0,012 | 0,5 | 0,5 | 0,020 | 0,020 |
| hard facings — as per bearing steel | 60 | 200 | 198 | 660 | 0,1 | 0,5 | 0,004 | 0,020 | 0,2 | 3,0 | 0,008 | 0,118 |
| high Cr irons | 80 | 250 | 264 | 825 | 0,1 | 0,6 | 0,004 | 0,024 | 0,2 | 3,0 | 0,008 | 0,118 |

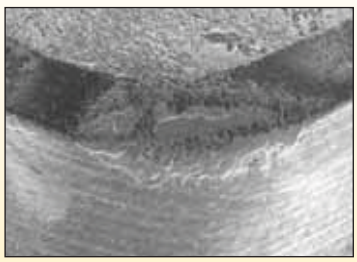
High-content PCBN grades are intended for use in negative rake clamp-type toolholders, boring, recessing tools, and milling heads. Due to the dynamic loads that occur in the machining of hard ferrous materials and the conditions under which these grades operate, frequently involving shocks from interrupted cutting, it is advisable to strengthen the tool system as much as possible.

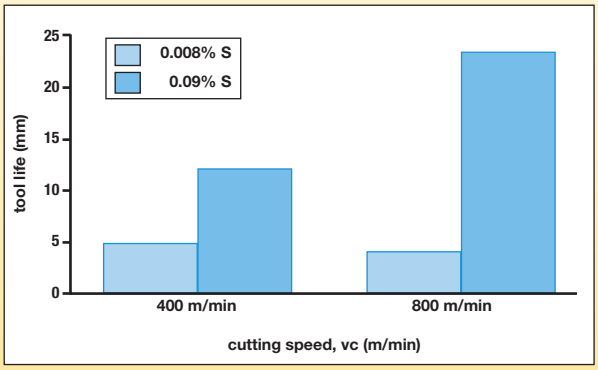
## Machining grey cast iron

The largest application area for KB1340™ is the machining of grey cast irons. The following are suggested guidelines for machining grey cast iron:

- GCI have to be machined dry. The application needs to generate high levels of heat in order to create a protective oxide layer on the tool.
- It is important to confirm that the GCI has been properly aged, and it has a sulphur content greater than 0,05%.
- The recommended starting point for edge preparation should be 0,10mm x 20° for finishing (DOC <0,5mm) and 0,20mm x 20° for roughing.
- Lack of aging and/or low sulphur content can lead to a decrease in tool life of up to 10 times!
- A slow feed approach/engagement of the tool is recommended to minimise chipping and notching.

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

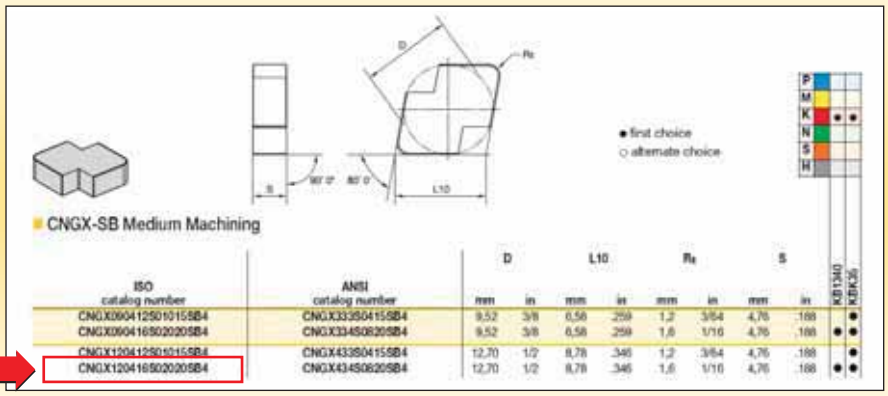





Comparison of the life of PCBN cutting tools in machining two different grey cast irons, primarily differing in sulphur content.

# Insert Selection System

## Step 1 • Select insert

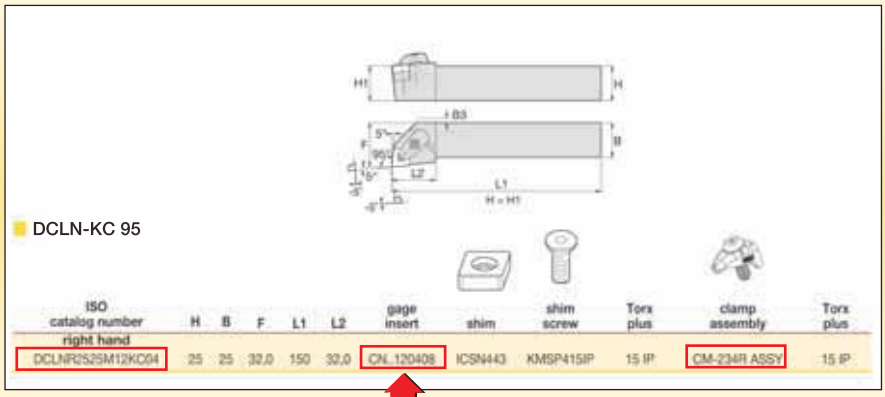



| ISO catalog number | ANSI catalog number | D mm | D in | L10 mm | L10 in | $R_\varepsilon$ mm | $R_\varepsilon$ in | S mm | S in | KB1340 | KBK35 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CNGX090412S01015SB4 | CNGX333S0415SB4 | 9,52 | 3/8 | 0,58 | .259 | 1,2 | 3/64 | 4,76 | .188 | | • |
| CNGX090416S02020SB4 | CNGX334S0820SB4 | 9,52 | 3/8 | 0,58 | .259 | 1,6 | 1/16 | 4,76 | .188 | • | • |
| CNGX120412S01015SB4 | CNGX433S0415SB4 | 12,70 | 1/2 | 0,78 | .346 | 1,2 | 3/64 | 4,76 | .188 | | • |
| CNGX120416S02020SB4 | CNGX434S0820SB4 | 12,70 | 1/2 | 0,78 | .346 | 1,6 | 1/16 | 4,76 | .188 | • | • |

1

NOTE: For example, see page A160 CNGX12416…SB4.

## Step 2 • Select holder based on insert size




| ISO catalog number right hand | H | B | F | L1 | L2 | gage insert | shim | shim screw | Torx plus | clamp assembly | Torx plus |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DCLNR2525M12KC04 | 25 | 25 | 32,0 | 150 | 32,0 | CN..120408 | ICSN443 | KMSP415IP | 15 IP | CM-234R ASSY | 15 IP |

2

NOTE: For example, C6 in the Kennametal Innovations Master Catalogue Cutting Tools 2013.
Holders for 1/4" CNGX inserts and 1/4" and 3/8" SNGX inserts are available as customised solutions.

## Step 3 • Select clamp

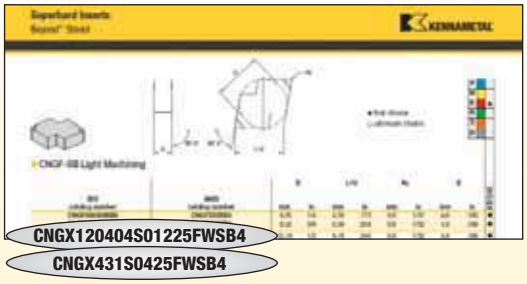
- Choose the Beyond Shield clamp as detailed in this chart, rather than the Kenclamp™ shown in the product table.

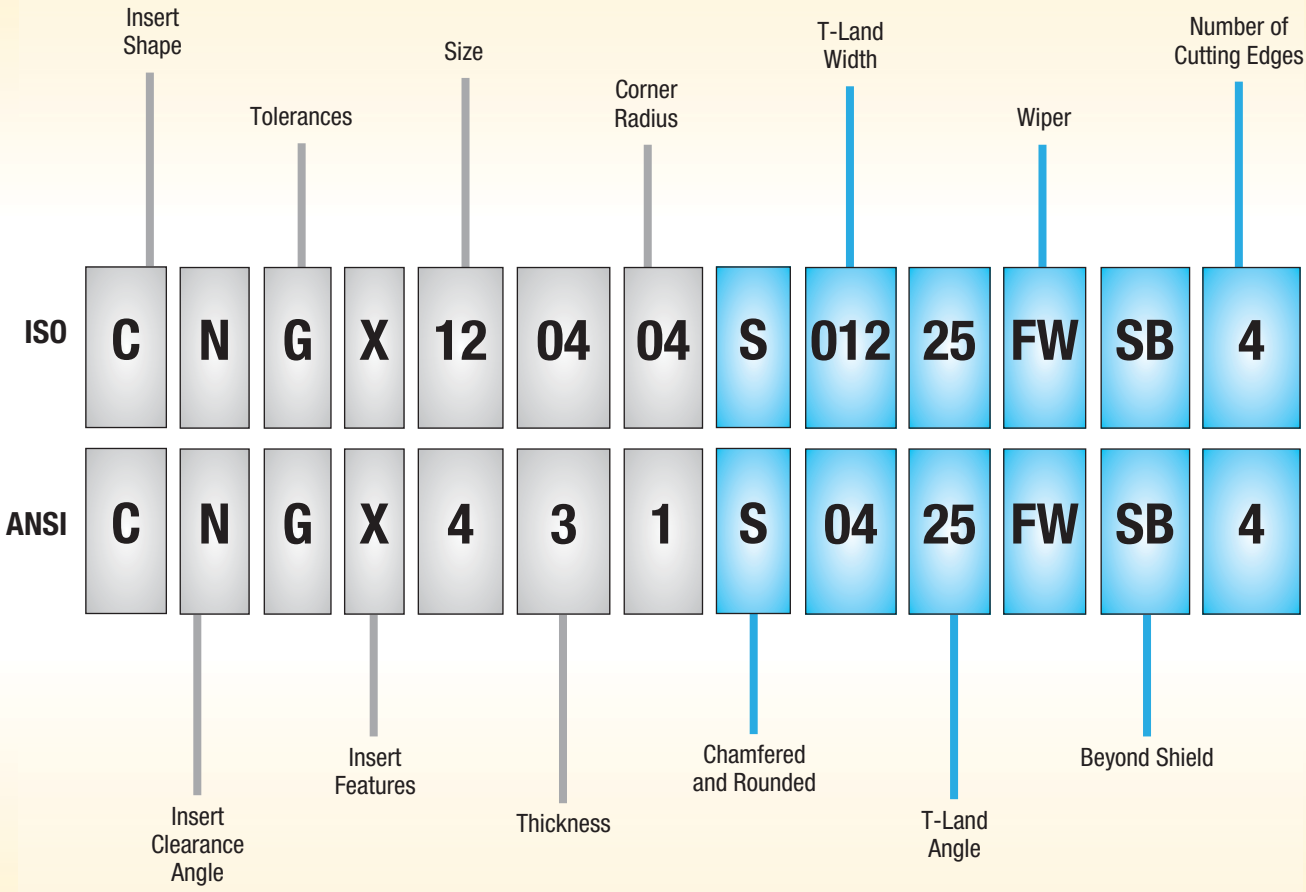
| insert | | steel clamp | | Kennametal Conforma Clad™ clamp | |
|---|---|---|---|---|---|
| ISO catalog number | ANSI catalog number | catalog number | order number | catalog number | order number |
| CNGX120416S02020SB4 | CNGX43S0820SB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX120416S01015FWSB4 | CNGX434S0415FWSB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX120412S01015SB4 | CNGX433S0415SB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX120412S01015FWSB4 | CNGX433S0415FWSB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGF120408SB4 | CNGF432SB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX090416S02020SB4 | CNGX334S0820SB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |
| CNGX090412S01015SB4 | CNGX333S0415SB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |
| CNGX090412S1015FWSB4 | CNGX333S0415FWSB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |

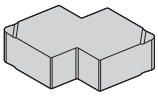
3

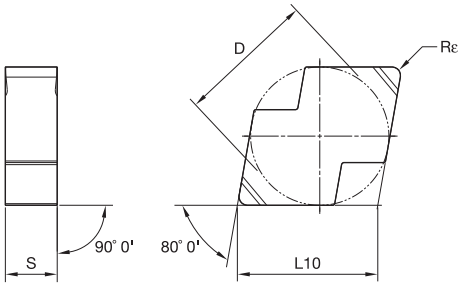
## How Do Catalogue Numbers Work?

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.





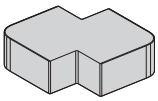


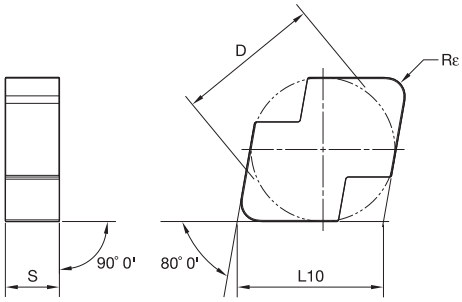

● first choice
○ alternate choice

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

## CNGF-SB Light Machining

| ISO catalogue number | D mm | L10 mm | Rε mm | S mm | KB1340 | KBK35 |
|---|---|---|---|---|---|---|
| CNGF060408SB4 | 6,35 | 4,39 | 0,8 | 4,8 | ● | |
| CNGF090408SB4 | 9,52 | 6,58 | 0,8 | 4,8 | ● | |
| CNGF120408SB4 | 12,70 | 8,78 | 0,8 | 4,8 | ● | |



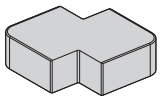


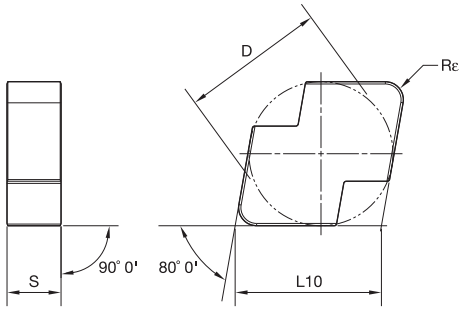

## CNGX-SB Light Machining

| ISO catalogue number | D mm | L10 mm | Rε mm | S mm | | |
|---|---|---|---|---|---|---|
| CNGX060412S01015FWSB4 | 6,35 | 4,39 | 1,2 | 4,76 | ● | |
| CNGX060412S01015SB4 | 6,35 | 4,39 | 1,2 | 4,76 | ● | |
| CNGX060416S01015FWSB4 | 6,35 | 4,39 | 1,6 | 4,76 | ● | |
| CNGX060416S02020SB4 | 6,35 | 4,39 | 1,6 | 4,76 | ● | |
| CNGX090412S01015FWSB4 | 9,52 | 6,58 | 1,2 | 4,76 | ● | |
| CNGX090412S01015SB4 | 9,52 | 6,58 | 1,2 | 4,76 | ● | |
| CNGX090416S01015FWSB4 | 9,52 | 6,58 | 1,6 | 4,76 | ● | |
| CNGX120412S01015SB4 | 12,70 | 8,78 | 1,2 | 4,76 | ● | |
| CNGX120412S01015FWSB4 | 12,70 | 8,78 | 1,2 | 4,76 | ● | |
| CNGX120416S01015FWSB4 | 12,70 | 8,78 | 1,6 | 4,76 | ● | |

## CNGX-FWSB Light Machining

| ISO catalogue number | D mm | L10 mm | Rε mm | S mm | | |
|---|---|---|---|---|---|---|
| CNGX060412S01015FWSB4 | 6,35 | 4,39 | 1,2 | 4,76 | ● | |
| CNGX060416S01015FWSB4 | 6,35 | 4,39 | 1,6 | 4,76 | ● | |
| CNGX090412S01015FWSB4 | 9,52 | 6,58 | 1,2 | 4,76 | ● | |
| CNGX090416S01015FWSB4 | 9,52 | 6,58 | 1,6 | 4,76 | ● | |
| CNGX120412S01015FWSB4 | 12,70 | 8,78 | 1,2 | 4,76 | ● | |
| CNGX120416S01015FWSB4 | 12,70 | 8,78 | 1,6 | 4,76 | ● | |



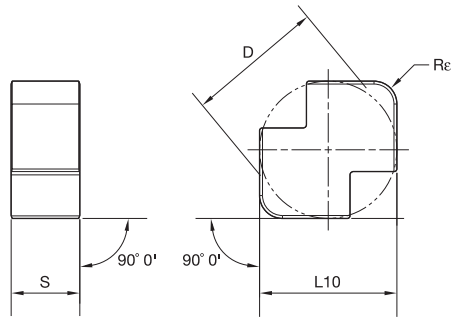


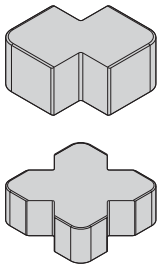

● first choice
○ alternate choice

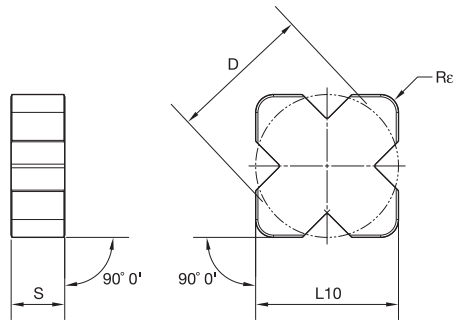
| | |
|---|---|
| P | |
| M | |
| K | ● ● |
| N | |
| S | |
| H | ○ |

## CNGX-SB Medium Machining

| ISO catalogue number | D mm | L10 mm | Rε mm | S mm | KB1340 | KBK35 |
|---|---|---|---|---|---|---|
| CNGX090412S01015SB4 | 9,52 | 6,58 | 1,2 | 4,76 | | ● |
| CNGX090416S02020SB4 | 9,52 | 6,58 | 1,6 | 4,76 | ● | ● |
| CNGX120412S01015SB4 | 12,70 | 8,78 | 1,2 | 4,76 | | ● |
| CNGX120416S02020SB4 | 12,70 | 8,78 | 1,6 | 4,76 | ● | ● |






## SNGX-SB Medium Machining

| ISO catalogue number | D mm | L10 mm | Rε mm | S mm | | |
|---|---|---|---|---|---|---|
| SNGX060416S02020SB4 | 6,35 | 4,17 | 1,6 | 4,76 | ● | |
| SNGX090416S02020SB8 | 9,52 | 2,56 | 1,6 | 4,76 | ● | ● |
| SNGX090416S02020SB4 | 9,52 | 6,27 | 1,6 | 4,76 | ● | ● |
| SNGX120416S02020SB8 | 12,70 | 4,15 | 1,6 | 4,76 | ● | ● |

- Beyond Shield clamp assembly is substituted in place of the CM-234R ASSY.
- The Beyond Shield clamps fit into the Kenclamp™ holder.

| insert | | steel clamp | | Kennametal Conforma Clad™ clamp | |
|---|---|---|---|---|---|
| ISO catalogue number | ANSI catalogue number | catalogue number | order number | catalogue number | order number |
| CNGX120416S02020SB4 | CNGX43S0820SB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX120416S01015FWSB4 | CNGX434S0415FWSB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX120412S01015SB4 | CNGX433S0415SB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX120412S01015FWSB4 | CNGX433S0415FWSB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGF120408SB4 | CNGF432SB4 | CM-224 ASSY | 5379145 | CM224WC210 ASSY | 5358455 |
| CNGX090416S02020SB4 | CNGX334S0820SB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |
| CNGX090412S01015SB4 | CNGX333S0415SB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |
| CNGX090412S1015FWSB4 | CNGX333S0415FWSB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |
| CNGX090416S01015FWSB4 | CNGX334S0415FWSB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |
| CNGF090408SB4 | CNGF332SB4 | CM-225 ASSY | 5379146 | CM225WC210 ASSY | 5358456 |
| CNGX060416S01015FWSB4 | CNGX234S0415FWSB4 | CM-226 ASSY | 5379147 | CM226WC210 ASSY | 5358457 |
| CNGX060412S01015SB4 | CNGX233S0415SB4 | CM-226 ASSY | 5379147 | CM226WC210 ASSY | 5358457 |
| CNGX060412S01015FWSB4 | CNGX233S0415FWSB4 | CM-226 ASSY | 5379147 | CM226WC210 ASSY | 5358457 |
| CNGF060408SB4 | CNGF232SB4 | CM-226 ASSY | 5379147 | CM226WC210 ASSY | 5358457 |
| CNGX060416S02020SB4 | CNGX234S0820SB4 | CM-226 ASSY | 5379147 | CM226WC210 ASSY | 5358457 |
| SNGX090416S020202SB4 | SNGX334S0820SB4 | CM-227 ASSY | 5379148 | CM227WC210 ASSY | 5358458 |
| SNGX090416S020202SB8 | SNGX334S0820SB8 | CM-229 ASSY | 5379320 | CM229WC210 ASSY | 5358570 |
| SNGX060416S02020SB4 | SNGX234S0820SB4 | CM-228 ASSY | 5379149 | CM228WC210 ASSY | 5358459 |
| SNGX120416S02020SB8 | SNGX434S0820SB8 | CM-230 ASSY | 5379321 | CM230WC210 ASSY | 5358571 |

NOTE: Clamps work on standard toolholders.

## Looking for a product that's not shown in this catalogue?

# Check the Kennametal website!

Turning

### Online product catalogue available 24/7

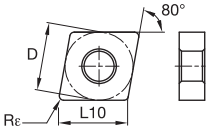
Visit **http://www.kennametal.com/turning/** to browse our electronic catalogue any time you're looking for Kennametal's best tooling solutions. It's fast, free, and always available. The online e-catalogue is updated weekly with products and solutions for milling, turning, holemaking, and tooling systems applications.

KENNAMETAL

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

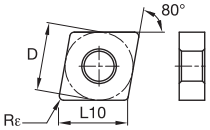
(ST)




## ■ CNGA-FST

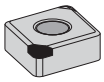
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **CNGA120404FST** | 12,70 | 12,90 | 0,4 |
| **CNGA120408FST** | 12,70 | 12,90 | 0,8 |

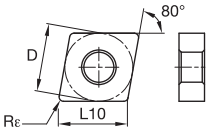
(MT)




## ■ CNGA-FW/MW MT

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **CNGA120404S01025FWMT** | 12,70 | 12,90 | 0,4 |
| **CNGA120408S01025FWMT** | 12,70 | 12,90 | 0,8 |
| **CNGA120408EFWMT** | 12,70 | 12,90 | 0,8 |
| **CNGA120412EFWMT** | 12,70 | 12,90 | 1,2 |
| **CNGA120404S01015FWMT** | 12,70 | 12,90 | 0,4 |
| **CNGA120408S01015FWMT** | 12,70 | 12,90 | 0,8 |
| **CNGA120412S01015FWMT** | 12,70 | 12,90 | 1,2 |



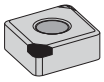



## ■ CNGM-CB1

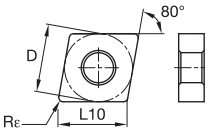
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **CNGM120404S01325MTCB1** | 12,70 | 12,90 | 0,4 |
| **CNGM120408S01325MTCB1** | 12,70 | 12,90 | 0,8 |
| **CNGM120412S01325MTCB1** | 12,70 | 12,90 | 1,2 |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | ● | ● | |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |



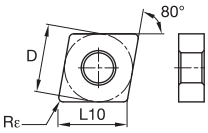
## CNGM-CB2




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNGM120404S01325MTCB2 | 12,70 | 12,90 | 0,4 |
| CNGM120408S01325MTCB2 | 12,70 | 12,90 | 0,8 |
| CNGM120412S01325MTCB2 | 12,70 | 12,90 | 1,2 |

(MT)

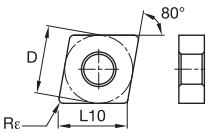
## CNGA-MT



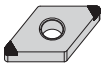

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNGA120404S01025MT | 12,70 | 12,90 | 0,4 |
| CNGA120408S01025MT | 12,70 | 12,90 | 0,8 |
| CNGA432EMT | 12,70 | 12,90 | 0,8 |
| CNGA120412S01020MT | 12,70 | 12,90 | 1,2 |
| CNGA120412S01025MT | 12,70 | 12,90 | 1,2 |
| CNGA120404S01225MT | 12,70 | 12,90 | 0,4 |
| CNGA120404S01015MT | 12,70 | 12,90 | 0,4 |
| CNGA120404S01735MT | 12,70 | 12,90 | 0,4 |
| CNGA120408S01735MT | 12,70 | 12,90 | 0,8 |
| CNGA120408S01225MT | 12,70 | 12,90 | 0,8 |
| CNGA120408S01015MT | 12,70 | 12,90 | 0,8 |
| CNGA120412S01735MT | 12,70 | 12,90 | 1,2 |
| CNGA120412S01225MT | 12,70 | 12,90 | 1,2 |
| CNGA120412S01015MT | 12,70 | 12,90 | 1,2 |

(ST)

## CNMS-FST

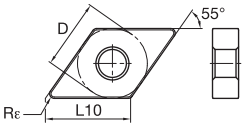



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| CNMS120404FST | 12,70 | 12,90 | 0,4 |
| CNMS120408FST | 12,70 | 12,90 | 0,8 |



(MT)

## DNGA-EMT

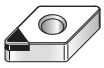



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DNGA150408EMT | 12,70 | 15,50 | 0,8 |
| DNGA150412EMT | 12,70 | 15,50 | 1,2 |

Turning

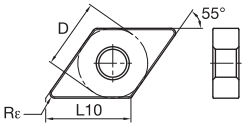
● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

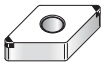


(ST)

## ■ DNGA-FST

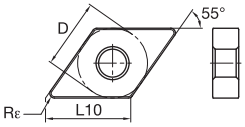



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DNGA150404FST | 12,70 | 15,50 | 0,4 | | | ● | ● | | | | |
| DNGA150408FST | 12,70 | 15,50 | 0,8 | | | ● | ● | | | | |

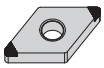


(MT)

## ■ DNGA-FW/MW MT

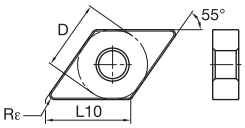



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DNGA150404EFWMT | 12,70 | 15,50 | 0,4 | | | | | | | ● | |
| DNGA150408EFWMT | 12,70 | 15,50 | 0,8 | | | | | | | ● | |
| DNGA150408S01015FWMT | 12,70 | 15,50 | 0,4 | | | | | ● | | | |
| DNGA150412EFWMT | 12,70 | 15,50 | 1,2 | | | | | | | ● | |
| DNGA150412S01015FWMT | 12,70 | 15,50 | 0,8 | | | | | ● | | | |



(MT)

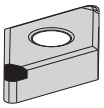
## ■ DNGA-MT

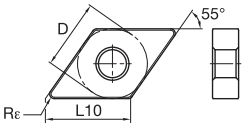



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DNGA150404S01015MT | 12,70 | 15,50 | 0,4 | | | | | ● | | | |
| DNGA150404S01025MT | 12,70 | 15,50 | 0,4 | | | | | | ● | ● | ● |
| DNGA150404S01225MT | 12,70 | 15,50 | 0,4 | | | | | ● | | | |
| DNGA150404S01735MT | 12,70 | 15,50 | 0,4 | | | | | ● | | | |
| DNGA150408S01015MT | 12,70 | 15,50 | 0,8 | | | | | ● | | | |
| DNGA150408S01025MT | 12,70 | 15,50 | 0,8 | | | | | | ● | ● | ● |
| DNGA150408S01735MT | 12,70 | 15,50 | 0,8 | | | | | ● | | | |
| DNGA150412S01015MT | 12,70 | 15,50 | 1,2 | | | | | ● | | | |
| DNGA150412S01025MT | 12,70 | 15,50 | 1,2 | | | | | | | ● | |
| DNGA150412S01225MT | 12,70 | 15,50 | 1,2 | | | | | ● | | | |
| DNGA150412S01735MT | 12,70 | 15,50 | 1,2 | | | | | ● | | | |
| DNGA150604S01015MT | 12,70 | 15,50 | 0,4 | | | | | ● | | | |
| DNGA150604S01225MT | 12,70 | 15,50 | 0,4 | | | | | ● | | | |
| DNGA150604S01735MT | 12,70 | 15,50 | 0,4 | | | | | ● | | | |
| DNGA150608S01015MT | 12,70 | 15,50 | 0,8 | | | | | ● | | | |
| DNGA150608S01225MT | 12,70 | 15,50 | 0,8 | | | | | ● | | | |
| DNGA150608S01735MT | 12,70 | 15,50 | 0,8 | | | | | ● | | | |
| DNGA150612S01015MT | 12,70 | 15,50 | 1,2 | | | | | ● | | | |
| DNGA150612S01225MT | 12,70 | 15,50 | 1,2 | | | | | ● | | | |
| DNGA150612S01735MT | 12,70 | 15,50 | 1,2 | | | | | ● | | | |

● first choice
○ alternate choice

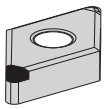
| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

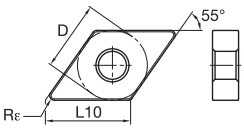





## DNGM-CB1

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **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 |

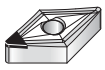




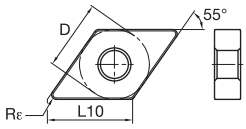

## DNGM-CB2

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **DNGM150408S01325MTCB2** | 12,70 | 15,50 | 0,8 |
| **DNGM150412S01325MTCB2** | 12,70 | 15,50 | 1,2 |

NOTE: Other insert geometries available upon request.



(ST)




## DNMS-FST

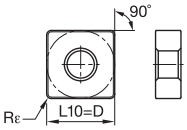
| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **DNMS150404FST** | 12,70 | 15,50 | 0,4 |
| **DNMS150408FST** | 12,70 | 15,50 | 0,8 |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(MT)

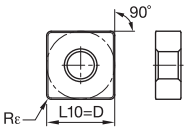
## SNGA-MT




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **SNGA120404S01025MT** | 12,70 | 12,70 | 0,4 |
| **SNGA120408S01025MT** | 12,70 | 12,70 | 0,8 |
| **SNGA120408S01225MT** | 12,70 | 12,70 | 0,8 |
| **SNGA120412S01025MT** | 12,70 | 12,70 | 1,2 |
| **SNGA120412S01225MT** | 12,70 | 12,70 | 1,2 |

(ST)

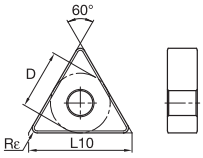
## SNMS-FST




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **SNMS120408FST** | 12,70 | 12,70 | 0,8 |
| **SNMS120412FST** | 12,70 | 12,70 | 1,2 |

(MT)

## TNGA-FW MT



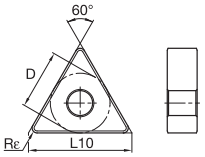

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TNGA160408EFWMT** | 9,53 | 16,50 | 0,8 |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(MT)

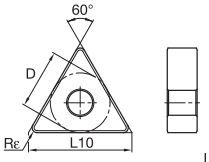
## TNGA-MT



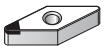

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TNGA160404S01015MT | 9,52 | 16,50 | 0,4 |
| TNGA160404S01025MT | 9,53 | 16,50 | 0,4 |
| TNGA160404S01225MT | 9,52 | 16,50 | 0,4 |
| TNGA160404S01735MT | 9,52 | 16,50 | 0,4 |
| TNGA160408S01015MT | 9,52 | 16,50 | 0,8 |
| TNGA160408S01025MT | 9,53 | 16,50 | 0,8 |
| TNGA160408S01225MT | 9,52 | 16,50 | 0,8 |
| TNGA160408S01735MT | 9,52 | 16,50 | 0,8 |
| TNGA160412S01015MT | 9,52 | 16,50 | 1,2 |
| TNGA160412S01025MT | 9,53 | 16,50 | 1,2 |
| TNGA160412S01225MT | 9,52 | 16,50 | 1,2 |
| TNGA160412S01735MT | 9,52 | 16,50 | 1,2 |

(ST)

## TNMS-FST

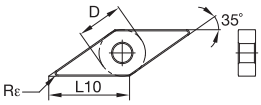



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| TNMS160404FST | 9,53 | 16,50 | 0,4 |
| TNMS160408FST | 9,53 | 16,50 | 0,8 |

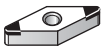


(ST)

## VNGA-FST

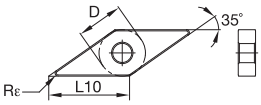



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNGA160404FST | 9,53 | 16,61 | 0,40 |
| VNGA160408FST | 9,53 | 16,61 | 0,80 |



(MT)

## VNGA-MT



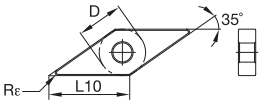

| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| VNGA160404S01015MT | 9,52 | 16,61 | 0,4 |
| VNGA160404S01025MT | 9,53 | 16,61 | 0,4 |
| VNGA160404S01225MT | 9,52 | 16,61 | 0,4 |
| VNGA160404S01735MT | 9,52 | 16,61 | 0,4 |
| VNGA160408S01015MT | 9,52 | 16,61 | 0,8 |
| VNGA160408S01025MT | 9,53 | 16,61 | 0,8 |
| VNGA160408S01225MT | 9,52 | 16,61 | 0,8 |
| VNGA160408S01735MT | 9,52 | 16,61 | 0,8 |
| VNGA160412S01225MT | 9,52 | 16,61 | 1,2 |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(ST)

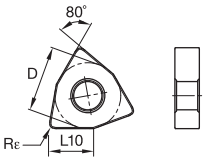
## ■ VNMS-FST




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **VNMS160404FST** | 9,53 | 16,61 | 0,4 |
| **VNMS160408FST** | 9,53 | 16,61 | 0,8 |

(ST)

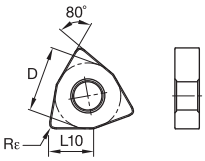
## ■ WNGA-FST




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **WNGA080404FST** | 12,70 | 8,69 | 0,4 |
| **WNGA080408FST** | 12,70 | 8,69 | 0,8 |

(MT)

## ■ WNGA-MT



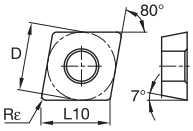

| ISO catalogue number | D mm | L10 mm | Rε mm | max mm |
|---|---|---|---|---|
| **WNGA080404S01015MT** | 12,70 | 8,69 | 0,4 | 3,16 |
| **WNGA080408S01015MT** | 12,70 | 8,69 | 0,8 | 3,16 |
| **WNGA080408S01225MT** | 12,70 | 8,69 | 0,8 | 3,16 |
| **WNGA080408S01735MT** | 12,70 | 8,69 | 0,8 | 3,16 |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(C)

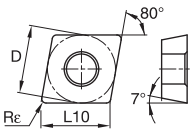
## CCGW-C




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CCGW060202EC | 6,35 | 6,45 | 0,2 | | | | | | | ● | |
| CCGW060202S01015C | 6,35 | 6,45 | 0,2 | | | | | | ● | | ● |
| CCGW060204S01015C | 6,35 | 6,45 | 0,4 | | | | | | ● | ● | ● |
| CCGW09T304S01015C | 9,53 | 9,67 | 0,4 | | | | | | | ● | |
| CCGW09T308S01015C | 9,53 | 9,67 | 0,8 | | | | | | | ● | |

(ST)

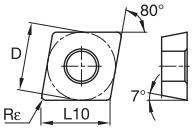
## CCGW-FST




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CCGW060204FST | 6,35 | 6,45 | 0,4 | | | ● | ● | | | | |
| CCGW09T304FST | 9,53 | 9,67 | 0,4 | | | ● | ● | | | | |
| CCGW09T308FST | 9,53 | 9,67 | 0,8 | | | ● | ● | | | | |

(C)

## CCGW-FWC



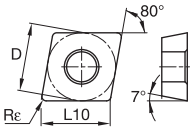

| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CCGW060202EFWC | 6,35 | 6,45 | 0,2 | | | | | | | ● | |
| CCGW060204EFWC | 6,35 | 6,45 | 0,4 | | | | | | | ● | |
| CCGW09T304EFWC | 9,53 | 9,67 | 0,4 | | | | | | | ● | |
| CCGW09T308EFWC | 9,53 | 9,67 | 0,8 | | | | | | | ● | |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(MT)

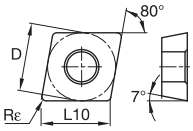
## CCGW-MT




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CCGW060202S01225MT** | 6,35 | 6,45 | 0,2 | | | | | ● | | | |
| **CCGW060204S01225MT** | 6,35 | 6,45 | 0,4 | | | | | ● | | | |
| **CCGW09T302S01225MT** | 9,52 | 9,67 | 0,2 | | | | | ● | | | |
| **CCGW09T304S01015MT** | 9,52 | 9,67 | 0,4 | | | | | ● | ● | | ● |
| **CCGW09T304S01225MT** | 9,52 | 9,67 | 0,4 | | | | | ● | | | |
| **CCGW09T308S01015MT** | 9,52 | 9,67 | 0,8 | | | | | ● | ● | | ● |
| **CCGW09T308S01225MT** | 9,52 | 9,67 | 0,8 | | | | | ● | | | |
| **CCGW120408S01015MT** | 12,70 | 12,90 | 0,8 | | | | | ● | | | |

(M)

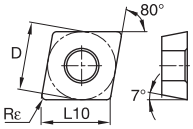
## CCGW-M




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CCGW060202EM** | 6,35 | 6,45 | 0,2 | | | | | | | ● | |
| **CCGW060204S01015M** | 6,35 | 6,45 | 0,4 | | | | | | | ● | |
| **CCGW09T304S01015M** | 9,53 | 9,67 | 0,4 | | | | | | | ● | |
| **CCGW09T308S01015M** | 9,53 | 9,67 | 0,8 | | | | | | | ● | |

(M)

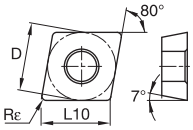
## CCGW-FWM




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CCGW060204EFWM** | 6,35 | 6,45 | 0,4 | | | | | | | ● | |
| **CCGW09T304EFWM** | 9,53 | 9,67 | 0,4 | | | | | | | ● | |
| **CCGW09T308EFWM** | 9,53 | 9,67 | 0,8 | | | | | | | ● | |

(MT)

## CCGW-FWMT



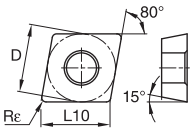

| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CCGW09T304S01015FWMT** | 9,52 | 9,67 | 0,4 | | | | | ● | | | |
| **CCGW09T308S01015FWMT** | 9,52 | 9,67 | 0,8 | | | | | ● | | | |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(ST)

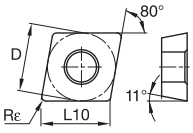
## CDHB-FST



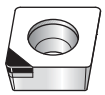

| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CDHBS4T002FST | 3,97 | 4,03 | 0,1 | | | ● | ● | | | | |
| CDHBS4T004FST | 3,97 | 4,03 | 0,2 | | | ● | ● | | | | |

(ST)

## CPGW-FWST

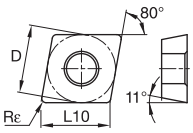



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CPGW060204FWST | 6,35 | 6,45 | 0,4 | | | ● | ● | | | | |
| CPGW09T308FWST | 9,53 | 9,67 | 0,8 | | | ● | ● | | | | |
| CPGW120408FWST | 12,70 | 12,90 | 0,8 | | | ● | ● | | | | |



(ST)

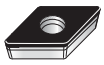
## CPGW-ST




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | ● | ● | | | | |
| CPGW120408FST | 12,70 | 12,90 | 0,8 | | | ● | ● | | | | |

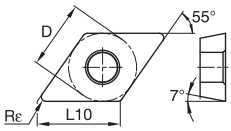
● first choice
○ alternate choice

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

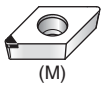


(C)

## ■ DCGW-C

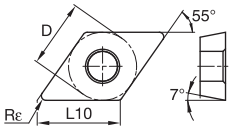



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DCGW070202EC | 6,35 | 7,75 | 0,2 | | | | | | | ● | |
| DCGW070202S01015C | 6,35 | 7,75 | 0,2 | | | | | | ● | | ● |
| DCGW070204S01015C | 6,35 | 7,75 | 0,4 | | | | | | ● | ● | ● |



(M)

## ■ DCGW-M



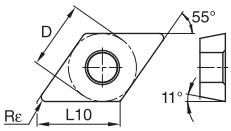

| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DCGW070202EM | 6,35 | 7,75 | 0,2 | | | | | | | ● | |
| DCGW070204S01015M | 6,35 | 7,75 | 0,4 | | | | | | | ● | |
| DCGW11T304S01015M | 9,53 | 11,63 | 0,4 | | | | | | | ● | |
| DCGW11T308S01015M | 9,53 | 11,63 | 0,8 | | | | | | | ● | |

● first choice
○ alternate choice

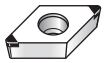
| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(C)

## DPGW-C

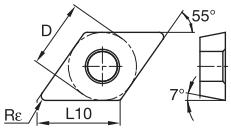



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DPGW070202EC | 6,35 | 7,75 | 0,2 |
| DPGW070204S01015C | 6,35 | 7,75 | 0,4 |
| DPGW070208S01015C | 6,35 | 7,75 | 0,8 |

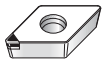


(MT)

## DCGW-MT

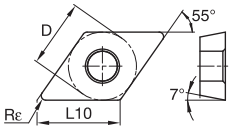



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DCGW070202S01225MT | 6,35 | 7,75 | 0,2 |
| DCGW070204S01015MT | 6,35 | 7,75 | 0,4 |
| DCGW070204S01225MT | 6,35 | 7,75 | 0,4 |
| DCGW11T302S01225MT | 9,52 | 11,63 | 0,2 |
| DCGW11T304S01015MT | 9,52 | 11,63 | 0,4 |
| DCGW11T304S01225MT | 9,52 | 11,63 | 0,4 |
| DCGW11T308S01015MT | 9,52 | 11,63 | 0,8 |
| DCGW11T308S01225MT | 9,52 | 11,63 | 0,8 |



(ST)

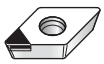
## DCGW-ST




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| DCGW070204FST | 6,35 | 7,75 | 0,4 |
| DCGW11T304FST | 9,53 | 11,63 | 0,4 |

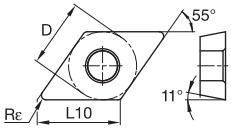
● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

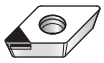


(ST)

## ■ DPGW-FST

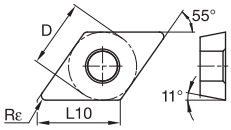



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DPGW070202FST | 6,35 | 7,75 | 0,2 | | | ● | ● | | | | |
| DPGW070204FST | 6,35 | 7,75 | 0,4 | | | ● | ● | | | | |
| DPGW11T304FST | 9,53 | 11,63 | 0,4 | | | ● | ● | | | | |

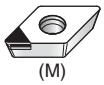


(ST)

## ■ DPGW-FWST

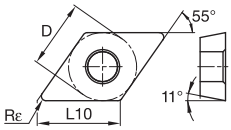



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DPGW070204FWST | 6,35 | 7,75 | 0,2 | | | ● | ● | | | | |
| DPGW11T304FWST | 9,53 | 11,63 | 0,2 | | | ● | ● | | | | |



(M)

## ■ DPGW-M



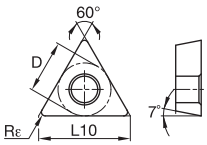

| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DPGW070202EM | 6,35 | 7,75 | 0,2 | | | | | | | ● | |
| DPGW070204S01015M | 6,35 | 7,75 | 0,4 | | | | | | | ● | |
| DPGW11T304S01015M | 9,53 | 11,63 | 0,4 | | | | | | | ● | |
| DPGW11T308S01015M | 9,53 | 11,63 | 0,8 | | | | | | | ● | |

● first choice
○ alternate choice

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

(C)

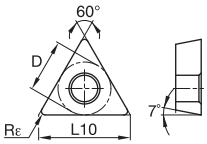
## TCGW-C




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TCGW110202EC | 6,35 | 11,00 | 0,20 | | | | | | | ● | |
| TCGW110204S01015C | 6,35 | 11,00 | 0,40 | | | | | | | ● | |

(ST)

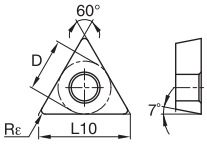
## TCGW-FST




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TCGW110204FST | 6,35 | 11,00 | 0,40 | | | ● | ● | | | | |
| TCGW16T304FST | 9,53 | 16,50 | 0,40 | | | ● | ● | | | | |

(M)

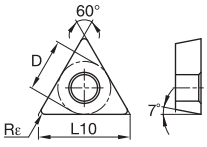
## TCGW-M




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TCGW110202EM | 6,35 | 11,00 | 0,2 | | | | | | | ● | |
| TCGW110204S01015M | 6,35 | 11,00 | 0,4 | | | | | | | ● | |
| TCGW16T304S01015M | 9,53 | 16,50 | 0,4 | | | | | | | ● | |
| TCGW16T308S01015M | 9,53 | 16,50 | 0,8 | | | | | | | ● | |

(MT)

## TCGW-MT



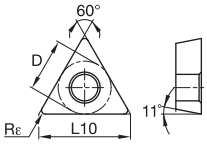

| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TCGW090202S01015MT | 5,56 | 9,62 | 0,2 | | | | | ● | | | |
| TCGW090204S01015 MT | 5,56 | 9,62 | 0,4 | | | | | ● | | | |
| TCGW110202S01015MT | 6,35 | 11,00 | 0,2 | | | | | ● | | | |
| TCGW110204S01015MT | 6,35 | 11,00 | 0,4 | | | | | ● | | | |
| TCGW110208S01015MT | 6,35 | 11,00 | 0,8 | | | | | ● | | | |

● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

(C)

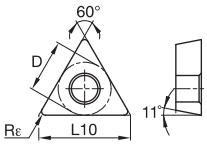
## TPGW-C




| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TPGW110202EC** | 6,35 | 11,00 | 0,20 |
| **TPGW110204S01015C** | 6,35 | 11,00 | 0,40 |
| **TPGW110208S01015C** | 6,35 | 11,00 | 0,80 |

(ST)

## TPGW-FST

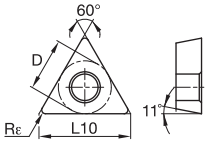



| ISO catalogue number | D mm | L10 mm | Rε mm |
|---|---|---|---|
| **TPGW110204FST** | 6,35 | 11,00 | 0,4 |
| **TPGW110208FST** | 6,35 | 11,00 | 0,8 |
| **TPGW16T304FST** | 9,53 | 16,50 | 0,4 |
| **TPGW16T308FST** | 9,53 | 16,50 | 0,8 |

● first choice
○ alternate choice

(M)

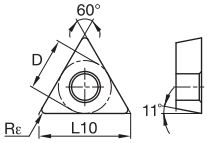
## TPGW-M




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TPGW110202EM | 6,35 | 11,00 | 0,2 | | | | | | | ● | |
| TPGW110204S01015M | 6,35 | 11,00 | 0,4 | | | | | | | ● | |
| TPGW110208S01015M | 6,35 | 11,00 | 0,8 | | | | | | | ● | |
| TPGW16T304S01015M | 9,53 | 16,50 | 0,4 | | | | | | | ● | |

(MT)

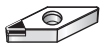
## TPGW-MT




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TPGW110202S01015MT | 6,35 | 11,00 | 0,2 | | | | | ● | | | |
| TPGW110204S01015MT | 6,35 | 11,00 | 0,4 | | | | | ● | | | |
| TPGW110208S01015MT | 6,35 | 11,00 | 0,8 | | | | | ● | | | |
| TPGW16T304S01015MT | 9,52 | 16,50 | 0,4 | | | | | ● | | | |
| TPGW16T304S01225MT | 9,52 | 16,50 | 0,4 | | | | | ● | | | |
| TPGW16T308S01015MT | 9,52 | 16,50 | 0,8 | | | | | ● | | | |
| TPGW16T308S01225MT | 9,52 | 16,50 | 0,8 | | | | | ● | | | |

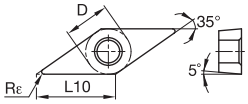
● first choice
○ alternate choice

| | | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | | | | | | ● | ● |
| M | | | | | | | | | |
| K | | ● | ● | | | | | | ● |
| N | | | | ● | ● | | | | |
| S | | | | | | | | ○ | ● |
| H | | ○ | | | | ● | ● | ● | ● |

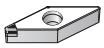


(ST)

## VBGW-FST

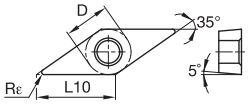



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VBGW110304FST | 6,35 | 11,07 | 0,4 | | | ● | ● | | | | |
| VBGW160404FST | 9,53 | 16,61 | 0,4 | | | ● | ● | | | | |

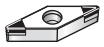


(M)

## VBGW-M

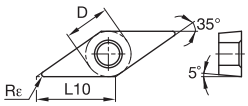



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VBGW160404S01015M | 9,53 | 16,61 | 0,4 | | | | | | | ● | |
| VBGW160408S01015M | 9,53 | 16,61 | 0,8 | | | | | | | ● | |



(MT)

## VBGW-MT

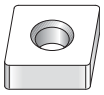


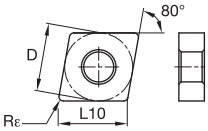

| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VBGW110304S01015MT | 6,35 | 11,07 | 0,4 | | | | | ● | | | |
| VBGW110304S01225MT | 6,35 | 11,07 | 0,4 | | | | | ● | | | |
| VBGW110308S01225MT | 6,35 | 11,07 | 0,8 | | | | | ● | | | |
| VBGW160404S01015MT | 9,53 | 16,61 | 0,4 | | | | | | ● | | ● |
| VBGW160408S01015MT | 9,52 | 16,61 | 0,8 | | | | | ● | ● | | ● |
| VBGW160412S01015MT | 9,52 | 16,61 | 1,2 | | | | | ● | | | |

● first choice
○ alternate choice

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

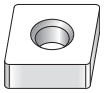
## CNMA

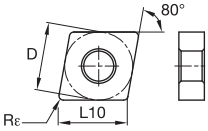





| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMA120408S02020 | 12,70 | 12,90 | 0,8 | ● | ● | | | | | | |
| CNMA120408S02020MW | 12,70 | 12,90 | 0,8 | | ● | | | | | | |
| CNMA120412S02020 | 12,70 | 12,90 | 1,2 | ● | | | | | | | |

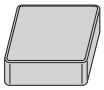
## CNMA-MW

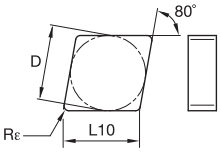





| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMA120408S02020MW | 12,70 | 12,90 | 0,8 | | ● | | | | | | |

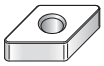
## CNMN

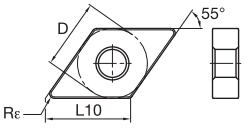





| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CNMN090308S02020 | 9,53 | 9,67 | 0,8 | ● | | | | | | | |
| CNMN120408S02020 | 12,70 | 12,90 | 0,8 | ● | | | | | | | |
| CNMN120412S02020 | 12,70 | 12,90 | 1,2 | ● | ● | | | | | | |

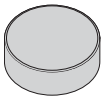
## DNMA

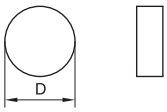





| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DNMA110408S02020 | 9,53 | 11,63 | 0,8 | ● | | | | | | | |
| DNMA110412S02020 | 9,53 | 11,63 | 1,2 | ● | | | | | | | |

## RNMN



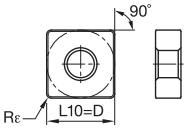



| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RNMN090300E | 9,53 | – | – | | ● | | | | | | |
| RNMN090300S02020 | 9,53 | – | – | ● | ● | | | | | | |
| RNMN120300S02020 | 12,70 | – | – | ● | | | | | | | |
| RNMN120400S02020 | 12,70 | – | – | ● | ● | | | | | | |

● first choice
○ alternate choice

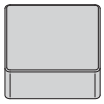
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| P | | | | | | | ● | ● |
| M | | | | | | | | |
| K | ● | ● | | | | | | ● |
| N | | | ● | ● | | | | |
| S | | | | | | | ○ | ● |
| H | ○ | | | | ● | ● | ● | ● |

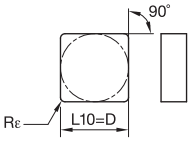
## SNMA




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMA120412S02020 | 12,70 | 12,70 | 1,2 | ● | | | | | | | |

## SNMN

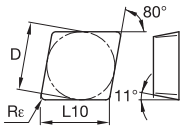





| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SNMN120308S02020 | 12,70 | 12,70 | 0,8 | ● | | | | | | | |
| SNMN120312S02020 | 12,70 | 12,70 | 1,2 | ● | | | | | | | |

## CPGN

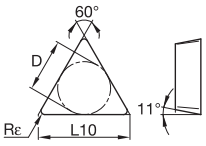
(ST)




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CPGN120304F | 12,70 | 12,90 | 0,4 | | | | ● | | | | |
| CPGN120308F | 12,70 | 12,90 | 0,8 | | | | ● | | | | |

## TPGN

(ST)




| ISO catalogue number | D mm | L10 mm | Rε mm | KB1340 | KBK35 | KD1400 | KD1425 | KBH20 | KB5610 | KB5625 | KB5630 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TPGN110304F | 6,35 | 11,00 | 0,4 | | | | ● | | | | |
| TPGN110308F | 6,35 | 11,00 | 0,8 | | | | ● | | | | |
| TPGN160304F | 9,53 | 16,50 | 0,4 | | | | ● | | | | |
| TPGN160308F | 9,53 | 16,50 | 0,8 | | | | ● | | | | |
| TPGN160312F | 9,53 | 16,50 | 1,2 | | | | ● | | | | |
| TPGN220404F | 12,70 | 22,00 | 0,4 | | | | ● | | | | |
| TPGN220408F | 12,70 | 22,00 | 0,8 | | | | ● | | | | |

# A3™ Deep Grooving...

## ... The best choice for high productivity — with outstanding application flexibility.

- A3 deep grooving tooling is compatible with square shank, KM™, and PSC (ISO 26623) platforms.
- One insert performs:
  - — O.D. operations.
  - — I.D. operations.
  - — Face grooving operations.
- In addition, the A3 system's performance is enhanced by:
  - — TiAlN grades.
  - — The Kenna Perfect™ Tooling Selection System.

Visit **www.kennametal.com** or contact your local Authorised Kennametal Distributor.

**www.kennametal.com**

KENNAMETAL®

# A4™ Tooling and Beyond™ Inserts for All Your O.D. and I.D. Applications

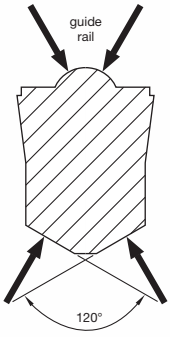
## Primary Application

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 deliver the highest metal removal rates in the industry.

## 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

GUP Chipbreaker

GMN Chipbreaker

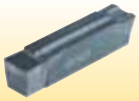
GMP Chipbreaker

GUP Chipbreaker

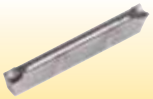
GMN Chipbreaker

GMP Chipbreaker

Flat Top


PCD Tipped

PCBD


CF Chipbreaker

## The A4™ System Increases Productivity

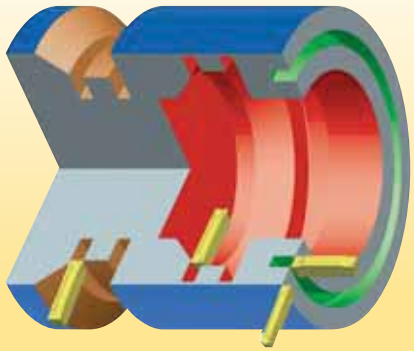
- Covers multiple applications.
- Reduces tool cost.
- Minimises machining time.

*To learn more,* ***scan here****.*
*For instructions on how to scan, please see page xxv.*

## Step 1 • Select A4 size for grooving and turning application

**What you need to know:**

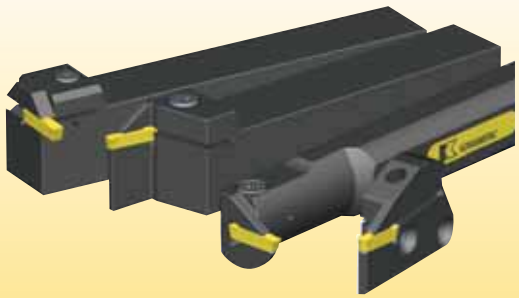
- Groove depth, width, and profile.
- Material being machined.
- Application to be performed (O.D. and I.D. grooving, turning, face grooving, and cut-off).



## Step 2 • Select toolholder based on the application

| | conventional toolholders | modular blades |
|---|---|---|
| O.D. grooving, cut-off, and turning | page D82* | page D94* |
| face grooving | page D85* | page D95* |
| I.D. grooving, cut-off, and turning | page D87* | — |

NOTE: Insert seat size must match the seat size of the toolholder.
*For more information, please see the Innovations Master Catalogue Cutting Tools 2013.



## Step 3 • Select chipbreaker style and feed rate

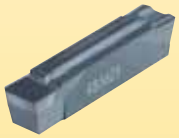
**Choose Chipbreaker Based on Material Type**

| P | M | K | N | S | H |
|---|---|---|---|---|---|
| GMN | GUP/GMP | GMN/B | GUP/GMP precision ground (-E for KD 1405) | GUP/GMP precision ground | GMN |

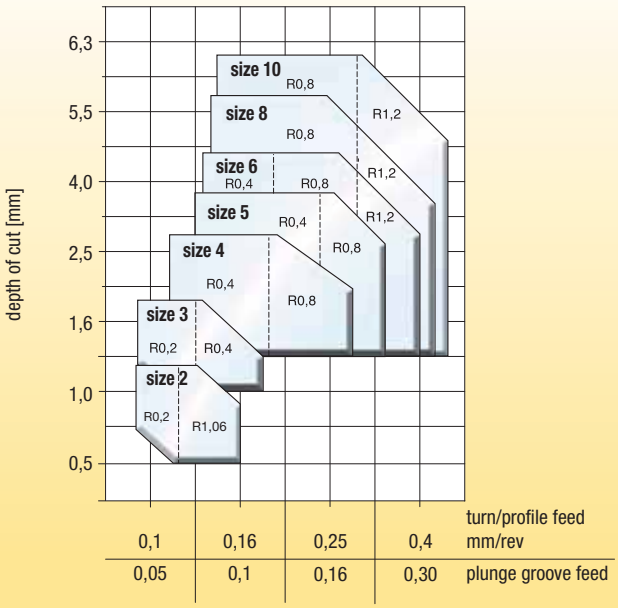
NOTE: Precision ground A4-P-GMN inserts can be applied on all material groups for inch-width grooving.

## Depth of Cut and Feed Guidelines

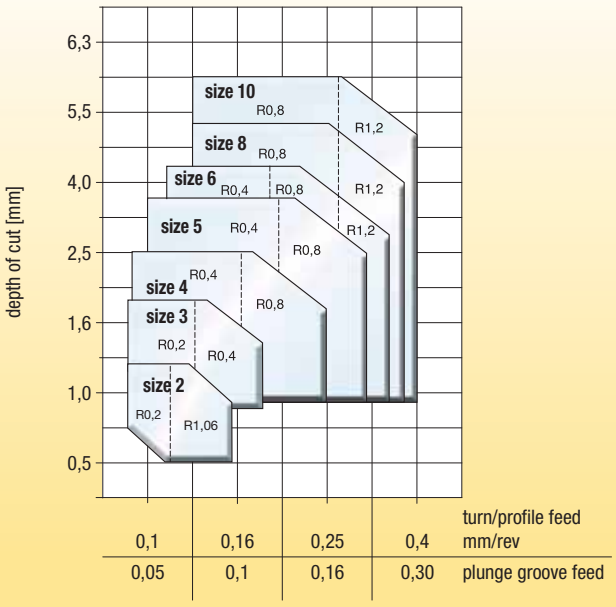
| square inserts (A4G...) | | | full radius inserts (A4R...) | | |
|---|---|---|---|---|---|
| **GUP chipbreaker** | **GMN chipbreaker** | **GMP chipbreaker** | **GUP chipbreaker** | **GMP chipbreaker** | **GMN chipbreaker** |
| | | | | | |
| • Groove and turn inserts in new Beyond™ grades.<br>• Available in moulded and precision-ground styles.<br>• Positive rake angle with enhanced chip control.<br>• Available in metric and inch widths. | • Groove and turn moulded and precision ground inserts.<br>• Stable cutting edge.<br>• Available in metric and inch widths. | • Groove and turn inserts.<br>• Available in moulded and precision-ground styles.<br>• Positive rake angle.<br>• Available in metric widths only. | • Groove and turn inserts in new Beyond™ grades.<br>• Available in moulded and precision-ground styles.<br>• Positive rake angle with enhanced chip control.<br>• Available in metric and inch widths. | • Groove and turn inserts.<br>• Available in moulded and precision-ground styles.<br>• Positive rake angle.<br>• Available in metric widths only. | • Maximum turning and profiling depth of cut equals half the insert width.<br>• The maximum turn and profile feed rate depends on the material to be machined and the depth of cut. For easy-to-machine materials, feed can be increased up to 1,5 times. |

| **Flat Top** | **PCD Tipped** | **PCBN Tipped** | **CF Chipbreaker** |
|---|---|---|---|
| |  | | |
| Groove and Turn<br>• Precision moulded<br>• Special profiles<br>• Cast iron | Groove and Turn<br>• Precision ground<br>• High performance<br>• Non-ferrous and titanium | Groove and Turn<br>• Precision ground<br>• High performance<br>• Irons, hardened steels, and nickel based alloys | Cut-off<br>• Precision moulded<br>• High positive rake<br>• Sharp cutting edge |

### GMN




### GMP/GUP




NOTE: Select feed based on nose radius.
Diagram explanation: R0,2 - R = corner radius; 0,2 = 0,2mm radius.

## Step 4 • Select grade and speed

### Recommended Beyond™ Grades

| cutting condition | P | M | K | N | S | H |
|---|---|---|---|---|---|---|
| heavily interrupted cut | KCU25/KC5025 | KCU25/KC5025 | KC9125/KCP25 KC5025 | KCU25/KC5025 | KCU25/KC5025 | — |
| lightly interrupted cut | KCP25/KC9125/ KC9125/KCU25/ KC5025 | KCU25/KC5025 | KC9320/KY3500 KC9125/KCP25 KC5025 | KCU25/KC5025 | KCU25/KC5025 | — |
| varying depth of cut, casting, or forging skin | KCU10/KC5010 | KCU10/KC5010 | KC9320/KY3500 KC9110/KCP10 KC5010 | KCU10/KC5010/ KD1405 | K313/KU10/ KCU10/KC5010 | KCU10/KC5010 |
| smooth cut, pre-turned surface | KT315/KCP10/ KC9110 | KT315 | KC9320/KY3500 KC9110/KCP10 KC5010 | KCU10/KC5010/ KD1405 | K313/KU10/ KCU10/KC5010 | KCU10/KC5010 |

### Recommended Beyond Cutting Speeds

**Steel** — speed — m/min (SFM) — starting conditions

| material group | grade | 60 (200) | 120 (400) | 185 (600) | 245 (800) | 300 (1000) | 360 (1200) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|
| P | KCU10/KC5010 | | ◁▷ | | | | | 120 | 400 |
| | KCP10 | | | | ◁▷ | | | 275 | 900 |
| | KCP25 | | | ◁▷ | | | | 220 | 725 |
| | KCU25/KC5025 | | ◁▷ | | | | | 120 | 400 |
| | KC9110 | | | | ◁▷ | | | 250 | 800 |
| | KC9125 | | | ◁▷ | | | | 200 | 650 |
| | KT315** | | | | | ◁▷ | | 260 | 850 |

**KT315 is an alternative choice for steel; primarily available in the GMP chipbreaker.

**Stainless Steel** — speed — m/min (SFM) — starting conditions

| material group | grade | 45 (150) | 90 (300) | 140 (450) | 185 (600) | 230 (750) | 275 (900) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|
| M | KU10/K313 | ◁▷ | | | | | | 55 | 185 |
| | KCU10/KC5010 | | | ◁▷ | | | | 140 | 465 |
| | KCU25/KC5025 | | ◁▷ | | | | | 110 | 365 |
| | KT315 | | | | ◁▷ | | | 170 | 400 |

**Cast Iron Materials** — 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) | 760 (2500) | 1050 (3500) | m/min | m/min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K | KC9320 | | | | ◁▷ | | | | | | | 230 | 750 |
| | KCU25 / KC5025 | | | ◁▷ | | | | | | | | 165 | 500 |
| | KCU10 / KC5010 | | | ◁▷ | | | | | | | | 180 | 600 |
| | KCP25 / KC9125 | | | | ◁▷ | | | | | | | 230 | 750 |
| | KCP10 / KC9110 | | | | | ◁▷ | | | | | | 260 | 850 |
| | KY3500 | | | | | | | | ◁▷ | | | 760 | 2500 |

**Non-Ferrous Metals** — speed — m/min (SFM) — starting conditions

| material group | grade | 150 (500) | 300 (1000) | 460 (1500) | 610 (2000) | 760 (2500) | 900 (3000) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|
| N | KCU25/KC5025 | | | ◁▷ | | | | 365 | 1200 |
| | KCU10/KC5010 | | | ◁▷ | | | | 455 | 1500 |
| | KD1405*** | | | | ◁▷ | | | 610 | 2000 |

***Recommended for high-silicon aluminium alloys and abrasive non-metallics.

## Recommended Beyond Cutting Speeds

**High-Temperature Alloys** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 15 (60) | 35 (120) | 55 (180) | 75 (240) | 90 (300) | 140 (450) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|
| S | KU10 | ◁▷ | | | | | | 22 | 75 |
| | KCU10/KC5010 | | | ◁▷ | | | | 65 | 220 |
| | KCU25/KC5025 | | | ◁▷ | | | | 50 | 160 |
| | KT315 | | ◁▷ | | | | | 30 | 100 |

**Hardened Materials** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 15 (60) | 35 (120) | 55 (180) | 75 (240) | 95 (300) | 115 (360) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|
| H | KC5010 | | ◁▷ | | | | | 30 | 100 |

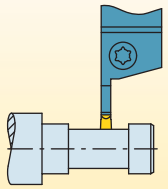
## Step 5 • Select insert and holder from catalogue page

NOTE: The insert seat size must match the seat size of your toolholder selection.

**Example for A4 — Groove and Turn**
Material.....low-alloyed steel
Workpiece O.D. .....38mm
Groove depth .....12mm
Groove width ..... 22mm
Lightly interrupted cut

**Recommendation**
Insert .....A4G0405M04U08GMN
Grade .....KC9125
Insert width .....4,05mm
Insert seat size .....4

Toolholder .....A4SMR160417
Grooving depth..... 17mm
Seat size .....4



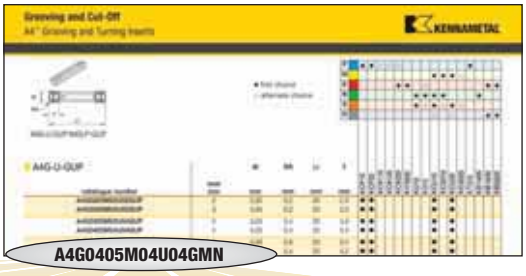
Speed: 200 m/min
Feed: 0,25 mm/rev
Plunge feed: 0,14 mm/rev

Congratulations!

You have successfully maximised your productivity by selecting the best A4 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.



**A4G0405M04U04GMN**

### Grooving and Turning Inserts

| A4 | G | 0405 | M | 04 | U | 04 | GMN |
|---|---|---|---|---|---|---|---|
| Tooling System | Insert Type | Groove Width | Unit of Measurement for Grooving Width | Seat Size | Insert Tolerance | Corner Radii | Chipbreaker Type/Edge Prep |
| **A4** = Grooving and Turning | **G** = Square<br>**R** = Full radius<br>**C** = Cut-off | Expressed in 1/100mm | **M** = Metric | | | | |

| pocket 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 |
| **2S** | 2,00–2,62 |
| **3S** | 3,00–3,05 |
| **4S** | 4,00–4,05 |
| **5S** | 5,00–5,05 |

**P** = Precision ground grooving width tolerance: ± 0,025mm (.001")

**U** = Utility moulded grooving width tolerance:

3,05-4,05: $\frac{+0{,}15\text{mm}}{-0}$

5,05-10,05: $\frac{+0{,}25\text{mm}}{-0}$

| metric |
|---|
| **01** = 0,1 |
| **02** = 0,2 |
| **04** = 0,4 |
| **08** = 0,8 |
| **12** = 1,2 |
| **full radius = 00** |

**GMN** = Grooving and turning medium machining stable cutting edge

**GMP** = Grooving and turning medium machining positive rake angle

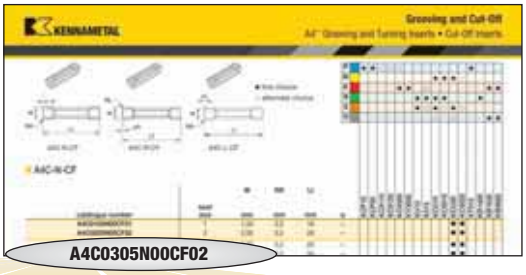
**GUP** = Grooving and turning high positive geometry. Especially in stainless steels and high-temp alloys

**B** = Flat top for special forms and applications

**E** = Flat top, slight honed edge

**S** = Negative land plus hone

**ST** = Single tip

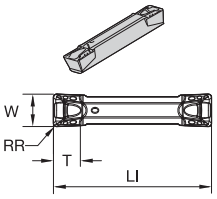


**A4C0305N00CF02**

### Cut-Off Inserts

| A4 | C | 0305 | N | 00 | CF | 02 |
|---|---|---|---|---|---|---|
| Tooling System | Insert Type | Cutting Width | Hand of Insert | Main Cutting Edge Lead Angle | Chipbreaker Type | Corner Radius |
| **A4** = Grooving and Turning | **C** = Cut-off | Expressed in 1/100mm | **R** = Right hand<br>**L** = Left hand<br>**N** = Neutral | **00** = Neutral<br>**06** = 6°<br>**10** = 10° | **CF** = Cut-off fine positive rake | **metric**<br>02 = 0,2 |

| insert type and chipbreaker designation | | application range | metric widths (mm) | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|
| **Moulded: A4G-U-GUP** | | Groove and Turn:<br>• Stable cutting edge for higher feed rates.<br>• Utility moulded. | 2–10 | ● | ● | ○ | ● | ● | ○ |
| **Precision Ground: A4G-P-GUP** | | • Stable, precision ground cutting edge.<br>• General grooving for specific inch widths.<br>• 0,025mm width tolerance. | 2–10 | ○ | ● | | ● | ● | ○ |
| **Moulded: A4G-U-GMN** | | Groove and Turn:<br>• Stable cutting edge for higher feed rates.<br>• Utility moulded. | 3,05–10,05 | ● | ○ | ● | | | ● |
| **Precision Ground: A4G-P-GMN** | | • Stable, precision ground cutting edge.<br>• General grooving for specific inch widths.<br>• 0,025mm width tolerance. | — | ● | ○ | ● | ○ | ○ | ● |
| **Moulded: A4G-U-GMP** | | Groove and Turn:<br>• Positive rake angle.<br>• Reduced cutting force.<br>• Small to medium feed rates.<br>• Utility moulded. | 3,05–10,05 | ● | ● | ○ | ○ | ● | ○ |
| **Precision Ground: A4G-P-GMP** | | • Positive rake angle.<br>• Precision ground cutting edge.<br>• 0,025mm width tolerance. | 3–10 | ○ | ○ | | ● | ● | |
| **Moulded: A4R-U-GUP** | | Groove and Turn:<br>• Stable cutting edge for higher feed rates.<br>• Utility moulded. | 3,05–10,05 | ● | ● | ○ | ● | ● | ○ |
| **Precision Ground: A4R-P-GUP** | | • Precision ground cutting edge.<br>• General grooving for specific inch widths.<br>• 0,025mm width tolerance. | 3–10 | ○ | ● | | ● | ● | ○ |
| **Moulded: A4R-U-GMN** | | Groove and Turn:<br>• Stable cutting edge for higher feed rates.<br>• Utility moulded. | 3,05–10,05 | ● | ○ | ● | | | ● |
| **Precision Ground: A4R-P-GMN** | | • Stable, precision ground cutting edge.<br>• General grooving for specific inch widths.<br>• 0,025mm width tolerance. | — | ● | ○ | ● | ○ | ○ | ● |
| **Precision Ground: A4R-P-GMP** | | Groove and Turn:<br>• Positive rake angle.<br>• Precision ground cutting edge.<br>• 0,025mm width tolerance. | 3–10 | ○ | ○ | | ● | ● | |
| **Moulded: A4G-U-B** | | Groove and Turn:<br>• For special profiles and for PCBN-tipped inserts (by request only).<br>• Secondary choice for cast iron and high-temp alloys. | 3,05–10,05 | | | ● | | ○ | |
| **Precision Ground: A4G-P-E-PCD** | | • Diamond sheet-tipped tool for high-performance non-ferrous machining. | 3–5 | | | | ● | ○ | |
| **Moulded: A4C-CF** | | Cut-Off:<br>• High positive rake angle.<br>• Sharp cutting edge.<br>• Available in neutral lead angle in 6° and 10° right- and left-hand styles. | 3,05–4,05 | ● | ● | | ● | ● | |
| **Precision Ground: A4G-P-SST A4G-P-EST** | | High performance machining.<br>• Cast and chilled irons.<br>• Hardened steels.<br>• Nickel based alloys. | 3–6 | | | ● | | ○ | ● |




A4G-U-GUP/A4G-P-GUP

● first choice
○ alternate choice

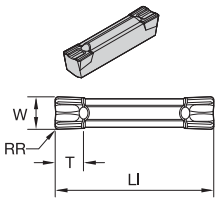
| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

## A4G-U-GUP

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ● | ● | | | | | | | ● | | ● | | | | | |
| 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 | ● | ● | | | | | | | ● | | ● | | | | | |
| A4G0805M08U08GUP | 8 | 8,05 | 0,8 | 30 | 6,0 | ● | ● | | | | | | | ● | | ● | | | | | |
| A4G0805M08U12GUP | 8 | 8,05 | 1,2 | 30 | 6,0 | ● | ● | | | | | | | ● | | ● | | | | | |
| A4G1005M10U08GUP | 10 | 10,05 | 0,8 | 30 | 6,0 | ● | ● | | | | | | | ● | | ● | | | | | |
| A4G1005M10U12GUP | 10 | 10,05 | 1,2 | 30 | 6,1 | ● | ● | | | | | | | ● | | ● | | | | | |

## A4G-P-GUP

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A4G0200M02P02GUP | 2 | 2,00 | 0,2 | 20 | 1,9 | | | | | | | ● | | ● | | ● | | | | | |
| A4G0300M03P02GUP | 3 | 3,00 | 0,2 | 20 | 2,9 | | | | | | | ● | | ● | | ● | | | | | |
| A4G0300M03P04GUP | 3 | 3,00 | 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 | | | | | | | ● | | ● | | ● | | | | | |
| 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 | | | | | | | ● | | ● | | ● | | | | | |
| A4G0800M08P08GUP | 8 | 8,00 | 0,8 | 30 | 6,0 | | | | | | | ● | | ● | | ● | | | | | |
| A4G0800M08P12GUP | 8 | 8,00 | 1,2 | 30 | 6,0 | | | | | | | ● | | ● | | ● | | | | | |
| A4G1000M10P08GUP | 10 | 10,00 | 0,8 | 30 | 6,0 | | | | | | | ● | | ● | | ● | | | | | |
| A4G1000M10P12GUP | 10 | 10,00 | 1,2 | 30 | 6,0 | | | | | | | ● | | ● | | ● | | | | | |



A4G-U-GMP/A4G-P-GMP

● first choice
○ alternate choice

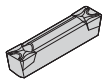
| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

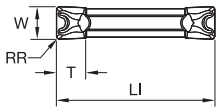
## A4G-U-GMP

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | 3,5 | | | ● | ● | | | | | ● | ● | ● | ● | ● | | | |
| **A4G0405M04U08GMP** | 4 | 4,05 | 0,8 | 20 | 3,5 | | | ● | ● | | | | | ● | ● | ● | ● | ● | | | |
| **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 | | | ● | ● | | | | | ● | ● | ● | ● | ● | | | |
| **A4G0605M06U12GMP** | 6 | 6,05 | 1,2 | 30 | 4,9 | | | | | | | | | ● | ● | | ● | | | | |
| **A4G0805M08U08GMP** | 8 | 8,05 | 0,8 | 30 | 6,4 | | | ● | ● | | | | | | | ● | ● | | | | |
| **A4G0805M08U12GMP** | 8 | 8,05 | 1,2 | 30 | 6,4 | | | | | | | | | | | | ● | | | | |
| **A4G1005M10U08GMP** | 10 | 10,05 | 0,8 | 30 | 8,1 | | | | | | | | | ● | ● | ● | ● | | | | |
| **A4G1005M10U12GMP** | 10 | 10,05 | 1,2 | 30 | 8,1 | | | | ● | | | | | | | | ● | | | | |

## A4G-P-GMP

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | 3,5 | | | | | | | | ● | ● | ● | ● | ● | | | | |
| **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 | 4,2 | | | | | | | | ● | ● | ● | ● | ● | | | | |
| **A4G0500M05P08GMP** | 5 | 5,00 | 0,8 | 25 | 4,2 | | | | | | | | ● | ● | ● | ● | ● | | | | |
| **A4G0600M06P04GMP** | 6 | 6,00 | 0,4 | 30 | 4,8 | | | | | | | | | ● | ● | ● | ● | | | | |
| **A4G0600M06P08GMP** | 6 | 6,00 | 0,8 | 30 | 4,8 | | | | | | | | | ● | ● | ● | ● | | | | |
| **A4G0800M08P08GMP** | 8 | 8,00 | 0,8 | 30 | 6,3 | | | | | | | | ● | ● | ● | ● | ● | | | | |
| **A4G0800M08P12GMP** | 8 | 8,00 | 1,2 | 30 | 6,3 | | | | | | | | | ● | ● | | | | | | |
| **A4G1000M10P08GMP** | 10 | 10,00 | 0,8 | 30 | 8,0 | | | | | | | | ● | ● | ● | ● | ● | | | | |
| **A4G1000M10P12GMP** | 10 | 10,00 | 1,2 | 30 | 8,0 | | | | | | | | | ● | ● | | | | | | |






A4G-U-GMN/A4G-P-GMN

● first choice
○ alternate choice

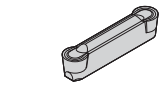
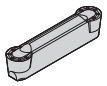
| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

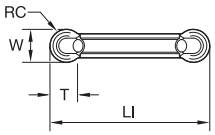
## A4G-U-GMN

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | 3,5 | | | ● | ● | | | | | ● | ● | ● | ● | | | | |
| **A4G0405M04U08GMN** | 4 | 4,05 | 0,8 | 20 | 3,5 | | | ● | ● | | | | | ● | ● | ● | ● | | | | |
| **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 | | | ● | ● | | | | | | | | ● | | | | |

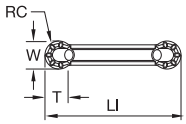
## A4G-P-GMN

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | | | | | | | | | | ● | ● | ● | | | | |
| **A4G312I08P2GMN** | 8 | 7,94 | 0,8 | 30 | 6,2 | | | | | | | | | | | | ● | | | | |
| **A4G375I10P1GMN** | 10 | 9,53 | 0,4 | 30 | 7,9 | | | | | | | | | | ● | | | | | | |
| **A4G375I10P2GMN** | 10 | 9,53 | 0,8 | 30 | 7,9 | | | | | | | | | ● | ● | ● | ● | | | | |



A4R-P-GMP



A4R-U-GMN/A4R-P-GMN

● first choice
○ alternate choice

## A4R-P-GMP

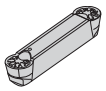
| catalogue number | seat size | W mm | RC mm | L1 mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0200M02P00GMP** | 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 | 4,9 | | | | | | | | | ● | ● | ● | ● | | | | |
| **A4R0800M08P00GMP** | 8 | 8,00 | 4,0 | 30 | 6,5 | | | | | | | | ● | ● | ● | ● | ● | | | | |
| **A4R1000M10P00GMP** | 10 | 10,00 | 5,0 | 30 | 8,1 | | | | | | | | ● | | | | | | | | |

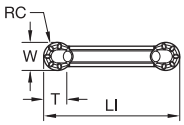
## A4R-U-GMN

| catalogue number | seat size | W mm | RC mm | L1 mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0205M02U00GMN** | 2 | 2,05 | 1,1 | 20 | 1,8 | | | ● | | | | | | ● | ● | ● | ● | | | | |
| **A4R0305M03U00GMN** | 3 | 3,05 | 1,5 | 20 | 2,6 | | | ● | ● | | | | | ● | ● | ● | ● | | | | |
| **A4R0405M04U00GMN** | 4 | 4,05 | 2,0 | 20 | 3,4 | | | ● | ● | | | | | ● | ● | ● | ● | | | | |
| **A4R0505M05U00GMN** | 5 | 5,05 | 2,5 | 25 | 4,1 | | | ● | ● | | | | | ● | ● | ● | ● | | | | |
| **A4R0605M06U00GMN** | 6 | 6,05 | 3,0 | 30 | 4,9 | | | ● | ● | | | | | ● | ● | ● | ● | | | | |
| **A4R0805M08U00GMN** | 8 | 8,05 | 4,0 | 30 | 6,5 | | | ● | ● | | | | | ● | ● | ● | ● | | | | |
| **A4R1005M10U00GMN** | 10 | 10,05 | 5,0 | 30 | 8,1 | | | | ● | | | | | ● | ● | ● | ● | | | | |

## A4R-P-GMN

| catalogue number | seat size | W mm | RC mm | L1 mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R125I03P00GMN** | 3 | 3,18 | 1,6 | 20 | 2,7 | | | | | | | | | ● | ● | ● | ● | | | | |
| **A4R187I04P00GMN** | 4 | 4,76 | 2,4 | 20 | 3,8 | | | | | | | | | ● | ● | ● | ● | | | | |
| **A4R250I06P00GMN** | 6 | 6,35 | 3,2 | 30 | 5,2 | | | | | | | | | ● | ● | ● | ● | | | | |
| **A4R312I08P00GMN** | 8 | 7,94 | 4,0 | 30 | 6,4 | | | | | | | | | ● | ● | | | | | | |
| **A4R375I10P00GMN** | 10 | 9,53 | 4,8 | 30 | 7,3 | | | | | | | | | | | ● | ● | | | | |






A4R-P-GUP/A4R-U-GUP

● first choice
○ alternate choice

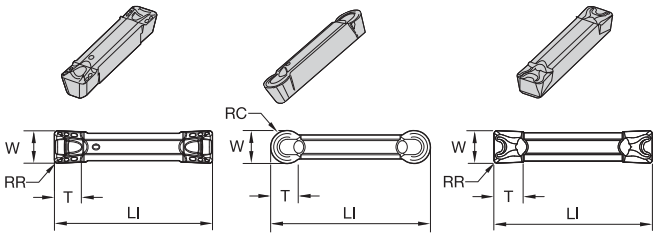
| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

## A4R-P-GUP

| catalogue number | seat size | W mm | RC mm | L1 mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0300M03P00GUP** | 3 | 3,00 | 1,5 | 20 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R0400M04P00GUP** | 4 | 4,00 | 2,0 | 20 | | | | | | | | | | | ● | | | | | |
| **A4R0500M05P00GUP** | 5 | 5,00 | 2,5 | 25 | | | | | | | | ● | | | ● | | | | | |
| **A4R0600M06P00GUP** | 6 | 6,00 | 3,0 | 30 | | | | | | | | | | | ● | | | | | |
| **A4R0800M08P00GUP** | 8 | 8,00 | 4,0 | 30 | | | | | | | | | | | ● | | | | | |
| **A4R1000M10P00GUP** | 10 | 10,00 | 5,0 | 30 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R125I03P00GUP** | 3 | 3,18 | 1,6 | 20 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R187I04P00GUP** | 4 | 4,76 | 2,4 | 20 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R250I06P00GUP** | 6 | 6,35 | 3,2 | 30 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R312I08P00GUP** | 8 | 7,94 | 4,0 | 30 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R375I10P00GUP** | 10 | 9,52 | 4,8 | 30 | | | | | | | | ● | ● | | ● | | | | | |

## A4R-U-GUP

| catalogue number | seat size | W mm | RC mm | L1 mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0305M03U00GUP** | 3 | 3,05 | 1,5 | 20 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R0505M05U00GUP** | 5 | 5,05 | 2,5 | 25 | | | | | | | | ● | ● | | ● | | | | | |
| **A4R1005M10U00GUP** | 10 | 10,05 | 5,0 | 30 | | | | | | | | ● | ● | | ● | | | | | |




A4G-SU-GUP/A4G-SP-GUP A4R-SP-GMP A4G-SU-GMN

● first choice
○ alternate choice

| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

## A4G-SU-GUP • Small Diameter Face Grooving

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | | | | | | | | | ● | | ● | | | | | |
| **A4G0405M4SU08GUP** | 4S | 4,05 | 0,8 | 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.

## A4G-SP-GUP • Small Diameter Face Grooving

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4G0200M2SP02GUP** | 2S | 2,00 | 0,2 | 20 | 1,9 | | | | | | | | | ● | | ● | | | | | |
| **A4G0300M3SP02GUP** | 3S | 3,00 | 0,2 | 20 | 2,9 | | | | | | | | | ● | | ● | | | | | |
| **A4G0300M3SP04GUP** | 3S | 3,00 | 0,4 | 20 | 2,9 | | | | | | | | | ● | | ● | | | | | |
| **A4G0400M4SP04GUP** | 4S | 4,00 | 0,4 | 20 | 3,4 | | | | | | | | | ● | | ● | | | | | |
| **A4G0400M4SP08GUP** | 4S | 4,00 | 0,8 | 20 | 3,4 | | | | | | | | | ● | | ● | | | | | |
| **A4G0500M5SP04GUP** | 5S | 5,00 | 0,4 | 25 | 4,1 | | | | | | | | | ● | | ● | | | | | |
| **A4G0500M5SP08GUP** | 5S | 5,00 | 0,8 | 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.

## A4R-SP-GMP • Small Diameter Face Grooving

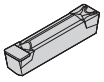
| catalogue number | seat size | W mm | RC mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0200M2SP00GMP** | 2S | 2,00 | 1,0 | 20 | 1,7 | | | | | | | | | | | ● | | | | | |
| **A4R0300M3SP00GMP** | 3S | 3,00 | 1,5 | 20 | 2,5 | | | | | | | | | | | ● | | | | | |
| **A4R0400M4SP00GMP** | 4S | 4,00 | 2,0 | 20 | 3,4 | | | | | | | | | | | ● | | | | | |
| **A4R0500M5SP00GMP** | 5S | 5,00 | 2,5 | 25 | 4,1 | | | | | | | | | | | ● | | | | | |

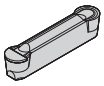
NOTE: A4-S inserts are reduced-height A4 inserts.
For example, a 2S seat size holder will not accept a seat size 2 insert.

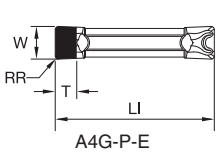
## A4G-SU-GMN • Small Diameter Face Grooving

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | | | | | | | | | ● | | ● | | | | | |
| **A4G0505M5SU08GMN** | 5S | 5,05 | 0,8 | 25 | 4,2 | | | | | | | | | ● | | ● | | | | | |

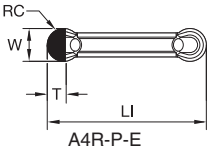
NOTE: A4-S inserts are reduced-height A4 inserts.
For example, a 2S seat size holder will not accept a seat size 2 insert.







A4G-P-E



A4R-P-E

● first choice
○ alternate choice

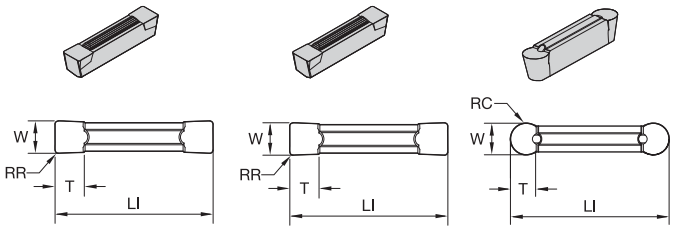
| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

## A4G-P-E • PCD Grooving

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4G0300M03P04E** | 3 | 3,00 | 0,4 | 20 | 3,5 | | | | | | | | | | | | | | ● | | |
| **A4G0400M04P04E** | 4 | 4,00 | 0,4 | 20 | 3,5 | | | | | | | | | | | | | | ● | | |
| **A4G0500M05P08E** | 5 | 5,00 | 0,8 | 25 | 4,2 | | | | | | | | | | | | | | ● | | |

## A4R-P-E • PCD Grooving

| catalogue number | seat size | W mm | RC mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0500M05P00E** | 5 | 5,00 | 2,5 | 25 | 4,1 | | | | | | | | | | | | | | ● | | |




A4G-U-B | A4G-P-T | A4R-P-T

● first choice
○ alternate choice

| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

## A4G-U-B

| catalogue number | seat size | W mm | RR mm | L1 mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | | | | | ● | | | | | | | | | | | |

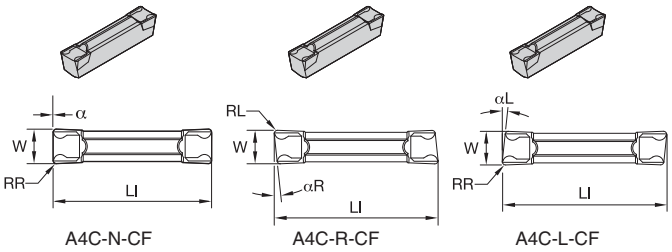
## A4G-P-T

| catalogue number | seat size | W mm | RR mm | L1 mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | | | | | | ● | | | | | | | | | | |
| **A4G187I04P2T0425** | 4 | 4,76 | 0,8 | 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 | | | | | | ● | | | | | | | | | | |

## A4R-P-T

| catalogue number | seat size | W mm | RC mm | L1 mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0300M03P00T01025** | 3 | 3,00 | 1,5 | 20 | 2,4 | | | | | | ● | | | | | | | | | | |
| **A4R125I03P00T0425** | 3 | 3,18 | 1,6 | 20 | 2,6 | | | | | | ● | | | | | | | | | | |
| **A4R0400M04P00T01025** | 4 | 4,00 | 2,0 | 20 | 3,0 | | | | | | ● | | | | | | | | | | |
| **A4R187I04P00T0425** | 4 | 4,76 | 2,4 | 20 | 4,3 | | | | | | ● | | | | | | | | | | |
| **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 | | | | | | ● | | | | | | | | | | |

Turning




A4C-N-CF A4C-R-CF A4C-L-CF

● first choice
○ alternate choice

| | | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | ● | ● | ○ | ○ | ○ | | | | | | | | ● | | | |
| M | | | | | | | | | | ● | ● | ● | ○ | | | | |
| K | | ● | ● | ● | ● | ● | ● | | ○ | | | | | | | ● | ● |
| N | | | | | | | | ● | ● | ● | ● | | | | ● | | |
| S | | | | | | | | ● | ○ | ● | ○ | ● | ○ | | | | |
| H | | | | | | | | | | ○ | | ○ | | | | ● | ● |

## A4C-N-CF

| catalogue number | seat size | W mm | RR mm | LI mm | α |
|---|---|---|---|---|---|
| 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 | – |

| catalogue number | KCU25 | KC5025 |
|---|---|---|
| A4C0155N00CF01 | ● | ● |
| A4C0205N00CF02 | ● | ● |
| A4C0255N00CF02 | ● | ● |
| A4C0305N00CF02 | ● | ● |
| A4C0405N00CF02 | ● | ● |

## A4C-R-CF

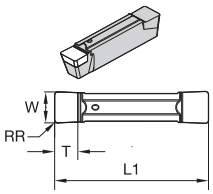
| catalogue number | seat size | W mm | RL mm | LI mm | αR |
|---|---|---|---|---|---|
| A4C0155R16CF01 | 1 | 1,50 | 0,2 | 16 | 16.0 |
| A4C0155R06CF01 | 1 | 1,50 | 0,2 | 16 | 6.0 |
| A4C0155R10CF01 | 1 | 1,50 | 0,2 | 16 | 10.0 |
| A4C0205R10CF02 | 2 | 1,99 | 0,2 | 20 | 10.0 |
| A4C0205R06CF02 | 2 | 1,99 | 0,2 | 20 | 6.0 |
| 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 |

| catalogue number | KCU25 | KC5025 |
|---|---|---|
| A4C0155R16CF01 | | ● |
| A4C0155R06CF01 | | ● |
| A4C0155R10CF01 | ● | ● |
| A4C0205R10CF02 | ● | ● |
| A4C0205R06CF02 | ● | ● |
| A4C0255R06CF02 | | ● |
| A4C0305R06CF02 | ● | ● |
| A4C0305R10CF02 | ● | ● |
| A4C0405R06CF02 | ● | ● |
| A4C0405R10CF02 | ● | ● |

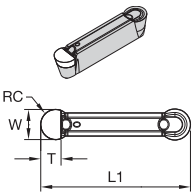
## A4C-L-CF

| catalogue number | seat size | W mm | RR mm | LI mm | αL |
|---|---|---|---|---|---|
| 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 |

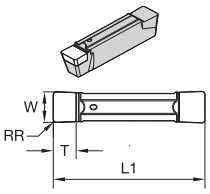
| catalogue number | KCU25 | KC5025 |
|---|---|---|
| A4C0155L06CF01 | | ● |
| A4C0205L06CF02 | ● | ● |
| A4C0205L10CF02 | | ● |
| A4C0305L06CF02 | ● | ● |
| A4C0305L10CF02 | ● | ● |
| A4C0405L06CF02 | ● | ● |
| A4C0405L10CF02 | ● | ● |



A4G-P-S-ST



A4R-P-E-ST



A4G-P-E-ST

● first choice
○ alternate choice

## A4G-P-S-ST

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | | | | | | | | | | | | | | | ● | ● |

## A4R-P-E-ST

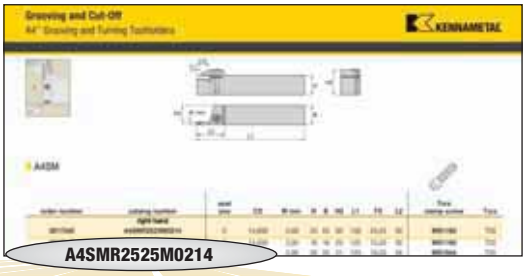
| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4R0300M03P00EST** | 3 | 3,00 | – | 20 | 2,2 | | | | | | | | | | | | | | | ● | |
| **A4R0400M04P00EST** | 4 | 4,00 | – | 20 | 2,9 | | | | | | | | | | | | | | | ● | |
| **A4R0500M05P00EST** | 5 | 5,00 | – | 25 | 3,7 | | | | | | | | | | | | | | | ● | |
| **A4R0600M06P00EST** | 6 | 6,00 | – | 30 | 4,4 | | | | | | | | | | | | | | | ● | |

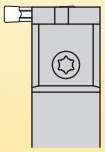
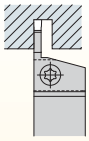
## A4G-P-E-ST

| catalogue number | seat size | W mm | RR mm | LI mm | T mm | KCP10 | KCP25 | KC9110 | KC9125 | KC9320 | KY3500 | KU10 | K313 | KCU10 | KC5010 | KCU25 | KC5025 | KT315 | KD1405 | KB1630 | KB5625 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A4G0300M03P04EST** | 3 | 3,00 | 0,4 | 20 | 3,0 | | | | | | | | | | | | | | | ● | |
| **A4G0400M04P04EST** | 4 | 4,00 | 0,4 | 20 | 3,3 | | | | | | | | | | | | | | | ● | |
| **A4G0500M05P08EST** | 5 | 5,00 | 0,8 | 25 | 3,5 | | | | | | | | | | | | | | | ● | |
| **A4G0600M06P08EST** | 6 | 6,00 | 0,8 | 30 | 4,0 | | | | | | | | | | | | | | | ● | |

# 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.




| A4 | S | M | R | 2525M | 02 | 14 |
|---|---|---|---|---|---|---|
| Tooling System | Tool Style | Support Type | Hand of Tool | Shank Size | Seat Size | Max Grooving Depth |
| **A4** = Grooving and Turning | **S** = Straight  **E** = End mounted 90° | |  **R** = Right hand **L** = Left hand **N** = Neutral | | 02 03 04 05 06 08 10 | in millimetres |

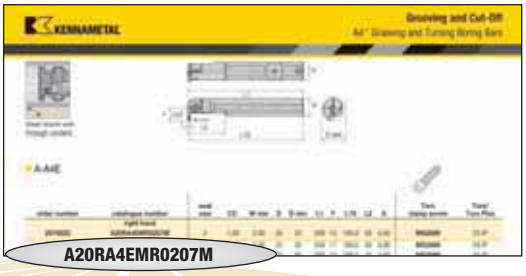
**M** =
Maximum support for specific groove widths and straight clearance for unlimited workpiece diameters

**E** =
No steel support for face grooving

**metric:**
Height x width in mm, letter indicates tool length according to ISO

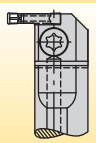
**metric tool length (mm)**
K = 125
M = 150
P = 170

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

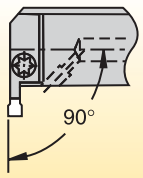


**A20RA4EMR0207M**

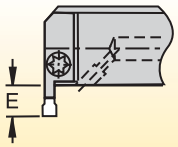
| A | 20 | R | A4 | E | M | R | 02 | 07 | M |
|---|---|---|---|---|---|---|---|---|---|
| Steel Bar with Coolant | Bar Diameter | Bar Length | A4 Groove & Turn System | Tool Style | Support Type | Hand of Tool | Insert Seat Size | Grooving Depth in mm | Tool Units |



**M** = Metric
**N** = Inch

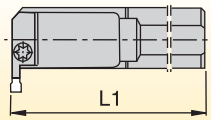



**E** = End mounted (90°)




**conversions:**

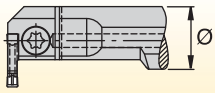
| mm | | inch |
|---|---|---|
| 7mm | = | .28" |
| 10mm | = | .39" |
| 12mm | = | .47" |
| 16mm | = | .63" |




**metric bars:**
R = 200mm
S = 250mm
T = 300mm

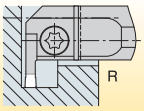
**inch bars:**
R = 8"
S = 10"
T = 12"

| pocket 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 |

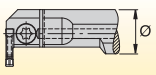



**metric bars:**
Bar diameter in millimetres

**inch bars:**
A two-digit number which indicates the bar diameter in 1/16" increments.

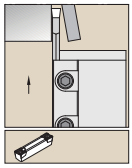


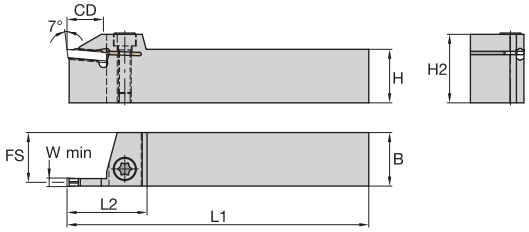

**R** = Right hand




**L** = Left hand

**M** = Maximum support



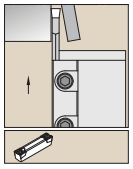


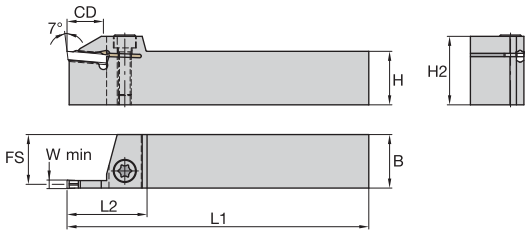

## A4SM

| order number | catalogue number | seat size | CD | W min | H | B | H2 | L1 | FS | L2 | Torx clamp screw | Torx |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | |
| 3017340 | A4SMR2525M0214 | 2 | 14,000 | 2,00 | 25 | 25 | 30 | 150 | 24,20 | 30 | MS1160 | T20 |
| 3017342 | A4SMR1616K0214 | 2 | 14,000 | 2,00 | 16 | 16 | 25 | 125 | 15,20 | 30 | MS1160 | T20 |
| 2974425 | A4SMR2020K0217 | 2 | 17,000 | 2,00 | 20 | 20 | 31 | 125 | 19,20 | 34 | MS1944 | T25 |
| 3017339 | A4SMR2525M0217 | 2 | 17,000 | 2,00 | 25 | 25 | 31 | 150 | 24,20 | 34 | MS1944 | T25 |
| 1949635 | A4SMR2020K0314 | 3 | 14,000 | 3,00 | 20 | 20 | 27 | 125 | 18,72 | 35 | MS1595 | T30 |
| 1949633 | A4SMR1616K0314 | 3 | 14,000 | 3,00 | 16 | 16 | 27 | 125 | 14,72 | 35 | MS2091 | T25 |
| 1949637 | A4SMR2525M0317 | 3 | 17,000 | 3,00 | 25 | 25 | 32 | 150 | 23,72 | 37 | MS1970 | T30 |
| 2503551 | A4SMR2020K0317 | 3 | 17,000 | 3,00 | 20 | 20 | 32 | 125 | 18,70 | 37 | MS1970 | T30 |
| 2503557 | A4SMR2016K0317 | 3 | 17,000 | 3,00 | 20 | 16 | 32 | 125 | 14,70 | 37 | MS1970 | T30 |
| 1949639 | A4SMR2020K0414 | 4 | 14,000 | 4,00 | 20 | 20 | 27 | 125 | 18,22 | 35 | MS1595 | T30 |
| 1949643 | A4SMR3225P0417 | 4 | 17,000 | 4,00 | 32 | 25 | 40 | 170 | 23,22 | 37 | MS1970 | T30 |
| 2503553 | A4SMR2020K0417 | 4 | 17,000 | 4,00 | 20 | 20 | 32 | 125 | 18,20 | 37 | MS1970 | T30 |
| 1949641 | A4SMR2525M0417 | 4 | 17,000 | 4,00 | 25 | 25 | 32 | 150 | 23,22 | 37 | MS1970 | T30 |
| 2503559 | A4SMR2016K0417 | 4 | 17,000 | 4,00 | 20 | 16 | 32 | 125 | 14,20 | 37 | MS1970 | T30 |
| 1949645 | A4SMR2020K0519 | 5 | 19,000 | 5,00 | 20 | 20 | 28 | 125 | 17,72 | 40 | MS1595 | T30 |
| 1949647 | A4SMR2525M0520 | 5 | 20,000 | 5,00 | 25 | 25 | 33 | 150 | 22,72 | 40 | MS1970 | T30 |
| 1949649 | A4SMR3225P0522 | 5 | 22,000 | 5,00 | 32 | 25 | 40 | 170 | 22,72 | 42 | MS1970 | T30 |
| 2503555 | A4SMR2020K0620 | 6 | 20,000 | 6,00 | 20 | 20 | 33 | 125 | 17,30 | 40 | MS1970 | T30 |
| 2245484 | A4SMR2525M0620 | 6 | 20,000 | 6,00 | 25 | 25 | 33 | 150 | 22,30 | 40 | MS1970 | T30 |
| 2263089 | A4SMR3225P0626 | 6 | 26,000 | 6,00 | 32 | 25 | 40 | 170 | 22,30 | 45 | MS1970 | T30 |
| 2245485 | A4SMR2525M0820 | 8 | 20,000 | 8,00 | 25 | 25 | 34 | 150 | 21,40 | 43 | MS1490 | T45 |
| 2263091 | A4SMR3225P0826 | 8 | 26,000 | 8,00 | 32 | 25 | 41 | 170 | 21,40 | 47 | MS1490 | T45 |
| 2263173 | A4SMR3225P1026 | 10 | 26,000 | 10,00 | 32 | 25 | 41 | 170 | 20,80 | 47 | MS1490 | T45 |
| 3017341 | A4SMR2020K0214 | 2 | 14,000 | – | 20 | 20 | 25 | 125 | 19,20 | 30 | MS1160 | T20 |

*(continued)*

*(A4SM continued)*





| order number | catalogue number | seat size | CD | W min | H | B | H2 | L1 | FS | L2 | Torx clamp screw | Torx |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **left hand** | | | | | | | | | | | |
| **3017338** | **A4SML1616K0214** | 2 | 14,000 | 2,00 | 16 | 16 | 25 | 125 | 15,20 | 30 | **MS1160** | T20 |
| **3017335** | **A4SML2525M0214** | 2 | 14,000 | 2,00 | 25 | 25 | 30 | 150 | 24,20 | 30 | **MS1160** | T20 |
| **3017337** | **A4SML2020K0217** | 2 | 17,000 | 2,00 | 20 | 20 | 31 | 125 | 19,20 | 34 | **MS1944** | T25 |
| **3017334** | **A4SML2525M0217** | 2 | 17,000 | 2,00 | 25 | 25 | 31 | 150 | 24,20 | 34 | **MS1944** | T25 |
| **1949636** | **A4SML2020K0314** | 3 | 14,000 | 3,00 | 20 | 20 | 27 | 125 | 18,72 | 35 | **MS1595** | T30 |
| **1949634** | **A4SML1616K0314** | 3 | 14,000 | 3,00 | 16 | 16 | 27 | 125 | 14,72 | 35 | **MS2091** | T25 |
| **2503550** | **A4SML2020K0317** | 3 | 17,000 | 3,00 | 20 | 20 | 32 | 125 | 18,70 | 37 | **MS1970** | T30 |
| **1949638** | **A4SML2525M0317** | 3 | 17,000 | 3,00 | 25 | 25 | 32 | 150 | 23,72 | 37 | **MS1970** | T30 |
| **2503556** | **A4SML2016K0317** | 3 | 17,000 | 3,00 | 20 | 16 | 32 | 125 | 14,70 | 37 | **MS1970** | T30 |
| **1949640** | **A4SML2020K0414** | 4 | 14,000 | 4,00 | 20 | 20 | 27 | 125 | 18,22 | 35 | **MS1595** | T30 |
| **1949642** | **A4SML2525M0417** | 4 | 17,000 | 4,00 | 25 | 25 | 32 | 150 | 23,22 | 37 | **MS1970** | T30 |
| **2503552** | **A4SML2020K0417** | 4 | 17,000 | 4,00 | 20 | 20 | 32 | 125 | 18,20 | 37 | **MS1970** | T30 |
| **2503558** | **A4SML2016K0417** | 4 | 17,000 | 4,00 | 20 | 16 | 32 | 125 | 14,20 | 37 | **MS1970** | T30 |
| **1949644** | **A4SML3225P0417** | 4 | 17,000 | 4,00 | 32 | 25 | 40 | 170 | 23,22 | 37 | **MS1970** | T30 |
| **1949646** | **A4SML2020K0519** | 5 | 19,000 | 5,00 | 20 | 20 | 28 | 125 | 17,72 | 40 | **MS1595** | T30 |
| **1949648** | **A4SML2525M0520** | 5 | 20,000 | 5,00 | 25 | 25 | 33 | 150 | 22,72 | 40 | **MS1970** | T30 |
| **1949650** | **A4SML3225P0522** | 5 | 22,000 | 5,00 | 32 | 25 | 40 | 170 | 22,72 | 42 | **MS1970** | T30 |
| **2245486** | **A4SML2525M0620** | 6 | 20,000 | 6,00 | 25 | 25 | 33 | 150 | 22,30 | 40 | **MS1970** | T30 |
| **2503554** | **A4SML2020K0620** | 6 | 20,000 | 6,00 | 20 | 20 | 33 | 125 | 17,30 | 40 | **MS1970** | T30 |
| **2263090** | **A4SML3225P0626** | 6 | 26,000 | 6,00 | 32 | 25 | 40 | 170 | 22,30 | 45 | **MS1970** | T30 |
| **2245487** | **A4SML2525M0820** | 8 | 20,000 | 8,00 | 25 | 25 | 34 | 150 | 21,40 | 43 | **MS1490** | T45 |
| **2263092** | **A4SML3225P0826** | 8 | 26,000 | 8,00 | 32 | 25 | 41 | 170 | 21,40 | 47 | **MS1490** | T45 |
| **2263174** | **A4SML3225P1026** | 10 | 26,000 | 10,00 | 32 | 25 | 41 | 170 | 20,80 | 47 | **MS1490** | T45 |
| **3017336** | **A4SML2020K0214** | 2 | 14,000 | – | 20 | 20 | 25 | 125 | 19,20 | 30 | **MS1160** | T20 |

# Beyond™ Top Notch™ Profiling

## Primary Application

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

### Beyond™ Grades

**Higher Productivity and Profitability**

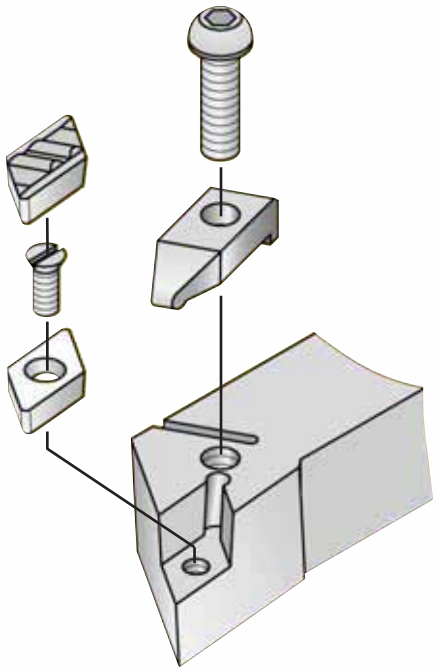
- Lower cutting forces increase speeds and reduce cycle time.
- Extended tool life.

**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 alloy.



## 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.
- Excellent in spindle and other boring applications.

## UF Geometry

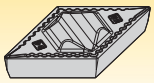
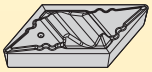
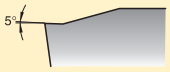
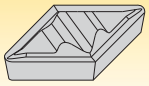
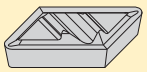
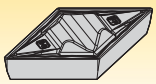
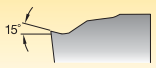
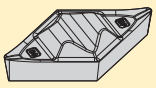
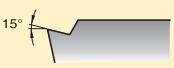
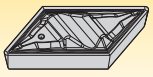
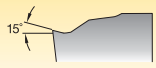
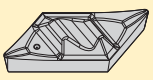
- Reduces cutting forces.
- Long tool life.
- Optimum chip control over wide range of cutting conditions.
- Chip control in finishing applications.

## HP Geometry

- Reduces cutting forces.
- Long tool life.
- Interference is avoided improving surface finish of the workpiece.
- Better indexability.
- Good control over job dimensions.
- Reduces workpiece material sticking.

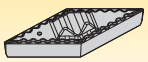
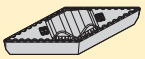
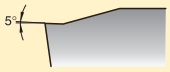
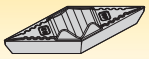
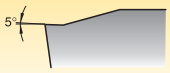
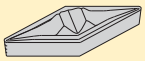
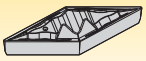
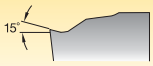
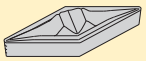
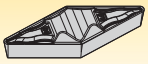
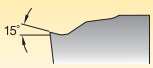
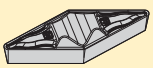
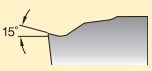
## Select the geometry — based on feed rate and depth of cut

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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<br>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<br>0,1–1,3 |
| | KCGR-UF |  |  | 0,1–0,3<br>0,1–1,3 |
| finishing | DCGR |  | | 0,1–0,3<br>0,3–1,8 |
| | KCGR |  | | 0,1–0,3<br>0,3–1,8 |
| | DCGR-FP |  |  | 0,063–0,25<br>0,16–1,6 |
| | DCGR-HP |  |  | 0,2–0,4<br>0,6–2,3 |
| | KCGR-FP |  |  | 0,063–0,25<br>0,16–1,6 |
| | KCGR-HP |  | | 0,2–0,4<br>0,6–2,3 |

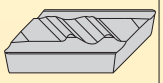
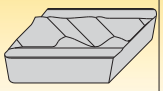
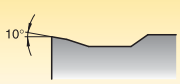
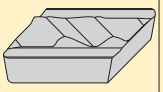
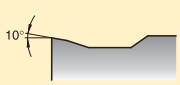
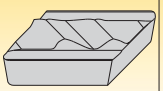
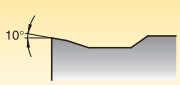
## Select the geometry — based on feed rate and depth of cut

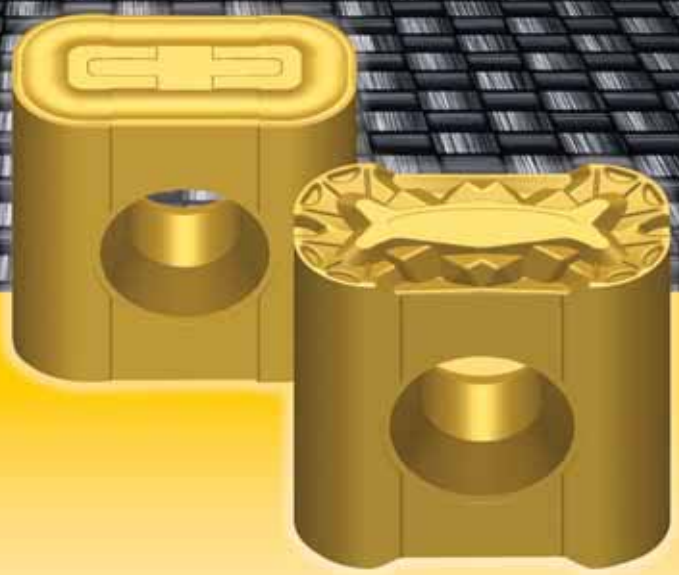
| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

| 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<br>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 | VBMR-UF |  | | 0,1–0,3<br>0,1–1,3 |
| | VCMR-UF |  |  | 0,1–0,3<br>0,1–1,3 |
| | VPGR-UF |  |  | 0,1–0,3<br>0,1–1,3 |
| finishing | VBMR |  | | 0,1–0,4<br>0,3–2,0 |
| | VBMR-FP |  |  | 0,063–0,25<br>0,16–1,6 |
| | VCGR |  | | 0,1–0,4<br>0,3–2,0 |
| | VCMR-FP |  |  | 0,063–0,25<br>016–1,6 |
| | VPGR-FP |  |  | 0,063–0,25<br>016–1,6 |

## Select the geometry — based on feed rate and depth of cut

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| 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<br>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 | **VPGR-HP** | | | 0,2–0,4<br>0,6–2,3 |
| finishing | **KNGX-15** |  | | 0,2–0,4<br>0,8–2,8 |
| finishing | **KNGX-20** |  |  | 0,2–0,5<br>1,0–3,0 |
| | **KNGX-25** |  |  | 0,3–0,6<br>1,1–3,6 |
| finishing | **KNGX-32** |  |  | 0,3–0,7<br>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 in tooling technology for maximum metal removal and higher productivity. All tools 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.

Visit **www.kennametal.com** or contact your local Authorised Kennametal Distributor.

**www.kennametal.com**

KENNAMETAL®

## Step 1 • Select the insert geometry

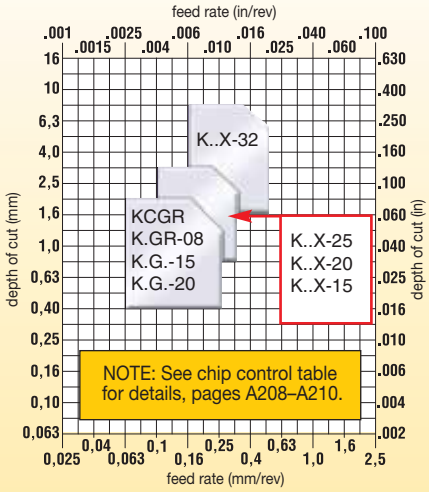
beyond

### Negative Inserts

-K...X-32
Roughing

-K...X-25—K...X-15,
Medium Machining

-K. GR-08, K.G.-15,
K.G.-20
Finishing



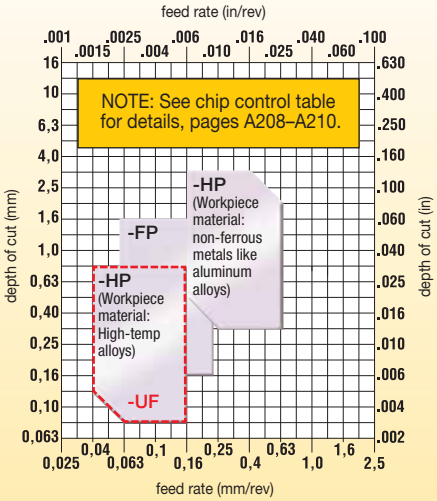

### Positive Inserts

-VCMR
Medium Machining

-.CGR, VBMR
Finishing

-VCGN
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 0,2–0,4 mm/rev; DOC 0,6–2,3mm

## Step 2 • Select the grade

| | | Steel | | | Stainless Steel | | |
|---|---|---|---|---|---|---|---|
| **cutting condition** | | **Finishing** | **Medium Machining** | **Roughing** | **Finishing** | **Medium Machining** | **Roughing** |
| heavily interrupted cut | | KCP25 | KCM25 | KCM25 | KCM25 | KCM25 | KCM25 |
| lightly interrupted cut | | KCP10 | KCP25 | KCP25 | KC5010/KCU10 | KC5025/KCU25 | KC5025/KCU25 |
| varying depth of cut, casting, or forging skin | | KT315 | KCP25 | KCP25 | KT315 | KCM25 | KCM25 |
| smooth cut, pre-turned surface | | KT315 | KCP05/KCP10 | KCP10 | KT315 | KC5010/KCU10 | KCM25 |

| | | Cast Iron | | | Non-Ferrous | | |
|---|---|---|---|---|---|---|---|
| **cutting condition** | | **Finishing** | **Medium Machining** | **Roughing** | **Finishing** | **Medium Machining** | **Roughing** |
| heavily interrupted cut | | KCP10 | KCP10 | KCP10 | KC5010/ KCU10 | KC5010/ KCU10 | KC5010/ K313/KCU10 |
| lightly interrupted cut | | KCP05 | KCP05 | KCP05 | KC5410/ KD1425 | KC5010/KCU10 | KC5010 |
| varying depth of cut, casting, or forging skin | | KCK05 | KCK05 | KCK05 | KD1425 | KC5410 | KC5410 |
| smooth cut, pre-turned surface | | KC5010/KCU10 | KC5010/KCU10 | KC5010/KCU10 | KD1425 | KC5410 | KC5410 |

| | High-Temperature Alloys | | |
|---|---|---|---|
| **cutting condition** | **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 | KC9110 | KC5010 |

## Step 3 • Select the cutting speed

**Steel** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 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** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 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** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 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 |

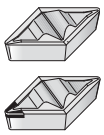
**Non-Ferrous** — speed — m/min (SFM) — starting conditions ◁▷

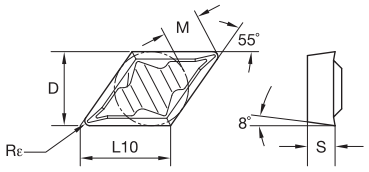
| material group | grade | 250 (800) | 500 (1600) | 750 (2400) | 1000 (3200) | 1250 (4000) | 1500 (4800) | 1750 (5600) | 2000 (6400) | m/min | SFM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N | K01425 | | | ◁▷ | | | | | | 765 | 2500 |
| | KC5410 | | | ◁▷ | | | | | | 550 | 1800 |
| | KC5010/KCU10 | | ◁▷ | | | | | | | 460 | 1500 |
| | K68/K313 | ◁▷ | | | | | | | | 150 | 500 |

**High-Temperature Alloys** — speed — m/min (SFM) — starting conditions ◁▷

| material group | grade | 15 (50) | 40 (120) | 55 (180) | 80 (250) | 100 (330) | 170 (550) | 200 (655) | 230 (750) | 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.



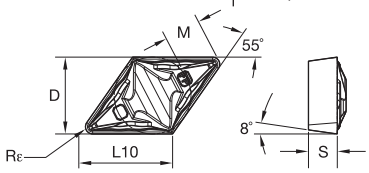



● first choice
○ alternate choice

| | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | | | ○ | ○ | ○ | ○ | | ● | | |
| M | | | | | | | ● | ● | ● | ● | ● | | ○ | | |
| K | | | ○ | ○ | ○ | ● | | | | | | | ○ | | |
| N | ○ | ○ | | | | | | | | | | ● | | ● | |
| S | ● | ● | | | | | ● | ● | ● | ● | ● | | | | ● |
| H | | | | | | | | | | | | | | | |

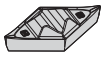
## DCGR • DPGR

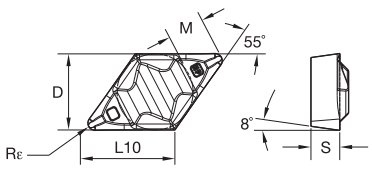
| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCGR150404 | 12,70 | 15,50 | 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

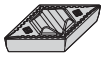
| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCGR150404FP | 12,70 | 15,50 | 4,76 | 6,94 | 0,4 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| DCGR150408FP | 12,70 | 15,50 | 4,76 | 6,48 | 0,8 | | | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| DCGR150412FP | 12,70 | 15,50 | 4,76 | 6,01 | 1,2 | | | | ● | ● | ● | | ● | ● | | | | | | |

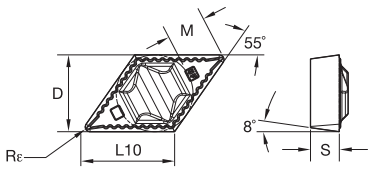





## DCGR-HP • DPGR-HP

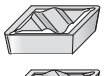
| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCGR150404HP | 12,55 | 15,50 | 4,76 | 7,02 | 0,4 | | ● | | | | | | | | | | | | | |
| DCGR150408HP | 12,70 | 15,50 | 4,76 | 6,48 | 0,8 | | ● | | | | | | | | | | | | | |
| DCGR150412HP | 12,70 | 15,50 | 4,76 | 6,01 | 1,2 | | ● | | | | | | | | | | | | | |

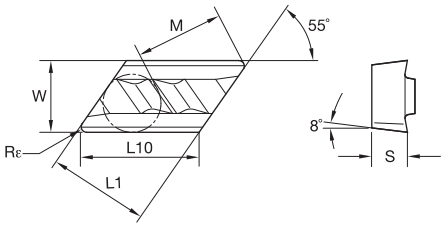





## DCGR-UF • DPGR-UF

| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCGR150404UF | 12,70 | 15,50 | 4,76 | 6,94 | 0,4 | | | ● | | | | | ● | | | | | | | |
| DCGR150408UF | 12,70 | 15,50 | 4,76 | 6,48 | 0,8 | | | ● | | | | | ● | | | | | | | |



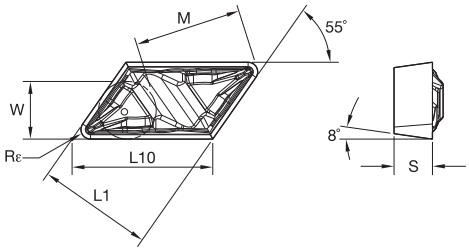



● first choice
○ alternate choice

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

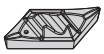
## KCGR • NPGR

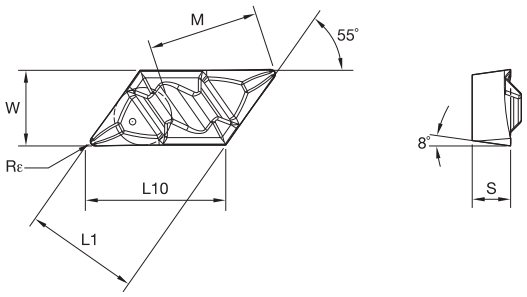
| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | |
| KCGR110304L08 | 9,53 | 11,60 | 6,35 | 3,18 | 9,10 | 0,4 | ● | | | | | | | ● | ● | ● | ● | | ● | | ● |
| KCGR110308L08 | 9,53 | 11,60 | 6,35 | 3,18 | 8,66 | 0,8 | | | | | | | | ● | ● | | ● | | | | ● |




## KCGR-FP • NPGR-FP

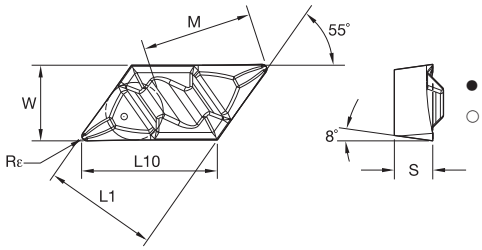
| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | |
| KCGR110304L08FP | 9,52 | 11,60 | 6,35 | 3,18 | 9,13 | 0,4 | | | | ● | ● | | ● | ● | ● | | | | | | |
| KCGR110308L08FP | 9,52 | 11,63 | 6,35 | 3,18 | 8,73 | 0,8 | | | | ● | ● | | ● | ● | ● | | | | | | |



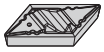



## KCGR-HP • NPGR-HP

| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | | | | | | | | |
| KCGR110304R08HP | 9,50 | 11,60 | 6,35 | 3,18 | 9,13 | 0,4 | | ● | | | | | | | | | | | | | |
| left hand | | | | | | | | | | | | | | | | | | | | | |
| KCGR110304L08HP | 9,50 | 11,60 | 6,35 | 3,18 | 9,13 | 0,4 | | ● | | | | | | | | | | | | | |

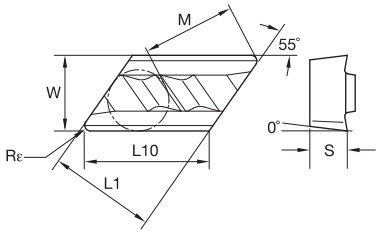



● first choice
○ alternate choice



## KCGR-UF • NPGR-UF

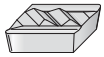
| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | | | | | | | |
| **KCGR110304R08UF** | 9,50 | 11,60 | 6,35 | 3,18 | 9,13 | 0,4 | | | ● | | | | | ● | | | | | | | |
| **left hand** | | | | | | | | | | | | | | | | | | | | | |
| **KCGR110304L08UF** | 9,50 | 11,60 | 6,35 | 3,18 | 9,13 | 0,4 | | | ● | | | | | ● | | | | | | | |

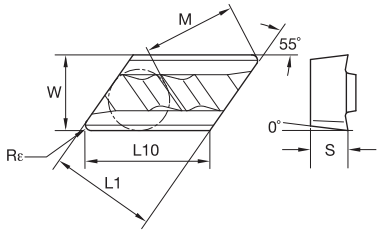


## KNGX • NPR/L

| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm |
|---|---|---|---|---|---|---|
| **right hand** | | | | | | |
| **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 |
| **KNGX150404R20** | 12,70 | 15,44 | 9,53 | 4,76 | 13,44 | 0,4 |
| **KNGX150408R20** | 12,70 | 15,44 | 9,53 | 4,76 | 12,98 | 0,8 |
| **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** | | | | | | |
| **KNGX150401L15** | 12,70 | 15,44 | 9,53 | 4,76 | 13,76 | 0,1 |
| **KNGX150404L20** | 12,70 | 15,44 | 9,53 | 4,76 | 13,44 | 0,4 |
| **KNGX150408L20** | 12,70 | 15,44 | 9,53 | 4,76 | 12,98 | 0,8 |
| **KNGX220404L25** | 18,62 | 22,73 | 9,53 | 4,76 | 19,91 | 0,4 |
| **KNGX220408L20** | 18,62 | 22,73 | 9,53 | 4,76 | 19,47 | 0,8 |
| **KNGX220408L25** | 18,62 | 22,73 | 9,53 | 4,76 | 19,47 | 0,8 |

| ISO catalogue number | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KNGX150401R15** | ● | | | | | | | ● | | | | | | | |
| **KNGX150402R15** | | | | | | | | ● | | | | | | | |
| **KNGX150404R20** | | | | | | | | ● | ● | ● | | | | | |
| **KNGX150408R20** | | | | | | | | ● | ● | ● | | | | | |
| **KNGX220404R25** | | | | | | | | | ● | | | | | | |
| **KNGX220408R32** | | | | | | | | ● | | | | | | | |
| **KNGX150401L15** | | | | | | | | ● | | | | | | | |
| **KNGX150404L20** | | | | | | | | ● | ● | ● | | | | | |
| **KNGX150408L20** | ● | | | | | | | ● | ● | ● | ● | | | | |
| **KNGX220404L25** | | | | | | | | ● | ● | | | | | | |
| **KNGX220408L20** | | | | | | | | ● | | | | | | | |
| **KNGX220408L25** | | | | | | | | ● | | | | | | | |

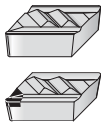


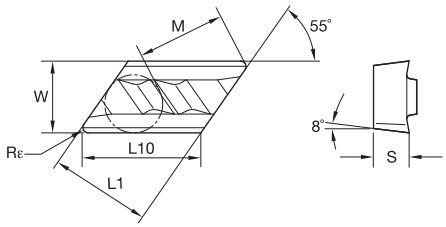



● first choice
○ alternate choice

## KNUX • NPR/L

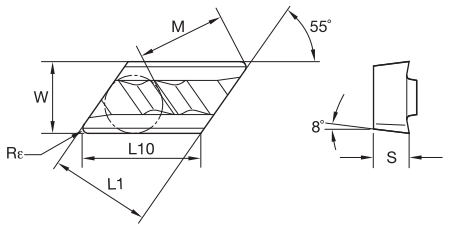
| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | | | | | | | |
| **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 | ● | | | | | | | | | | | | | | |
| **KNUX150410R20** | 12,70 | 15,44 | 9,53 | 4,76 | 12,74 | 1,0 | ● | | | | | | | | | ● | | | | | |
| **KNUX150410R25** | 12,70 | 15,44 | 9,53 | 4,76 | 12,74 | 1,0 | ● | | | | | | | ● | | | | | | | |
| **left hand** | | | | | | | | | | | | | | | | | | | | | |
| **KNUX150405L20** | 12,70 | 15,44 | 9,53 | 4,76 | 13,32 | 0,5 | | | | | | | | | | ● | | | | | |
| **KNUX150405L25** | 12,70 | 15,44 | 9,53 | 4,76 | 13,32 | 0,5 | ● | | | | | | | ● | | | | | | | |
| **KNUX150410L20** | 12,70 | 15,44 | 9,53 | 4,76 | 12,74 | 1,0 | ● | | | | | | | | | | | | | | |
| **KNUX150410L25** | 12,70 | 15,44 | 9,53 | 4,76 | 12,74 | 1,0 | ● | | | | | | | ● | | | | | | | |






## KCGX • NPR/L

| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | 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** | 9,53 | 11,60 | 6,35 | 3,18 | 8,65 | 0,8 | ● | | | | | | | ● | ● | ● | ● | | ● | | |
| **left hand** | | | | | | | | | | | | | | | | | | | | | |
| **KCGX110301L15** | 9,53 | 11,60 | 6,35 | 3,18 | 9,43 | 0,1 | ● | ● | | | | | | ● | ● | ● | | | | | ● |
| **KCGX110302L15** | 9,53 | 11,60 | 6,35 | 3,18 | 9,34 | 0,2 | | ● | | | | | | ● | ● | | | | | | ● |
| **KCGX110304L15** | 9,53 | 11,60 | 6,35 | 3,18 | 9,11 | 0,4 | ● | ● | | | | | | ● | ● | ● | ● | | | | ● |
| **KCGX110308L15** | 9,53 | 11,60 | 6,35 | 3,18 | 8,65 | 0,8 | ● | ● | | | | | | ● | ● | ● | ● | | | | |

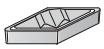


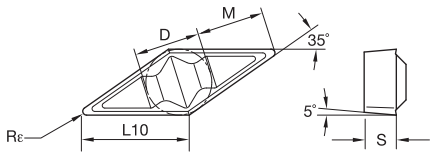

● first choice
○ alternate choice

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

## KCUX • NPR/L

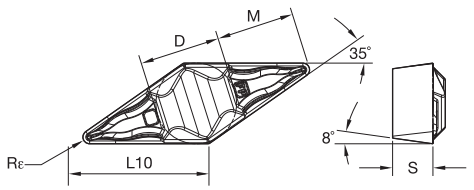
| ISO catalogue number | L1 mm | L10 mm | W mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | | | | | | | |
| **KCUX110302R15** | 9,53 | 11,60 | 6,35 | 3,18 | 9,32 | 0,2 | ● | | | | | | | ● | | ● | | | | | |
| **KCUX110305R15** | 9,53 | 11,60 | 6,35 | 3,18 | 8,97 | 0,5 | ● | | | | | | | ● | | ● | | | | | |
| **left hand** | | | | | | | | | | | | | | | | | | | | | |
| **KCUX110302L15** | 9,53 | 11,60 | 6,35 | 3,18 | 9,32 | 0,2 | ● | | | | | | | ● | | ● | | | | | |
| **KCUX110305L15** | 9,53 | 11,60 | 6,35 | 3,18 | 8,97 | 0,5 | ● | | | | | | | ● | | ● | | | | | |





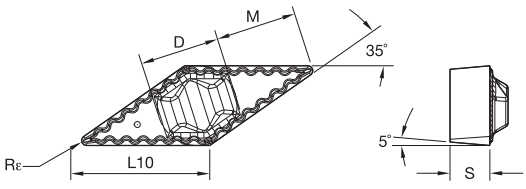

## VBMR

| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VBMR110302** | 6,35 | 11,07 | 3,18 | 6,91 | 0,2 | | | | | | | | ● | ● | | ● | | | | |
| **VBMR110304** | 6,35 | 11,07 | 3,18 | 6,46 | 0,4 | | | | | | | | ● | ● | ● | ● | | ● | | |
| **VBMR110308** | 6,35 | 11,07 | 3,18 | 5,54 | 0,8 | | | | | | | | ● | | | ● | | | | |




## VBMR - FP

| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | 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 | | | | ● | ● | | ● | ● | ● | | | | | | |



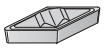

## VBMR - UF

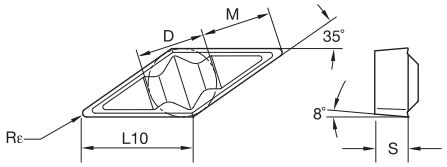
| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VBMR110302UF** | 6,35 | 11,07 | 3,18 | 6,91 | 0,2 | | | ● | | | | | ● | | | | | | | |
| **VBMR110304UF** | 6,35 | 11,07 | 3,18 | 6,46 | 0,4 | | | ● | | | | | ● | | | | | | | |

● first choice
○ alternate choice

| | | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | | ● | ● | ● | | | ○ | ○ | ○ | ○ | | ● | | |
| M | | | | | | | | ● | ● | ● | ● | ● | | ○ | | |
| K | | | | ○ | ○ | ○ | ● | | | | | | | ○ | | |
| N | | ○ | ○ | | | | | | | | | | ● | | ● | |
| S | | ● | ● | | | | | ● | ● | ● | ● | ● | | | | ● |
| H | | | | | | | | | | | | | | | | |

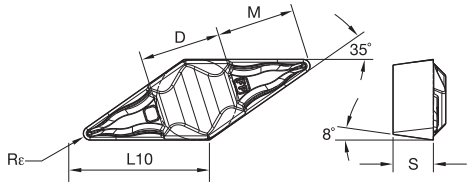
## VCMR





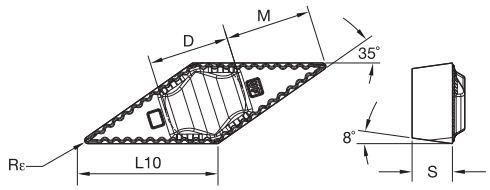

| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm |
|---|---|---|---|---|---|
| VCMR160404 | 9,53 | 16,61 | 4,76 | 10,15 | 0,4 |
| VCMR160408 | 9,53 | 16,61 | 4,76 | 9,23 | 0,8 |

## VCMR - FP



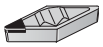

| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm |
|---|---|---|---|---|---|
| VCMR160404FP | 9,52 | 16,61 | 4,76 | 10,15 | 0,4 |
| VCMR160408FP | 9,52 | 16,61 | 4,76 | 9,23 | 0,8 |

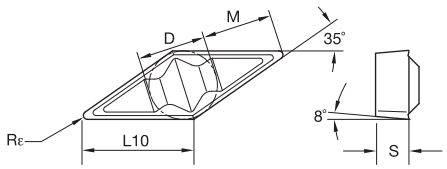
## VCMR - UF




| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm |
|---|---|---|---|---|---|
| VCMR160404UF | 9,52 | 16,61 | 4,76 | 10,15 | 0,4 |

## VPGN

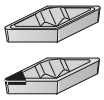


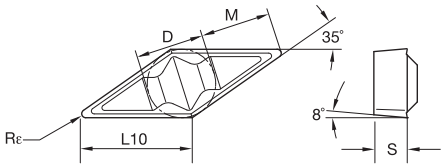



| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm |
|---|---|---|---|---|---|
| VCGN160404 | 9,53 | 16,61 | 4,76 | 10,15 | 0,4 |
| VCGN160408 | 9,53 | 16,61 | 4,76 | 9,23 | 0,8 |
| VCGN160412 | 9,53 | 16,61 | 4,76 | 8,31 | 1,2 |

● first choice
○ alternate choice

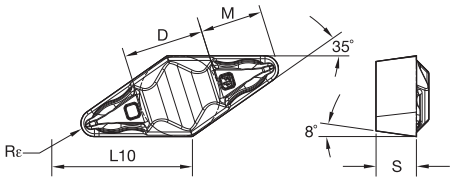
| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | | ● | ● | ● | | | ○ | ○ | ○ | ○ | | ● | | |
| M | | | | | | | ● | ● | ● | ● | ● | | ○ | | |
| K | | | ○ | ○ | ○ | ● | | | | | | | ○ | | |
| N | ○ | ○ | | | | | | | | | | ● | | ● | |
| S | ● | ●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





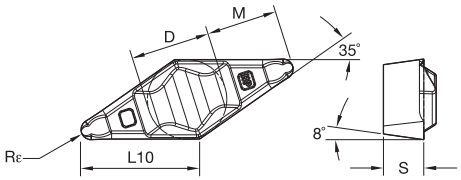

## VCGR • VPGR

| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VCGR160402 | 9,53 | 16,61 | 4,76 | 10,60 | 0,2 | ● | | | | | | | ● | ● | ● | ● | ● | | | |
| VCGR160404 | 9,53 | 16,61 | 4,76 | 10,15 | 0,4 | ● | ● | | | | | | ● | ● | ● | ● | ● | ● | | ● |
| VCGR160408 | 9,53 | 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 | | | | | | | | ● | | ● | | | | | |



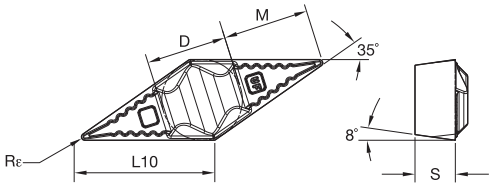

## VCGR-FP • VPGR-FP

| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | 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 | | | | ● | ● | | ● | ● | ● | | | | | | |



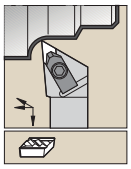

## VCGR-HP • VPGR-HP

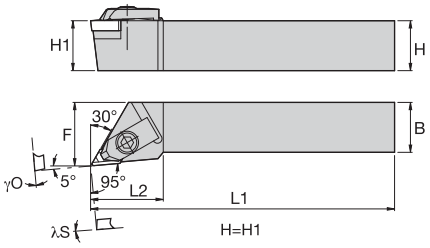
| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VCGR160402HP | 9,52 | 16,65 | 4,76 | 10,60 | 0,2 | | ● | | | | | | | | | | | | | |
| VCGR160404HP | 9,52 | 16,61 | 4,76 | 10,23 | 0,4 | | ● | | | | | | | | | | | | | |
| VCGR160408HP | 9,52 | 17,16 | 4,76 | 9,23 | 0,8 | | ● | | | | | | | | | | | | | |
| VCGR160412HP | 9,52 | 16,35 | 4,76 | 8,31 | 1,2 | | ● | | | | | | | | | | | | | |




## VCGR-UF • VPGR-UF

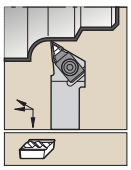
| ISO catalogue number | D mm | L10 mm | S mm | M mm | Rε mm | K68 | K313 | KCP05 | KCP10 | KCP25 | KCK05 | KCM25 | KCU10 | KCU25 | KC5010 | KC5025 | KC5410 | KT315 | KB1345 | KD1425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VCGR160402UF | 9,52 | 16,61 | 4,76 | 10,60 | 0,2 | | | ● | | | | | ● | | | | | | | |
| VCGR160404UF | 9,52 | 16,61 | 4,76 | 10,15 | 0,4 | | | ● | | | | | ● | | | | | | | |

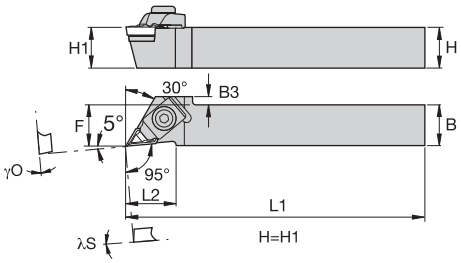





## NKLC 95°

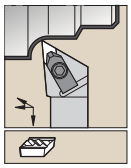
| catalogue number | H | B | F | L1 | L2 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **NKLCR1212F11** | 12 | 12 | 16,0 | 80 | 24,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **NKLCR1616H11** | 16 | 16 | 20,0 | 100 | 24,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **NKLCR2020K11** | 20 | 20 | 25,0 | 125 | 24,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **NKLCR2525M11** | 25 | 25 | 32,0 | 150 | 24,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **left hand** | | | | | | | | | | | | | | |
| **NKLCL1212F11** | 12 | 12 | 16,0 | 80 | 24,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **NKLCL1616H11** | 16 | 16 | 20,0 | 100 | 24,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **NKLCL2020K11** | 20 | 20 | 25,0 | 125 | 24,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **NKLCL2525M11** | 25 | 25 | 32,0 | 150 | 24,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |

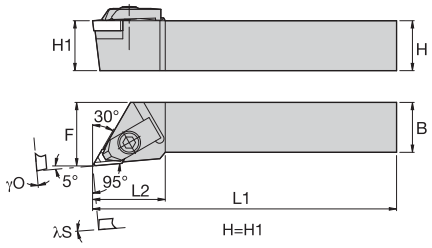




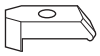

## NKLC-F 95°

| catalogue number | H | B | F | L1 | L2 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **NKLCRF1212M11Q** | 12 | 12 | 12,0 | 150 | 24,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM180** | **MS524** | 3 mm |
| **NKLCRF1616K11Q** | 16 | 16 | 16,0 | 125 | 24,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM180** | **MS524** | 3 mm |
| **left hand** | | | | | | | | | | | | | | |
| **NKLCLF1616K11Q** | 16 | 16 | 16,0 | 125 | 24,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | CM180 | **MS524** | 3 mm |

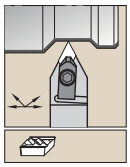


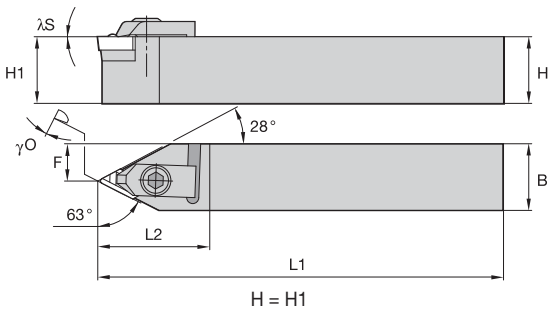



## NKLN 95°

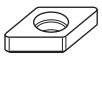


| catalogue number | H | B | F | L1 | L2 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **NKLNR2020K15** | 20 | 20 | 25,0 | 125 | 32,0 | -2.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| **NKLNR2525M15** | 25 | 25 | 32,0 | 150 | 32,0 | -2.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| **NKLNR3225P15** | 32 | 25 | 32,0 | 170 | 32,0 | -2.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| **left hand** | | | | | | | | | | | | | | |
| **NKLNL2020K15** | 20 | 20 | 25,0 | 125 | 32,0 | -2.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| **NKLNL2525M15** | 25 | 25 | 32,0 | 150 | 32,0 | -2.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |

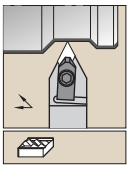


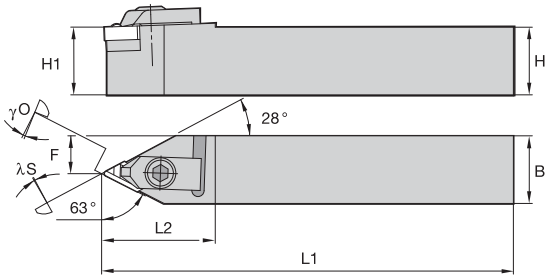



## NKNC 63°



| catalogue number | H | B | F | L1 | L2 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **NKNCR1616H11** | 16 | 16 | 9,0 | 100 | 27,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **left hand** | | | | | | | | | | | | | | |
| **NKNCL1616H11** | 16 | 16 | 9,0 | 100 | 27,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |

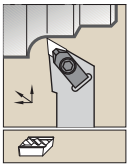


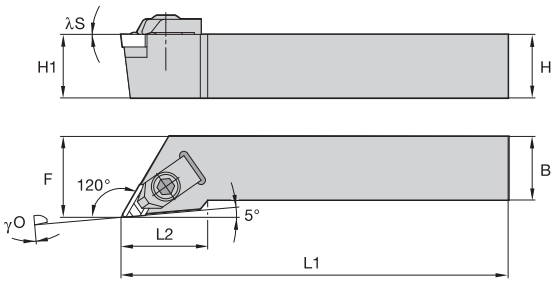



H = H1

## NKNN 63°

| catalogue number | H | B | F | L1 | L2 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | |
| **NKNNR2020K15** | 20 | 20 | 12,0 | 125 | 37,0 | -2.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| **NKNNR2525M15** | 25 | 25 | 12,0 | 150 | 37,0 | -2.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| left hand | | | | | | | | | | | | | | |
| **NKNNL2020K15** | 20 | 20 | 12,0 | 125 | 37,0 | -2.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| **NKNNL2525M15** | 25 | 25 | 12,0 | 150 | 37,0 | -2.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |

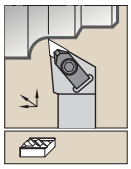


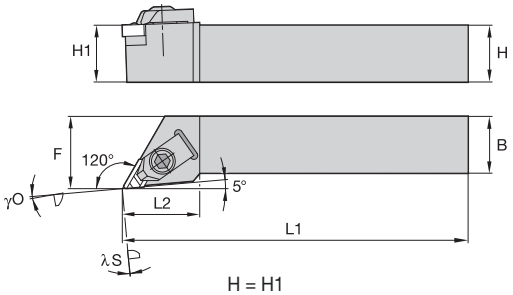



H = H1

## NKXC 120°

| catalogue number | H | B | F | L1 | L2 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | |
| **NKXCR1212F11** | 12 | 12 | 16,0 | 80 | 27,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **NKXCR1616H11** | 16 | 16 | 20,0 | 100 | 27,0 | 0.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| left hand | | | | | | | | | | | | | | |
| **NKXCL1616H11** | 16 | 16 | 20,0 | 100 | 27,0 | 0.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |

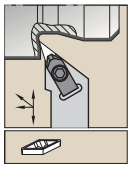


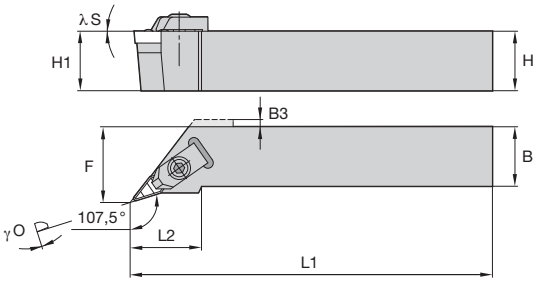



H = H1

## NKXN 120°

| catalogue number | H | B | F | L1 | L2 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **NKXNR2525M15** | 25 | 25 | 32,0 | 150 | 35,0 | -2.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |
| **left hand** | | | | | | | | | | | | | | |
| **NKXNL2525M15** | 25 | 25 | 32,0 | 150 | 35,0 | -2.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS625** | 4 mm |

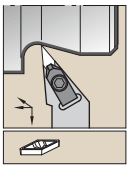


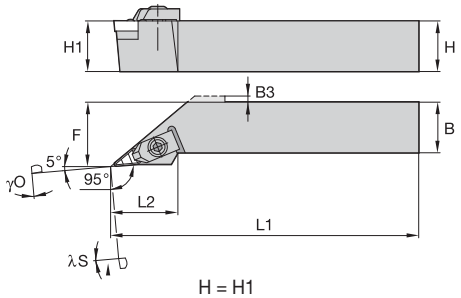



H = H1

## NVHB 107,5°

| catalogue number | H | B | F | L1 | L2 | B3 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | |
| **NVHBR1616H11** | 16 | 16 | 20,0 | 100 | 25,0 | 3,0 | 0.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |
| **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** | | | | | | | | | | | | | | | |
| **NVHBL1616H11** | 16 | 16 | 20,0 | 100 | 25,0 | 3,0 | 0.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 4 mm | **CM159** | **MS518** | 4 mm |
| **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 |

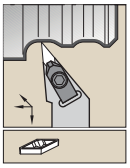


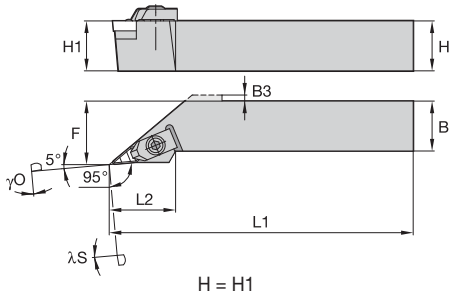



H = H1

## NVLB 95°

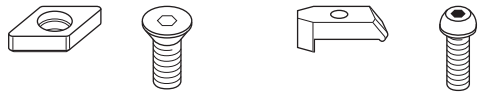
| catalogue number | H | B | F | L1 | L2 | B3 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | |
| **NVLBR1616H11** | 16 | 16 | 20,0 | 100 | 25,0 | – | 0.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |
| **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 |



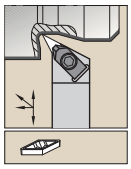


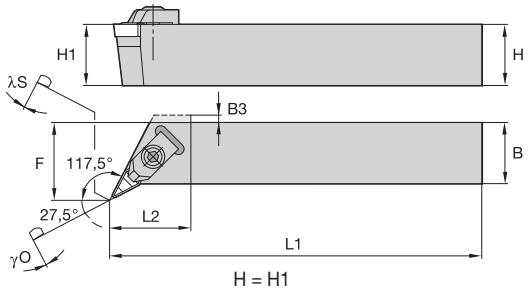

H = H1

## NVLC 95°



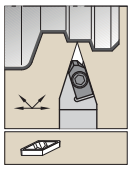
| catalogue number | H | B | F | L1 | L2 | B3 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | |
| **NVLCR1616H16** | 16 | 16 | 20,0 | 100 | 37,0 | 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** | | | | | | | | | | | | | | | |
| **NVLCL1616H16** | 16 | 16 | 20,0 | 100 | 37,0 | 5,0 | 0.0 | 0.0 | VC..160408 | **SM812** | **MS959** | 4 mm | **CM114** | **MS412** | 4 mm |
| **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 |

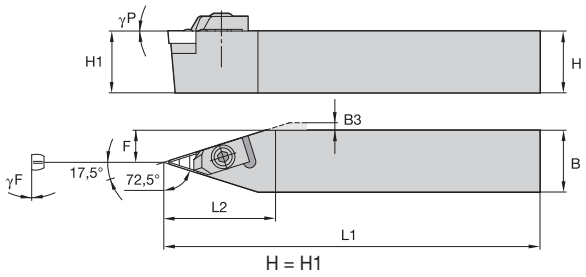





## NVOC 117,5°

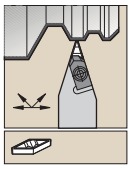
| catalogue number | H | B | F | L1 | L2 | B3 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| right hand | | | | | | | | | | | | | | | |
| **NVOCR2020K16** | 20 | 20 | 32,0 | 125 | 29,0 | 3,0 | 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 |

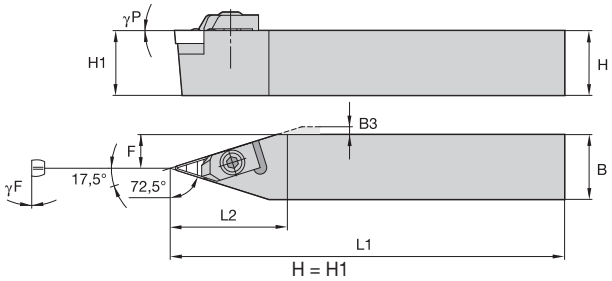





## NVVB 72,5°

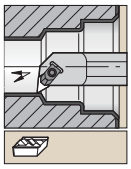
| catalogue number | H | B | F | L1 | L2 | B3 | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NVVBN2020K11** | 20 | 20 | 10,0 | 125 | 30,0 | – | 0.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |
| **NVVBN2525M11** | 25 | 25 | 12,5 | 150 | 30,0 | – | 0.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |



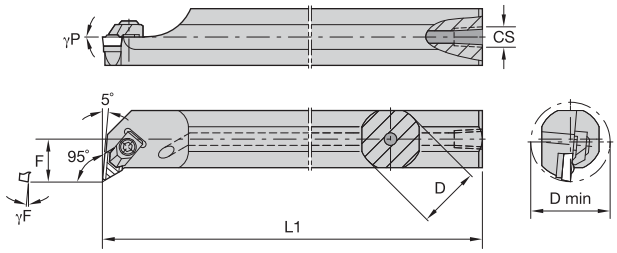



## NVVC 72,5°

| catalogue number | H | B | F | L1 | L2 | B3 | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NVVCN1616H16** | 16 | 16 | 8,0 | 100 | 42,0 | 4,0 | 0.0 | 0.0 | VC..160408 | **SM812** | **MS959** | 4 mm | **CM113** | **MS412** | 4 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 |

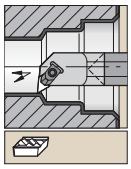


Steel shank with through coolant.

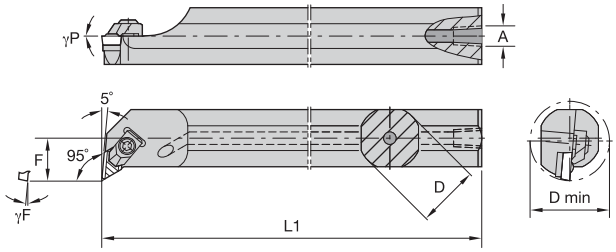



## A-NKLC 95°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **A12MNKLCR11** | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -5.0 | 0.0 | KC..110305L | — | — | 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 |
| **A20QNKLCR11** | 20 | 25,0 | 13,0 | 180 | 1/8-27 NPT | -5.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **A25RNKLCR11** | 25 | 32,0 | 16,0 | 200 | 1/4-18 NPT | -5.0 | 0.0 | KC..110305L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |
| **A32SNKLCR11** | 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** | 12 | 16,0 | 9,0 | 150 | 1/16-27 NPT | -5.0 | 0.0 | KC..110305R | — | — | 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 |
| **A32SNKLCL11** | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -5.0 | 0.0 | KC..110305R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |

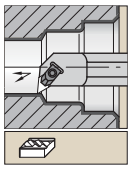


Carbide shank with through coolant.

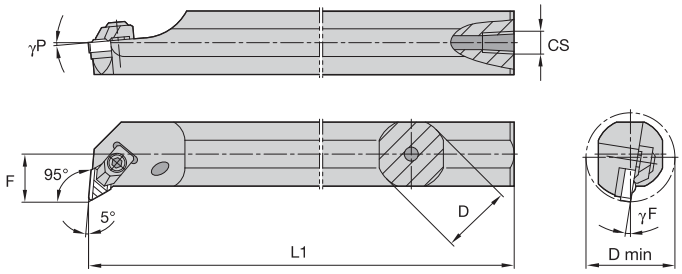



## E-NKLC 95°

| catalogue number | D | D min | F | L1 | A | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | |
| **E12QNKLCR11** | 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 |
| **E20SNKLCR11** | 20 | 25,0 | 13,0 | 250 | 7,1 | – | -5.0 | 0.0 | KC..110308L | **SM886** | **MS959** | 3 mm | **CM68** | **MS524** | 3 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 |
| **E16RNKLCL11** | 16 | 20,0 | 11,0 | 200 | 5,5 | – | -5.0 | 0.0 | KC..110308R | **SM885** | **MS959** | 2.5 mm | **CM105** | **MS518** | 2.5 mm |
| **E20SNKLCL11** | 20 | 25,0 | 13,0 | 250 | 7,1 | – | -5.0 | 0.0 | KC..110308R | **SM885** | **MS959** | 3 mm | **CM68** | **MS524** | 3 mm |

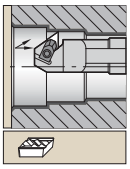


Steel shank with through coolant.

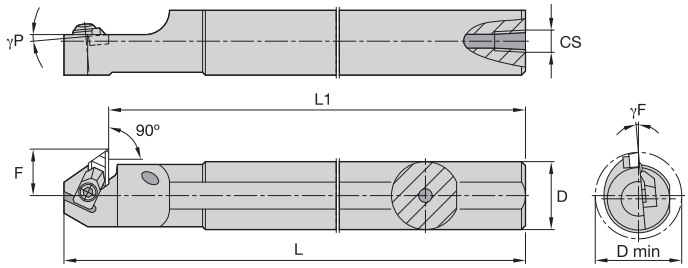



## A-NKLN 95°

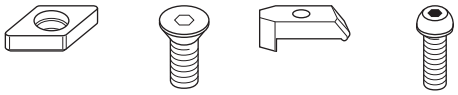
| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **A25RNKLNR15** | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -9.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM77** | **MS1221** | T25 |
| **A32SNKLNR15** | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -9.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS624** | 4 mm |
| **A40TNKLNR15** | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -5.0 | -5.0 | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS624** | 4 mm |
| **left hand** | | | | | | | | | | | | | | |
| **A25RNKLNL15** | 25 | 32,0 | 17,0 | 200 | 1/4-18 NPT | -9.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM69** | **MS1221** | T25 |
| **A32SNKLNL15** | 32 | 40,0 | 22,0 | 250 | 1/4-18 NPT | -9.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS624** | 4 mm |
| **A40TNKLNL15** | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -5.0 | -5.0 | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS624** | 4 mm |



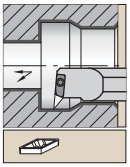
Steel shank with through coolant.



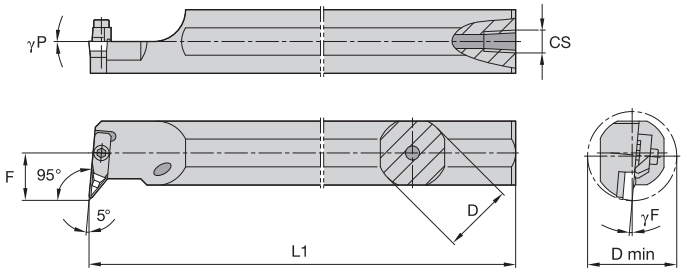

## A-NKXC 90°



| catalogue number | D | D min | F | L1 | L | CS | γF° | γP° | gage insert | shim | shim screw | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **left hand** | | | | | | | | | | | | | | |
| **A20QNKXCL11** | 20 | 25,0 | 13,0 | 180 | 199 | 1/8-27 NPT | -5.0 | -5.0 | KC..110305L | **SM886** | **MS959** | **CM79** | **MS1220** | T25 |

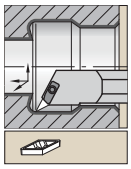


Steel shank with through coolant.

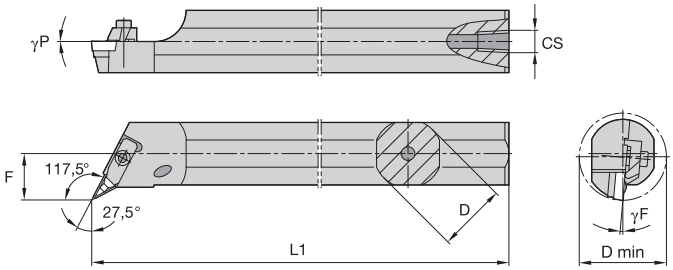



## A-NVLB 95°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **A20SNVLBR11** | 20 | 26,0 | 13,0 | 250 | 1/8-27 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM159** | **MS518** | 2.5 mm |
| **A25TNVLBR11** | 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 |
| **left hand** | | | | | | | | | | | | | | |
| **A20SNVLBL11** | 20 | 26,0 | 13,0 | 250 | 1/8-27 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |
| **A25TNVLBL11** | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |

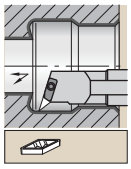


Steel shank with through coolant.

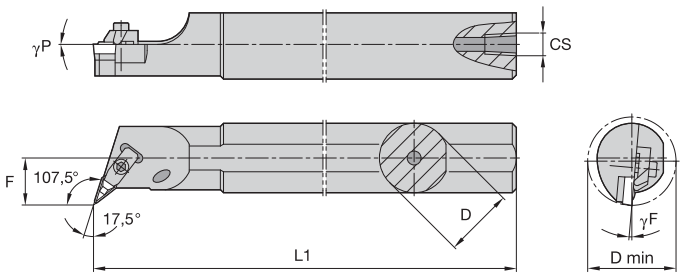



## A-NVOC 117,5°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 |
| **A40TNVOCR16** | 40 | 50,0 | 27,0 | 300 | 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 |
| **A40TNVOCL16** | 40 | 50,0 | 27,0 | 300 | 1/4-18 NPT | -2.0 | 0.0 | VC..160408 | **SM812** | **MS959** | 4 mm | **CM114** | **MS412** | 4 mm |

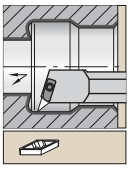


Steel shank with through coolant.

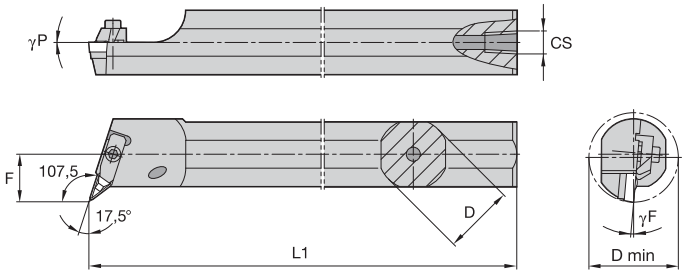



## A-NVQB 107,5°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **A16RNVQBR11** | 16 | 22,0 | 11,0 | 200 | 1/8-27 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM159** | **MS518** | 2.5 mm |
| **A20SNVQBR11** | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM159** | **MS518** | 2.5 mm |
| **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 |
| **left hand** | | | | | | | | | | | | | | |
| **A20SNVQBL11** | 20 | 25,0 | 13,0 | 250 | 1/8-27 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |
| **A25TNVQBL11** | 25 | 32,0 | 17,0 | 300 | 1/4-18 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |

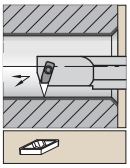


Steel shank with through coolant.

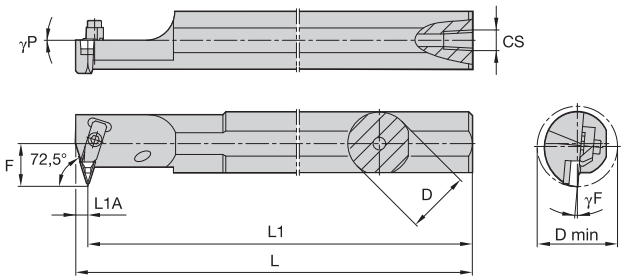



## A-NVQC 107,5°

| catalogue number | D | D min | F | L1 | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | |
| **A32SNVQCR16** | 32 | 40,00 | 22,0 | 250 | 1/4-18 NPT | -2.0 | 0.0 | VC..160408 | **SM812** | **MS959** | 4 mm | **CM113** | **MS412** | 4 mm |
| **A40TNVQCR16** | 40 | 50,00 | 27,0 | 300 | 1/4-18 NPT | -2.0 | 0.0 | VC..160408 | **SM812** | **MS959** | 4 mm | **CM113** | **MS412** | 4 mm |
| **left hand** | | | | | | | | | | | | | | |
| **A32SNVQCL16** | 32 | 40,00 | 22,0 | 250 | 1/4-18 NPT | -2.0 | 0.0 | VC..160408 | **SM812** | **MS959** | 4 mm | **CM114** | **MS412** | 4 mm |

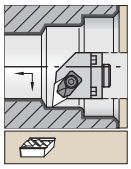


Steel shank with through coolant.

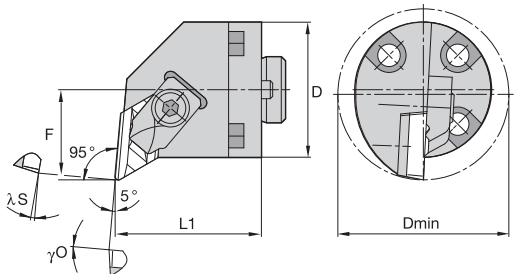



## A-NVVB 72,5°

| catalogue number | D | D min | F | L1 | L | L1A | CS | γF° | γP° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | | |
| **A25TNVVBR11** | 25 | 32,0 | 17,0 | 300 | 306,6 | 6,6 | 1/4-18 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM159** | **MS518** | 2.5 mm |
| **left hand** | | | | | | | | | | | | | | | | |
| **A25TNVVBL11** | 25 | 32,0 | 17,0 | 300 | 306,6 | 6,6 | 1/4-18 NPT | -5.0 | 0.0 | VB..110304 | **SM813** | **MS959** | 2.5 mm | **CM158** | **MS518** | 2.5 mm |

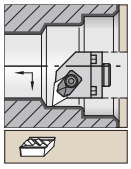


With through coolant.

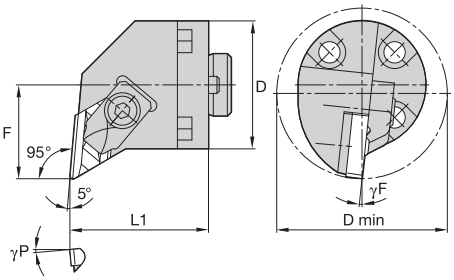



## H-NKLC 95°

| catalogue number | D | D min | F | L1 | λS° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | |
| **H25NKLCR11** | 25 | 32 | 17 | 41 | -5.0 | 0.0 | KC..110305L | SM886 | MS959 | 3 mm | CM68 | MS524 | 3 mm |
| **left hand** | | | | | | | | | | | | | |
| **H25NKLCL11** | 25 | 32 | 17 | 41 | -5.0 | 0.0 | KC..110305R | SM885 | MS959 | 3 mm | CM68 | MS524 | 3 mm |



With through coolant.




## H-NKLN 95°

| catalogue number | D | D min | F | L1 | λS° | γF° | γP° | γO° | gage insert | shim | shim screw | hex (mm) | clamp | clamp screw | hex (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | | | | | |
| **H32NKLNR15** | 32 | 40 | 22 | 41 | — | -6.0 | -5.0 | — | KN..150410L | **SM871** | **MS111** | 2 mm | **CM66** | **MS624** | 4 mm |
| **left hand** | | | | | | | | | | | | | | | |
| **H32NKLNL15** | 32 | 40 | 22 | 41 | — | -6.0 | -5.0 | — | KN..150410R | **SM872** | **MS111** | 2 mm | **CM66** | **MS624** | 4 mm |

# The LT — Laydown Threading System

**Triangle Threading inserts and tools that provide the highest accuracy and quality level for daily production needs!**

- LT is the system of choice for fine-pitch threads, high-helix/multi-start threads, and single-point threading in small-diameter bores.
- Variable shim angles enable proper cutting geometry for high-helix angle and reverse helix angle threading. This maximises tool life and improves thread quality.
- Increase productivity by outperforming conventional PVD grades with up to a 30% advantage in cutting speeds.

Visit **www.kennametal.com** or contact your local Authorised Kennametal Distributor.

**www.kennametal.com**

KENNAMETAL®

# The Fix-Perfect™ Precision Ground Insert Program Goes Above and Beyond™!

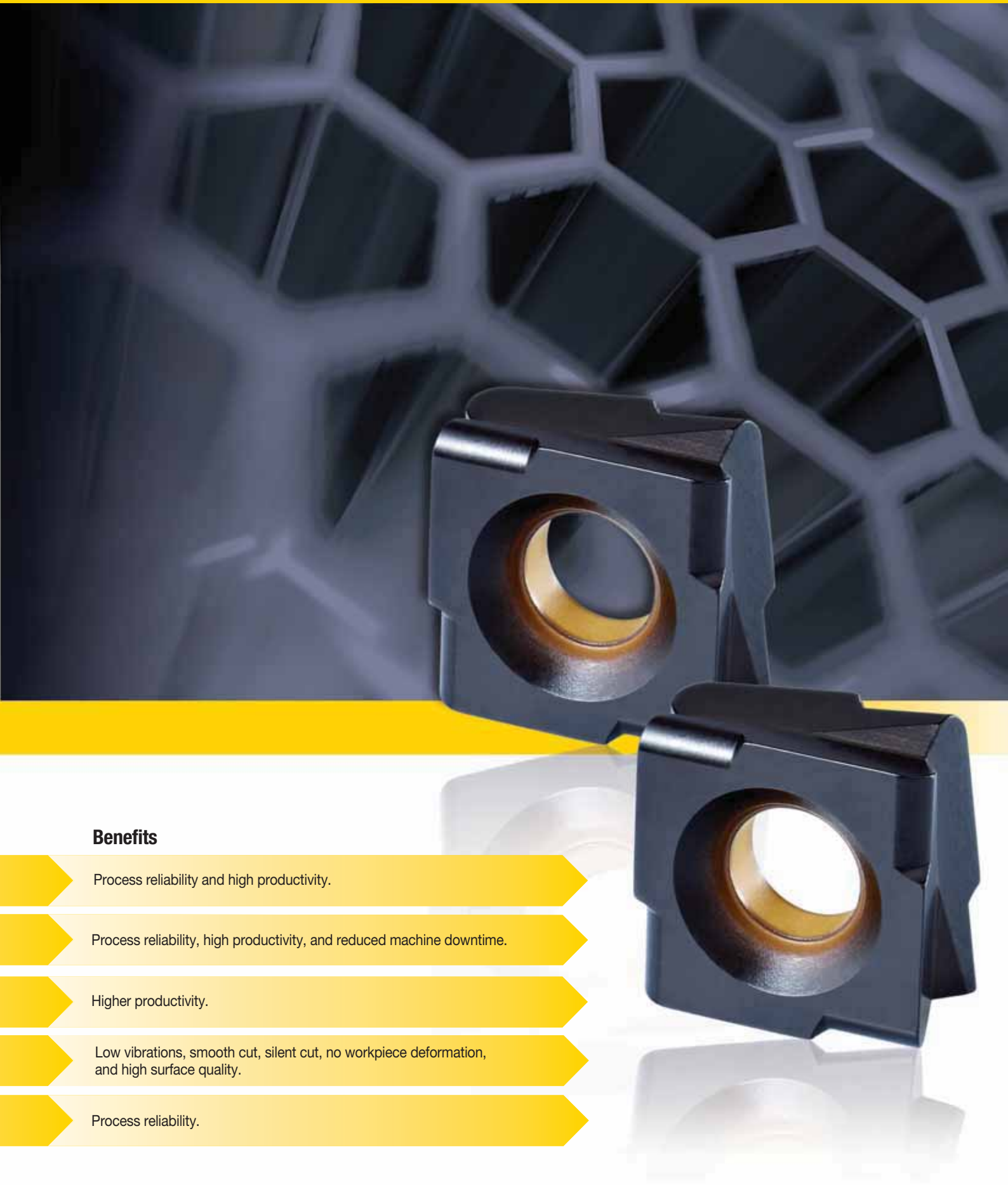
## Primary Application

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 and Benefits

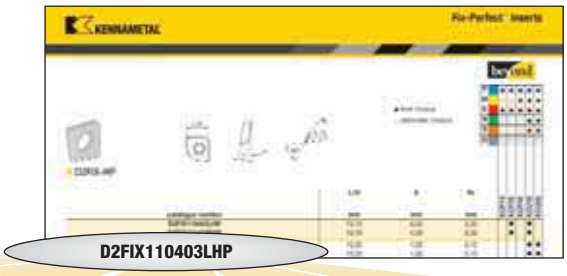
| Features | Functions |
|---|---|
| Tangential design. | Stable system. |
| Rigid clamping system. | Very stable clamping system and quick and easy cutting edge switch. |
| Up to eight cutting edges (protected by pocket seat). | Use up to eight edges per insert. |
| Positive geometry. | Very low cutting forces and excellent chip control. |
| Precision ground insert. | Better indexing accuracy. |



## Benefits

- Process reliability and high productivity.
- Process reliability, high productivity, and reduced machine downtime.
- Higher productivity.
- Low vibrations, smooth cut, silent cut, no workpiece deformation, and high surface quality.
- Process reliability.

## Beyond™ Identification System

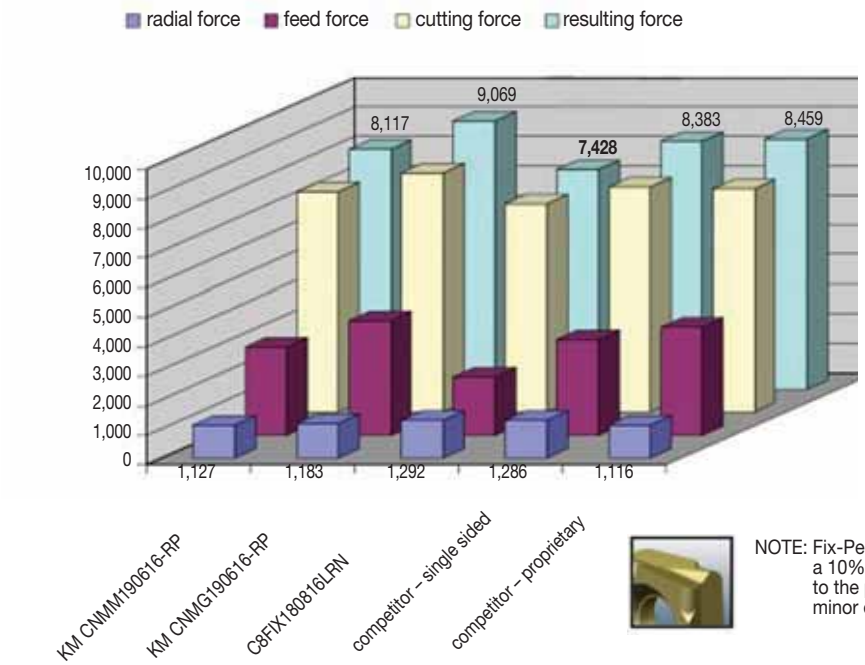


D2FIX110403LHP

| D | 2 | FIX | 11 | 04 | 03 | L | HP |
|---|---|---|---|---|---|---|---|
| Insert Shape (corner angle) | Number of Cutting Edges | Proprietary System | Cutting Edge Length | Thickness | Corner Radius | Hand of Insert | Chip Control |

## New Beyond Fix-Perfect Naming System

| old catalogue number | description | new catalogue number |
|---|---|---|
| 1.21101R151 | insert with 2 positive cutting edges, corner radius e = 56° | D2FIX110403RMS |

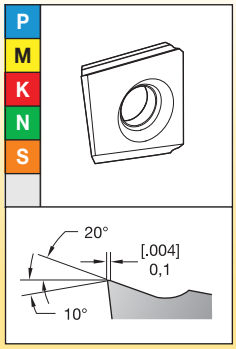


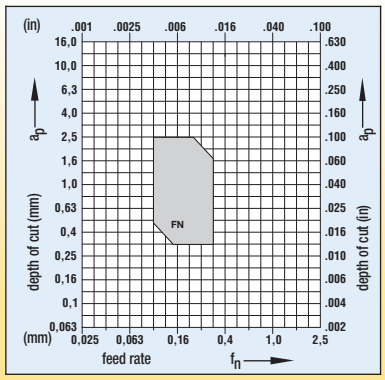



NOTE: Fix-Perfect achieves at least a 10% lower cutting force due to the positive rake and sloped minor edge.

## Finishing

### D2FIX-FN

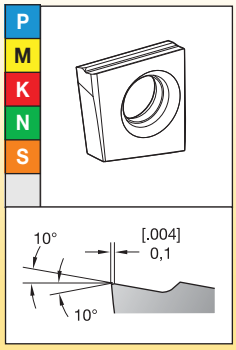


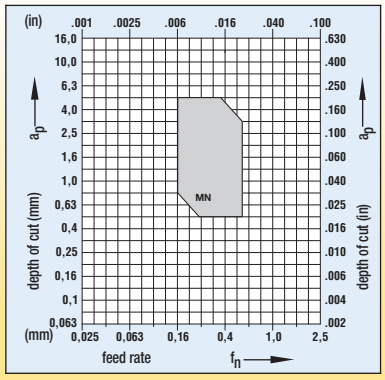




| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

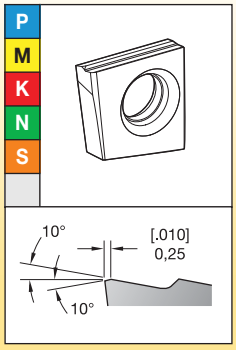
## Medium Machining

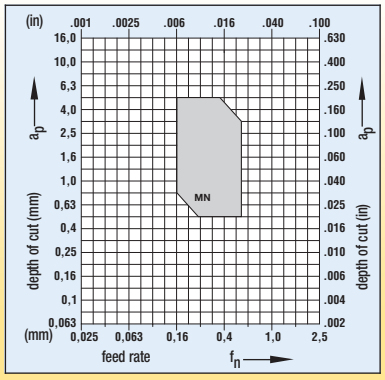
### C2FIX15-MN



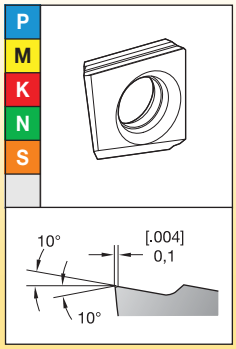



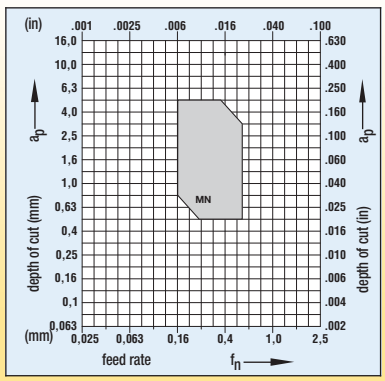

### C2FIX18-MN



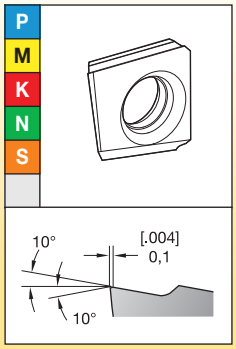



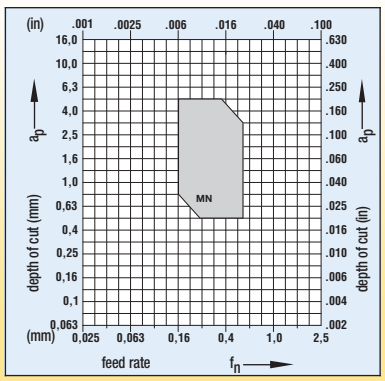

### D2FIX-MN




### K2FIX-MN

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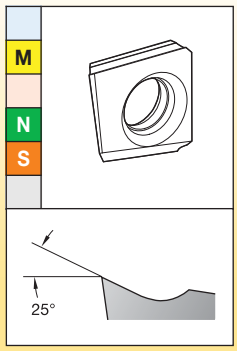
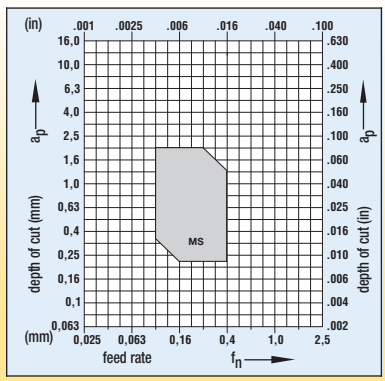
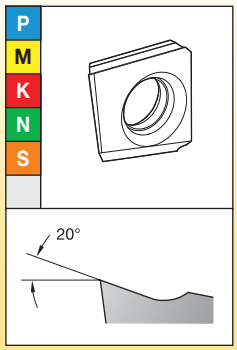
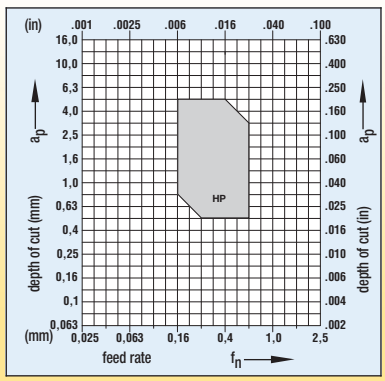



### D2FIX-HP



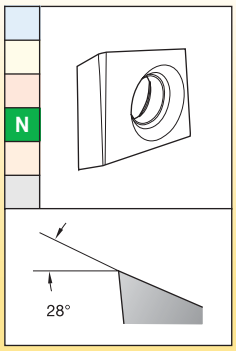

*(continued)*

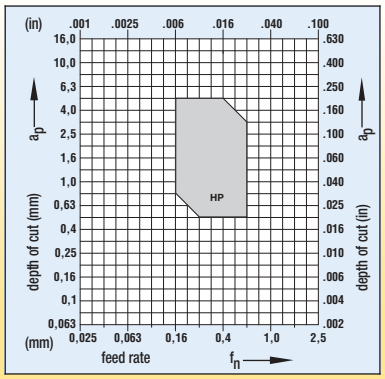
*(continued)*



## Medium Machining

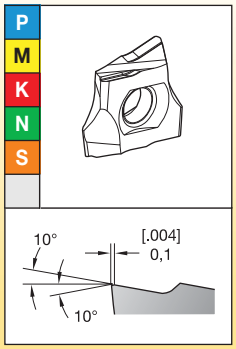
### E2FIX-HP

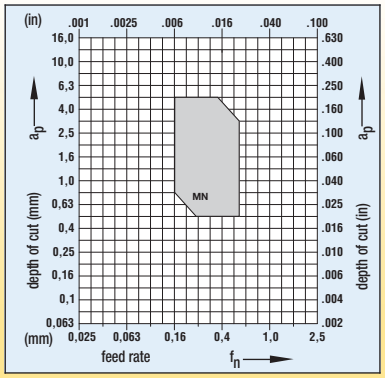


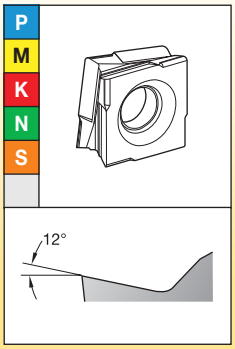

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

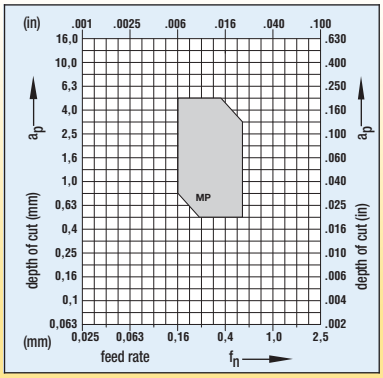
### D4FIX-MN



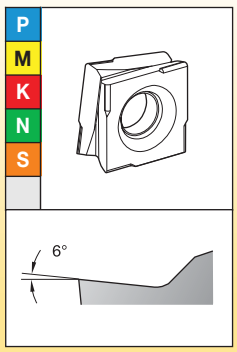

### C8FIX-MP

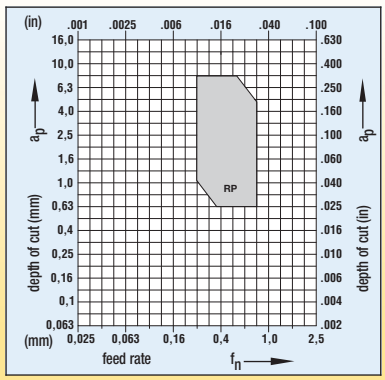


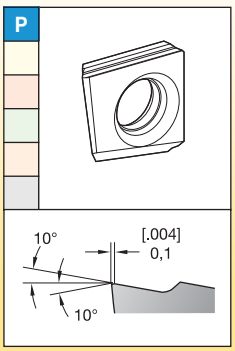

## Roughing

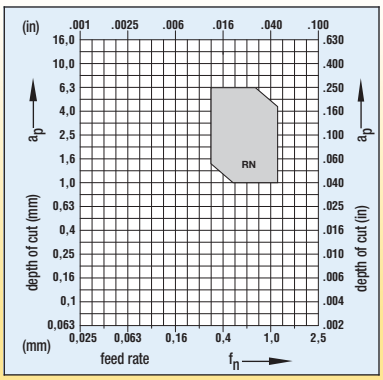
### C8FIX-RP




### D2FIX-RN

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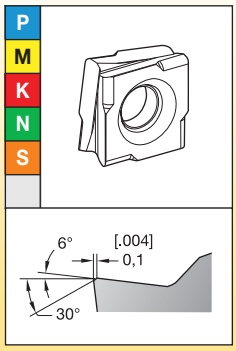
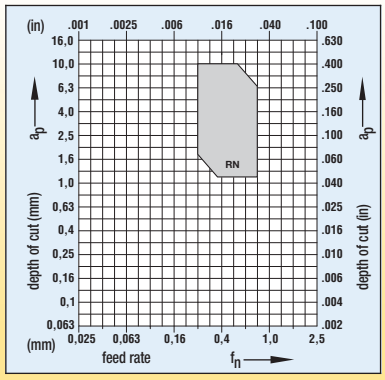
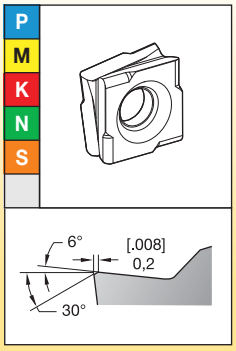
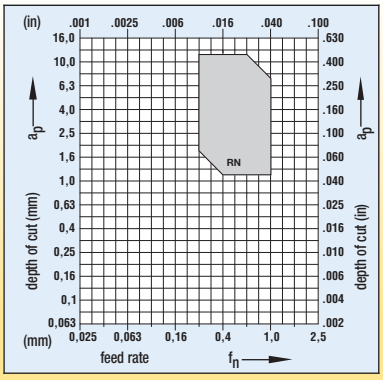



### C8FIX18-RN



# Select the Insert Geometry

## 8-Edged Inserts

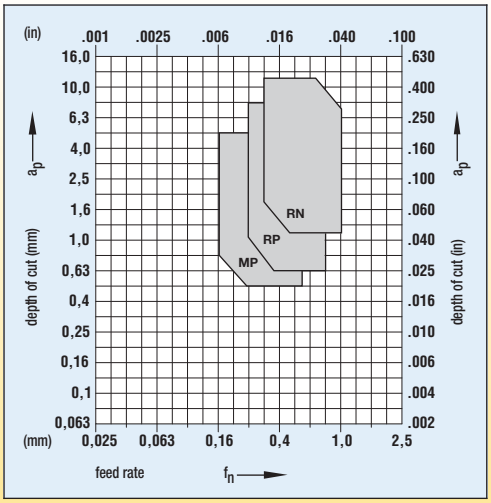
**Roughing**
Interrupted cut and/or heavy scale
USE: -RP OR -RN

-RP

-RN

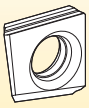
**Medium Turning**
Slightly interrupted cut and/or slight scale
USE: -MP

-MP




## 2- and 4-Edged Inserts

**Roughing**
Interrupted cut and/or heavy scale
USE: -RN

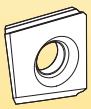


-RN

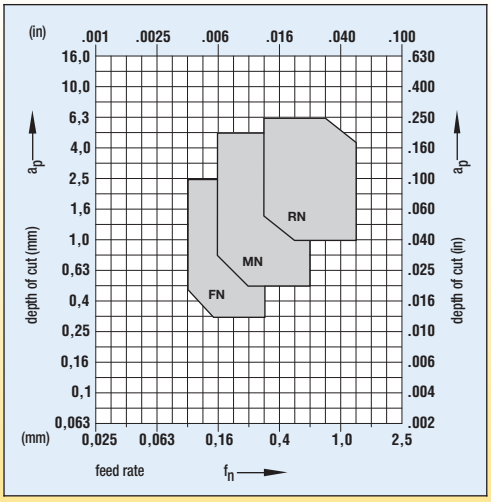
**Medium Turning**
Slightly interrupted cut and/or slight scale
USE: -MN

-MN

**Finishing**
Non-interrupted cut, no scale
USE: -FN

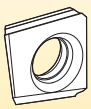


-FN

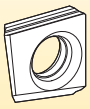



## 2-Edged Inserts, High Positive

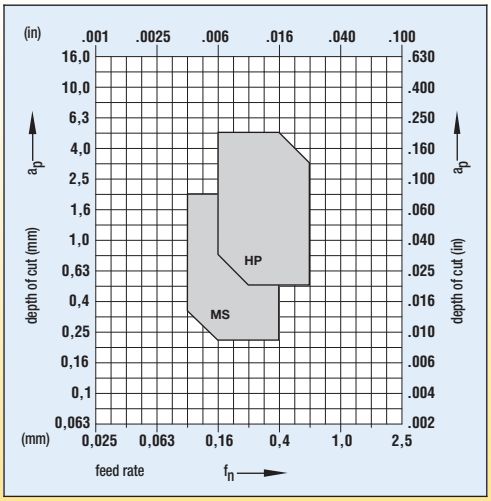
**Medium Turning**
Slightly interrupted cut and/or slight scale
USE: -HP OR -MS



-HP



-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) | 150 (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 | 800 |

**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 | | | ◁▷ | | | | | | | 165 | 500 |
| | KCU10 | | | | ◁▷ | | | | | | 180 | 600 |
| | KCP25 | | | | | ◁▷ | | | | | 230 | 750 |
| | KCP10 | | | | | ◁▷ | | | | | 260 | 850 |

**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 |

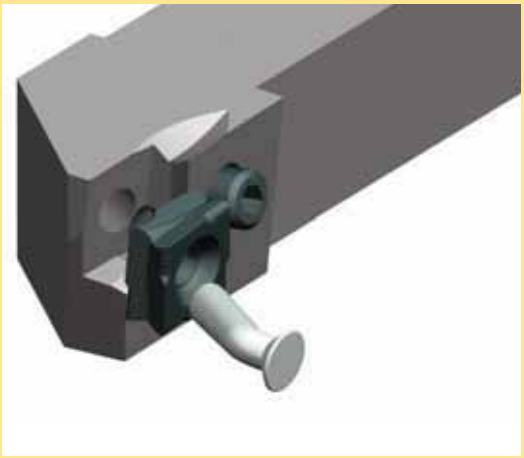
**High-Temperature Alloys** — speed — m/min (SFM) — starting conditions ◁▷

| 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 |

## Fix-Perfect Tool System



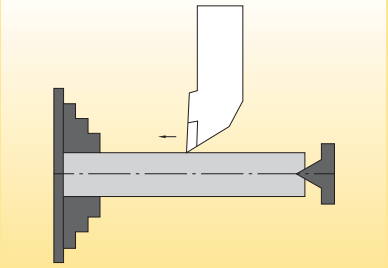
With 2, 4, or 8 edges, this tool system is the ideal supplement to ISO tools.

The examples on the following page show the range of possible applications.

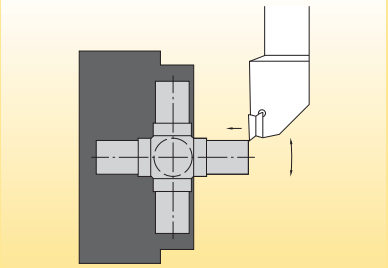
Use of the Fix-Perfect system results in:

- Lower cutting forces.
- Smooth, open chips.
- Larger feed rates and depths of cut.

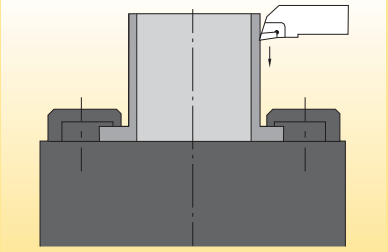
*(continued)*



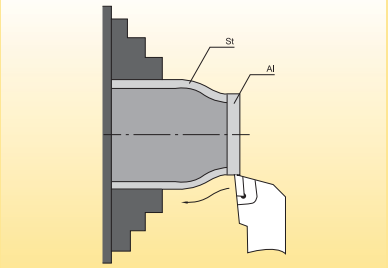
Turning slender shafts (clamping on one side also possible) with a workpiece length outside the chuck >8 x D with high geometric accuracy and surface finish.



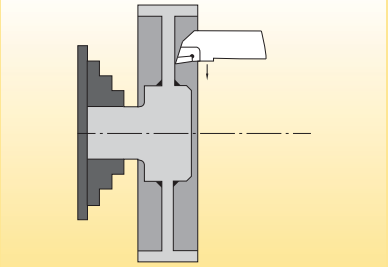
Machining of unstably chucked workpieces (e.g., in a swivel chuck).



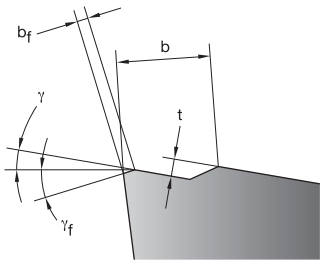
External machining of thin-walled workpieces.

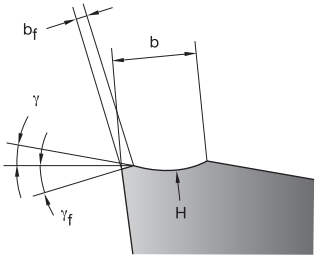



Turning material combinations of varying machinability, for example, aluminium combined with stainless and acid-proof steels.



Smoothing of welding seams with interrupted cuts.




| old catalogue number | new catalogue number | b | | t | | | $b_f$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | inch | mm | inch | γ° | mm | inch | $\gamma_f$° |
| NEW | **C2FIX110404LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **C2FIX110404RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21103L171 | **C2FIX110405LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21103R171 | **C2FIX110405RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **C2FIX110408LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **C2FIX110408RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **C2FIX150504LMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **C2FIX150504RMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21503L171 | **C2FIX150505LMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21503R171 | **C2FIX150505RMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **C2FIX150508LMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **C2FIX150508RMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21503L172 | **C2FIX150510LMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21503R172 | **C2FIX150510RMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| NEW | **C2FIX150512LMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| NEW | **C2FIX150512RMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21803L171 | **C2FIX180610LMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21803R171 | **C2FIX180610RMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21803L172 | **C2FIX180615LMN** | 4,0 | 0.157 | 0,6 | 0.024 | 10 | 0,3 | 0.012 | 10 |
| 1.21803R172 | **C2FIX180615RMN** | 4,0 | 0.157 | 0,6 | 0.024 | 10 | 0,3 | 0.012 | 10 |
| 1.21501L152 | **D2FIX150505LFN** | 3,2 | 0.126 | H | H | 20 | 0,1 | 0.004 | 10 |
| 1.21501R152 | **D2FIX150505RFN** | 3,2 | 0.126 | H | H | 20 | 0,1 | 0.004 | 10 |
| 1.21101L173 | **D2FIX110403LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21101R173 | **D2FIX110403RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D2FIX110404LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D2FIX110404RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21101L171 | **D2FIX110405LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21101R171 | **D2FIX110405RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21501R175 | **D2FIX150503RMN** | 2,2* | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D2FIX150504LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D2FIX150504RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21501L171 | **D2FIX150505LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21501R171 | **D2FIX150505RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D2FIX150508LMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D2FIX150508RMN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21501L173 | **D2FIX150510LMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21501R173 | **D2FIX150510RMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21801L171 | **D2FIX180610LMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21801R171 | **D2FIX180610RMN** | 3,2 | 0.126 | 0,5 | 0.020 | 10 | 0,2 | 0.008 | 10 |
| 1.21501L172 | **D2FIX150505LRN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21501R172 | **D2FIX150505RRN** | 2,6 | 0.102 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21501L154 | **D2FIX150503LMS** | 3,0 | 0.118 | H | H | 25** | Sharp | Sharp | Sharp |
| 1.21501R154 | **D2FIX150503RMS** | 3,0 | 0.118 | H | H | 25** | Sharp | Sharp | Sharp |
| 1.21501L155 | **D2FIX150505LMS** | 3,0* | 0.118 | H | H | 25** | Sharp | Sharp | Sharp |

H – Hollow-ground.

*(continued)*

* – Deviation from old catalogue number.

** – At mounting angle (clearance) 7°. Also 12° mounting angle possible (dependent on toolholder), then γ = 20°.

*(continued)*

| old catalogue number | new catalogue number | b | | t | | | $b_f$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | inch | mm | inch | γ° | mm | inch | $\gamma_f$° |
| 1.21501R155 | **D2FIX150505RMS** | 3,0* | 0.118 | H | H | 25** | Sharp | Sharp | Sharp |
| 1.21101L151 | **D2FIX110403LHP** | 2,6 | 0.102 | H | H | 20 | Sharp | Sharp | Sharp |
| 1.21101R151 | **D2FIX110403RHP** | 2,6 | 0.102 | H | H | 20 | Sharp | Sharp | Sharp |
| NEW | **D2FIX110404LHP** | 2,6 | 0.102 | H | H | 20 | Sharp | Sharp | Sharp |
| NEW | **D2FIX110404RHP** | 2,6 | 0.102 | H | H | 20 | Sharp | Sharp | Sharp |
| 1.21501L151 | **D2FIX150503LHP** | 3,0 | 0.118 | H | H | 20 | Sharp | Sharp | Sharp |
| 1.21501R151 | **D2FIX150503RHP** | 3,0 | 0.118 | H | H | 20 | Sharp | Sharp | Sharp |
| NEW | **D2FIX150504LHP** | 3,0 | 0.118 | H | H | 20 | Sharp | Sharp | Sharp |
| NEW | **D2FIX150504RHP** | 3,0 | 0.118 | H | H | 20 | Sharp | Sharp | Sharp |
| NEW | **D2FIX150508LHP** | 3,0 | 0.118 | H | H | 20 | Sharp | Sharp | Sharp |
| NEW | **D2FIX150508RHP** | 3,0 | 0.118 | H | H | 20 | Sharp | Sharp | Sharp |
| 1.21500L145 | **E2FIX100505LHP** | — | — | — | — | 28 | Sharp | Sharp | Sharp |
| 1.21500R145 | **E2FIX100505RHP** | — | — | — | — | 28 | Sharp | Sharp | Sharp |
| 1.21500L171 | **K2FIX150505LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.21500R171 | **K2FIX150505RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.42002L173 | **D4FIX140603LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.42002R173 | **D4FIX140603RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D4FIX140604LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D4FIX140604RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.42002L171 | **D4FIX140605LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.42002R171 | **D4FIX140605RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D4FIX140608LMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| NEW | **D4FIX140608RMN** | 2,2 | 0.087 | 0,4 | 0.016 | 10 | 0,1 | 0.004 | 10 |
| 1.81202L171 | **C8FIX120503LMP** | 1,6 | 0.063 | 0,3 | 0.012 | 12 | — | — | — |
| 1.81202R171 | **C8FIX120503RMP** | 1,6 | 0.063 | 0,3 | 0.012 | 12 | — | — | — |
| 1.81502L171 | **C8FIX150603LMP** | 2,0 | 0.079 | 0,3 | 0.012 | 12 | — | — | — |
| 1.81502R171 | **C8FIX150603RMP** | 2,0 | 0.079 | 0,3 | 0.012 | 12 | — | — | — |
| 1.81802L171 | **C8FIX180805LMP** | 2,3 | 0.091 | 0,4 | 0.016 | 12 | — | — | — |
| 1.81802R171 | **C8FIX180805RMP** | 2,3 | 0.091 | 0,4 | 0.016 | 12 | — | — | — |
| 1.81201L121 | **C8FIX120503LRP** | — | — | — | — | 6 | — | — | — |
| 1.81201R121 | **C8FIX120503RRP** | — | — | — | — | 6 | — | — | — |
| NEW | **C8FIX120504LRP** | — | — | — | — | 6 | — | — | — |
| NEW | **C8FIX120504RRP** | — | — | — | — | 6 | — | — | — |
| 1.81201L122 | **C8FIX120505LRP** | — | — | — | — | 6 | — | — | — |
| 1.81201R122 | **C8FIX120505RRP** | — | — | — | — | 6 | — | — | — |
| NEW | **C8FIX120508LRP** | — | — | — | — | 6 | — | — | — |
| NEW | **C8FIX120508RRP** | — | — | — | — | 6 | — | — | — |
| NEW | **C8FIX120512LRP** | — | — | — | — | 6 | — | — | — |
| NEW | **C8FIX120512RRP** | — | — | — | — | 6 | — | — | — |
| 1.81501L121 | **C8FIX150605LRN** | — | — | — | — | 6 | 0,1 | 0.004 | 30 |
| 1.81501R121 | **C8FIX150605RRN** | — | — | — | — | 6 | 0,1 | 0.004 | 30 |
| 1.81501L122 | **C8FIX150608LRN** | — | — | — | — | 6 | 0,1 | 0.004 | 30 |
| 1.81501R122 | **C8FIX150608RRN** | — | — | — | — | 6 | 0,1 | 0.004 | 30 |
| NEW | **C8FIX150612LRN** | — | — | — | — | 6 | 0,1 | 0.004 | 30 |
| NEW | **C8FIX150612RRN** | — | — | — | — | 6 | 0,1 | 0.004 | 30 |
| 1.81801L121 | **C8FIX180808LRN** | — | — | — | — | 6 | 0,2 | 0.008 | 30 |
| 1.81801R121 | **C8FIX180808RRN** | — | — | — | — | 6 | 0,2 | 0.008 | 30 |
| 1.81801L122 | **C8FIX180812LRN** | — | — | — | — | 6 | 0,2 | 0.008 | 30 |
| 1.81801R122 | **C8FIX180812RRN** | — | — | — | — | 6 | 0,2 | 0.008 | 30 |

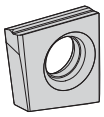
H – Hollow-ground.

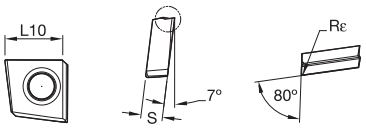
* – Deviation from old catalogue number.

** – At mounting angle (clearance) 7°. Also 12° mounting angle possible (dependent on toolholder), then γ = 20°.

● first choice
○ alternate choice

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





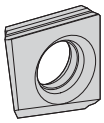

## C2FIX-MN

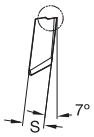
| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| C2FIX110404LMN | 10,70 | 4,00 | 0,40 | ● | ● | ● | | ● | ● |
| C2FIX110404RMN | 10,70 | 4,00 | 0,40 | ● | ● | ● | | ● | ● |
| C2FIX110405LMN | 10,70 | 4,00 | 0,50 | | ● | ● | | ● | |
| C2FIX110405RMN | 10,70 | 4,00 | 0,50 | | ● | ● | | | |
| C2FIX110408LMN | 10,70 | 4,00 | 0,80 | ● | ● | ● | | ● | ● |
| C2FIX110408RMN | 10,70 | 4,00 | 0,80 | ● | ● | ● | | ● | ● |
| C2FIX150504LMN | 14,70 | 5,00 | 0,40 | ● | ● | ● | | ● | ● |
| C2FIX150504RMN | 14,70 | 5,00 | 0,40 | ● | ● | ● | | ● | ● |
| C2FIX150505LMN | 14,70 | 5,00 | 0,50 | | ● | ● | | ● | |
| C2FIX150505RMN | 14,70 | 5,00 | 0,50 | | ● | ● | | | |
| C2FIX150508LMN | 14,60 | 5,00 | 0,80 | ● | ● | ● | | ● | ● |
| C2FIX150508RMN | 14,60 | 5,00 | 0,80 | ● | ● | ● | | ● | ● |
| C2FIX150510LMN | 14,50 | 5,00 | 1,00 | | ● | ● | | | |
| C2FIX150510RMN | 14,50 | 5,00 | 1,00 | | ● | ● | | | |
| C2FIX150512LMN | 14,50 | 5,00 | 1,20 | ● | ● | ● | | ● | ● |
| C2FIX150512RMN | 14,50 | 5,00 | 1,20 | ● | ● | ● | | ● | ● |
| C2FIX180610LMN | 17,50 | 6,00 | 1,00 | | ● | ● | | ● | |
| C2FIX180610RMN | 17,50 | 6,00 | 1,00 | | ● | ● | | ● | |
| C2FIX180615LMN | 17,50 | 6,00 | 1,50 | | ● | ● | | | |
| C2FIX180615RMN | 17,50 | 6,00 | 1,50 | | ● | ● | | | |

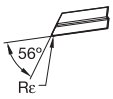
beyond

● first choice
○ alternate choice

| | | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | ● |
| M | | ○ | ○ | ● | ● | ● | ● |
| K | | ● | ● | ● | ● | ● | ● |
| N | | | | | | ● | ● |
| S | | | | ○ | ○ | ● | ● |
| H | | | | | | | |





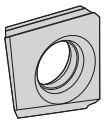

## D2FIX-MN

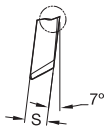
| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| D2FIX110403LMN | 10,70 | 4,00 | 0,30 | ● | ● | | | | |
| D2FIX110403RMN | 10,70 | 4,00 | 0,30 | ● | ● | | | | |
| D2FIX110404LMN | 10,60 | 4,00 | 0,40 | ● | ● | ● | | ● | ● |
| D2FIX110404RMN | 10,60 | 4,00 | 0,40 | ● | ● | ● | | ● | ● |
| D2FIX110405LMN | 10,50 | 4,00 | 0,50 | ● | ● | ● | | | |
| D2FIX110405RMN | 10,50 | 4,00 | 0,50 | ● | ● | ● | | | |
| D2FIX150503RMN | 14,70 | 5,00 | 0,30 | ● | ● | | | | |
| D2FIX150504LMN | 14,60 | 5,00 | 0,40 | ● | ● | ● | | ● | ● |
| D2FIX150504RMN | 14,60 | 5,00 | 0,40 | ● | ● | ● | | ● | ● |
| D2FIX150505LMN | 14,50 | 5,00 | 0,50 | ● | ● | ● | | | |
| D2FIX150505RMN | 14,50 | 5,00 | 0,50 | ● | ● | ● | | | |
| D2FIX150508LMN | 14,20 | 5,00 | 0,80 | ● | ● | ● | | ● | ● |
| D2FIX150508RMN | 14,20 | 5,00 | 0,80 | ● | ● | ● | | ● | ● |
| D2FIX150510LMN | 14,00 | 5,00 | 1,00 | | ● | | | | |
| D2FIX150510RMN | 14,00 | 5,00 | 1,00 | ● | ● | ● | | | |
| D2FIX180610LMN | 17,00 | 6,00 | 1,00 | | ● | | | | |
| D2FIX180610RMN | 17,00 | 6,00 | 1,00 | | ● | | | | |

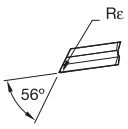
● first choice
○ alternate choice

| | | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | ● |
| M | | ○ | ○ | ● | ● | ● | ● |
| K | | ● | ● | ● | ● | ● | ● |
| N | | | | | | ● | ● |
| S | | | | ○ | ○ | ● | ● |
| H | | | | | | | |

## D2FIX-HP

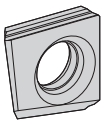


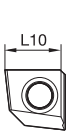


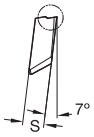



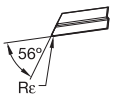

| catalogue number | L10 mm | S mm | Rε mm |
|---|---|---|---|
| D2FIX110403LHP | 10,10 | 4,00 | 0,30 |
| D2FIX110403RHP | 10,10 | 4,00 | 0,30 |
| D2FIX110404LHP | 10,00 | 4,00 | 0,40 |
| D2FIX110404RHP | 10,00 | 4,00 | 0,40 |
| D2FIX150503LHP | 14,10 | 5,00 | 0,30 |
| D2FIX150503RHP | 14,10 | 5,00 | 0,30 |
| D2FIX150504LHP | 14,00 | 5,00 | 0,40 |
| D2FIX150504RHP | 14,00 | 5,00 | 0,40 |
| D2FIX150508LHP | 13,60 | 5,00 | 0,80 |
| D2FIX150508RHP | 13,60 | 5,00 | 0,80 |

## D2FIX-MS



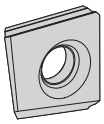


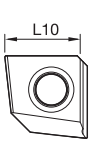



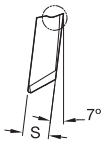



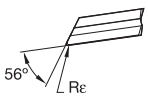

| catalogue number | L10 mm | S mm | Rε mm |
|---|---|---|---|
| D2FIX150505LMS | 13,90 | 5,00 | 0,50 |
| D2FIX150505RMS | 13,90 | 5,00 | 0,50 |
| D2FIX150503RMS | 14,10 | 5,00 | 0,30 |
| D2FIX150503LMS | 14,10 | 5,00 | 0,30 |

## D2FIX-FN





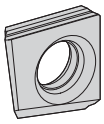

| catalogue number | L10 mm | S mm | Rε mm |
|---|---|---|---|
| D2FIX150505RFN | 13,90 | 5,00 | 0,50 |
| D2FIX150505LFN | 13,90 | 5,00 | 0,50 |

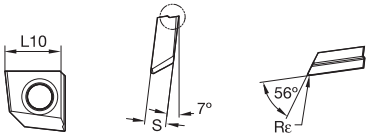
beyond

● first choice
○ alternate choice

| | | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | ● |
| M | | ○ | ○ | ● | ● | ● | ● |
| K | | ● | ● | ● | ● | ● | ● |
| N | | | | | | ● | ● |
| S | | | | ○ | ○ | ● | ● |
| H | | | | | | | |

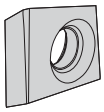
## D2FIX-RN

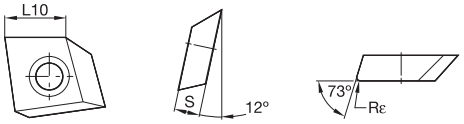





| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| D2FIX150505LRN | 14,50 | 5,00 | 0,50 | ● | ● | ● | | | |
| D2FIX150505RRN | 14,50 | 5,00 | 0,50 | ● | | ● | | | |

## E2FIX-HP

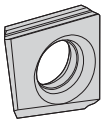


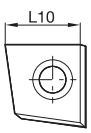


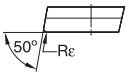

| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| E2FIX100505LHP | 10,50 | 5,00 | 0,50 | | | | | ● | |
| E2FIX100505RHP | 10,50 | 5,00 | 0,50 | | | | | ● | |

● first choice
○ alternate choice

| | | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | ● |
| M | | ○ | ○ | ● | ● | ● | ● |
| K | | ● | ● | ● | ● | ● | ● |
| N | | | | | | ● | ● |
| S | | | | ○ | ○ | ● | ● |
| H | | | | | | | |

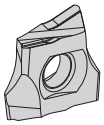


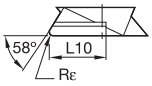



## K2FIX-MN

| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| K2FIX150505LMN | 14,50 | 5,00 | 0,50 | | ● | | | | |
| K2FIX150505RMN | 14,50 | 5,00 | 0,50 | | ● | | | ● | |





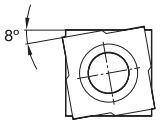

## D4FIX-MN

| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| D4FIX140603LMN | 7,20 | 5,90 | 0,30 | | ● | | | | |
| D4FIX140603RMN | 7,20 | 5,90 | 0,30 | ● | ● | | | | |
| D4FIX140604LMN | 7,10 | 5,90 | 0,40 | ● | ● | ● | | ● | ● |
| D4FIX140604RMN | 7,10 | 5,90 | 0,40 | ● | ● | ● | | ● | ● |
| D4FIX140605LMN | 7,00 | 5,90 | 0,50 | | ● | | | | |
| D4FIX140605RMN | 7,00 | 5,90 | 0,50 | ● | ● | | | | |
| D4FIX140608LMN | 6,70 | 5,90 | 0,80 | ● | ● | ● | | ● | ● |
| D4FIX140608RMN | 6,70 | 5,90 | 0,80 | ● | ● | ● | | ● | ● |

beyond

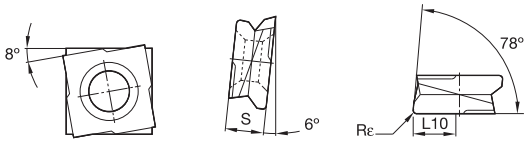
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | ● |
| M | | ○ | ○ | ● | ● | ● | ● |
| K | | ● | ● | ● | ● | ● | ● |
| N | | | | | | ● | ● |
| S | | | | ○ | ○ | ● | ● |
| H | | | | | | | |

● first choice
○ alternate choice



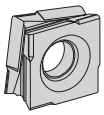

## C8FIX-RN

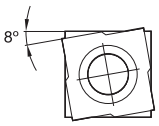
| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| C8FIX150605LRN | 9,10 | 6,60 | 0,50 | ● | ● | ● | | ● | ● |
| C8FIX150605RRN | 9,10 | 6,60 | 0,50 | ● | ● | ● | | ● | ● |
| C8FIX150608LRN | 8,90 | 6,60 | 0,80 | ● | ● | ● | | ● | ● |
| C8FIX150608RRN | 8,90 | 6,60 | 0,80 | ● | ● | ● | | ● | ● |
| C8FIX150612LRN | 8,60 | 6,60 | 1,20 | ● | ● | ● | | ● | ● |
| C8FIX150612RRN | 8,60 | 6,60 | 1,20 | ● | ● | ● | | ● | ● |
| C8FIX180808LRN | 10,90 | 7,90 | 0,80 | ● | ● | ● | | ● | ● |
| C8FIX180808RRN | 10,90 | 7,90 | 0,80 | ● | ● | ● | | ● | ● |
| C8FIX180812LRN | 10,60 | 7,90 | 1,20 | ● | ● | ● | | ● | ● |
| C8FIX180812RRN | 10,60 | 7,90 | 1,20 | ● | ● | ● | | ● | ● |




## C8FIX-RP

| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| C8FIX120503LRP | 7,30 | 5,50 | 0,30 | | ● | ● | | ● | ● |
| C8FIX120503RRP | 7,30 | 5,50 | 0,30 | ● | ● | ● | | ● | ● |
| C8FIX120504LRP | 7,20 | 5,50 | 0,40 | ● | ● | ● | ● | ● | ● |
| C8FIX120504RRP | 7,20 | 5,50 | 0,40 | ● | ● | ● | ● | ● | ● |
| C8FIX120505LRP | 7,10 | 5,50 | 0,50 | ● | ● | ● | | ● | ● |
| C8FIX120505RRP | 7,10 | 5,50 | 0,50 | ● | ● | ● | | ● | ● |
| C8FIX120508LRP | 6,90 | 5,50 | 0,80 | ● | ● | ● | | ● | ● |
| C8FIX120508RRP | 6,90 | 5,50 | 0,80 | ● | ● | ● | ● | ● | ● |
| C8FIX150608LRP | 8,80 | 6,60 | 0,80 | | ● | ● | | ● | ● |
| C8FIX150608RRP | 8,80 | 6,60 | 0,80 | ● | ● | ● | ● | ● | ● |
| C8FIX150612LRP | 7,80 | 6,60 | 1,20 | | ● | ● | | ● | ● |
| C8FIX150612RRP | 7,80 | 6,60 | 1,20 | ● | ● | ● | ● | ● | ● |
| C8FIX180808LRP | 11,40 | 7,90 | 0,80 | ● | ● | ● | ● | ● | ● |
| C8FIX180808RRP | 11,40 | 7,90 | 0,80 | ● | ● | ● | ● | ● | ● |
| C8FIX180812LRP | 10,80 | 7,90 | 1,20 | ● | ● | ● | ● | ● | ● |
| C8FIX180812RRP | 10,80 | 7,90 | 1,20 | ● | ● | ● | ● | ● | ● |



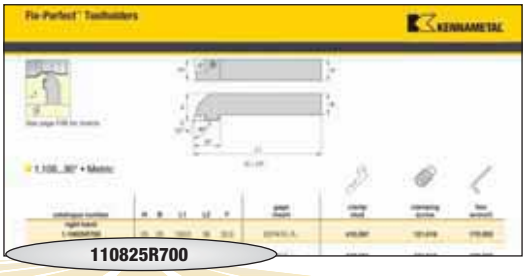



● first choice
○ alternate choice

| | | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|
| P | | ● | ● | ● | ● | ● | ● |
| M | | ○ | ○ | ● | ● | ● | ● |
| K | | ● | ● | ● | ● | ● | ● |
| N | | | | | | ● | ● |
| S | | | | ○ | ○ | ● | ● |
| H | | | | | | | |

■ C8FIX-MP

| catalogue number | L10 mm | S mm | Rε mm | KCP10 | KCP25 | KCP40 | KCM15 | KCU10 | KCU25 |
|---|---|---|---|---|---|---|---|---|---|
| C8FIX120503LMP | 7,30 | 5,50 | 0,30 | ● | ● | ● | | ● | ● |
| C8FIX120503RMP | 7,30 | 5,50 | 0,30 | ● | ● | ● | | ● | ● |
| C8FIX120504LMP | 6,70 | 5,50 | 0,40 | | ● | | ● | ● | ● |
| C8FIX120504RMP | 6,70 | 5,50 | 0,40 | | ● | | ● | ● | ● |
| C8FIX120508LMP | 6,60 | 5,50 | 0,80 | | ● | | ● | ● | ● |
| C8FIX120508RMP | 6,60 | 5,50 | 0,80 | | ● | | ● | ● | ● |
| C8FIX150603LMP | 9,30 | 6,60 | 0,30 | ● | ● | ● | | ● | ● |
| C8FIX150603RMP | 9,30 | 6,60 | 0,30 | ● | ● | ● | | ● | ● |
| C8FIX150608LMP | 8,60 | 6,60 | 0,80 | | ● | | ● | ● | ● |
| C8FIX150608RMP | 8,60 | 6,60 | 0,80 | | ● | | ● | ● | ● |
| C8FIX150612LMP | 8,30 | 6,60 | 1,20 | | ● | | ● | ● | ● |
| C8FIX150612RMP | 8,30 | 6,60 | 1,20 | | ● | | ● | ● | ● |
| C8FIX180805LMP | 11,10 | 7,90 | 0,50 | ● | ● | ● | | ● | ● |
| C8FIX180805RMP | 11,10 | 7,90 | 0,80 | ● | ● | ● | | ● | ● |




## 1 — Turning Program

**1** = Fix-Perfect

## 1 — Number of Cutters

**1** = Inserts with 2 cutting edges

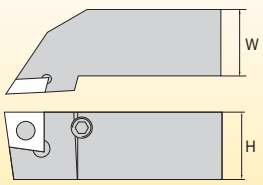
**3** = Inserts with 4 cutting edges

**7** = Inserts with 8 cutting edges

## 08 — Version

**08** = 90° or 93° setting, for machining aluminium
**16** = 92° setting angle
**20** = 92° setting angle
**22** = 92° setting angle
**30** = 75° setting angle
**71** = 75° setting angle
**72** = 45° setting angle
**77** = 90° setting angle
**80** = 90° or 93° setting angle

## 25 — Shaft Dimensions

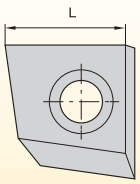



Toolholder
**10** = 10 x 10mm
**11** = 40 x 40mm
**16** = 16 x 16mm
**20** = 20 x 20mm
**21** = 50 x 50mm
**35** = 25 x 25mm
**32** = 32 x 25mm
32 x 32mm
**40** = 40 x 32mm

## R — Direction of Working

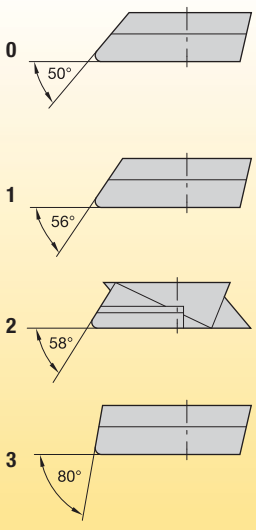
**R** = Right
**L** = Left

## 7 — Insert Size and Type




| | L | cutting edges |
|---|---|---|
| **0** | 8mm<br>20mm<br>25mm | 4<br>4<br>4 |
| **1** | 10,5mm<br>12mm | 2<br>8 |
| **3** | 14,5mm<br>15mm | 2<br>8 |
| **4** | 17,5mm<br>18mm | 2<br>8 |
| **5** | 23,5mm<br>21mm | 2<br>8 |
| **7** | 10,5mm | 2 Alu |

## 0 — Insert Shape




## 0 — Clamping Screw Support

**0** = Activated from main cutting edge

**1** = Minor cutting edge

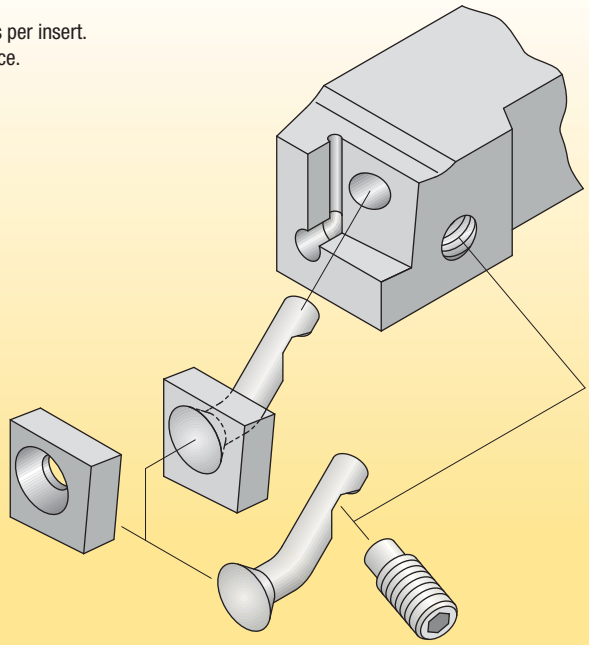
**2** = Above

**5** = Main cutting edge with sharp-edged full cartridge

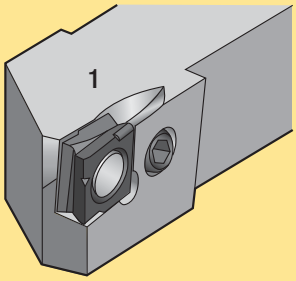
**6** = Minor cutting edge with sharp-edged full cartridge

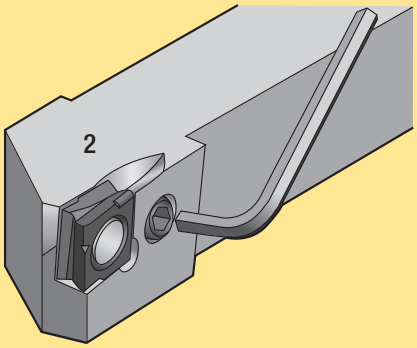
**Features of the Fix-Perfect lathe tool system:**

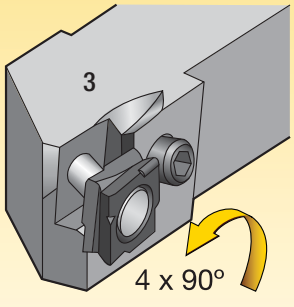
- Cost-effective use of inserts with up to eight positive cutting edges per insert.
- Indexable insert ground on all sides, thus requiring less cutting force.
- High stability due to upright insert for roughing and profiling tasks.
- Guaranteed rigid clamping of inserts.
- Optimum chip evacuation guaranteed.
- Cutting edges protected by insert seat.

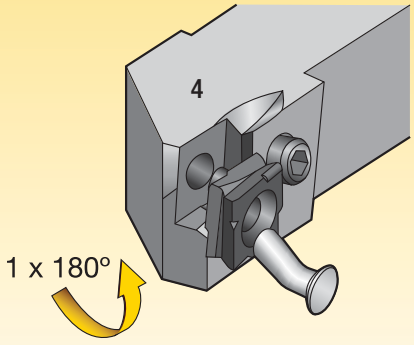


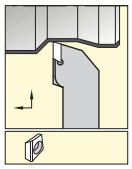
Quick and easy cutting edge switch —
just loosen the pin, no need to remove it.



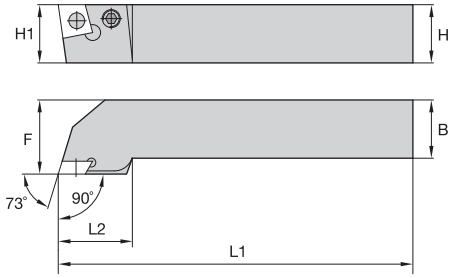



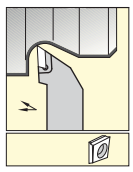


See page A246 for inserts.

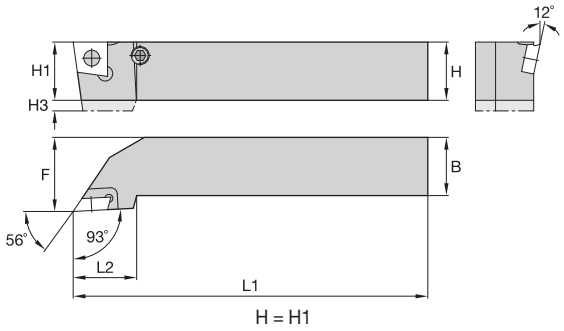



## 1.108...90° • Metric

| catalogue number | H | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | |
| **1.10825R700** | 25 | 25 | 150,0 | 36 | 32,0 | E2FIX10..R.. | **410.081** | **121.616** | **170.003** |
| **left hand** | | | | | | | | | |
| **1.10825L700** | 25 | 25 | 150,0 | 36 | 32,0 | E2FIX10..L.. | **410.081** | **121.616** | **170.003** |

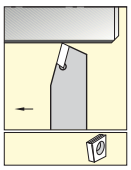


See page A245 for inserts.

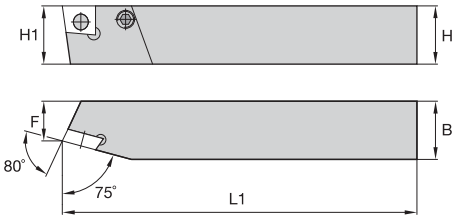



## 1.108...93° • Metric

| catalogue number | H | H3 | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | |
| **1.10820R310** | 20 | 5 | 20 | 125,0 | 26 | 25,0 | D2FIX15..RHP/FN/MS | **112.403** | **121.612** | **170.003** |
| **1.10825R310** | 25 | — | 25 | 150,0 | 26 | 32,0 | D2FIX15..RHP/FN/MS | **112.404** | **121.616** | **170.003** |
| **left hand** | | | | | | | | | | |
| **1.10820L310** | 20 | 5 | 20 | 125,0 | 26 | 25,0 | D2FIX15..LHP/FN/MS | **112.403** | **121.612** | **170.003** |
| **1.10825L310** | 25 | — | 25 | 150,0 | 26 | 32,0 | D2FIX15..LHP/FN/MS | **112.404** | **121.616** | **170.003** |



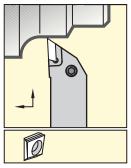
See page A243 for inserts.



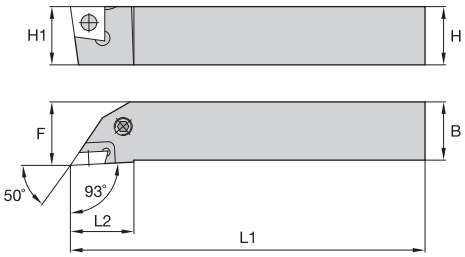

H = H1

## 1.171...75° • Metric

| catalogue number | H | B | L1 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | |
| **1.17120R130** | 20 | 20 | 125,0 | 15,0 | C2FIX11..R.. | **112.244** | **121.612** | **170.003** |
| **1.17125R330** | 25 | 25 | 150,0 | 17,0 | C2FIX15..R.. | **112.404** | **121.616** | **170.003** |
| **left hand** | | | | | | | | |
| **1.17120L130** | 20 | 20 | 125,0 | 15,0 | C2FIX11..L.. | **112.244** | **121.612** | **170.003** |
| **1.17125L330** | 25 | 25 | 150,0 | 17,0 | C2FIX15..L.. | **112.404** | **121.616** | **170.003** |



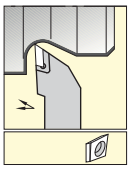
See page A247 for inserts.



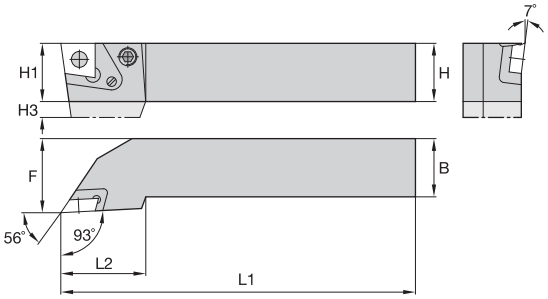

H = H1

## 1.180...93° • Metric

| catalogue number | H | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | |
| **1.18025R302** | 25 | 20 | 150,0 | 36 | 26,0 | K2FIX15..R.. | **112.423** | **121.612** | **170.003** |
| **left hand** | | | | | | | | | |
| **1.18025L302** | 25 | 20 | 150,0 | 36 | 26,0 | K2FIX15..L.. | **112.423** | **121.612** | **170.003** |

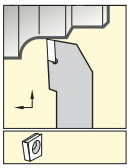


See pages A248–A249 for inserts.

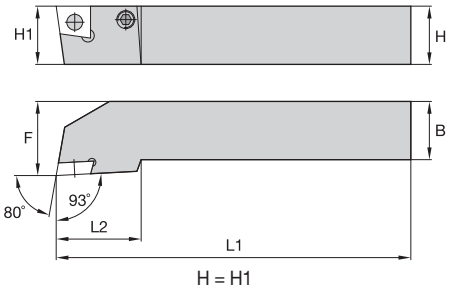



## 1.18 • Metric

| catalogue number | H | H3 | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench | steel nest assembly |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | |
| **1.18016R110** | 16 | 4 | 16 | 100,0 | 28 | 24,0 | D2FIX11..R.. | **112.244** | **121.612** | **170.003** | – |
| **1.18020R110** | 20 | – | 20 | 125,0 | 26 | 25,0 | D2FIX11..R.. | **112.244** | **121.612** | **170.003** | – |
| **1.18020R310** | 20 | 5 | 20 | 125,0 | 26 | 26,0 | D2FIX15..R.. | **112.403** | **121.612** | **170.003** | – |
| **1.18025R110** | 25 | – | 25 | 150,0 | 26 | 32,0 | D2FIX11..R.. | **112.244** | **121.612** | **170.003** | – |
| **1.18025R310** | 25 | – | 25 | 150,0 | 26 | 32,0 | D2FIX15..R.. | **112.404** | **121.616** | **170.003** | – |
| **1.18025R315** | 25 | 7 | 25 | 150,0 | 36 | 32,0 | D2FIX15..R.. | **112.505** | **121.616** | **170.003** | **132.151** |
| **1.18032R315** | 32 | – | 25 | 170,0 | 36 | 32,0 | D2FIX15..R.. | **112.505** | **121.616** | **170.003** | **132.151** |
| **1.18032R410** | 32 | – | 25 | 170,0 | 36 | 32,0 | D2FIX18..R.. | **112.604** | **121.816** | **170.004** | – |
| **left hand** | | | | | | | | | | | |
| **1.18016L110** | 16 | 4 | 16 | 100,0 | 28 | 24,0 | D2FIX11..L.. | **112.244** | **121.612** | **170.003** | – |
| **1.18020L110** | 20 | – | 20 | 125,0 | 26 | 25,0 | D2FIX11..L.. | **112.244** | **121.612** | **170.003** | – |
| **1.18020L310** | 20 | 5 | 20 | 125,0 | 26 | 26,0 | D2FIX15..L.. | **112.403** | **121.612** | **170.003** | – |
| **1.18025L110** | 25 | – | 25 | 150,0 | 26 | 32,0 | D2FIX11..L.. | **112.244** | **121.612** | **170.003** | – |
| **1.18025L310** | 25 | – | 25 | 150,0 | 26 | 32,0 | D2FIX15..L.. | **112.404** | **121.616** | **170.003** | – |
| **1.18025L315** | 25 | 7 | 25 | 150,0 | 36 | 32,0 | D2FIX15..L.. | **112.505** | **121.616** | **170.003** | **132.156** |
| **1.18032L315** | 32 | – | 25 | 170,0 | 36 | 32,0 | D2FIX15..L.. | **112.505** | **121.616** | **170.003** | **132.156** |
| **1.18032L410** | 32 | – | 25 | 170,0 | 36 | 32,0 | D2FIX18..L.. | **112.604** | **121.816** | **170.004** | – |

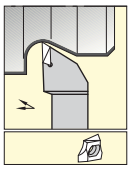


See page A243 for inserts.

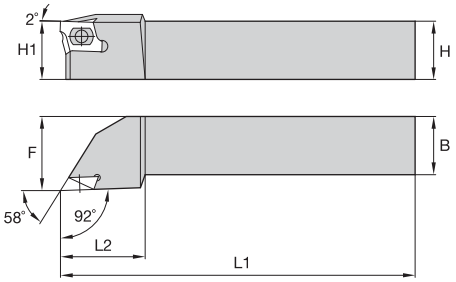



## 1.180...93° • Metric

| catalogue number | H | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | |
| **1.18020R130** | 20 | 20 | 125,0 | 26 | 26,0 | C2FIX11..R.. | **112.244** | **121.612** | **170.003** |
| **1.18025R130** | 25 | 25 | 150,0 | 26 | 32,0 | C2FIX11..R.. | **112.244** | **121.612** | **170.003** |
| **1.18025R330** | 25 | 25 | 150,0 | 36 | 32,0 | C2FIX15..R.. | **112.404** | **121.616** | **170.003** |
| **1.18032R430** | 32 | 25 | 170,0 | 36 | 32,0 | C2FIX18..R.. | **112.604** | **121.816** | **170.004** |
| **left hand** | | | | | | | | | |
| **1.18020L130** | 20 | 20 | 125,0 | 26 | 26,0 | C2FIX11..L.. | **112.244** | **121.612** | **170.003** |
| **1.18025L130** | 25 | 25 | 150,0 | 26 | 32,0 | C2FIX11..L.. | **112.244** | **121.612** | **170.003** |
| **1.18025L330** | 25 | 25 | 150,0 | 36 | 32,0 | C2FIX15..L.. | **112.404** | **121.616** | **170.003** |
| **1.18032L430** | 32 | 25 | 170,0 | 36 | 32,0 | C2FIX18..L.. | **112.604** | **121.816** | **170.004** |



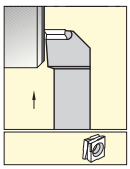
See page A247 for inserts.



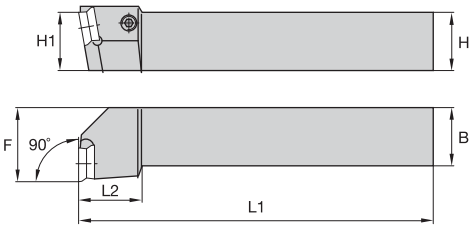

H = H1

## 1.380...92° • Metric

| catalogue number | H | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | |
| **1.38020R021** | 20 | 20 | 125,0 | 35 | 25,0 | D4FIX..R.. | **114.111** | **121.812** | **170.004** |
| **1.38025R021** | 25 | 25 | 150,0 | 36 | 32,0 | D4FIX..R.. | **114.111** | **121.816** | **170.004** |
| **left hand** | | | | | | | | | |
| **1.38020L021** | 20 | 20 | 125,0 | 35 | 25,0 | D4FIX..L.. | **114.111** | **121.812** | **170.004** |
| **1.38025L021** | 25 | 25 | 150,0 | 36 | 32,0 | D4FIX..L.. | **114.111** | **121.816** | **170.004** |



See pages A248–A249 for inserts.

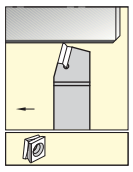



H = H1

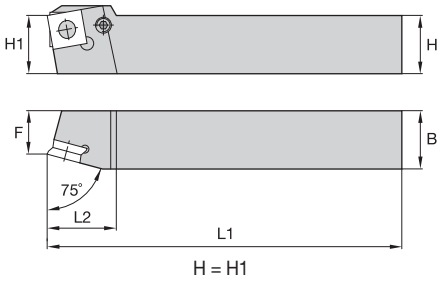
## 1.777...90° • Metric

| catalogue number | H | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | |
| **1.77720R101** | 20 | 20 | 125,0 | 26 | 25,5 | 1.81201L9 | **118.214** | **121.612** | **170.003** |
| **1.77725R301** | 25 | 25 | 150,0 | 26 | 32,0 | C8FIX15..L.. | **118.314** | **121.816** | **170.004** |
| **left hand** | | | | | | | | | |
| **1.77720L101** | 20 | 20 | 125,0 | 26 | 25,5 | 1.81201R9 | **118.214** | **121.612** | **170.003** |
| **1.77725L301** | 25 | 25 | 150,0 | 26 | 32,0 | 1.8150_R9 | **118.314** | **121.812** | **170.004** |

NOTE: Right-hand tool requires left-hand insert.

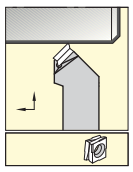


See pages A248–A249
for inserts.

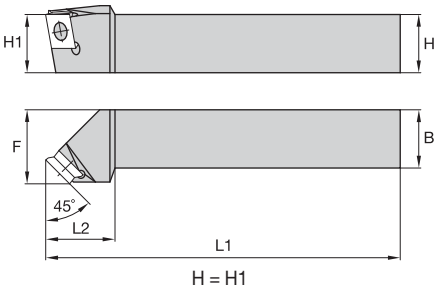



## 1.771...75° • Metric

| catalogue number | H | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | |
| **1.77120R100** | 20 | 20 | 125,0 | 20 | 17,0 | C8FIX12..R.. | **118.204** | **121.612** | **–** | **170.003** |
| **1.77125R300** | 25 | 25 | 150,0 | 26 | 21,0 | C8FIX15..R.. | **410.084** | **121.816** | **–** | **170.004** |
| **1.77132R400** | 32 | 32 | 170,0 | 38 | 27,0 | C8FIX18..R.. | **118.404** | **–** | **121.820** | **–** |
| **left hand** | | | | | | | | | | |
| **1.77120L100** | 20 | 20 | 125,0 | 20 | 17,0 | C8FIX12..L.. | **118.204** | **121.612** | **–** | **170.003** |
| **1.77125L300** | 25 | 25 | 150,0 | 26 | 21,0 | 1.8150_R9 | **410.084** | **121.816** | **–** | **170.004** |
| **1.77132L400** | 32 | 32 | 170,0 | 38 | 27,5 | C8FIX18..L.. | **118.404** | **–** | **121.820** | **170.004** |



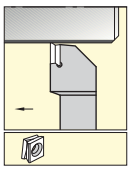
See pages A248–A249
for inserts.



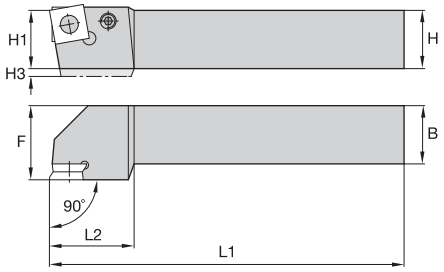

## 1.772...45° • Metric

| catalogue number | H | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | |
| **1.77225R301** | 25 | 25 | 150,0 | 26 | 32,0 | C8FIX15..L.. | **118.314** | **121.816** | **170.004** |
| **left hand** | | | | | | | | | |
| **1.77225L301** | 25 | 25 | 150,0 | 26 | 32,0 | 1.8150_R9 | **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.



See pages A248–A249 for inserts.




H = H1

## 1.780...90° • Metric

| catalogue number | H | H3 | B | L1 | L2 | F | gage insert | clamp stud | clamping screw | screw | hex wrench |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **right hand** | | | | | | | | | | | |
| **1.78012R103** | 12 | – | 12 | 80,0 | 20 | 14,0 | C8FIX12..R.. | – | – | **122.511** | **170.003** |
| **1.78016R100** | 16 | 4 | 16 | 100,0 | 28 | 25,0 | C8FIX12..R.. | **118.204** | **121.616** | – | **170.003** |
| **1.78020R100** | 20 | – | 20 | 125,0 | 26 | 25,0 | C8FIX12..R.. | **118.204** | **121.616** | – | **170.003** |
| **1.78025R100** | 25 | – | 25 | 150,0 | 26 | 32,0 | 1.81201R... | **118.204** | **121.616** | – | **170.003** |
| **1.78025R300** | 25 | – | 25 | 150,0 | 36 | 32,0 | C8FIX15..R.. | **410.084** | **121.816** | – | **170.004** |
| **1.78032R300** | 32 | – | 32 | 170,0 | 36 | 40,0 | 1.8150_R9 | **410.084** | **121.816** | – | **170.004** |
| **1.78032R400** | 32 | – | 32 | 170,0 | 36 | 40,0 | C8FIX18..R.. | **118.404** | **121.825** | – | **170.004** |
| **left hand** | | | | | | | | | | | |
| **1.78016L100** | 16 | 4 | 16 | 100,0 | 27 | 25,0 | 1.8120_L9 | **118.204** | **121.616** | – | **170.003** |
| **1.78020L100** | 20 | – | 20 | 125,0 | 26 | 25,0 | 1.8120_L9 | **118.204** | **121.616** | – | **170.003** |
| **1.78025L100** | 25 | – | 25 | 150,0 | 26 | 32,0 | 1.81202L... | **118.204** | **121.616** | – | **170.003** |
| **1.78025L300** | 25 | – | 25 | 150,0 | 36 | 32,0 | C8FIX15..L.. | **410.084** | **121.816** | – | **170.004** |
| **1.78032L300** | 32 | – | 32 | 170,0 | 36 | 40,0 | 1.8150_L9 | **410.084** | **121.816** | – | **170.004** |
| **1.78032L400** | 32 | – | 32 | 170,0 | 36 | 40,0 | C8FIX18..L.. | **118.404** | **121.825** | – | **170.004** |

# Holemaking

**KSEM PLUS Modular Drill System . . . . . .B2–B23**
Product Overview . . . . . .B4–B7
Head Diameter Extension and New B1 Heads . . . . . .B8–B11
Toolholder Diameter Extension . . . . . .B12–B13
DFR, DFT, DFC Beyond Grades and DPA Guiding Pads . . . . . .B14–B16
Spare Parts . . . . . .B18–B21
Application Data . . . . . .B22
**Expandable Reamers . . . . . .B24–B39**
**Tube Sheet Groover . . . . . .B40–B43**
**Romicron AVS . . . . . .B44–B53**
**Setting Fixtures . . . . . .B54–B61**
**Beyond HSS-E-PM Taps . . . . . .B62–B72**

# KSEM PLUS™ Modular Drill System

Our KSEM PLUS drill concept is simple but effective. It combines the benefits of the KSEM™ modular drill (high feeds and length-to-diameter [L/D] ratios) with the benefits of an indexable drill (high speeds and low consumable costs). KSEM PLUS is a modular drilling platform, offering a pre-mountable HSS head with pocket seats for carbide inserts. KSEM PLUS features two head styles which are interchangeable on fitting tool bodies with our flexible FDS interface.

## Primary Application

KSEM PLUS performs in steel, cast iron, stainless steel, and advanced materials. It is perfectly suited to replace HSS or indexable drilling tools. The KSEM PLUS range comprises 28–101mm (1.102–4") from 3–10 x D. There is a wide range of applications in the energy market, and in general engineering (e.g., bearing rings for windmills, hydraulic manifolds, large engine parts, generator housings, etc.).
This tool will deliver vast improvements in productivity, and greatly attribute to increasing your machining capacity.

# Features and Benefits

## Replaceable Heads with FDS-Interface Coupling

- Quickly and easily replace inserts or drill heads without the need to remove complete tool bodies from machine.
- Save money and reduce tool stock by replacing just the worn drill head; keep the tool body for further usage.
- Use one tool body for different sizes and styles of drill heads (a head fits any drill body of the same FDS size).

## KSEM PLUS A1 Heads

- High metal removal rates.
- Very stable in normal cutting conditions.
- Cost-effective indexable Drill Fix™ DFT inserts.

## KSEM PLUS B1 Heads

- High-speed drilling in difficult conditions.
- Drills stacked plates and cored holes.
- Capable of machining through cross holes.
- Works with slanted exits up to 15°.

## Two Effective Cutting Edges

- Like any solid carbide or modular drill, KSEM PLUS has two full cutting edges in action when operating.
- Unmatched performance with up to 100% increased productivity vs. an indexable drill of the same diameter.
- High L/D ratios possible from 3 x D up to 10 x D as stocked standards, and up to 20 x D as custom solutions.

## KSEM PLUS Pilot Insert

- Very high feed rates, comparable to modular drills.
- Very long tool life of KSEM PLUS centre inserts and modular heads due to total prevention of chip flow obstruction.
- No precentring necessary for toolholders up to 5 x D.

## DFR™/DFT™/DFC™ Outboard Inserts

- Very high cutting speeds enable advanced metal removal rates.
- Improved stability in all cutting conditions.
- Indexable inserts provide good surface finish and hole diameter accuracy.

## Tailored Grades

### Centre Inserts

- KC7315™ grade is a TiAlN-based PVD grade, offering superior performance in all steel applications.
- KC7410™ grade contains multiple layers of PVD coating, offering outstanding wear-resistance when drilling cast irons.

### Drill Fix™ Lateral Inserts

NEW!
- KCU25™ grade enables high metal removal rates. With its advanced TiCN-Al-CVD coating, it excels with superior tool life in stable working conditions.

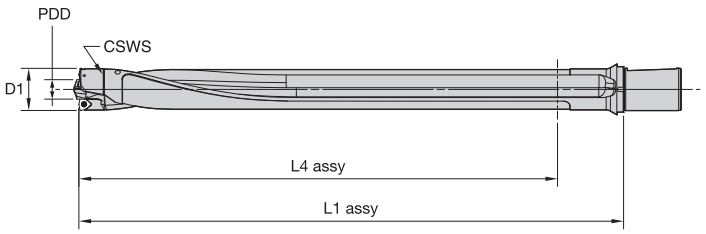
NEW!
- KCU40™ is your first choice for high reliability when machining most materials for applications with medium cutting speeds. It features a multilayered TiAlN-PVD coating, providing high wear resistance in challenging conditions.
- KC7140™ grade is a TiCN-based, PVD-coated alloyed carbide, ideal for machining alloyed steel and stainless steel on KSEM PLUS systems.
- KC7225™ offers the highest level of process safety for non-ferrous materials, super alloys, and titanium. It features a TiAlN-PVD-coated fine-grain carbide.

NEW!

## Customisation

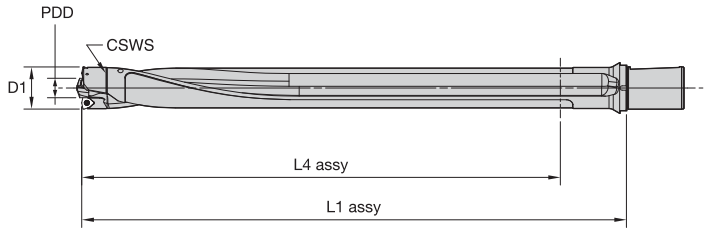
- Heads are available in intermediate diameters, and up to Ø 127mm as semi-standards.
- Tool bodies are available with all popular shank styles and up to 20x drill Ø unless total shank length does not exceed a length of 1200mm.
- New custom body style with helical chip flutes for better chip evacuation.
- Heads for reground inserts are available as semi-standards.
- KSEM PLUS features a high level of available customisation. Please do not hesitate to approach us for your particular metalcutting applications.

*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*



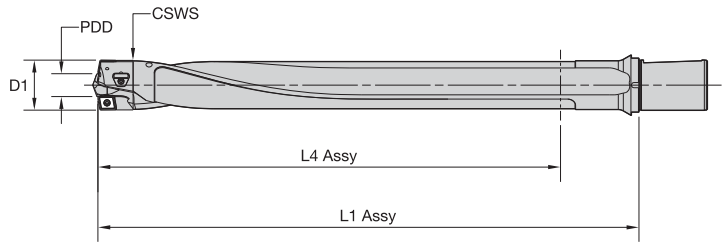

NEW!

| available KSEM PLUS heads | | | | requested insert size reference per head | | | available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 mm | D1 in | KSEM PLUS head order number | KSEM PLUS head ANSI catalogue number | PDD (mm) centre insert size reference | outboard gage insert DFR/DFT | CSWS | KSEM PLUS body order number | KSEM PLUS body ANSI catalogue number | L/D ratio | L4 assembly (mm) | L1 assembly (mm) |
| 28,00 | 1.102 | 4000408 | KSEMP2800FDS28A1M | 14,00 | DFR040304D28 | 28 | 4000409 | WD32FDS28128M | 3 x D | 93 | 150 |
| 28,58 | 1.125 | 4047811 | KSEMP1125FDS28A1 | 15,00 | DFR040304D28 | | 4051136 | WD32FDS28190M | 5 x D | 155 | 212 |
| 29,00 | 1.142 | 4047812 | KSEMP2900FDS28A1M | 15,00 | DFR040304D28 | | 4051137 | WD32FDS28283M | 8 x D | 248 | 305 |
| 29,36 | 1.156 | 4047823 | KSEMP1156FDS28A1 | 16,00 | DFR040304D28 | | 4000411 | WD32FDS28345M | 10 x D | 310 | 367 |
| 30,00 | 1.181 | 4047824 | KSEMP3000FDS28A1M | 16,00 | DFR040304D28 | | 4051138 | SSF150FDS280502 | 3 x D | 93 | 150 |
| 30,18 | 1.188 | 4047825 | KSEMP1188FDS28A1 | 17,00 | DFR040304D28 | | 4051139 | SSF150FDS280746 | 5 x D | 155 | 212 |
| 30,96 | 1.219 | 4047826 | KSEMP1219FDS28A1 | 17,00 | DFR040304D28 | | 4051140 | SSF150FDS281112 | 8 x D | 248 | 305 |
| 31,00 | 1.221 | 4047827 | KSEMP3100FDS28A1M | 17,00 | DFR040304D28 | | 4051141 | SSF150FDS281356 | 10 x D | 310 | 367 |
| 31,75 | 1.250 | 3794916 | KSEMP1250FDS32A1 | 15,00 | DFT05T308D32 | 32 | 3950219 | WD32FDS32146M | 3 x D | 105 | 166 |
| 32,00 | 1.260 | 3794291 | KSEMP3200FDS32A1M | 15,00 | DFT05T308D32 | | 3794428 | WD32FDS32216M | 5 x D | 175 | 236 |
| 33,00 | 1.299 | 3742210 | KSEMP3300FDS32A1M | 16,00 | DFT05T308D33 | | 3742293 | WD32FDS32321M | 8 x D | 280 | 341 |
| 33,20 | 1.307 | 3793949 | KSEMP3320FDS32A1M | 16,00 | DFT05T308D33 | | 3794429 | WD32FDS32391M | 10 x D | 350 | 411 |
| 33,35 | 1.313 | 3794917 | KSEMP1313FDS32A1 | 17,00 | DFT05T308D33 | | 3952192 | SSF150FDS320573 | 3 x D | 105 | 166 |
| 34,00 | 1.339 | 3794292 | KSEMP3400FDS32A1M | 17,00 | DFT05T308D33 | | 3794835 | SSF150FDS320850 | 5 x D | 175 | 236 |
| 34,93 | 1.375 | 3794918 | KSEMP1375FDS32A1 | 18,00 | DFT05T308D33 | | 3794836 | SSF150FDS321263 | 8 x D | 280 | 341 |
| 35,00 | 1.378 | 3794393 | KSEMP3500FDS32A1M | 18,00 | DFT05T308D33 | | 3794837 | SSF150FDS321539 | 10 x D | 350 | 411 |
| 36,00 | 1.417 | 3794394 | KSEMP3600FDS36A1M | 13,00 | DFT06T308D36 | 36 | 3950220 | WD32FDS36166M | 3 x D | 117 | 186 |
| 36,53 | 1.438 | 3794919 | KSEMP1438FDS36A1 | 14,00 | DFT06T308D36 | | 3794430 | WD32FDS36244M | 5 x D | 195 | 264 |
| 37,00 | 1.457 | 3794395 | KSEMP3700FDS36A1M | 14,00 | DFT06T308D36 | | 3794431 | WD32FDS36361M | 8 x D | 312 | 381 |
| 37,50 | 1.476 | 3794427 | KSEMP3750FDS36A1M | 15,00 | DFT06T308D36 | | 3794432 | WD32FDS36439M | 10 x D | 390 | 459 |
| 38,00 | 1.496 | 3794396 | KSEMP3800FDS36A1M | 15,00 | DFT06T308D36 | | 3952343 | SSF150FDS360652 | 3 x D | 117 | 186 |
| 38,10 | 1.500 | 3794920 | KSEMP1500FDS36A1 | 15,00 | DFT06T308D36 | | 3794838 | SSF150FDS360960 | 5 x D | 195 | 264 |
| 39,00 | 1.535 | 3794397 | KSEMP3900FDS36A1M | 16,00 | DFT06T308D39 | | 3794839 | SSF150FDS361421 | 8 x D | 312 | 381 |
| 39,20 | 1.543 | 3793950 | KSEMP3920FDS36A1M | 16,00 | DFT06T308D39 | | 3794840 | SSF150FDS361728 | 10 x D | 390 | 459 |
| 39,70 | 1.563 | 3794921 | KSEMP1563FDS36A1 | 17,00 | DFT06T308D39 | | | | | | |
| 40,00 | 1.575 | 3794398 | KSEMP4000FDS40A1M | 17,00 | DFT06T308D39 | 40 | 3872075 | WD50FDS40183M | 3 x D | 132 | 208 |
| 41,00 | 1.614 | 3794399 | KSEMP4100FDS40A1M | 18,00 | DFT06T308D39 | | 3794443 | WD50FDS40271M | 5 x D | 220 | 296 |
| 41,28 | 1.625 | 3794922 | KSEMP1625FDS40A1 | 18,00 | DFT06T308D39 | | 3794444 | WD50FDS40403M | 8 x D | 352 | 428 |
| 42,00 | 1.654 | 3794400 | KSEMP4200FDS40A1M | 19,00 | DFT06T308D39 | | 3794445 | WD50FDS40491M | 10 x D | 440 | 516 |
| 43,00 | 1.693 | 3794401 | KSEMP4300FDS40A1M | 20,00 | DFT06T308D39 | | 3952344 | SSF200FDS400721 | 3 x D | 132 | 208 |
| 44,00 | 1.732 | 3794402 | KSEMP4400FDS40A1M | 21,00 | DFT06T308D44 | | 3794841 | SSF200FDS401066 | 5 x D | 220 | 296 |
| 44,45 | 1.750 | 3794933 | KSEMP1750FDS40A1 | 22,00 | DFT06T308D44 | | 3794842 | SSF200FDS401586 | 8 x D | 352 | 428 |
| | | | | | | | 3794903 | SSF200FDS401933 | 10 x D | 440 | 516 |
| | | | | | | 45 | 3872709 | WD50FDS45206M | 3 x D | 147 | 231 |
| 45,00 | 1.772 | 3794403 | KSEMP4500FDS45A1M | 18,00 | DFT070408D45 | | 3794446 | WD50FDS45304M | 5 x D | 245 | 329 |
| 46,00 | 1.811 | 3794404 | KSEMP4600FDS45A1M | 19,00 | DFT070408D45 | | 3794447 | WD50FDS45451M | 8 x D | 392 | 476 |
| 47,00 | 1.850 | 3794405 | KSEMP4700FDS45A1M | 20,00 | DFT070408D45 | | 3794448 | WD50FDS45549M | 10 x D | 490 | 574 |
| 47,63 | 1.875 | 3794934 | KSEMP1875FDS45A1 | 21,00 | DFT070408D45 | | 3952345 | SSF200FDS450809 | 3 x D | 147 | 231 |
| 48,00 | 1.890 | 3794406 | KSEMP4800FDS45A1M | 21,00 | DFT070408D45 | | 3794904 | SSF200FDS451196 | 5 x D | 245 | 329 |
| 49,00 | 1.929 | 3794407 | KSEMP4900FDS45A1M | 22,00 | DFT070408D45 | | 3794905 | SSF200FDS451775 | 8 x D | 392 | 476 |
| | | | | | | | 3794906 | SSF200FDS452161 | 10 x D | 490 | 574 |



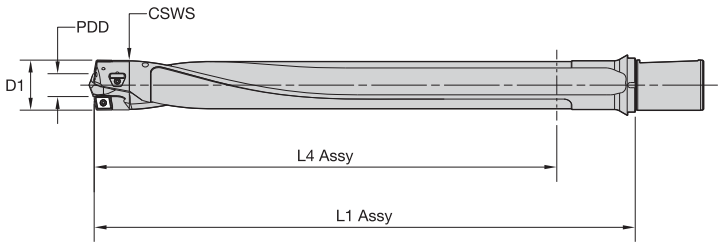



| available KSEM PLUS heads | | | | requested insert size reference per head | | | available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 mm | D1 in | KSEM PLUS head order number | KSEM PLUS head ANSI catalogue number | PDD (mm) centre insert size reference | outboard gage insert DFR/DFT | CSWS | KSEM PLUS body order number | KSEM PLUS body ANSI catalogue number | L/D ratio | L4 assembly (mm) | L1 assembly (mm) |
| 50,00 | 1.969 | 3742211 | KSEMP5000FDS50A1M | 23,00 | DFT070408D50 | 50 | 3950221 | WD50FDS50228M | 3 x D | 165 | 258 |
| 50,80 | 2.000 | 3794935 | KSEMP2000FDS50A1 | 24,00 | DFT070408D50 | | 3794449 | WD50FDS50338M | 5 x D | 275 | 368 |
| 51,00 | 2.008 | 3794408 | KSEMP5100FDS50A1M | 24,00 | DFT070408D50 | | 3742294 | WD50FDS50503M | 8 x D | 440 | 533 |
| 52,00 | 2.047 | 3794409 | KSEMP5200FDS50A1M | 25,00 | DFT070408D50 | | 3794450 | WD50FDS50613M | 10 x D | 550 | 643 |
| 53,00 | 2.087 | 3794410 | KSEMP5300FDS50A1M | 26,00 | DFT070408D50 | | 3952346 | SSF200FDS500896 | 3 x D | 165 | 258 |
| 53,98 | 2.125 | 3794936 | KSEMP2125FDS50A1 | 27,00 | DFT070408D50 | | 3794907 | SSF200FDS501330 | 5 x D | 275 | 368 |
| 54,00 | 2.126 | 3794411 | KSEMP5400FDS50A1M | 27,00 | DFT070408D50 | | 3794908 | SSF200FDS501980 | 8 x D | 440 | 533 |
| 55,00 | 2.165 | 3794412 | KSEMP5500FDS50A1M | 28,00 | DFT070408D50 | | 3794909 | SSF200FDS502413 | 10 x D | 550 | 643 |
| 56,00 | 2.205 | 3794413 | KSEMP5600FDS56A1M | 20,00 | DFT090508D56 | 56 | 3950222 | WD50FDS56259M | 3 x D | 186 | 289 |
| 57,00 | 2.244 | 3794414 | KSEMP5700FDS56A1M | 21,00 | DFT090508D56 | | 3794451 | WD50FDS56383M | 5 x D | 310 | 413 |
| 57,15 | 2.250 | 3794937 | KSEMP2250FDS56A1 | 21,00 | DFT090508D56 | | 3794452 | WD50FDS56569M | 8 x D | 496 | 599 |
| 58,00 | 2.284 | 3794415 | KSEMP5800FDS56A1M | 22,00 | DFT090508D56 | | 3794453 | WD50FDS56693M | 10 x D | 620 | 723 |
| 59,00 | 2.323 | 3794416 | KSEMP5900FDS56A1M | 23,00 | DFT090508D56 | | 3952347 | SSF200FDS561020 | 3 x D | 186 | 289 |
| 60,00 | 2.362 | 3794417 | KSEMP6000FDS56A1M | 24,00 | DFT090508D56 | | 3794910 | SSF200FDS561507 | 5 x D | 310 | 413 |
| 60,33 | 2.375 | 3794938 | KSEMP2375FDS56A1 | 24,00 | DFT090508D56 | | 3794911 | SSF200FDS562240 | 8 x D | 496 | 599 |
| 61,00 | 2.402 | 3794418 | KSEMP6100FDS56A1M | 25,00 | DFT090508D56 | | 3794912 | SSF200FDS562783 | 10 x D | 620 | 723 |
| 62,00 | 2.441 | 3794419 | KSEMP6200FDS56A1M | 26,00 | DFT090508D56 | | | | | | |
| 63,00 | 2.480 | 3794420 | KSEMP6300FDS63A1M | 27,00 | DFT090508D63 | 63 | | | | | |
| 63,50 | 2.500 | 3794939 | KSEMP2500FDS63A1 | 28,00 | DFT090508D63 | | 3950333 | WD50FDS63289M | 3 x D | 210 | 325 |
| 64,00 | 2.520 | 3794421 | KSEMP6400FDS63A1M | 28,00 | DFT090508D63 | | 3794454 | WD50FDS63429M | 5 x D | 350 | 465 |
| 65,00 | 2.559 | 3794422 | KSEMP6500FDS63A1M | 29,00 | DFT090508D63 | | 3794455 | WD50FDS63639M | 8 x D | 560 | 675 |
| 66,00 | 2.598 | 3794423 | KSEMP6600FDS63A1M | 30,00 | DFT090508D63 | | 3742296 | WD50FDS63779M | 10 x D | 700 | 815 |
| 66,68 | 2.625 | 3794940 | KSEMP2625FDS63A1 | 31,00 | DFT090508D63 | | 3952348 | SSF200FDS631138 | 3 x D | 210 | 325 |
| 67,00 | 2.638 | 3794424 | KSEMP6700FDS63A1M | 31,00 | DFT090508D63 | | 3794913 | SSF200FDS631688 | 5 x D | 350 | 465 |
| 68,00 | 2.677 | 3794425 | KSEMP6800FDS63A1M | 32,00 | DFT090508D63 | | 3794914 | SSF200FDS632515 | 8 x D | 560 | 675 |
| 69,00 | 2.717 | 3794426 | KSEMP6900FDS63A1M | 33,00 | DFT090508D63 | | 3794915 | SSF200FDS633066 | 10 x D | 700 | 815 |
| 69,85 | 2.750 | 3794941 | KSEMP2750FDS63A1 | 34,00 | DFT090508D63 | | | | | | |
| 70,00 | 2.756 | 3742212 | KSEMP7000FDS63A1M | 34,00 | DFT090508D63 | | | | | | |
| NEW! 72,00 | 2.835 | 5397513 | KSEMP7200FDS71A1M | 27,00 | | 71 | | | | | |
| 74,00 | 2.913 | 5397514 | KSEMP7400FDS71A1M | 29,00 | | | 5397942 | WD50FDS71292M | 3 x D | 240 | 332 |
| 76,00 | 2.992 | 5397515 | KSEMP7600FDS71A1M | 31,00 | 4x DFT06T308D44 | | 5397943 | WD50FDS71452M | 5 x D | 400 | 492 |
| 76,20 | 3.000 | 5397516 | KSEMP3000FDS71A1 | 31,00 | | | 5397948 | SSF200FDS711150 | 3 x D | 240 | 332 |
| 78,00 | 3.071 | 5397517 | KSEMP7800FDS71A1M | 33,00 | | | 5397949 | SSF200FDS711780 | 5 x D | 400 | 492 |
| 80,00 | 3.150 | 5397518 | KSEMP8000FDS80A1M | 31,00 | | 80 | | | | | |
| 82,00 | 3.228 | 5397519 | KSEMP8200FDS80A1M | 33,00 | | | 5397944 | WD50FDS80327M | 3 x D | 270 | 372 |
| 82,55 | 3.250 | 5397550 | KSEMP3250FDS80A1 | 34,00 | 2x DFT06T308D44 | | 5397945 | WD50FDS80507M | 5 x D | 450 | 552 |
| 84,00 | 3.307 | 5397551 | KSEMP8400FDS80A1M | 35,00 | & | | 5398010 | SSF200FDS801287 | 3 x D | 270 | 372 |
| 86,00 | 3.386 | 5397552 | KSEMP8600FDS80A1M | 37,00 | 2x DFT070408D50 | | 5398011 | SSF200FDS801996 | 5 x D | 450 | 552 |
| 88,00 | 3.465 | 5397553 | KSEMP8800FDS80A1M | 39,00 | | | | | | | |
| 88,90 | 3.500 | 5397554 | KSEMP3500FDS80A1 | 40,00 | | | | | | | |
| 90,00 | 3.543 | 5397555 | KSEMP9000FDS90A1M | 37,00 | 4x DFT070408D50 | 90 | | | | | |
| 92,00 | 3.622 | 5397556 | KSEMP9200FDS90A1M | 39,00 | | | 5397946 | WD50FDS90362M | 3 x D | 300 | 412 |
| 94,00 | 3.701 | 5397557 | KSEMP9400FDS90A1M | 26,00 | | | 5397947 | WD50FDS90562M | 5 x D | 500 | 612 |
| 95,25 | 3.750 | 5397558 | KSEMP3750FDS90A1 | 27,00 | 6x DFT06T308D44 | | 5398012 | SSF200FDS901425 | 3 x D | 300 | 412 |
| 96,00 | 3.780 | 5397559 | KSEMP9600FDS90A1M | 28,00 | | | 5398013 | SSF200FDS902213 | 5 x D | 500 | 612 |
| 98,00 | 3.858 | 5397560 | KSEMP9800FDS90A1M | 30,00 | | | | | | | |
| 101,60 | 4.000 | 5397561 | KSEMP4000FDS90A1 | 34,00 | | | | | | | |




NEW!

| available KSEM PLUS heads | | | | requested insert size reference per head | | | available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 mm | D1 in | KSEM PLUS head order number | KSEM PLUS head ANSI catalogue number | PDD (mm) center insert size reference | Drill Fix™ DFC DPA guiding pads | CSWS | KSEM PLUS body order number | KSEM PLUS body ANSI catalogue number | L/D ratio | L4 assembly (mm) | L1 assembly (mm) |
| 28,00 | 1.102 | **5115736** | **KSEMP2800FDS28B1M** | 14,00 | **DFC inserts** DFC040310D28 **DPA guiding pads** DPA07T3D25 | 28 | **4000409 4051136 4051137 4000411** | **WD32FDS28128M WD32FDS28190M WD32FDS28283M WD32FDS28345M** | 3 x D 5 x D 8 x D 10 x D | 93 155 248 310 | 150 212 305 367 |
| 28,58 | 1.125 | **5115737** | **KSEMP1125FDS28B1** | 15,00 | | | | | | | |
| 29,00 | 1.142 | **5115738** | **KSEMP2900FDS28B1M** | 15,00 | | | | | | | |
| 29,36 | 1.156 | **5115739** | **KSEMP1156FDS28B1** | 16,00 | | | | | | | |
| 30,00 | 1.181 | **5116010** | **KSEMP3000FDS28B1M** | 16,00 | | | **4051138 4051139 4051140 4051141** | **SSF150FDS280502 SSF150FDS280746 SSF150FDS281112 SSF150FDS281356** | 3 x D 5 x D 8 x D 10 x D | 93 155 248 310 | 150 212 305 367 |
| 30,18 | 1.188 | **5116011** | **KSEMP1188FDS28B1** | 17,00 | | | | | | | |
| 30,96 | 1.219 | **5116012** | **KSEMP1219FDS28B1** | 17,00 | | | | | | | |
| 31,00 | 1.220 | **5116013** | **KSEMP3100FDS28B1M** | 17,00 | | | | | | | |
| 31,75 | 1.250 | **5116014** | **KSEMP1250FDS32B1** | 15,00 | **DFC inserts** DFC05T312D32 **DPA guiding pads** DPA09T4D32 | 32 | **3950219 3794428 3742293 3794429** | **WD32FDS32146M WD32FDS32216M WD32FDS32321M WD32FDS32391M** | 3 x D 5 x D 8 x D 10 x D | 105 175 280 350 | 166 236 341 411 |
| 32,00 | 1.260 | **5116015** | **KSEMP3200FDS32B1M** | 15,00 | | | | | | | |
| 33,00 | 1.299 | **5116016** | **KSEMP3300FDS32B1M** | 16,00 | | | | | | | |
| 33,20 | 1.307 | **5116017** | **KSEMP3320FDS32B1M** | 16,00 | | | | | | | |
| 33,35 | 1.313 | **5116018** | **KSEMP1313FDS32B1** | 17,00 | | | **3952192 3794835 3794836 3794837** | **SSF150FDS320573 SSF150FDS320850 SSF150FDS321263 SSF150FDS321539** | 3 x D 5 x D 8 x D 10 x D | 105 175 280 350 | 166 236 341 411 |
| 34,00 | 1.339 | **5116019** | **KSEMP3400FDS32B1M** | 17,00 | | | | | | | |
| 34,93 | 1.375 | **5116030** | **KSEMP1375FDS32B1** | 18,00 | | | | | | | |
| 35,00 | 1.378 | **5116031** | **KSEMP3500FDS32B1M** | 18,00 | | | | | | | |
| 36,00 | 1.417 | **5116032** | **KSEMP3600FDS36B1M** | 13,00 | **DFC inserts** DFC06T312D36 **DPA guiding pads** DPA09T4D32 | 36 | **3950220 3794430 3794431 3794432** | **WD32FDS36166M WD32FDS36244M WD32FDS36361M WD32FDS36439M** | 3 x D 5 x D 8 x D 10 x D | 117 195 312 390 | 186 264 381 459 |
| 36,53 | 1.438 | **5116033** | **KSEMP1438FDS36B1** | 14,00 | | | | | | | |
| 37,00 | 1.457 | **5116034** | **KSEMP3700FDS36B1M** | 14,00 | | | | | | | |
| 37,50 | 1.476 | **5116035** | **KSEMP3750FDS36B1M** | 15,00 | | | | | | | |
| 38,00 | 1.496 | **5116036** | **KSEMP3800FDS36B1M** | 15,00 | | | **3952343 3794838 3794839 3794840** | **SSF150FDS360652 SSF150FDS360960 SSF150FDS361421 SSF150FDS361728** | 3 x D 5 x D 8 x D 10 x D | 117 195 312 390 | 186 264 381 459 |
| 38,10 | 1.500 | **5116037** | **KSEMP1500FDS36B1** | 15,00 | | | | | | | |
| 39,00 | 1.535 | **5116038** | **KSEMP3900FDS36B1M** | 16,00 | | | | | | | |
| 39,20 | 1.543 | **5116039** | **KSEMP3920FDS36B1M** | 16,00 | | | | | | | |
| 39,70 | 1.563 | **5116040** | **KSEMP1563FDS36B1** | 17,00 | | | | | | | |
| 40,00 | 1.575 | **5116041** | **KSEMP4000FDS40B1M** | 17,00 | **DFC inserts** DFC06T312D36 **DPA guiding pads** DPA09T4D32 | 40 | **3872075 3794443 3794444 3794445** | **WD50FDS40183M WD50FDS40271M WD50FDS40403M WD50FDS40491M** | 3 x D 5 x D 8 x D 10 x D | 132 220 352 440 | 208 296 428 516 |
| 41,00 | 1.614 | **5116042** | **KSEMP4100FDS40B1M** | 18,00 | | | | | | | |
| 41,28 | 1.625 | **5116043** | **KSEMP1625FDS40B1** | 18,00 | | | | | | | |
| 42,00 | 1.654 | **5116044** | **KSEMP4200FDS40B1M** | 19,00 | | | | | | | |
| 43,00 | 1.693 | **5116045** | **KSEMP4300FDS40B1M** | 20,00 | | | **3952344 3794841 3794842 3794903** | **SSF200FDS400721 SSF200FDS401066 SSF200FDS401586 SSF200FDS401933** | 3 x D 5 x D 8 x D 10 x D | 132 220 352 440 | 208 296 428 516 |
| 44,00 | 1.732 | **5116046** | **KSEMP4400FDS40B1M** | 21,00 | | | | | | | |
| 44,45 | 1.750 | **5116047** | **KSEMP1750FDS40B1** | 22,00 | | | | | | | |
| 45,00 | 1.772 | **5116098** | **KSEMP4500FDS45B1M** | 18,00 | **DFC inserts** DFC070416D45 **DPA guiding pads** DPA09T4D32 | 45 | **3872709 3794446 3794447** | **WD50FDS45206M WD50FDS45304M WD50FDS45451M WD50FDS45549M** | 3 x D 5 x D 8 x D 10 x D | 147 245 392 490 | 231 329 476 |
| 46,00 | 1.811 | **5116099** | **KSEMP4600FDS45B1M** | 19,00 | | | | | | | |
| 47,00 | 1.850 | **5116110** | **KSEMP4700FDS45B1M** | 20,00 | | | **3794448 3952345 3794904 3794905** | **SSF200FDS450809 SSF200FDS451196 SSF200FDS451775 SSF200FDS452161** | 3 x D 5 x D 8 x D 10 x D | 147 245 392 490 | 574 231 329 476 |
| 47,63 | 1.875 | **5116111** | **KSEMP1875FDS45B1** | 21,00 | | | | | | | |
| 48,00 | 1.890 | **5116112** | **KSEMP4800FDS45B1M** | 21,00 | | | | | | | |
| 49,00 | 1.929 | **5116113** | **KSEMP4900FDS45B1M** | 22,00 | | | | | | | |

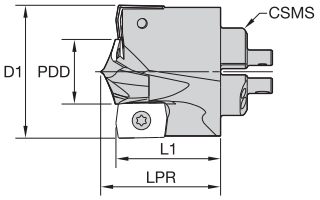




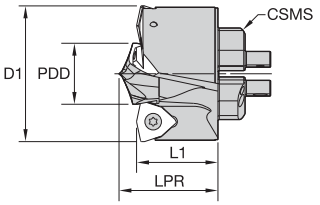

| available KSEM PLUS heads | | | requested insert size reference per head | | | available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| D1 mm | D1 in | KSEM PLUS head order number | KSEM PLUS head ANSI catalogue number | PDD (mm) center insert size reference | Drill Fix™ DFC DPA guiding pads | CSWS | KSEM PLUS body order number | KSEM PLUS body ANSI catalogue number | L/D ratio | L4 assembly (mm) | L1 assembly (mm) |
| 50,00 | 1.969 | 5116114 | KSEMP5000FDS50B1M | 23,00 | DFC inserts DFC070416D45 | 50 | 3794906 | WD50FDS50228M | 3 x D | 165 | 574 |
| 50,80 | 2.000 | 5116115 | KSEMP2000FDS50B1 | 24,00 | | | 3950221 | WD50FDS50338M | 5 x D | 275 | 258 |
| 51,00 | 2.008 | 5116116 | KSEMP5100FDS50B1M | 24,00 | DPA guiding pads DPA13T5D50 | | 3794449 | WD50FDS50503M | 8 x D | 440 | 368 |
| 52,00 | 2.047 | 5116117 | KSEMP5200FDS50B1M | 25,00 | | | 3742294 | WD50FDS50613M | 10 x D | 550 | 533 |
| 53,00 | 2.087 | 5116118 | KSEMP5300FDS50B1M | 26,00 | | | 3742294 | SSF200FDS500896 | 3 x D | 165 | 643 |
| 53,98 | 2.125 | 5116119 | KSEMP2125FDS50B1 | 27,00 | | | 3794450 | SSF200FDS501330 | 5 x D | 275 | 258 |
| 54,00 | 2.126 | 5116120 | KSEMP5400FDS50B1M | 27,00 | | | 3952346 | SSF200FDS501980 | 8 x D | 440 | 368 |
| 55,00 | 2.165 | 5116121 | KSEMP5500FDS50B1M | 28,00 | | | 3794907 | SSF200FDS502413 | 10 x D | 550 | 533 |
| 56,00 | 2.205 | 5116122 | KSEMP5600FDS56B1M | 20,00 | DFC inserts DFC090520D56 | 56 | 3794908 | WD50FDS56259M | 3 x D | 186 | 643 |
| 57,00 | 2.244 | 5116123 | KSEMP5700FDS56B1M | 21,00 | | | 3794909 | WD50FDS56383M | 5 x D | 310 | 289 |
| 57,15 | 2.250 | 5116124 | KSEMP2250FDS56B1 | 21,00 | DPA guiding pads DPA13T5D50 | | 3950222 | WD50FDS56569M | 8 x D | 496 | 413 |
| 58,00 | 2.283 | 5116125 | KSEMP5800FDS56B1M | 22,00 | | | 3794451 | WD50FDS56693M | 10 x D | 620 | 599 |
| 59,00 | 2.323 | 5116126 | KSEMP5900FDS56B1M | 23,00 | | | 3794452 | SSF200FDS561020 | 3 x D | 186 | 723 |
| 60,00 | 2.362 | 5116127 | KSEMP6000FDS56B1M | 24,00 | | | 3794453 | SSF200FDS561507 | 5 x D | 310 | 289 |
| 60,33 | 2.375 | 5116128 | KSEMP2375FDS56B1 | 24,00 | | | 3952347 | SSF200FDS562240 | 8 x D | 496 | 413 |
| 61,00 | 2.402 | 5116129 | KSEMP6100FDS56B1M | 25,00 | | | 3794910 | SSF200FDS562783 | 10 x D | 620 | 599 |
| 62,00 | 2.441 | 5116130 | KSEMP6200FDS56B1M | 26,00 | | | | | | | |
| 63,00 | 2.480 | 5116131 | KSEMP6300FDS63B1M | 27,00 | DFC inserts DFC090520D56 | 63 | 3794911 | WD50FDS63289M | 3 x D | 210 | 325 |
| 63,50 | 2.500 | 5116132 | KSEMP2500FDS63B1 | 28,00 | | | 3794912 | WD50FDS63429M | 5 x D | 350 | 465 |
| 64,00 | 2.520 | 5116133 | KSEMP6400FDS63B1M | 28,00 | DPA guiding pads DPA13T5D50 | | 3950333 | WD50FDS63639M | 8 x D | 560 | 675 |
| 65,00 | 2.559 | 5116134 | KSEMP6500FDS63B1M | 29,00 | | | 3794454 | WD50FDS63779M | 10 x D | 700 | 815 |
| 66,00 | 2.598 | 5116135 | KSEMP6600FDS63B1M | 30,00 | | | 3794455 | SSF200FDS631138 | 3 x D | 210 | 325 |
| 66,68 | 2.625 | 5116136 | KSEMP2625FDS63B1 | 31,00 | | | 3742296 | SSF200FDS631688 | 5 x D | 350 | 465 |
| 67,00 | 2.638 | 5116137 | KSEMP6700FDS63B1M | 31,00 | | | 3952348 | SSF200FDS632515 | 8 x D | 560 | 675 |
| 68,00 | 2.677 | 5116138 | KSEMP6800FDS63B1M | 32,00 | | | 3794913 | SSF200FDS633066 | 10 x D | 700 | 815 |
| 69,00 | 2.717 | 5116139 | KSEMP6900FDS63B1M | 33,00 | | | | | | | |
| 69,85 | 2.750 | 5116140 | KSEMP2750FDS63B1 | 34,00 | | | | | | | |
| 70,00 | 2.756 | 5116141 | KSEMP7000FDS63B1M | 34,00 | | | | | | | |
| NEW! 76,20 | 3.000 | 5397562 | KSEMP3000FDS71B1 | 31,00 | DFC inserts 4x DFC06T312D36 DPA guiding pads DPA13T5D50 | 71 | 3794914 | WD50FDS71292M | 3 x D | 240 | 332 |
| | | | | | | | | WD50FDS71452M | 5 x D | 400 | 492 |
| | | | | | | | | SSF200FDS711150 | 3 x D | 240 | 332 |
| | | | | | | | | SSF200FDS711780 | 5 x D | 400 | 492 |
| 82,55 | 3.250 | 5397563 | KSEMP3250FDS80B1 | 34,00 | DFC inserts 2x DFC06T312D36 & 2x DFC070416D45 DPA guiding pads DPA13T5D50 | 80 | 3794915 | WD50FDS90362M | 3 x D | 300 | 412 |
| 88,90 | 3.500 | 5397564 | KSEMP3500FDS80B1 | 40,00 | | | | WD50FDS90562M | 5 x D | 500 | 612 |
| | | | | | | | | SSF200FDS901425 | 3 x D | 300 | 412 |
| | | | | | | | | SSF200FDS902213 | 5 x D | 500 | 612 |
| 95,25 | 3.750 | 5397565 | KSEMP3750FDS90B1 | 27,00 | DFC inserts 6x DFC06T312D36 DPA guiding pads DPA13T5D50 | 90 | 5397942 | WD50FDS90362M | 3 x D | 300 | 412 |
| 101,60 | 4.000 | 5397566 | KSEMP4000FDS90B1 | 34,00 | | | 5397943 | WD50FDS90562M | 5 x D | 500 | 612 |
| | | | | | | | | SSF200FDS901425 | 3 x D | 300 | 412 |
| | | | | | | | | SSF200FDS902213 | 5 x D | 500 | 612 |

- To ensure 100% system stability, KSEM™ inserts used for KSEM PLUS should not be reground.
- KSEM PLUS heads are shipped with all insert screws.
- KSEM PLUS heads are shipped with two wrenches: one for the KSEM insert and one to be used for the DFT™/DFR™ inserts as well as for the assembly of the body to the head.
- Order KSEM PLUS shanks using connection coupling size (CSMS) to determine which heads go with each shank.
- PDD in the callout drawing refers to the D1 of the KSEM HPG and HPCCL inserts for use with KSEM PLUS.
- Order inserts (KSEM, DFT, and DFR) for KSEM PLUS separately.

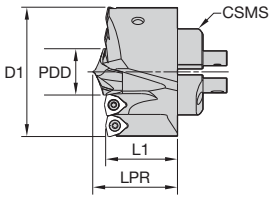


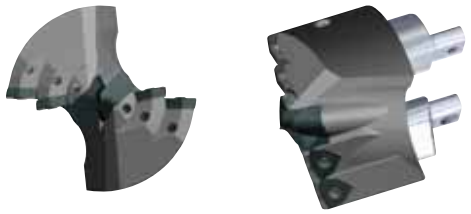


**2 x DFR**
diameter: 28–<31,75mm

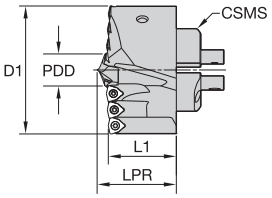


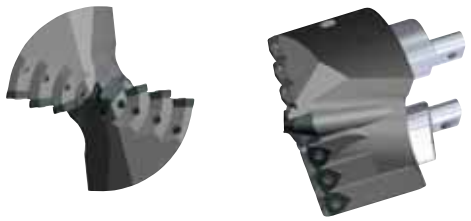
**2 x DFT**
diameter: 31,75–70,34mm



**4 x DFT**
diameter: 70,35–93,34mm



**6 x DFT**
diameter: 93,35–127mm

NEW!

## KSEM PLUS A1 Heads 28–101,60mm (1.102–4")

| order number | ISO catalogue number | ANSI catalogue number | D1 mm | D1 in | PDD mm | PDD in | LPR mm | LPR in | L1 mm | L1 in | CSMS system size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4000408 | KSEMP2800FDS28A1M | KSEMP2800FDS28A1M | 28,00 | 1.102 | 14,00 | .5512 | 24,9 | .980 | 22,0 | .866 | FDS28 |
| 4047811 | KSEMP2858FDS28A1M | KSEMP1125FDS28A1 | 28,58 | 1.125 | 15,00 | .5906 | 25,0 | .984 | 22,0 | .866 | FDS28 |
| 4047812 | KSEMP2900FDS28A1M | KSEMP2900FDS28A1M | 29,00 | 1.142 | 15,00 | .5906 | 25,0 | .984 | 22,0 | .866 | FDS28 |
| 4047823 | KSEMP2937FDS28A1M | KSEMP1156FDS28A1 | 29,36 | 1.156 | 16,00 | .6299 | 25,2 | .992 | 22,0 | .866 | FDS28 |
| 4047824 | KSEMP3000FDS28A1M | KSEMP3000FDS28A1M | 30,00 | 1.181 | 16,00 | .6299 | 25,2 | .992 | 22,0 | .866 | FDS28 |
| 4047825 | KSEMP3017FDS28A1M | KSEMP1188FDS28A1 | 30,18 | 1.188 | 17,00 | .6693 | 25,4 | 1.000 | 22,0 | .866 | FDS28 |
| 4047826 | KSEMP3096FDS28A1M | KSEMP1219FDS28A1 | 30,96 | 1.219 | 17,00 | .6693 | 25,4 | 1.000 | 22,0 | .866 | FDS28 |
| 4047827 | KSEMP3100FDS28A1M | KSEMP3100FDS28A1M | 31,00 | 1.221 | 17,00 | .6693 | 25,4 | 1.000 | 22,0 | .866 | FDS28 |
| 3794916 | KSEMP3175FDS32A1M | KSEMP1250FDS32A1 | 31,75 | 1.250 | 15,00 | .5906 | 23,0 | .907 | 20,0 | .787 | FDS32 |
| 3794291 | KSEMP3200FDS32A1M | KSEMP3200FDS32A1M | 32,00 | 1.260 | 15,00 | .5906 | 23,0 | .907 | 20,0 | .787 | FDS32 |
| 3742210 | KSEMP3300FDS32A1M | KSEMP3300FDS32A1M | 33,00 | 1.299 | 16,00 | .6299 | 23,2 | .913 | 20,0 | .787 | FDS32 |
| 3793949 | KSEMP3320FDS32A1M | KSEMP3320FDS32A1M | 33,20 | 1.307 | 16,00 | .6299 | 23,2 | .913 | 20,0 | .787 | FDS32 |
| 3794917 | KSEMP3334FDS32A1M | KSEMP1313FDS32A1 | 33,35 | 1.313 | 17,00 | .6693 | 23,4 | .920 | 20,0 | .787 | FDS32 |
| 3794292 | KSEMP3400FDS32A1M | KSEMP3400FDS32A1M | 34,00 | 1.339 | 17,00 | .6693 | 23,4 | .920 | 20,0 | .787 | FDS32 |
| 3794918 | KSEMP3493FDS32A1M | KSEMP1375FDS32A1 | 34,93 | 1.375 | 18,00 | .7087 | 23,6 | .928 | 20,0 | .787 | FDS32 |
| 3794393 | KSEMP3500FDS32A1M | KSEMP3500FDS32A1M | 35,00 | 1.378 | 18,00 | .7087 | 23,6 | .928 | 20,0 | .787 | FDS32 |
| 3794394 | KSEMP3600FDS36A1M | KSEMP3600FDS36A1M | 36,00 | 1.417 | 13,00 | .5118 | 22,7 | .893 | 20,0 | .787 | FDS36 |
| 3794919 | KSEMP3651FDS36A1M | KSEMP1438FDS36A1 | 36,53 | 1.438 | 14,00 | .5512 | 22,9 | .900 | 20,0 | .787 | FDS36 |
| 3794395 | KSEMP3700FDS36A1M | KSEMP3700FDS36A1M | 37,00 | 1.457 | 14,00 | .5512 | 22,9 | .900 | 20,0 | .787 | FDS36 |
| 3794427 | KSEMP3750FDS36A1M | KSEMP3750FDS36A1M | 37,50 | 1.476 | 15,00 | .5906 | 23,0 | .907 | 20,0 | .787 | FDS36 |

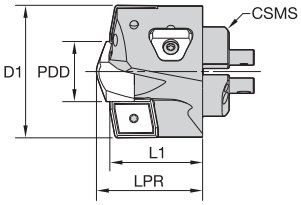
*(continued)*

*(KSEM PLUS A1 Heads 28–101,60mm (1.102–4") continued)*

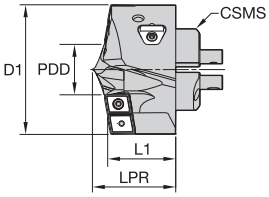
| order number | ISO catalogue number | ANSI catalogue number | D1 mm | D1 in | PDD mm | PDD in | LPR mm | LPR in | L1 mm | L1 in | CSMS system size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3794396 | KSEMP3800FDS36A1M | KSEMP3800FDS36A1M | 38,00 | 1.496 | 15,00 | .5906 | 23,0 | .907 | 20,0 | .787 | FDS36 |
| 3794920 | KSEMP3810FDS36A1M | KSEMP1500FDS36A1 | 38,10 | 1.500 | 15,00 | .5906 | 23,0 | .907 | 20,0 | .787 | FDS36 |
| 3794397 | KSEMP3900FDS36A1M | KSEMP3900FDS36A1M | 39,00 | 1.535 | 16,00 | .6299 | 23,2 | .913 | 20,0 | .787 | FDS36 |
| 3793950 | KSEMP3920FDS36A1M | KSEMP3920FDS36A1M | 39,20 | 1.543 | 16,00 | .6299 | 23,2 | .913 | 20,0 | .787 | FDS36 |
| 3794921 | KSEMP3970FDS36A1M | KSEMP1563FDS36A1 | 39,70 | 1.563 | 17,00 | .6693 | 23,4 | .920 | 20,0 | .787 | FDS36 |
| 3794398 | KSEMP4000FDS40A1M | KSEMP4000FDS40A1M | 40,00 | 1.575 | 17,00 | .6693 | 28,6 | 1.125 | 25,0 | .984 | FDS40 |
| 3794399 | KSEMP4100FDS40A1M | KSEMP4100FDS40A1M | 41,00 | 1.614 | 18,00 | .7087 | 28,8 | 1.132 | 25,0 | .984 | FDS40 |
| 3794922 | KSEMP4128FDS40A1M | KSEMP1625FDS40A1 | 41,28 | 1.625 | 18,00 | .7087 | 28,8 | 1.132 | 25,0 | .984 | FDS40 |
| 3794400 | KSEMP4200FDS40A1M | KSEMP4200FDS40A1M | 42,00 | 1.654 | 19,00 | .7480 | 28,9 | 1.139 | 25,0 | .984 | FDS40 |
| 3794401 | KSEMP4300FDS40A1M | KSEMP4300FDS40A1M | 43,00 | 1.693 | 20,00 | .7874 | 29,1 | 1.146 | 25,0 | .984 | FDS40 |
| 3794402 | KSEMP4400FDS40A1M | KSEMP4400FDS40A1M | 44,00 | 1.732 | 21,00 | .8268 | 29,3 | 1.153 | 25,0 | .984 | FDS40 |
| 3794933 | KSEMP4445FDS40A1M | KSEMP1750FDS40A1 | 44,45 | 1.750 | 22,00 | .8661 | 29,5 | 1.160 | 25,0 | .984 | FDS40 |
| 3794403 | KSEMP4500FDS45A1M | KSEMP4500FDS45A1M | 45,00 | 1.772 | 18,00 | .7087 | 28,8 | 1.132 | 25,0 | .984 | FDS45 |
| 3794404 | KSEMP4600FDS45A1M | KSEMP4600FDS45A1M | 46,00 | 1.811 | 19,00 | .7480 | 28,9 | 1.139 | 25,0 | .984 | FDS45 |
| 3794405 | KSEMP4700FDS45A1M | KSEMP4700FDS45A1M | 47,00 | 1.850 | 20,00 | .7874 | 29,1 | 1.146 | 25,0 | .984 | FDS45 |
| 3794934 | KSEMP4763FDS45A1M | KSEMP1875FDS45A1 | 47,63 | 1.875 | 21,00 | .8268 | 29,3 | 1.153 | 25,0 | .984 | FDS45 |
| 3794406 | KSEMP4800FDS45A1M | KSEMP4800FDS45A1M | 48,00 | 1.890 | 21,00 | .8268 | 29,3 | 1.153 | 25,0 | .984 | FDS45 |
| 3794407 | KSEMP4900FDS45A1M | KSEMP4900FDS45A1M | 49,00 | 1.929 | 22,00 | .8661 | 29,5 | 1.160 | 25,0 | .984 | FDS45 |
| 3742211 | KSEMP5000FDS50A1M | KSEMP5000FDS50A1M | 50,00 | 1.969 | 23,00 | .9055 | 34,8 | 1.372 | 30,0 | 1.181 | FDS50 |
| 3794935 | KSEMP5080FDS50A1M | KSEMP2000FDS50A1 | 50,80 | 2.000 | 24,00 | .9449 | 35,0 | 1.379 | 30,0 | 1.181 | FDS50 |
| 3794408 | KSEMP5100FDS50A1M | KSEMP5100FDS50A1M | 51,00 | 2.008 | 24,00 | .9449 | 35,0 | 1.379 | 30,0 | 1.181 | FDS50 |
| 3794409 | KSEMP5200FDS50A1M | KSEMP5200FDS50A1M | 52,00 | 2.047 | 25,00 | .9843 | 35,2 | 1.386 | 30,0 | 1.181 | FDS50 |
| 3794410 | KSEMP5300FDS50A1M | KSEMP5300FDS50A1M | 53,00 | 2.087 | 26,00 | 1.0236 | 35,4 | 1.392 | 30,0 | 1.181 | FDS50 |
| 3794936 | KSEMP5398FDS50A1M | KSEMP2125FDS50A1 | 53,98 | 2.125 | 27,00 | 1.0630 | 35,6 | 1.399 | 30,0 | 1.181 | FDS50 |
| 3794411 | KSEMP5400FDS50A1M | KSEMP5400FDS50A1M | 54,00 | 2.126 | 27,00 | 1.0630 | 35,6 | 1.399 | 30,0 | 1.181 | FDS50 |
| 3794412 | KSEMP5500FDS50A1M | KSEMP5500FDS50A1M | 55,00 | 2.165 | 28,00 | 1.1024 | 35,7 | 1.406 | 30,0 | 1.181 | FDS50 |
| 3794413 | KSEMP5600FDS56A1M | KSEMP5600FDS56A1M | 56,00 | 2.205 | 20,00 | .7874 | 34,3 | 1.351 | 30,0 | 1.181 | FDS56 |
| 3794414 | KSEMP5700FDS56A1M | KSEMP5700FDS56A1M | 57,00 | 2.244 | 21,00 | .8268 | 34,5 | 1.358 | 30,0 | 1.181 | FDS56 |
| 3794937 | KSEMP5715FDS56A1M | KSEMP2250FDS56A1 | 57,15 | 2.250 | 21,00 | .8268 | 34,5 | 1.358 | 30,0 | 1.181 | FDS56 |
| 3794415 | KSEMP5800FDS56A1M | KSEMP5800FDS56A1M | 58,00 | 2.284 | 22,00 | .8661 | 34,7 | 1.365 | 30,0 | 1.181 | FDS56 |
| 3794416 | KSEMP5900FDS56A1M | KSEMP5900FDS56A1M | 59,00 | 2.323 | 23,00 | .9055 | 34,8 | 1.372 | 30,0 | 1.181 | FDS56 |
| 3794417 | KSEMP6000FDS56A1M | KSEMP6000FDS56A1M | 60,00 | 2.362 | 24,00 | .9449 | 35,0 | 1.379 | 30,0 | 1.181 | FDS56 |
| 3794938 | KSEMP6033FDS56A1M | KSEMP2375FDS56A1 | 60,33 | 2.375 | 24,00 | .9449 | 35,0 | 1.379 | 30,0 | 1.181 | FDS56 |
| 3794418 | KSEMP6100FDS56A1M | KSEMP6100FDS56A1M | 61,00 | 2.402 | 25,00 | .9843 | 35,2 | 1.386 | 30,0 | 1.181 | FDS56 |
| 3794419 | KSEMP6200FDS56A1M | KSEMP6200FDS56A1M | 62,00 | 2.441 | 26,00 | 1.0236 | 35,4 | 1.392 | 30,0 | 1.181 | FDS56 |
| 3794420 | KSEMP6300FDS63A1M | KSEMP6300FDS63A1M | 63,00 | 2.480 | 27,00 | 1.0630 | 41,8 | 1.643 | 36,0 | 1.417 | FDS63 |
| 3794939 | KSEMP6350FDS63A1M | KSEMP2500FDS63A1 | 63,50 | 2.500 | 28,00 | 1.1024 | 41,9 | 1.650 | 36,0 | 1.417 | FDS63 |
| 3794421 | KSEMP6400FDS63A1M | KSEMP6400FDS63A1M | 64,00 | 2.520 | 28,00 | 1.1024 | 41,9 | 1.650 | 36,0 | 1.417 | FDS63 |
| 3794422 | KSEMP6500FDS63A1M | KSEMP6500FDS63A1M | 65,00 | 2.559 | 29,00 | 1.1417 | 42,1 | 1.657 | 36,0 | 1.417 | FDS63 |
| 3794423 | KSEMP6600FDS63A1M | KSEMP6600FDS63A1M | 66,00 | 2.598 | 30,00 | 1.1811 | 42,3 | 1.664 | 36,0 | 1.417 | FDS63 |
| 3794940 | KSEMP6668FDS63A1M | KSEMP2625FDS63A1 | 66,68 | 2.625 | 31,00 | 1.2205 | 42,5 | 1.671 | 36,0 | 1.417 | FDS63 |
| 3794424 | KSEMP6700FDS63A1M | KSEMP6700FDS63A1M | 67,00 | 2.638 | 31,00 | 1.2205 | 42,5 | 1.671 | 36,0 | 1.417 | FDS63 |
| 3794425 | KSEMP6800FDS63A1M | KSEMP6800FDS63A1M | 68,00 | 2.677 | 32,00 | 1.2598 | 42,6 | 1.678 | 36,0 | 1.417 | FDS63 |
| 3794426 | KSEMP6900FDS63A1M | KSEMP6900FDS63A1M | 69,00 | 2.717 | 33,00 | 1.2992 | 42,8 | 1.685 | 36,0 | 1.417 | FDS63 |
| 3794941 | KSEMP6985FDS63A1M | KSEMP2750FDS63A1 | 69,85 | 2.750 | 34,00 | 1.3386 | 43,0 | 1.692 | 36,0 | 1.417 | FDS63 |
| 3742212 | KSEMP7000FDS63A1M | KSEMP7000FDS63A1M | 70,00 | 2.756 | 34,00 | 1.3386 | 43,0 | 1.692 | 36,0 | 1.417 | FDS63 |
| 5397513 | KSEMP7200FDS71A1M | KSEMP7200FDS71A1M | 72,00 | 2.835 | 27,00 | 1.0630 | 47,0 | 1.849 | 47,0 | 1.849 | FDS71 |
| 5397514 | KSEMP7400FDS71A1M | KSEMP7400FDS71A1M | 74,00 | 2.913 | 29,00 | 1.1420 | 47,3 | 1.863 | 47,3 | 1.863 | FDS71 |
| 5397515 | KSEMP7600FDS71A1M | KSEMP7600FDS71A1M | 76,00 | 2.992 | 31,00 | 1.2200 | 47,7 | 1.876 | 47,7 | 1.876 | FDS71 |
| 5397516 | KSEMP7620FDS71A1M | KSEMP3000FDS71A1 | 76,20 | 3.000 | 31,00 | 1.2200 | 47,7 | 1.876 | 47,7 | 1.876 | FDS71 |
| 5397517 | KSEMP7800FDS71A1M | KSEMP7800FDS71A1M | 78,00 | 3.071 | 33,00 | 1.2990 | 48,0 | 1.890 | 48,0 | 1.890 | FDS71 |
| 5397518 | KSEMP8000FDS80A1M | KSEMP8000FDS80A1M | 80,00 | 3.150 | 31,00 | 1.2200 | 52,8 | 2.077 | 52,8 | 2.077 | FDS80 |
| 5397519 | KSEMP8200FDS80A1M | KSEMP8200FDS80A1M | 82,00 | 3.228 | 33,00 | 1.2992 | 53,1 | 2.091 | 53,1 | 2.091 | FDS80 |
| 5397550 | KSEMP8255FDS80A1M | KSEMP3250FDS80A1 | 82,55 | 3.250 | 34,00 | 1.3386 | 53,3 | 2.098 | 53,3 | 2.098 | FDS80 |
| 5397551 | KSEMP8400FDS80A1M | KSEMP8400FDS80A1M | 84,00 | 3.307 | 35,00 | 1.3780 | 53,5 | 2.105 | 53,5 | 2.105 | FDS80 |
| 5397552 | KSEMP8600FDS80A1M | KSEMP8600FDS80A1M | 86,00 | 3.386 | 37,00 | 1.4567 | 53,8 | 2.119 | 53,8 | 2.119 | FDS80 |
| 5397553 | KSEMP8800FDS80A1M | KSEMP8800FDS80A1M | 88,00 | 3.465 | 39,00 | 1.5354 | 54,2 | 2.133 | 54,2 | 2.133 | FDS80 |
| 5397554 | KSEMP8890FDS80A1M | KSEMP3500FDS80A1 | 88,90 | 3.500 | 40,00 | 1.5748 | 54,3 | 2.140 | 54,3 | 2.140 | FDS80 |
| 5397555 | KSEMP9000FDS90A1M | KSEMP9000FDS90A1M | 90,00 | 3.543 | 37,00 | 1.4567 | 59,2 | 2.332 | 59,2 | 2.332 | FDS90 |
| 5397556 | KSEMP9200FDS90A1M | KSEMP9200FDS90A1M | 92,00 | 3.622 | 39,00 | 1.5354 | 59,6 | 2.346 | 59,6 | 2.346 | FDS90 |
| 5397557 | KSEMP9400FDS90A1M | KSEMP9400FDS90A1M | 94,00 | 3.701 | 26,00 | 1.0236 | 58,0 | 2.283 | 58,0 | 2.283 | FDS90 |
| 5397558 | KSEMP9525FDS90A1M | KSEMP3750FDS90A1 | 95,25 | 3.750 | 27,00 | 1.0630 | 58,3 | 2.297 | 58,3 | 2.297 | FDS90 |
| 5397559 | KSEMP9600FDS90A1M | KSEMP9600FDS90A1M | 96,00 | 3.780 | 28,00 | 1.1024 | 58,3 | 2.297 | 58,3 | 2.297 | FDS90 |
| 5397560 | KSEMP9800FDS90A1M | KSEMP9800FDS90A1M | 98,00 | 3.858 | 30,00 | 1.1811 | 58,7 | 2.311 | 58,7 | 2.311 | FDS90 |
| 5397561 | KSEMP10160FDS90A1M | KSEMP4000FDS90A1 | 101,60 | 4.000 | 34,00 | 1.3390 | 59,4 | 2.338 | 59,4 | 2.338 | FDS90 |

- To ensure 100% system stability, KSEM™ inserts used for KSEM PLUS should not be reground.
- KSEM PLUS heads are shipped with all insert screws.
- KSEM PLUS B1 heads are shipped with two to three wrenches: one for the KSEM insert, one for DFC™ inserts and DPA guiding pads as well as for assembling the head onto the tool body. One additional wrench might be added depending on the size of the guiding pad.
- Order KSEM PLUS shanks using connection coupling size (CSMS) to determine which heads go with each shank.
- PDD in the callout drawing refers to the D1 of the KSEM HPGM and HPCM inserts for use with KSEM PLUS.
- Order inserts (KSEM, DFC) for KSEM PLUS separately.

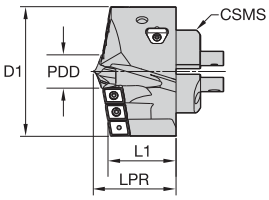




**2 x DFC**
diameter: 28–70,34mm



**4 x DFC**
diameter: 70,35–93,34mm



**6 x DFC**
diameter: 93,35–127mm

NEW!

## KSEM PLUS B1 Heads 28–101,60mm (1.102–4")

| order number | ISO catalogue number | ANSI catalogue number | D1 mm | D1 in | PDD mm | PDD in | LPR mm | LPR in | L1 mm | L1 in | CSMS system size | Drill Fix DFC insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5115736** | **KSEMP2800FDS28B1M** | **KSEMP2800FDS28B1M** | 28,00 | 1.102 | 14,00 | .5512 | 28,1 | 1.105 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5115737** | **KSEMP2858FDS28B1M** | **KSEMP1125FDS28B1** | 28,58 | 1.125 | 15,00 | .5906 | 28,2 | 1.110 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5115738** | **KSEMP2900FDS28B1M** | **KSEMP2900FDS28B1M** | 29,00 | 1.142 | 15,00 | .5906 | 28,2 | 1.111 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5115739** | **KSEMP2937FDS28B1M** | **KSEMP1156FDS28B1** | 29,36 | 1.156 | 16,00 | .6299 | 28,4 | 1.118 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5116010** | **KSEMP3000FDS28B1M** | **KSEMP3000FDS28B1M** | 30,00 | 1.181 | 16,00 | .6299 | 28,4 | 1.118 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5116011** | **KSEMP3017FDS28B1M** | **KSEMP1188FDS28B1** | 30,18 | 1.188 | 17,00 | .6693 | 28,6 | 1.125 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5116012** | **KSEMP3096FDS28B1M** | **KSEMP1219FDS28B1** | 30,96 | 1.219 | 17,00 | .6693 | 28,6 | 1.125 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5116013** | **KSEMP3100FDS28B1M** | **KSEMP3100FDS28B1M** | 31,00 | 1.220 | 17,00 | .6693 | 28,6 | 1.125 | 25,0 | .984 | FDS28 | DFC040310D28 |
| **5116014** | **KSEMP3175FDS32B1M** | **KSEMP1250FDS32B1** | 31,75 | 1.250 | 15,00 | .5906 | 28,2 | 1.111 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116015** | **KSEMP3200FDS32B1M** | **KSEMP3200FDS32B1M** | 32,00 | 1.260 | 15,00 | .5906 | 28,2 | 1.111 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116016** | **KSEMP3300FDS32B1M** | **KSEMP3300FDS32B1M** | 33,00 | 1.299 | 16,00 | .6299 | 28,4 | 1.118 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116017** | **KSEMP3320FDS32B1M** | **KSEMP3320FDS32B1M** | 33,20 | 1.307 | 16,00 | .6299 | 28,4 | 1.118 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116018** | **KSEMP3334FDS32B1M** | **KSEMP1313FDS32B1** | 33,35 | 1.313 | 17,00 | .6693 | 28,6 | 1.125 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116019** | **KSEMP3400FDS32B1M** | **KSEMP3400FDS32B1M** | 34,00 | 1.339 | 17,00 | .6693 | 28,6 | 1.125 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116030** | **KSEMP3493FDS32B1M** | **KSEMP1375FDS32B1** | 34,93 | 1.375 | 18,00 | .7087 | 28,8 | 1.132 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116031** | **KSEMP3500FDS32B1M** | **KSEMP3500FDS32B1M** | 35,00 | 1.378 | 18,00 | .7087 | 28,8 | 1.132 | 25,0 | .984 | FDS32 | DFC05T312D32 |
| **5116032** | **KSEMP3600FDS36B1M** | **KSEMP3600FDS36B1M** | 36,00 | 1.417 | 13,00 | .5118 | 27,9 | 1.098 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| **5116033** | **KSEMP3651FDS36B1M** | **KSEMP1438FDS36B1** | 36,53 | 1.438 | 14,00 | .5512 | 28,1 | 1.105 | 25,0 | .984 | FDS36 | DFC06T312D36 |

*(continued)*

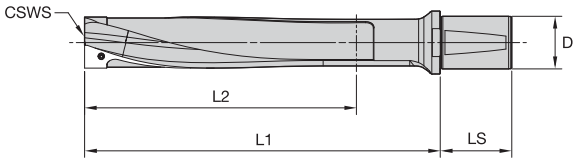
*(KSEM PLUS B1 Heads 28–101,60mm (1.102–4") continued)*



| order number | ISO catalogue number | ANSI catalogue number | D1 mm | D1 in | PDD mm | PDD in | LPR mm | LPR in | L1 mm | L1 in | CSMS system size | Drill Fix DFC insert |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5116034 | KSEMP3700FDS36B1M | KSEMP3700FDS36B1M | 37,00 | 1.457 | 14,00 | .5512 | 28,1 | 1.105 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| 5116035 | KSEMP3750FDS36B1M | KSEMP3750FDS36B1M | 37,50 | 1.476 | 15,00 | .5906 | 28,2 | 1.111 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| 5116036 | KSEMP3800FDS36B1M | KSEMP3800FDS36B1M | 38,00 | 1.496 | 15,00 | .5906 | 28,2 | 1.111 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| 5116037 | KSEMP3810FDS36B1M | KSEMP1500FDS36B1 | 38,10 | 1.500 | 15,00 | .5906 | 28,2 | 1.111 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| 5116038 | KSEMP3900FDS36B1M | KSEMP3900FDS36B1M | 39,00 | 1.535 | 16,00 | .6299 | 28,4 | 1.118 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| 5116039 | KSEMP3920FDS36B1M | KSEMP3920FDS36B1M | 39,20 | 1.543 | 16,00 | .6299 | 28,4 | 1.118 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| 5116040 | KSEMP3970FDS36B1M | KSEMP1563FDS36B1 | 39,70 | 1.563 | 17,00 | .6693 | 28,6 | 1.125 | 25,0 | .984 | FDS36 | DFC06T312D36 |
| 5116041 | KSEMP4000FDS40B1M | KSEMP4000FDS40B1M | 40,00 | 1.575 | 17,00 | .6693 | 33,8 | 1.330 | 30,0 | 1.181 | FDS40 | DFC06T312D36 |
| 5116042 | KSEMP4100FDS40B1M | KSEMP4100FDS40B1M | 41,00 | 1.614 | 18,00 | .7087 | 34,0 | 1.337 | 30,0 | 1.181 | FDS40 | DFC06T312D36 |
| 5116043 | KSEMP4128FDS40B1M | KSEMP1625FDS40B1 | 41,28 | 1.625 | 18,00 | .7087 | 34,0 | 1.337 | 30,0 | 1.181 | FDS40 | DFC06T312D36 |
| 5116044 | KSEMP4200FDS40B1M | KSEMP4200FDS40B1M | 42,00 | 1.654 | 19,00 | .7480 | 34,1 | 1.344 | 30,0 | 1.181 | FDS40 | DFC06T312D36 |
| 5116045 | KSEMP4300FDS40B1M | KSEMP4300FDS40B1M | 43,00 | 1.693 | 20,00 | .7874 | 34,3 | 1.351 | 30,0 | 1.181 | FDS40 | DFC06T312D36 |
| 5116046 | KSEMP4400FDS40B1M | KSEMP4400FDS40B1M | 44,00 | 1.732 | 21,00 | .8268 | 34,5 | 1.358 | 30,0 | 1.181 | FDS40 | DFC06T312D36 |
| 5116047 | KSEMP4445FDS40B1M | KSEMP1750FDS40B1 | 44,45 | 1.750 | 22,00 | .8661 | 34,7 | 1.365 | 30,0 | 1.181 | FDS40 | DFC06T312D36 |
| 5116098 | KSEMP4500FDS45B1M | KSEMP4500FDS45B1M | 45,00 | 1.772 | 18,00 | .7087 | 34,0 | 1.337 | 30,0 | 1.181 | FDS45 | DFC070416D45 |
| 5116099 | KSEMP4600FDS45B1M | KSEMP4600FDS45B1M | 46,00 | 1.811 | 19,00 | .7480 | 34,1 | 1.344 | 30,0 | 1.181 | FDS45 | DFC070416D45 |
| 5116110 | KSEMP4700FDS45B1M | KSEMP4700FDS45B1M | 47,00 | 1.850 | 20,00 | .7874 | 34,3 | 1.351 | 30,0 | 1.181 | FDS45 | DFC070416D45 |
| 5116111 | KSEMP4763FDS45B1M | KSEMP1875FDS45B1 | 47,63 | 1.875 | 21,00 | .8268 | 34,5 | 1.358 | 30,0 | 1.181 | FDS45 | DFC070416D45 |
| 5116112 | KSEMP4800FDS45B1M | KSEMP4800FDS45B1M | 48,00 | 1.890 | 21,00 | .8268 | 34,5 | 1.358 | 30,0 | 1.181 | FDS45 | DFC070416D45 |
| 5116113 | KSEMP4900FDS45B1M | KSEMP4900FDS45B1M | 49,00 | 1.929 | 22,00 | .8661 | 34,7 | 1.365 | 30,0 | 1.181 | FDS45 | DFC070416D45 |
| 5116114 | KSEMP5000FDS50B1M | KSEMP5000FDS50B1M | 50,00 | 1.969 | 23,00 | .9055 | 40,0 | 1.577 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116115 | KSEMP5080FDS50B1M | KSEMP2000FDS50B1 | 50,80 | 2.000 | 24,00 | .9449 | 40,2 | 1.584 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116116 | KSEMP5100FDS50B1M | KSEMP5100FDS50B1M | 51,00 | 2.008 | 24,00 | .9449 | 40,2 | 1.584 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116117 | KSEMP5200FDS50B1M | KSEMP5200FDS50B1M | 52,00 | 2.047 | 25,00 | .9843 | 40,4 | 1.590 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116118 | KSEMP5300FDS50B1M | KSEMP5300FDS50B1M | 53,00 | 2.087 | 26,00 | 1.0236 | 40,6 | 1.597 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116119 | KSEMP5398FDS50B1M | KSEMP2125FDS50B1 | 53,98 | 2.125 | 27,00 | 1.0630 | 40,8 | 1.604 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116120 | KSEMP5400FDS50B1M | KSEMP5400FDS50B1M | 54,00 | 2.126 | 27,00 | 1.0630 | 40,8 | 1.604 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116121 | KSEMP5500FDS50B1M | KSEMP5500FDS50B1M | 55,00 | 2.165 | 28,00 | 1.1024 | 40,9 | 1.611 | 35,0 | 1.378 | FDS50 | DFC070416D45 |
| 5116122 | KSEMP5600FDS56B1M | KSEMP5600FDS56B1M | 56,00 | 2.205 | 20,00 | .7874 | 39,5 | 1.556 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116123 | KSEMP5700FDS56B1M | KSEMP5700FDS56B1M | 57,00 | 2.244 | 21,00 | .8268 | 39,7 | 1.563 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116124 | KSEMP5715FDS56B1M | KSEMP2250FDS56B1 | 57,15 | 2.250 | 21,00 | .8268 | 39,7 | 1.563 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116125 | KSEMP5800FDS56B1M | KSEMP5800FDS56B1M | 58,00 | 2.283 | 22,00 | .8661 | 39,9 | 1.570 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116126 | KSEMP5900FDS56B1M | KSEMP5900FDS56B1M | 59,00 | 2.323 | 23,00 | .9055 | 40,0 | 1.577 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116127 | KSEMP6000FDS56B1M | KSEMP6000FDS56B1M | 60,00 | 2.362 | 24,00 | .9449 | 40,2 | 1.584 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116128 | KSEMP6033FDS56B1M | KSEMP2375FDS56B1 | 60,33 | 2.375 | 24,00 | .9449 | 40,2 | 1.584 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116129 | KSEMP6100FDS56B1M | KSEMP6100FDS56B1M | 61,00 | 2.402 | 25,00 | .9843 | 40,4 | 1.590 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116130 | KSEMP6200FDS56B1M | KSEMP6200FDS56B1M | 62,00 | 2.441 | 26,00 | 1.0236 | 40,6 | 1.597 | 35,0 | 1.378 | FDS56 | DFC090520D56 |
| 5116131 | KSEMP6300FDS63B1M | KSEMP6300FDS63B1M | 63,00 | 2.480 | 27,00 | 1.0630 | 46,0 | 1.809 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116132 | KSEMP6350FDS63B1M | KSEMP2500FDS63B1 | 63,50 | 2.500 | 28,00 | 1.1024 | 46,1 | 1.816 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116133 | KSEMP6400FDS63B1M | KSEMP6400FDS63B1M | 64,00 | 2.520 | 28,00 | 1.1024 | 46,1 | 1.816 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116134 | KSEMP6500FDS63B1M | KSEMP6500FDS63B1M | 65,00 | 2.559 | 29,00 | 1.1417 | 46,3 | 1.823 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116135 | KSEMP6600FDS63B1M | KSEMP6600FDS63B1M | 66,00 | 2.598 | 30,00 | 1.1811 | 46,5 | 1.830 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116136 | KSEMP6668FDS63B1M | KSEMP2625FDS63B1 | 66,68 | 2.625 | 31,00 | 1.2205 | 46,7 | 1.837 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116137 | KSEMP6700FDS63B1M | KSEMP6700FDS63B1M | 67,00 | 2.638 | 31,00 | 1.2205 | 46,7 | 1.837 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116138 | KSEMP6800FDS63B1M | KSEMP6800FDS63B1M | 68,00 | 2.677 | 32,00 | 1.2598 | 46,8 | 1.844 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116139 | KSEMP6900FDS63B1M | KSEMP6900FDS63B1M | 69,00 | 2.717 | 33,00 | 1.2992 | 47,0 | 1.851 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116140 | KSEMP6985FDS63B1M | KSEMP2750FDS63B1 | 69,85 | 2.750 | 34,00 | 1.3386 | 47,2 | 1.858 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5116141 | KSEMP7000FDS63B1M | KSEMP7000FDS63B1M | 70,00 | 2.756 | 34,00 | 1.3386 | 47,2 | 1.858 | 40,0 | 1.575 | FDS63 | DFC090520D56 |
| 5397562 | KSEMP7620FDS71B1M | KSEMP3000FDS71B1 | 76,20 | 3.000 | 31,00 | 1.2200 | 48,8 | 1.919 | 48,8 | 1.919 | FDS71 | DFC06T312D36 |
| 5397563 | KSEMP8255FDS80B1M | KSEMP3250FDS80B1 | 82,55 | 3.250 | 34,00 | 1.3386 | 54,6 | 2.149 | 54,6 | 2.149 | FDS80 | DFC070416D45 |
| 5397564 | KSEMP8890FDS80B1M | KSEMP3500FDS80B1 | 88,90 | 3.500 | 40,00 | 1.5748 | 55,6 | 2.190 | 55,6 | 2.190 | FDS80 | DFC070416D45 |
| 5397565 | KSEMP9525FDS90B1M | KSEMP3750FDS90B1 | 95,25 | 3.750 | 27,00 | 1.0630 | 60,6 | 2.383 | 60,6 | 2.383 | FDS90 | DFC06T312D36 |
| 5397566 | KSEMP10160FDS90B1M | KSEMP4000FDS90B1 | 101,60 | 4.000 | 34,00 | 1.3390 | 61,8 | 2.432 | 61,8 | 2.432 | FDS90 | DFC06T312D36 |

- Order KSEM PLUS heads according to the connection coupling size (CSWS).
- Order KSEM PLUS heads separately; see pages H50–H51.
- Wrench will be shipped with KSEM PLUS head.
- Custom solution for cast iron application with twisted flutes available.





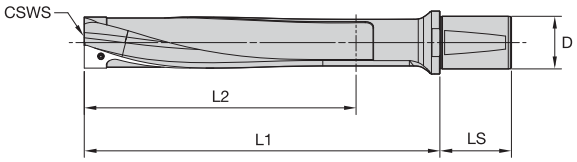
## KSEM PLUS WD Shanks • 3 x D • Metric

| | catalogue number | CSWS system size | D | L1 | L2 | LS | clamp screw |
|---|---|---|---|---|---|---|---|
| | **WD32FDS28128M** | FDS28 | 32 | 128 | 71 | 58 | **193.537** |
| | **WD32FDS32146M** | FDS32 | 32 | 146 | 85 | 58 | **193.523** |
| | **WD32FDS36166M** | FDS36 | 32 | 166 | 97 | 58 | **193.524** |
| | **WD50FDS40183M** | FDS40 | 50 | 183 | 107 | 68 | **193.524** |
| | **WD50FDS45206M** | FDS45 | 50 | 206 | 122 | 68 | **193.525** |
| | **WD50FDS50228M** | FDS50 | 50 | 228 | 135 | 68 | **193.525** |
| | **WD50FDS56259M** | FDS56 | 50 | 259 | 156 | 68 | **193.526** |
| | **WD50FDS63289M** | FDS63 | 50 | 289 | 174 | 68 | **193.526** |
| NEW! | **WD50FDS71292M** | FDS71 | 50 | 292 | 200 | 68 | **193.526** |
| | **WD50FDS80327M** | FDS80 | 50 | 327 | 225 | 68 | **193.545** |
| | **WD50FDS90362M** | FDS90 | 50 | 362 | 250 | 68 | **193.545** |

## KSEM PLUS WD Shanks • 5 x D • Metric

| | catalogue number | CSWS system size | D | L1 | L2 | LS | clamp screw |
|---|---|---|---|---|---|---|---|
| | **WD32FDS28190M** | FDS28 | 32 | 190 | 133 | 58 | **193.537** |
| | **WD32FDS32216M** | FDS32 | 32 | 216 | 155 | 58 | **193.523** |
| | **WD32FDS36244M** | FDS36 | 32 | 244 | 175 | 58 | **193.524** |
| | **WD50FDS40271M** | FDS40 | 50 | 271 | 195 | 68 | **193.524** |
| | **WD50FDS45304M** | FDS45 | 50 | 304 | 220 | 68 | **193.525** |
| | **WD50FDS50338M** | FDS50 | 50 | 338 | 245 | 68 | **193.525** |
| | **WD50FDS56383M** | FDS56 | 50 | 383 | 280 | 68 | **193.526** |
| | **WD50FDS63429M** | FDS63 | 50 | 429 | 314 | 68 | **193.526** |
| NEW! | **WD50FDS71452M** | FDS71 | 50 | 452 | 360 | 68 | **193.526** |
| | **WD50FDS80507M** | FDS80 | 50 | 507 | 405 | 68 | **193.545** |
| | **WD50FDS90562M** | FDS90 | 50 | 562 | 450 | 68 | **193.545** |

- Order KSEM PLUS heads according to the connection coupling size (CSWS).
- Order KSEM PLUS heads separately; see pages H50–H51.
- Wrench will be shipped with KSEM PLUS head.
- Custom solution for cast iron application with twisted flutes available.



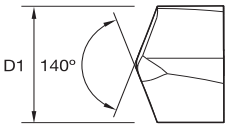
## KSEM PLUS WD Shanks • 8 x D • Metric

| catalogue number | CSWS system size | D | L1 | L2 | LS | clamp screw |
|---|---|---|---|---|---|---|
| **WD32FDS28283M** | FDS28 | 32 | 283 | 226 | 58 | **193.537** |
| **WD32FDS32321M** | FDS32 | 32 | 321 | 260 | 58 | **193.523** |
| **WD32FDS36361M** | FDS36 | 32 | 361 | 292 | 58 | **193.524** |
| **WD50FDS40403M** | FDS40 | 50 | 403 | 327 | 68 | **193.524** |
| **WD50FDS45451M** | FDS45 | 50 | 451 | 367 | 68 | **193.525** |
| **WD50FDS50503M** | FDS50 | 50 | 503 | 410 | 68 | **193.525** |
| **WD50FDS56569M** | FDS56 | 50 | 569 | 466 | 68 | **193.526** |
| **WD50FDS63639M** | FDS63 | 50 | 639 | 524 | 68 | **193.526** |

## KSEM PLUS WD Shanks • 10 x D • Metric

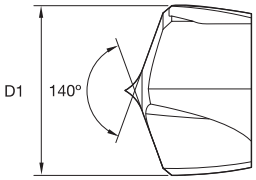
| catalogue number | CSWS system size | D | L1 | L2 | LS | clamp screw |
|---|---|---|---|---|---|---|
| **WD32FDS28345M** | FDS28 | 32 | 345 | 288 | 58 | **193.537** |
| **WD32FDS32391M** | FDS32 | 32 | 391 | 330 | 58 | **193.523** |
| **WD32FDS36439M** | FDS36 | 32 | 439 | 370 | 58 | **193.524** |
| **WD50FDS40491M** | FDS40 | 50 | 491 | 415 | 68 | **193.524** |
| **WD50FDS45549M** | FDS45 | 50 | 549 | 465 | 68 | **193.525** |
| **WD50FDS50613M** | FDS50 | 50 | 613 | 520 | 68 | **193.525** |
| **WD50FDS56693M** | FDS56 | 50 | 693 | 590 | 68 | **193.526** |
| **WD50FDS63779M** | FDS63 | 50 | 779 | 664 | 68 | **193.526** |

- To ensure 100% system stability, KSEM inserts used for KSEM PLUS should not be reground.
- The callout D1 (mm) = PDD. PDD is used in reference to the KSEM PLUS heads.

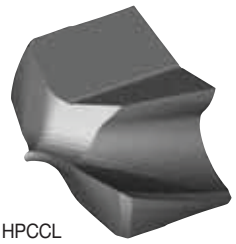



D1 (mm) = PDD

HPG

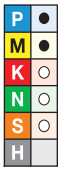



D1 (mm) = PDD



HPCCL

## KSEMP Inserts



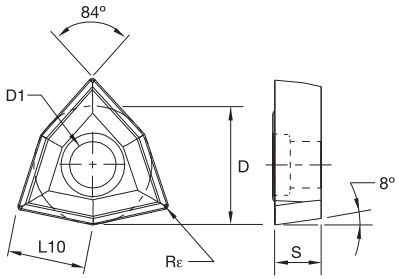
● first choice
○ alternate choice

| HPGM • KC7315 | HPCCL • KC7410 | D1 mm | D1 in | seat size |
|---|---|---|---|---|
| **KSEMP1300HPGM** | **KSEM1300HPCCLM** | 13,000 | .5118 | C |
| **KSEMP1400HPGM** | **KSEM1400HPCCLM** | 14,000 | .5512 | B |
| **KSEMP1500HPGM** | **KSEM1500HPCCLM** | 15,000 | .5906 | A |
| **KSEMP1600HPGM** | **KSEM1600HPCCLM** | 16,000 | .6299 | 1 |
| **KSEMP1700HPGM** | **KSEM1700HPCCLM** | 17,000 | .6693 | 1 |
| **KSEMP1800HPGM** | **KSEM1800HPCCLM** | 18,000 | .7087 | 1 |
| **KSEMP1900HPGM** | **KSEM1900HPCCLM** | 19,000 | .7480 | 2 |
| **KSEMP2000HPGM** | **KSEM2000HPCCLM** | 20,000 | .7874 | 3 |
| **KSEMP2100HPGM** | **KSEM2100HPCCLM** | 21,000 | .8268 | 3 |
| **KSEMP2200HPGM** | **KSEM2200HPCCLM** | 22,000 | .8661 | 3 |
| **KSEMP2300HPGM** | **KSEM2300HPCCLM** | 23,000 | .9055 | 4 |
| **KSEMP2400HPGM** | **KSEM2400HPCCLM** | 24,000 | .9449 | 4 |
| **KSEMP2500HPGM** | **KSEM2500HPCCLM** | 25,000 | .9843 | 5 |
| **KSEMP2600HPGM** | **KSEM2600HPCCLM** | 26,000 | 1.0236 | 5 |
| **KSEMP2700HPGM** | **KSEM2700HPCCLM** | 27,000 | 1.0630 | 6 |
| **KSEMP2800HPGM** | **KSEM2800HPCCLM** | 28,000 | 1.1024 | 6 |
| **KSEMP2900HPGM** | **KSEM2900HPCCLM** | 29,000 | 1.1417 | 7 |
| **KSEMP3000HPGM** | **KSEM3000HPCCLM** | 30,000 | 1.1811 | 7 |
| **KSEMP3100HPGM** | **KSEM3100HPCCLM** | 31,000 | 1.2205 | 8 |
| **KSEMP3200HPGM** | **KSEM3200HPCCLM** | 32,000 | 1.2598 | 8 |
| **KSEMP3300HPGM** | – | 33,000 | 1.2992 | 9 |
| **KSEMP3400HPGM** | – | 34,000 | 1.3386 | 9 |

**Tolerance HPGM, HPCCLM • Metric**

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

## DFT-HP



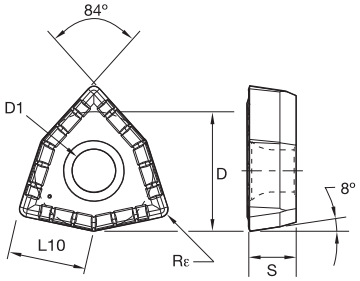

● first choice
○ alternate choice

beyond

| | P | M | K | N | S | H |
|---|---|---|---|---|---|---|
| KCU25 | ● | ○ | ● | ○ | ○ | |
| KCU40 | ● | ○ | ○ | ○ | ● | |

| catalogue number | L10 mm | L10 in | D mm | D in | D1 mm | D1 in | S mm | S in | Rε mm | Rε in | KCU25 | KCU40 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DFT05T308D32HP | 5,29 | .208 | 8,00 | .315 | 3,40 | .134 | 3,75 | .148 | 0,80 | .031 | ● | ● |
| DFT05T308D33HP | 5,29 | .208 | 8,00 | .315 | 3,40 | .134 | 3,75 | .148 | 0,80 | .031 | ● | ● |
| DFT06T308D36HP | 6,62 | .260 | 10,00 | .394 | 4,40 | .173 | 3,75 | .148 | 0,80 | .031 | ● | ● |
| DFT06T308D39HP | 6,62 | .260 | 10,00 | .394 | 4,40 | .173 | 3,75 | .148 | 0,80 | .031 | ● | ● |
| DFT06T308D44HP | 6,62 | .260 | 10,00 | .394 | 4,40 | .173 | 3,75 | .148 | 0,80 | .031 | ● | ● |
| DFT070408D45HP | 7,94 | .313 | 12,00 | .472 | 4,40 | .173 | 4,75 | .187 | 0,80 | .031 | ● | ● |
| DFT070408D50HP | 7,94 | .313 | 12,00 | .472 | 4,40 | .173 | 4,75 | .187 | 0,80 | .031 | ● | ● |
| DFT090508D56HP | 9,92 | .391 | 15,00 | .591 | 5,50 | .217 | 5,25 | .207 | 0,80 | .031 | ● | ● |
| DFT090508D63HP | 9,92 | .391 | 15,00 | .591 | 5,50 | .217 | 5,25 | .207 | 0,80 | .031 | ● | ● |

## DFT-MD

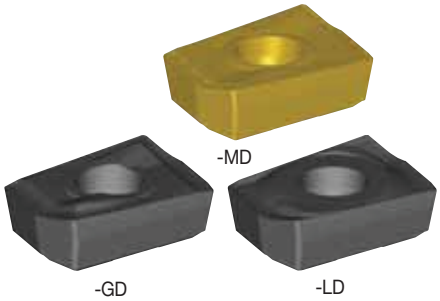


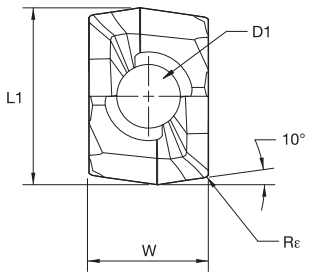

● first choice
○ alternate choice

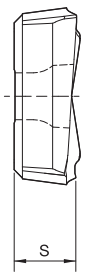
| | P | M | K | N | S | H |
|---|---|---|---|---|---|---|
| KC7140 | ● | ● | ○ | ○ | ○ | |

| catalogue number | L10 mm | L10 in | D mm | D in | D1 mm | D1 in | S mm | S in | Rε mm | Rε in | KC7140 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DFT05T308D33MD | 5,29 | .208 | 8,00 | .315 | 3,40 | .134 | 3,75 | .148 | 0,80 | .031 | ● |
| DFT05T308D32MD | 5,29 | .208 | 8,00 | .315 | 3,40 | .134 | 3,75 | .148 | 0,80 | .031 | ● |
| DFT06T308D44MD | 6,62 | .260 | 10,00 | .394 | 4,40 | .173 | 3,75 | .148 | 0,80 | .031 | ● |
| DFT06T308D39MD | 6,62 | .260 | 10,00 | .394 | 4,40 | .173 | 3,75 | .148 | 0,80 | .031 | ● |
| DFT06T308D36MD | 6,62 | .260 | 10,00 | .394 | 4,40 | .173 | 3,75 | .148 | 0,80 | .031 | ● |
| DFT070408D50MD | 7,94 | .313 | 12,00 | .472 | 4,40 | .173 | 4,75 | .187 | 0,80 | .031 | ● |
| DFT070408D45MD | 7,94 | .313 | 12,00 | .472 | 4,40 | .173 | 4,75 | .187 | 0,80 | .031 | ● |
| DFT090508D56MD | 9,92 | .391 | 15,00 | .591 | 5,50 | .217 | 5,25 | .207 | 0,80 | .031 | ● |
| DFT090508D63MD | 9,92 | .391 | 15,00 | .591 | 5,50 | .217 | 5,25 | .207 | 0,80 | .031 | ● |

## DFR-GD, -LD, -MD



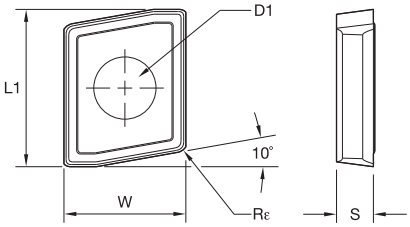

● first choice
○ alternate choice

NEW!

beyond

| | P | M | K | N | S | H |
|---|---|---|---|---|---|---|
| KC7140 | ● | ● | ○ | ○ | ○ | |
| KC7225 | ○ | ○ | ● | ● | ○ | |
| KCU25 | ● | ○ | ● | ○ | ○ | |
| KCU40 | ● | ○ | ○ | ○ | ● | |

| catalogue number | L1 mm | L1 in | W mm | W in | D1 mm | D1 in | S mm | S in | Rε mm | Rε in | KC7140 | KC7225 | KCU25 | KCU40 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DFR040304D28GD | 10,76 | .4236 | 7,26 | .2860 | 2,85 | .1122 | 3,79 | .1492 | 0,40 | .0156 | | | ● | ● |
| DFR040304D28LD | 10,76 | .4236 | 7,26 | .2860 | 2,85 | .1122 | 3,78 | .1490 | 0,40 | .0156 | | ● | | |
| DFR040304D28MD | 10,76 | .4236 | 7,26 | .2860 | 2,85 | .1122 | 3,79 | .1490 | 0,40 | .0156 | ● | | | |



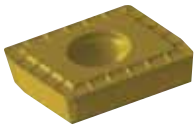

● first choice
○ alternate choice

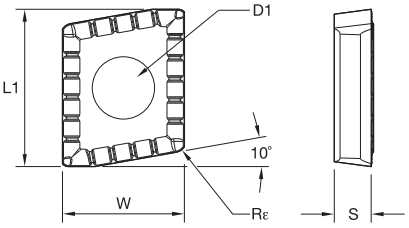
| | | |
|---|---|---|
| P | ● | ● |
| M | ○ | ○ |
| K | ● | ○ |
| N | ○ | ● |
| S | ○ | ● |
| H | | |

NEW!

## DFC-HP

| | L1 | | W | | D1 | | S | | Rε | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| catalogue number | mm | in | mm | in | mm | in | mm | in | mm | in | KCU25 | KCU40 |
| **DFC040310D28HP** | 10,00 | .3940 | 7,60 | .2990 | 2,85 | .1120 | 3,18 | .1250 | 0,50 | .0200 | ● | ● |
| **DFC05T312D32HP** | 12,00 | .4720 | 9,40 | .3700 | 3,40 | .1340 | 3,75 | .1480 | 0,80 | .0320 | ● | ● |
| **DFC06T312D36HP** | 16,00 | .6300 | 12,40 | .4880 | 4,40 | .1730 | 3,75 | .1480 | 0,80 | .0320 | ● | ● |
| **DFC070416D45HP** | 18,00 | .7090 | 14,50 | .5710 | 4,40 | .1730 | 4,75 | .1870 | 0,80 | .0320 | ● | ● |
| **DFC090520D56HP** | 24,00 | .9450 | 19,00 | .7480 | 5,50 | .2170 | 5,25 | .2070 | 0,80 | .0310 | ● | ● |





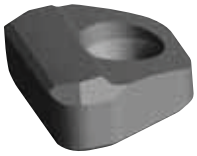

● first choice
○ alternate choice

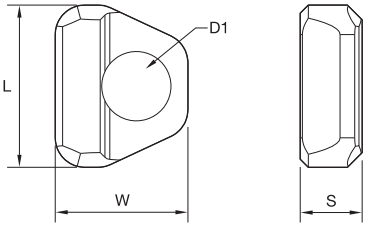
| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

NEW!

## DFC-MD

| | L1 | | W | | D1 | | S | | Rε | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| catalogue number | mm | in | mm | in | mm | in | mm | in | mm | in | KC7140 |
| **DFC040310D28MD** | 10,00 | .3940 | 7,60 | .2990 | 2,85 | .1120 | 3,18 | .1250 | 0,50 | .0200 | ● |
| **DFC05T312D32MD** | 12,00 | .4720 | 9,40 | .3700 | 3,40 | .1340 | 3,75 | .1480 | 0,80 | .0310 | ● |
| **DFC06T312D36MD** | 16,00 | .6300 | 12,40 | .4880 | 4,40 | .1730 | 3,75 | .1480 | 0,80 | .0310 | ● |
| **DFC070416D45MD** | 18,00 | .7090 | 14,50 | .5710 | 4,40 | .1730 | 4,75 | .1870 | 0,80 | .0310 | ● |
| **DFC090520D56MD** | 24,00 | .9450 | 19,00 | .7480 | 5,50 | .2170 | 5,25 | .2070 | 0,80 | .0310 | ● |






● first choice
○ alternate choice

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

NEW!

## DPA Guiding Pads

| | L | | W | | D1 | | S | | |
|---|---|---|---|---|---|---|---|---|---|
| catalogue number | mm | in | mm | in | mm | in | mm | in | KCU40 |
| **DPA07T3D25** | 8,60 | .3390 | 7,00 | .2760 | 2,85 | .1120 | 3,50 | .1380 | ● |
| **DPA09T4D32** | 11,00 | .4330 | 9,00 | .3540 | 3,40 | .1340 | 4,20 | .1650 | ● |
| **DPA13T5D50** | 16,00 | .6300 | 13,00 | .5120 | 4,40 | .1730 | 5,20 | .2050 | ● |

# KSEM™ Modular Drills

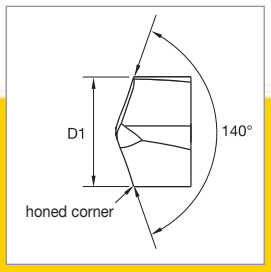
## KCPM45™ – Your New Grade for Tough Jobs in Low-Carbon Steel

- KCPM45 combines a very tough, fine-grain carbide substrate with an advanced multilayer TiAlN coating. It is capable of machining steel even in very difficult applications.
- Use KCPM45 HPG inserts as an effective alternative for stainless steel.
- Try our initial range of KSEM KCPM45 HPG cutting inserts — perfectly suited for drilling low-carbon steel.

### Main Applications:

— Construction industry.

— Heat exchanger tube sheets and baffles.




● first choice
○ alternate choice

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

## KSEM Cutting Inserts

| HPG • KCPM45 | D1 mm | D1 in |
|---|---|---|
| **KSEM1270HPGM** | 12.7 | 1/2 |
| **KSEM1293HPGM** | 12.93 | – |
| **KSEM1400HPGM** | 14 | – |
| **KSEM1429HPGM** | 14.29 | 9/16 |
| **KSEM1609HPGM** | 16.09 | – |
| **KSEM1620HPGM** | 16.2 | – |
| **KSEM1667HPGM** | 16.67 | 21/32 |
| **KSEM1746HPGM** | 17.46 | 11/16 |
| **KSEM1800HPGM** | 18 | – |
| **KSEM1826HPGM** | 18.26 | 23/32 |
| **KSEM1900HPGM** | 19 | – |
| **KSEM1905HPGM** | 19.05 | 3/4 |
| **KSEM1925HPGM** | 19.25 | – |
| **KSEM1927HPGM** | 19.27 | – |
| **KSEM1950HPGM** | 19.5 | – |
| **KSEM1984HPGM** | 19.84 | 25/32 |
| **KSEM2000HPGM** | 20 | – |
| **KSEM2064HPGM** | 20.64 | 13/16 |
| **KSEM2100HPGM** | 21 | – |
| **KSEM2200HPGM** | 22 | – |
| **KSEM2223HPGM** | 22.23 | 7/8 |
| **KSEM2300HPGM** | 23 | – |

| HPG • KCPM45 | D1 mm | D1 in |
|---|---|---|
| **KSEM2381HPGM** | 23.81 | 15/16 |
| **KSEM2400HPGM** | 24 | – |
| **KSEM2500HPGM** | 25 | – |
| **KSEM2540HPGM** | 25.4 | 1 |
| **KSEM2560HPGM** | 25.6 | – |
| **KSEM2565HPGM** | 25.65 | – |
| **KSEM2567HPGM** | 25.67 | – |
| **KSEM2581HPGM** | 25.81 | 1.1/64 |
| **KSEM2600HPGM** | 26 | – |
| **KSEM2619HPGM** | 26.19 | 1.1/32 |
| **KSEM2700HPGM** | 27 | – |
| **KSEM2800HPGM** | 28 | – |
| **KSEM2858HPGM** | 28.58 | 1.1/8 |
| **KSEM3000HPGM** | 30 | – |
| **KSEM3016HPGM** | 30.16 | 1.3/16 |
| **KSEM3175HPGM** | 31.75 | 1.1/4 |
| **KSEM3200HPGM** | 32 | – |
| **KSEM3300HPGM** | 33 | – |
| **KSEM3334HPGM** | 33.34 | 1.5/16 |
| **KSEM3600HPGM** | 36 | – |
| **KSEM3810HPGM** | 38.1 | 1.1/2 |
| **KSEM4000HPGM** | 40 | – |

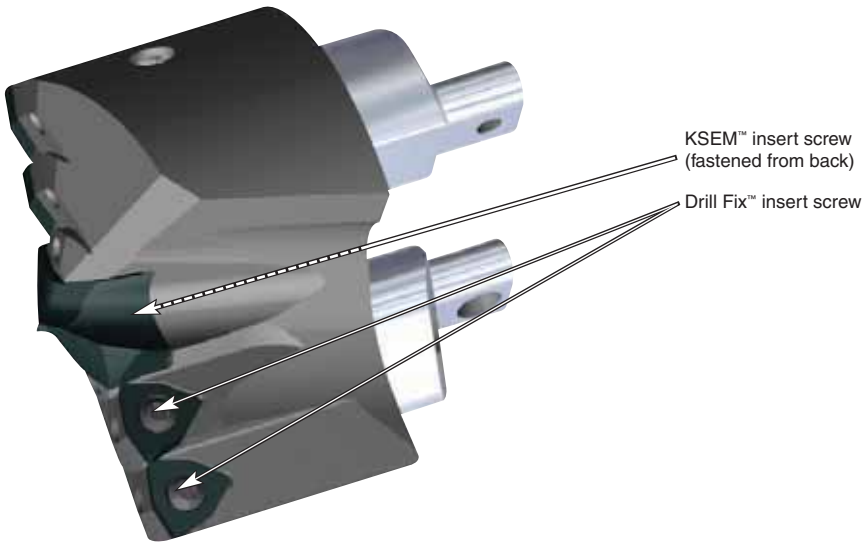
NOTE: HPG (M) tolerances apply

## KSEM PLUS A1 Heads 28–101,60mm • Spare Parts



| D1 mm | D1 in | PDD mm | PDD in | CSMS system size | KSEM insert screw | KSEM wrench | Drill Fix insert screw | Drilll Fix wrench |
|---|---|---|---|---|---|---|---|---|
| 28,00 | 1.102 | 14,00 | .5512 | FDS28 | **364.016** | **170.350** | **192.432** | **170.352** |
| 28,58 | 1.125 | 15,00 | .5906 | FDS28 | **364.016** | **170.350** | **192.432** | **170.352** |
| 29,00 | 1.142 | 15,00 | .5906 | FDS28 | **364.016** | **170.350** | **192.432** | **170.352** |
| 29,36 | 1.156 | 16,00 | .6299 | FDS28 | **364.010** | **170.345** | **192.432** | **170.352** |
| 30,00 | 1.181 | 16,00 | .6299 | FDS28 | **364.010** | **170.345** | **192.432** | **170.352** |
| 30,18 | 1.188 | 17,00 | .6693 | FDS28 | **364.010** | **170.345** | **192.432** | **170.352** |
| 30,96 | 1.219 | 17,00 | .6693 | FDS28 | **364.010** | **170.345** | **192.432** | **170.352** |
| 31,00 | 1.221 | 17,00 | .6693 | FDS28 | **364.010** | **170.345** | **192.432** | **170.352** |
| 31,75 | 1.250 | 15,00 | .5906 | FDS32 | **364.016** | **170.350** | **191.924** | **170.353** |
| 32,00 | 1.260 | 15,00 | .5906 | FDS32 | **364.016** | **170.350** | **191.924** | **170.353** |
| 33,00 | 1.299 | 16,00 | .6299 | FDS32 | **364.010** | **170.345** | **191.924** | **170.353** |
| 33,20 | 1.307 | 16,00 | .6299 | FDS32 | **364.010** | **170.345** | **191.924** | **170.353** |
| 33,35 | 1.313 | 17,00 | .6693 | FDS32 | **364.010** | **170.345** | **191.924** | **170.353** |
| 34,00 | 1.339 | 17,00 | .6693 | FDS32 | **364.010** | **170.345** | **191.924** | **170.353** |
| 34,93 | 1.375 | 18,00 | .7087 | FDS32 | **364.010** | **170.345** | **191.924** | **170.353** |
| 35,00 | 1.378 | 18,00 | .7087 | FDS32 | **364.010** | **170.345** | **191.924** | **170.353** |
| 36,00 | 1.417 | 13,00 | .5118 | FDS36 | **364.016** | **170.350** | **191.916** | **170.355** |
| 36,53 | 1.438 | 14,00 | .5512 | FDS36 | **364.016** | **170.350** | **191.916** | **170.355** |
| 37,00 | 1.457 | 14,00 | .5512 | FDS36 | **364.016** | **170.350** | **191.916** | **170.355** |
| 37,50 | 1.476 | 15,00 | .5906 | FDS36 | **364.016** | **170.350** | **191.916** | **170.355** |
| 38,00 | 1.496 | 15,00 | .5906 | FDS36 | **364.016** | **170.350** | **191.916** | **170.355** |
| 38,10 | 1.500 | 15,00 | .5906 | FDS36 | **364.016** | **170.350** | **191.916** | **170.355** |
| 39,00 | 1.535 | 16,00 | .6299 | FDS36 | **364.010** | **170.345** | **191.916** | **170.355** |
| 39,20 | 1.543 | 16,00 | .6299 | FDS36 | **364.010** | **170.345** | **191.916** | **170.355** |
| 39,70 | 1.563 | 17,00 | .6693 | FDS36 | **364.010** | **170.345** | **191.916** | **170.355** |
| 40,00 | 1.575 | 17,00 | .6693 | FDS40 | **364.010** | **170.345** | **191.916** | **170.355** |
| 41,00 | 1.614 | 18,00 | .7087 | FDS40 | **364.010** | **170.345** | **191.916** | **170.355** |
| 41,28 | 1.625 | 18,00 | .7087 | FDS40 | **364.010** | **170.345** | **191.916** | **170.355** |
| 42,00 | 1.654 | 19,00 | .7480 | FDS40 | **364.010** | **170.345** | **191.916** | **170.355** |
| 43,00 | 1.693 | 20,00 | .7874 | FDS40 | **364.011** | **170.346** | **191.916** | **170.355** |
| 44,00 | 1.732 | 21,00 | .8268 | FDS40 | **364.011** | **170.346** | **191.916** | **170.355** |
| 44,45 | 1.750 | 22,00 | .8661 | FDS40 | **364.011** | **170.346** | **191.916** | **170.355** |

*(continued)*



*(KSEM PLUS A1 Heads 28–101,60mm • Spare Parts continued)*

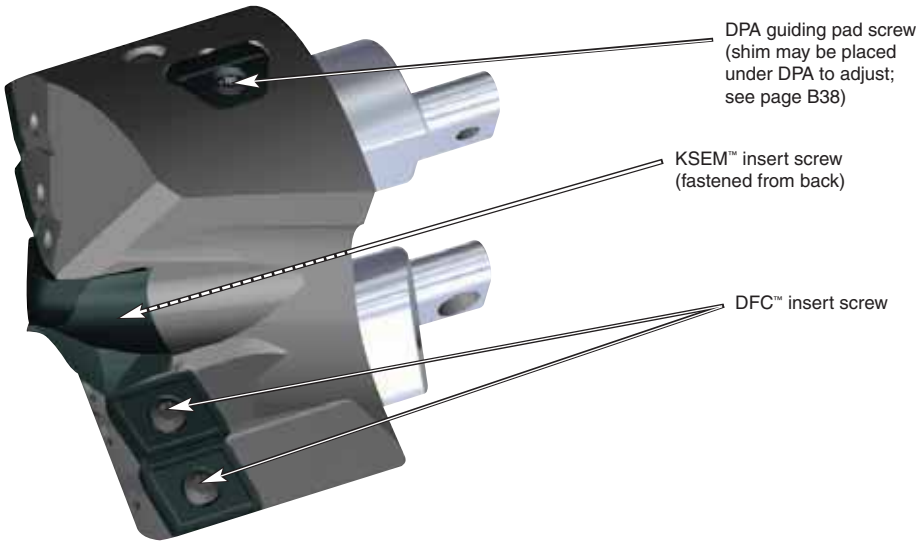
| D1 mm | D1 in | PDD mm | PDD in | CSMS system size | KSEM insert screw | KSEM wrench | Drill Fix insert screw | Drilll Fix wrench |
|---|---|---|---|---|---|---|---|---|
| 45,00 | 1.772 | 18,00 | .7087 | FDS45 | **364.010** | **170.345** | **191.698** | **170.355** |
| 46,00 | 1.811 | 19,00 | .7480 | FDS45 | **364.010** | **170.345** | **191.698** | **170.355** |
| 47,00 | 1.850 | 20,00 | .7874 | FDS45 | **364.011** | **170.346** | **191.698** | **170.355** |
| 47,63 | 1.875 | 21,00 | .8268 | FDS45 | **364.011** | **170.346** | **191.698** | **170.355** |
| 48,00 | 1.890 | 21,00 | .8268 | FDS45 | **364.011** | **170.346** | **191.698** | **170.355** |
| 49,00 | 1.929 | 22,00 | .8661 | FDS45 | **364.011** | **170.346** | **191.698** | **170.355** |
| 50,00 | 1.969 | 23,00 | .9055 | FDS50 | **364.011** | **170.346** | **191.698** | **170.355** |
| 50,80 | 2.000 | 24,00 | .9449 | FDS50 | **364.011** | **170.346** | **191.698** | **170.355** |
| 51,00 | 2.008 | 24,00 | .9449 | FDS50 | **364.011** | **170.346** | **191.698** | **170.355** |
| 52,00 | 2.047 | 25,00 | .9843 | FDS50 | **364.012** | **170.347** | **191.698** | **170.355** |
| 53,00 | 2.087 | 26,00 | 1.0236 | FDS50 | **364.012** | **170.347** | **191.698** | **170.355** |
| 53,98 | 2.125 | 27,00 | 1.0630 | FDS50 | **364.012** | **170.347** | **191.698** | **170.355** |
| 54,00 | 2.126 | 27,00 | 1.0630 | FDS50 | **364.012** | **170.347** | **191.698** | **170.355** |
| 55,00 | 2.165 | 28,00 | 1.1024 | FDS50 | **364.012** | **170.347** | **191.698** | **170.355** |
| 56,00 | 2.205 | 20,00 | .7874 | FDS56 | **364.011** | **170.346** | **191.726** | **170.356** |
| 57,00 | 2.244 | 21,00 | .8268 | FDS56 | **364.011** | **170.346** | **191.726** | **170.356** |
| 57,15 | 2.250 | 21,00 | .8268 | FDS56 | **364.011** | **170.346** | **191.726** | **170.356** |
| 58,00 | 2.284 | 22,00 | .8661 | FDS56 | **364.011** | **170.346** | **191.726** | **170.356** |
| 59,00 | 2.323 | 23,00 | .9055 | FDS56 | **364.011** | **170.346** | **191.726** | **170.356** |
| 60,00 | 2.362 | 24,00 | .9449 | FDS56 | **364.011** | **170.346** | **191.726** | **170.356** |
| 60,33 | 2.375 | 24,00 | .9449 | FDS56 | **364.011** | **170.346** | **191.726** | **170.356** |
| 61,00 | 2.402 | 25,00 | .9843 | FDS56 | **364.012** | **170.347** | **191.726** | **170.356** |
| 62,00 | 2.441 | 26,00 | 1.0236 | FDS56 | **364.012** | **170.347** | **191.726** | **170.356** |
| 63,00 | 2.480 | 27,00 | 1.0630 | FDS63 | **364.012** | **170.347** | **191.726** | **170.356** |
| 63,50 | 2.500 | 28,00 | 1.1024 | FDS63 | **364.012** | **170.347** | **191.726** | **170.356** |
| 64,00 | 2.520 | 28,00 | 1.1024 | FDS63 | **364.012** | **170.347** | **191.726** | **170.356** |
| 65,00 | 2.559 | 29,00 | 1.1417 | FDS63 | **364.013** | **170.348** | **191.726** | **170.356** |
| 66,00 | 2.598 | 30,00 | 1.1811 | FDS63 | **364.013** | **170.348** | **191.726** | **170.356** |
| 66,68 | 2.625 | 31,00 | 1.2205 | FDS63 | **364.013** | **170.348** | **191.726** | **170.356** |
| 67,00 | 2.638 | 31,00 | 1.2205 | FDS63 | **364.013** | **170.348** | **191.726** | **170.356** |
| 68,00 | 2.677 | 32,00 | 1.2598 | FDS63 | **364.013** | **170.348** | **191.726** | **170.356** |
| 69,00 | 2.717 | 33,00 | 1.2992 | FDS63 | **364.015** | **170.348** | **191.726** | **170.356** |
| 69,85 | 2.750 | 34,00 | 1.3386 | FDS63 | **364.015** | **170.348** | **191.726** | **170.356** |
| 70,00 | 2.756 | 34,00 | 1.3386 | FDS63 | **364.015** | **170.348** | **191.726** | **170.356** |
| 72,00 | 2.835 | 27,00 | 1.0630 | FDS71 | **364.012** | **170.347** | **191.916** | **170.355** |
| 74,00 | 2.913 | 29,00 | 1.1420 | FDS71 | **364.013** | **170.365** | **191.916** | **170.355** |
| 76,00 | 2.992 | 31,00 | 1.2200 | FDS71 | **364.013** | **170.365** | **191.916** | **170.355** |
| 76,20 | 3.000 | 31,00 | 1.2200 | FDS71 | **364.013** | **170.365** | **191.916** | **170.355** |
| 78,00 | 3.071 | 33,00 | 1.2990 | FDS71 | **364.015** | **170.365** | **191.916** | **170.355** |
| 80,00 | 3.150 | 31,00 | 1.2200 | FDS80 | **364.013** | **170.365** | **191.916** | **170.355** |
| 82,00 | 3.228 | 33,00 | 1.2992 | FDS80 | **364.015** | **170.365** | **191.916** | **170.355** |
| 82,55 | 3.250 | 34,00 | 1.3386 | FDS80 | **364.015** | **170.365** | **191.916** | **170.355** |
| 84,00 | 3.307 | 35,00 | 1.3780 | FDS80 | **364.015** | **170.365** | **191.916** | **170.355** |
| 86,00 | 3.386 | 37,00 | 1.4567 | FDS80 | **364.015** | **170.365** | **191.916** | **170.355** |
| 88,00 | 3.465 | 39,00 | 1.5354 | FDS80 | **364.015** | **170.365** | **191.916** | **170.355** |
| 88,90 | 3.500 | 40,00 | 1.5748 | FDS80 | **364.015** | **170.365** | **191.916** | **170.355** |
| 90,00 | 3.543 | 37,00 | 1.4567 | FDS90 | **364.015** | **170.365** | **191.916** | **170.355** |
| 92,00 | 3.622 | 39,00 | 1.5354 | FDS90 | **364.015** | **170.365** | **191.916** | **170.355** |
| 94,00 | 3.701 | 26,00 | 1.0236 | FDS90 | **364.012** | **170.347** | **191.916** | **170.355** |
| 95,25 | 3.750 | 27,00 | 1.0630 | FDS90 | **364.012** | **170.347** | **191.916** | **170.355** |
| 96,00 | 3.780 | 28,00 | 1.1024 | FDS90 | **364.012** | **170.347** | **191.916** | **170.355** |
| 98,00 | 3.858 | 30,00 | 1.1811 | FDS90 | **364.013** | **170.365** | **191.916** | **170.355** |
| 101,60 | 4.000 | 34,00 | 1.3390 | FDS90 | **364.015** | **170.365** | **191.916** | **170.355** |

NOTE: Find complete KSEM PLUS™ A1 product overview on pages B8–B9.

## KSEM PLUS B1 Heads 28–101,60mm • Spare Parts

| D1 mm | D1 in | KSEM B1 Head order number | KSEM insert screw | Torx wrench | DFC insert screw | Torx wrench | DPA guiding pad screw | Torx wrench | shim pack |
|---|---|---|---|---|---|---|---|---|---|
| 28,00 | 1.102 | 5115736 | 364.016 | 170.350 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 28,58 | 1.125 | 5115737 | 364.016 | 170.350 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 29,00 | 1.142 | 5115738 | 364.016 | 170.350 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 29,36 | 1.156 | 5115739 | 364.010 | 170.345 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 30,00 | 1.181 | 5116010 | 364.010 | 170.345 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 30,18 | 1.188 | 5116011 | 364.010 | 170.345 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 30,96 | 1.219 | 5116012 | 364.010 | 170.345 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 31,00 | 1.220 | 5116013 | 364.010 | 170.345 | 192.432 | 170.352 | 192.432 | 170.352 | 193.554 |
| 31,75 | 1.250 | 5116014 | 364.016 | 170.350 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 32,00 | 1.260 | 5116015 | 364.016 | 170.350 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 33,00 | 1.299 | 5116016 | 364.010 | 170.345 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 33,20 | 1.307 | 5116017 | 364.010 | 170.345 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 33,35 | 1.313 | 5116018 | 364.010 | 170.345 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 34,00 | 1.339 | 5116019 | 364.010 | 170.345 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 34,93 | 1.375 | 5116030 | 364.010 | 170.345 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 35,00 | 1.378 | 5116031 | 364.010 | 170.345 | 191.924 | 170.353 | 191.924 | 170.353 | 193.555 |
| 36,00 | 1.417 | 5116032 | 364.016 | 170.350 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 36,53 | 1.438 | 5116033 | 364.016 | 170.350 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 37,00 | 1.457 | 5116034 | 364.016 | 170.350 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 37,50 | 1.476 | 5116035 | 364.016 | 170.350 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 38,00 | 1.496 | 5116036 | 364.016 | 170.350 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 38,10 | 1.500 | 5116037 | 364.016 | 170.350 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 39,00 | 1.535 | 5116038 | 364.010 | 170.345 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 39,20 | 1.543 | 5116039 | 364.010 | 170.345 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 39,70 | 1.563 | 5116040 | 364.010 | 170.345 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 40,00 | 1.575 | 5116041 | 364.010 | 170.345 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 41,00 | 1.614 | 5116042 | 364.010 | 170.345 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 41,28 | 1.625 | 5116043 | 364.010 | 170.345 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 42,00 | 1.654 | 5116044 | 364.010 | 170.345 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 43,00 | 1.693 | 5116045 | 364.011 | 170.346 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 44,00 | 1.732 | 5116046 | 364.011 | 170.346 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |
| 44,45 | 1.750 | 5116047 | 364.011 | 170.346 | 191.916 | 170.355 | 191.924 | 170.353 | 193.555 |

*(continued)*



*(KSEM PLUS B1 Heads 28–101,60mm continued)*

| D1 mm | D1 in | KSEM B1 Head order number | KSEM insert screw | Torx wrench | DFC insert screw | Torx wrench | DPA guiding pad screw | Torx wrench | shim pack |
|---|---|---|---|---|---|---|---|---|---|
| 45,00 | 1.772 | **5116098** | **364.010** | **170.345** | **191.916** | **170.355** | **191.924** | **170.353** | **193.555** |
| 46,00 | 1.811 | **5116099** | **364.010** | **170.345** | **191.916** | **170.355** | **191.924** | **170.353** | **193.555** |
| 47,00 | 1.850 | **5116110** | **364.011** | **170.346** | **191.916** | **170.355** | **191.924** | **170.353** | **193.555** |
| 47,63 | 1.875 | **5116111** | **364.011** | **170.346** | **191.916** | **170.355** | **191.924** | **170.353** | **193.555** |
| 48,00 | 1.890 | **5116112** | **364.011** | **170.346** | **191.916** | **170.355** | **191.924** | **170.353** | **193.555** |
| 49,00 | 1.929 | **5116113** | **364.011** | **170.346** | **191.916** | **170.355** | **191.924** | **170.353** | **193.555** |
| 50,00 | 1.969 | **5116114** | **364.011** | **170.346** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 50,80 | 2.000 | **5116115** | **364.011** | **170.346** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 51,00 | 2.008 | **5116116** | **364.011** | **170.346** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 52,00 | 2.047 | **5116117** | **364.012** | **170.347** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 53,00 | 2.087 | **5116118** | **364.012** | **170.347** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 53,98 | 2.125 | **5116119** | **364.012** | **170.347** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 54,00 | 2.126 | **5116120** | **364.012** | **170.347** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 55,00 | 2.165 | **5116121** | **364.012** | **170.347** | **191.916** | **170.355** | **191.916** | **170.355** | **193.556** |
| 56,00 | 2.205 | **5116122** | **364.011** | **170.346** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 57,00 | 2.244 | **5116123** | **364.011** | **170.346** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 57,15 | 2.250 | **5116124** | **364.011** | **170.346** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 58,00 | 2.283 | **5116125** | **364.011** | **170.346** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 59,00 | 2.323 | **5116126** | **364.011** | **170.346** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 60,00 | 2.362 | **5116127** | **364.011** | **170.346** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 60,33 | 2.375 | **5116128** | **364.011** | **170.346** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 61,00 | 2.402 | **5116129** | **364.012** | **170.347** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 62,00 | 2.441 | **5116130** | **364.012** | **170.347** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 63,00 | 2.480 | **5116131** | **364.012** | **170.347** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 63,50 | 2.500 | **5116132** | **364.012** | **170.347** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 64,00 | 2.520 | **5116133** | **364.012** | **170.347** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 65,00 | 2.559 | **5116134** | **364.013** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 66,00 | 2.598 | **5116135** | **364.013** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 66,68 | 2.625 | **5116136** | **364.013** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 67,00 | 2.638 | **5116137** | **364.013** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 68,00 | 2.677 | **5116138** | **364.013** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 69,00 | 2.717 | **5116139** | **364.015** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 69,85 | 2.750 | **5116140** | **364.015** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 70,00 | 2.756 | **5116141** | **364.015** | **170.348** | **191.726** | **170.356** | **191.916** | **170.355** | **193.556** |
| 76,20 | 3.000 | **5397562** | **364.013** | **170.365** | **191.916** | **170.355** | **191.916** | **170.356** | **193.556** |
| 82,55 | 3.250 | **5397563** | **364.015** | **170.355** | **191.916** | **170.355** | **191.916** | **170.356** | **193.556** |
| 88,90 | 3.500 | **5397564** | **364.015** | **170.355** | **191.916** | **170.355** | **191.916** | **170.356** | **193.556** |
| 95,25 | 3.750 | **5397565** | **364.012** | **170.347** | **191.916** | **170.355** | **191.916** | **170.356** | **193.556** |
| 101,60 | 4.000 | **5397566** | **364.015** | **170.365** | **191.916** | **170.355** | **191.916** | **170.356** | **193.556** |

NOTE: When one screw is listed, it is for both insert and guiding pad. When two screws are listed, the first one is for the insert screw, and the second one is for the guiding pad.
Find complete KSEM PLUS™ B1 product overview on pages B24–B25.

Holemaking

## Modular Drill • KSEM PLUS™ • Metric • A1 and B1 Style

| Material Group | | Condition | Cutting Speed — vc Range — m/min | | | Metric Recommended Feed Rate (f) by Diameter | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | min | Starting Value | max | | KSEM 14....17 DFR04... 28,00 - 31,74 | KSEM 15....18 DFT05.. 31,75 - 35,99 | KSEM 13....22 DFT06... 36,00 - 44,99 | KSEM 18....28 DFT07... 45,00 - 55,99 | KSEM 20....34 DFT09... 56,00 - 70,00 | KSEM 26....40 DFx06.../DFx07 70,36 - 102,35 |
| P | 2 | S | 90 | 190 | 230 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,360 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | U | 71 | 130 | 170 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,360 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | I | 50 | 80 | 110 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | 3 | S | 90 | 180 | 230 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | U | 70 | 120 | 170 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | I | 50 | 70 | 106 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | 4 | S | 90 | 140 | 220 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | U | 70 | 110 | 160 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | I | 50 | 80 | 110 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | 5 | S | 90 | 130 | 210 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | U | 70 | 100 | 150 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | I | 50 | 70 | 100 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | 6 | S | 70 | 90 | 180 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | U | 50 | 75 | 120 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | I | 40 | 60 | 100 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| M | 1 | S | 60 | 110 | 135 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 40 | 70 | 90 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 30 | 50 | 65 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | 2 | S | 60 | 100 | 135 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 40 | 60 | 90 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 30 | 50 | 65 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | 3 | S | 50 | 90 | 135 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 40 | 60 | 90 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 25 | 40 | 65 | mm/r | 0,130 - 0,250 | 0,130 - 0,250 | 0,160 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| K | 1 | S | 90 | 170 | 230 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | | U | 60 | 120 | 160 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | | I | 40 | 70 | 90 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | 2 | S | 90 | 160 | 220 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | | U | 60 | 110 | 160 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | | I | 40 | 70 | 100 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | 3 | S | 90 | 150 | 210 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | | U | 60 | 100 | 150 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| | | I | 35 | 60 | 90 | mm/r | 0,180 - 0,300 | 0,180 - 0,300 | 0,216 - 0,360 | 0,240 - 0,420 | 0,240 - 0,420 | 0,240 - 0,420 |
| N | 1 | S | 150 | 240 | 360 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 100 | 160 | 240 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 60 | 100 | 160 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | 2 | S | 150 | 220 | 360 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 100 | 150 | 240 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 60 | 100 | 160 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | 3 | S | 150 | 200 | 360 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 100 | 140 | 240 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 60 | 90 | 160 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | 4 | S | 110 | 220 | 260 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 70 | 140 | 170 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 45 | 90 | 110 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | 5 | S | 150 | 200 | 360 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | U | 100 | 140 | 240 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | | I | 60 | 90 | 160 | mm/r | 0,120 - 0,200 | 0,120 - 0,200 | 0,144 - 0,280 | 0,160 - 0,320 | 0,160 - 0,320 | 0,160 - 0,320 |
| | 6 | S | 250 | 400 | 600 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | U | 200 | 300 | 400 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |
| | | I | 150 | 200 | 300 | mm/r | 0,160 - 0,280 | 0,160 - 0,280 | 0,200 - 0,320 | 0,200 - 0,400 | 0,200 - 0,400 | 0,200 - 0,400 |

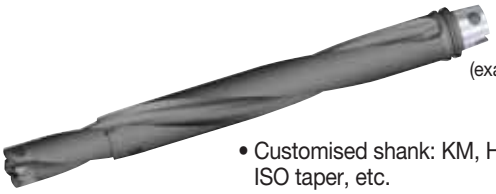
## Insert Recommendation

| Material Group | Outboard / Inboard | Insert Style | Grade |
|---|---|---|---|
| P | O | DFR-GD | KCU25, KCU40 |
| | | DFC-/DFT-HP | |
| | I | KSEMP-HPG | KC7315 |
| M | O | DFR-MD | KC7140 |
| | | DFC-/DFT-MD | |
| | I | KSEMP-HPG | KC7315 |
| K | O | DFR-LD | KCU25 |
| | | DFC/DFT-HP | |
| | I | KSEM-HPCCL | KC7410 |
| N | O | DFR-GD | KC7225 |
| | | DFC/DFT-HP | KCU40 |
| | I | KSEMP-HPG | KC7315 |

| Application | Workpiece Shape | A1 Head | B1 Head |
|---|---|---|---|
| Flat Face | | ✓ | ✓ |
| Cored Hole | | ✗ | ✓ |
| Stacked Plates | | ✗ | ✓ |
| Angled Exit (exit only!) | | ✓ <3° | ✓ max 15° |
| Angled Entrance | | ✓ <3° | ✓ <3° |
| Cross Holes | | ✗ | ✓ max 50% of D1 |

## KSEM PLUS Customised Solution Capabilities:

- Intermediate head Ø.
- Custom head to use reground KSEM™ inserts.
- Heads for cross holes Ø = d1.



(example)

- Customised shank: KM, HSK, VDI, ISO taper, etc.
- Customised flute helix.
- Step drill.

(example)

- Drill body up to L1 = 20 x D and total length of 1250mm.

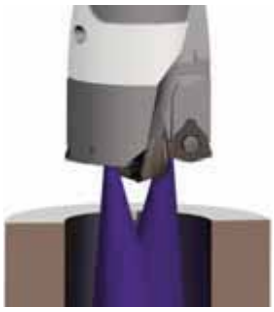
## Mounting DPA Guiding Pads on B1 Heads

**All B1 heads are delivered with preset guiding pads.**

Measure radial undersize “A” of pad to cutting edge for both sides and adjust using shim set that comes with each head.

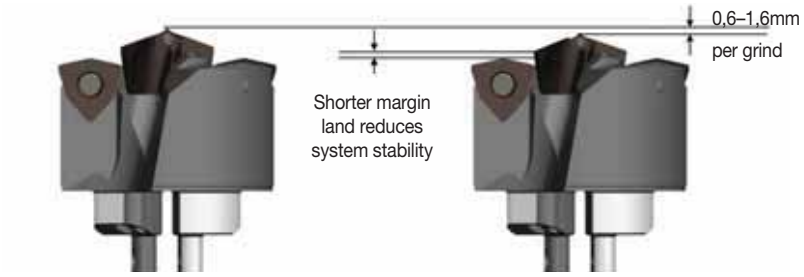
NOTE: For best results with slanted exits and in cross hole drilling, we recommend guiding pads adjustment results in an undersize of A = 30 µm (edge of guiding pads to cutting edges).

## Coolant Recommendations



Internal coolant is recommended for optimum chip flow and tool life.

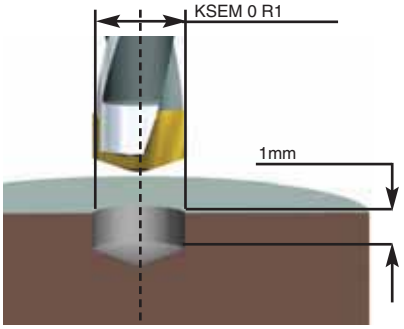
## KSEM PLUS Piloting Insert SHOULD NOT Be Reground:




Only new KSEM PLUS inserts will provide consistency and process security on a KSEM PLUS modular drill system. If you want to regrind, refer to our custom solution A1 and B1 heads.

NOTE: Reground KSEM PLUS inserts can be used in KSEM™ drills.

## Piloting Instructions:




1. KSEM….PCM
   Pilot drill Ø equal KSEMP Ø PDD
2. Drill 1mm deep from full diameter

# RMB-E™ and RHM-E™ Expandable Reamers • The Expandable Reaming System

## Primary Application

The new Kennametal Expandable Reamers feature an elastic behaviour over the entire range (48 microns for each diameter). With a complete linear expansion rate of 2 microns per 30° twisting the expansion screw, the new Expandable Reamers can be positioned in the machining centre without measurement devices.

# Features and Benefits

### Versatility and Productivity

- Use with SIF steerable chucks for KST toolholders for easy compensation of radial runout and angular inaccuracies.
- Achieve the greatest possible hole straightness and surface quality.
- Tools are preadjusted to hit IT6 tolerance.

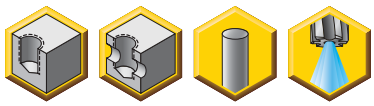
### Increased Tool Life

- Up to 4 times the tool life of non-expandable reamers due to compensation of the loss of diameter due to wear.
- Longer tool life at smaller tolerances.

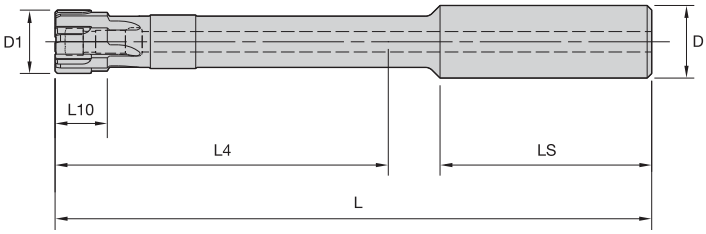
### Customisation

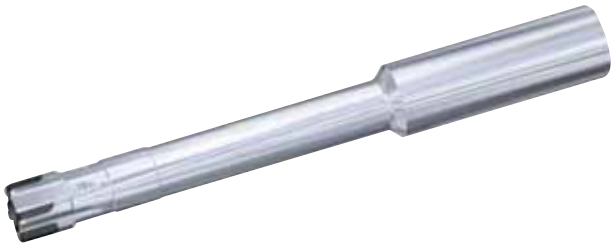
- Diameters up to 42mm available with helical and straight flutes in 0,001mm increments.

- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.

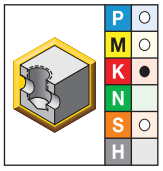


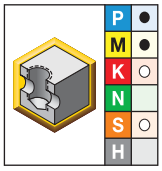




## RMB-E • Straight Flutes and Internal Coolant




● first choice
○ alternate choice

| KC6005 | KC6305 | D1 mm | D | L | L4 mm | L10 | LS | Z |
|---|---|---|---|---|---|---|---|---|
| RMBE14000H6SF | RMBE14000H6SF | 14,00 | 16,00 | 131,5 | 72,5 | 8,0 | 49,0 | 6 |
| RMBE15000H6SF | RMBE15000H6SF | 15,00 | 16,00 | 136,5 | 77,5 | 8,0 | 49,0 | 6 |
| RMBE16000H6SF | RMBE16000H6SF | 16,00 | 20,00 | 143,5 | 82,5 | 8,0 | 54,4 | 6 |
| RMBE17000H6SF | RMBE17000H6SF | 17,00 | 20,00 | 148,5 | 87,5 | 8,0 | 51,0 | 6 |
| RMBE18000H6SF | RMBE18000H6SF | 18,00 | 20,00 | 153,5 | 92,5 | 8,0 | 51,0 | 6 |
| RMBE19000H6SF | RMBE19000H6SF | 19,00 | 20,00 | 158,5 | 97,5 | 8,0 | 51,0 | 6 |
| RMBE20000H6SF | RMBE20000H6SF | 20,00 | 25,00 | 169,8 | 102,5 | 8,0 | 57,0 | 6 |

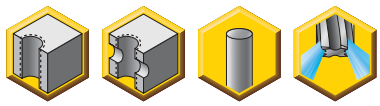
NOTE: Uncoated carbide grade K605™ and uncoated cermet grade KT325™ are available on request.

## Dimensions for Engineered-Solution Reamers

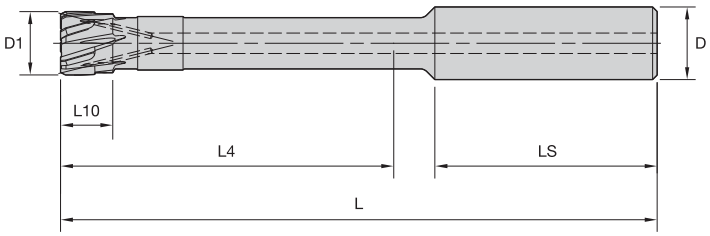
| D1 min mm | D1 max mm | D mm | L mm | L4 mm | L10 mm | LS mm | Z |
|---|---|---|---|---|---|---|---|
| 14,00 | 15,99 | 16,00 | 145 | 97 | 9 | 48 | 6 |
| 16,00 | 17,99 | 20,00 | 157 | 107 | 9 | 50 | 6 |
| 18,00 | 19,99 | 20,00 | 171 | 121 | 9 | 50 | 6 |
| 20,00 | 21,99 | 20,00 | 200 | 150 | 9 | 50 | 6 |
| 22,00 | 25,99 | 20,00 | 210 | 160 | 11 | 50 | 6 |
| 26,00 | 29,99 | 25,00 | 240 | 184 | 11 | 56 | 8 |
| 30,00 | 32,00 | 25,00 | 270 | 214 | 11 | 56 | 8 |

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

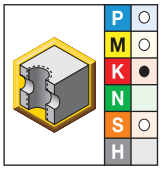
- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.

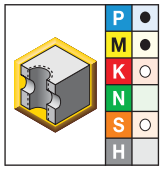






## RMB-E • Helical Flutes and Internal Coolant




● first choice
○ alternate choice

| KC6005 | KC6305 | D1 mm | D | L | L4 mm | L10 | LS | Z |
|---|---|---|---|---|---|---|---|---|
| RMBE14000H6HF | RMBE14000H6HF | 14,00 | 16,00 | 131,5 | 72,5 | 7,6 | 49,0 | 6 |
| RMBE15000H6HF | RMBE15000H6HF | 15,00 | 16,00 | 136,5 | 77,5 | 7,6 | 49,0 | 6 |
| RMBE16000H6HF | RMBE16000H6HF | 16,00 | 20,00 | 143,5 | 82,5 | 7,6 | 51,0 | 6 |
| RMBE17000H6HF | RMBE17000H6HF | 17,00 | 20,00 | 148,5 | 87,5 | 7,6 | 51,0 | 6 |
| RMBE18000H6HF | RMBE18000H6HF | 18,00 | 20,00 | 153,5 | 92,5 | 7,6 | 51,0 | 6 |
| RMBE19000H6HF | RMBE19000H6HF | 19,00 | 20,00 | 158,5 | 97,5 | 7,6 | 51,0 | 6 |
| RMBE20000H6HF | RMBE20000H6HF | 20,00 | 25,00 | 169,8 | 102,5 | 7,6 | 57,0 | 6 |

NOTE: Uncoated carbide grade K605™ is available on request.

## Dimensions for Engineered-Solution Reamers

| D1 min mm | D1 max mm | D mm | L mm | L4 mm | L10 mm | LS mm | Z |
|---|---|---|---|---|---|---|---|
| 14,00 | 15,99 | 16,00 | 145 | 97 | 9 | 48 | 6 |
| 16,00 | 17,99 | 20,00 | 157 | 107 | 9 | 50 | 6 |
| 18,00 | 19,99 | 20,00 | 171 | 121 | 9 | 50 | 6 |
| 20,00 | 21,99 | 20,00 | 200 | 150 | 9 | 50 | 6 |
| 22,00 | 25,99 | 20,00 | 210 | 160 | 11 | 50 | 6 |
| 26,00 | 29,99 | 25,00 | 240 | 184 | 11 | 56 | 8 |
| 30,00 | 32,00 | 25,00 | 270 | 214 | 11 | 56 | 8 |

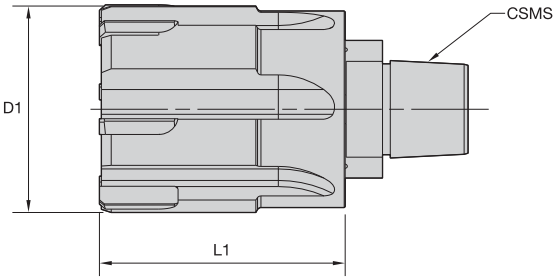
NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

Holemaking

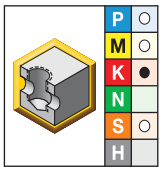
## RMB-E™ • Metric

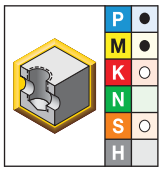
| Material Group | | KT325 Cutting Speed — vc Range — m/min | | | KT6215 Cutting Speed — vc Range — m/min | | | K605 Cutting Speed — vc Range — m/min | | | KC6005 Cutting Speed — vc Range — m/min | | | KC6305 Cutting Speed — vc Range — m/min | | | Metric Recommended Feed Rate per Tooth | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | Tool Diameter (mm) | 14,00–19,99 | | 20,00–32,00 | |
| | | min | Starting Value | max | min | Starting Value | max | min | Starting Value | max | min | Starting Value | max | min | Starting Value | max | Feed/ Tooth | min | max | min | max |
| P | 1 | 150 | **180** | 210 | 180 | **210** | 240 | 40 | **60** | 70 | 90 | **120** | 155 | 90 | **120** | 155 | mm/z | 0,10 | 0,22 | 0,10 | 0,25 |
| | 2 | 150 | **180** | 210 | 180 | **210** | 240 | 40 | **60** | 70 | 90 | **120** | 155 | 90 | **120** | 155 | mm/z | 0,10 | 0,22 | 0,10 | 0,25 |
| | 3 | 130 | **160** | 180 | 150 | **180** | 210 | 30 | **40** | 50 | 75 | **100** | 130 | 75 | **100** | 130 | mm/z | 0,10 | 0,22 | 0,10 | 0,25 |
| | 4 | 100 | **130** | 150 | 120 | **150** | 170 | 25 | **40** | 45 | 50 | **80** | 105 | 50 | **80** | 105 | mm/z | 0,10 | 0,22 | 0,10 | 0,25 |
| | 5 | 80 | **100** | 120 | 100 | **130** | 150 | 10 | **20** | 30 | 30 | **40** | 55 | 30 | **40** | 55 | mm/z | 0,08 | 0,2 | 0,08 | 0,22 |
| | 6 | 80 | **100** | 120 | 100 | **130** | 150 | 10 | **20** | 30 | 30 | **40** | 55 | 30 | **40** | 55 | mm/z | 0,08 | 0,2 | 0,08 | 0,22 |
| M | 1 | – | **–** | – | – | **–** | – | 8 | **10** | 15 | – | **–** | – | 15 | **20** | 28 | mm/z | 0,08 | 0,18 | 0,08 | 0,2 |
| | 2 | – | **–** | – | – | **–** | – | 8 | **10** | 15 | – | **–** | – | 15 | **20** | 28 | mm/z | 0,08 | 0,18 | 0,08 | 0,2 |
| | 3 | – | **–** | – | – | **–** | – | 8 | **10** | 15 | – | **–** | – | 15 | **20** | 28 | mm/z | 0,08 | 0,18 | 0,08 | 0,2 |
| K | 1 | 150 | **180** | 200 | 180 | **210** | 240 | 30 | **50** | 60 | 80 | **110** | 130 | 80 | **110** | 130 | mm/z | 0,10 | 0,22 | 0,10 | 0,25 |
| | 2 | 130 | **160** | 180 | 150 | **180** | 210 | 25 | **40** | 45 | 65 | **90** | 110 | 65 | **90** | 110 | mm/z | 0,10 | 0,22 | 0,10 | 0,25 |
| | 3 | 100 | **130** | 160 | 120 | **150** | 170 | 20 | **30** | 40 | 50 | **70** | 90 | 50 | **70** | 90 | mm/z | 0,10 | 0,2 | 0,10 | 0,22 |
| N | 1 | – | **–** | – | – | **–** | – | 110 | **150** | 195 | – | **–** | – | – | **–** | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 |
| | 2 | – | **–** | – | – | **–** | – | 110 | **150** | 195 | – | **–** | – | – | **–** | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 |
| | 3 | – | **–** | – | – | **–** | – | 110 | **150** | 195 | – | **–** | – | – | **–** | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 |
| | 4 | – | **–** | – | – | **–** | – | 110 | **150** | 195 | – | **–** | – | – | **–** | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 |
| | 5 | – | **–** | – | – | **–** | – | 105 | **140** | 180 | – | **–** | – | – | **–** | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 |
| S | 1 | – | **–** | – | – | **–** | – | 8 | **10** | 15 | – | **–** | – | 15 | **20** | 28 | mm/z | 0,10 | 0,18 | 0,10 | 0,20 |
| | 2 | – | **–** | – | – | **–** | – | 8 | **10** | 15 | – | **–** | – | 15 | **20** | 28 | mm/z | 0,10 | 0,18 | 0,10 | 0,20 |
| | 3 | – | **–** | – | – | **–** | – | 15 | **20** | 30 | – | **–** | – | 20 | **30** | 40 | mm/z | 0,10 | 0,20 | 0,10 | 0,20 |
| | 4 | – | **–** | – | – | **–** | – | 15 | **20** | 30 | – | **–** | – | 20 | **30** | 40 | mm/z | 0,10 | 0,20 | 0,10 | 0,20 |

- For hole tolerance H6.
- Intermediate sizes available.
- Screw for axial use or pull stud comes with holder.
- Allen expansion screw.



## RHM-E • Straight Flutes and Internal Coolant



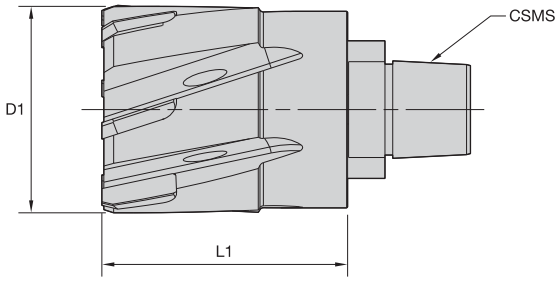




● first choice
○ alternate choice

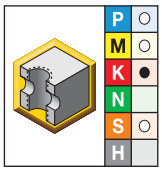
| KC6005 | KC6305 | CSMS system size | D1 mm | L1 mm | Z |
|---|---|---|---|---|---|
| RHME14000KST115H6SF | RHME14000KST115H6SF | KST115 | 14,00 | 25,00 | 6 |
| RHME14288KST115H6SF | RHME14288KST115H6SF | KST115 | 14,29 | 25,00 | 6 |
| RHME15000KST115H6SF | RHME15000KST115H6SF | KST115 | 15,00 | 25,00 | 6 |
| RHME16000KST135H6SF | RHME16000KST135H6SF | KST135 | 16,00 | 25,00 | 6 |
| RHME17000KST135H6SF | RHME17000KST135H6SF | KST135 | 17,00 | 25,00 | 6 |
| RHME17463KST135H6SF | RHME17463KST135H6SF | KST135 | 17,46 | 25,00 | 6 |
| RHME18000KST155H6SF | RHME18000KST155H6SF | KST155 | 18,00 | 25,00 | 6 |
| RHME19000KST155H6SF | RHME19000KST155H6SF | KST155 | 19,00 | 25,00 | 6 |
| RHME19050KST155H6SF | RHME19050KST155H6SF | KST155 | 19,05 | 25,00 | 6 |
| RHME20000KST175H6SF | RHME20000KST175H6SF | KST175 | 20,00 | 25,00 | 6 |
| RHME21000KST175H6SF | RHME21000KST175H6SF | KST175 | 21,00 | 25,00 | 6 |
| RHME22000KST175H6SF | RHME22000KST175H6SF | KST175 | 22,00 | 25,00 | 6 |
| RHME22225KST175H6SF | RHME22225KST175H6SF | KST175 | 22,22 | 25,00 | 6 |
| RHME23000KST200H6SF | RHME23000KST200H6SF | KST200 | 23,00 | 25,00 | 6 |
| RHME23813KST200H6SF | RHME23813KST200H6SF | KST200 | 23,81 | 25,00 | 6 |
| RHME24000KST200H6SF | RHME24000KST200H6SF | KST200 | 24,00 | 25,00 | 6 |
| RHME25000KST200H6SF | RHME25000KST200H6SF | KST200 | 25,00 | 30,00 | 6 |
| RHME25400KST200H6SF | RHME25400KST200H6SF | KST200 | 25,40 | 30,00 | 6 |
| RHME26000KST200H6SF | RHME26000KST200H6SF | KST200 | 26,00 | 30,00 | 8 |
| RHME27000KST200H6SF | RHME27000KST200H6SF | KST200 | 27,00 | 30,00 | 8 |
| RHME28000KST250H6SF | RHME28000KST250H6SF | KST250 | 28,00 | 36,00 | 8 |
| RHME30000KST250H6SF | RHME30000KST250H6SF | KST250 | 30,00 | 36,00 | 8 |
| RHME31750KST250H6SF | RHME31750KST250H6SF | KST250 | 31,75 | 36,00 | 8 |
| RHME32000KST250H6SF | RHME32000KST250H6SF | KST250 | 32,00 | 36,00 | 8 |
| RHME34000KST300H6SF | RHME34000KST300H6SF | KST300 | 33,99 | 36,00 | 8 |
| RHME36000KST300H6SF | RHME36000KST300H6SF | KST300 | 35,99 | 36,00 | 8 |
| RHME38000KST350H6SF | RHME38000KST350H6SF | KST350 | 37,99 | 36,00 | 8 |
| RHME40000KST350H6SF | RHME40000KST350H6SF | KST350 | 39,99 | 36,00 | 8 |
| RHME42000KST350H6SF | RHME42000KST350H6SF | KST350 | 41,99 | 36,00 | 8 |

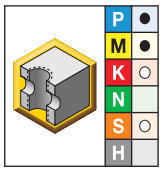
NOTE: Uncoated carbide grade K605™ is available on request.

- For hole tolerance H6.
- Intermediate sizes available.
- Screw for axial use or pull stud comes with holder.
- Allen expansion screw.



## RHM-E • Helical Flutes and Internal Coolant



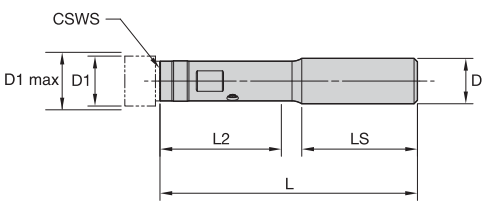



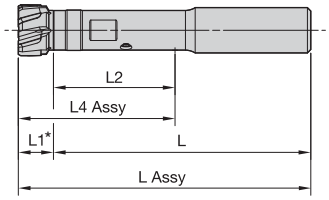

● first choice
○ alternate choice

| KC6005 | KC6305 | CSMS system size | D1 mm | L1 mm | Z |
|---|---|---|---|---|---|
| RHME14000KST115H6HF | RHME14000KST115H6HF | KST115 | 14,00 | 25,00 | 6 |
| RHME14288KST115H6HF | RHME14288KST115H6HF | KST115 | 14,29 | 25,00 | 6 |
| RHME15000KST115H6HF | RHME15000KST115H6HF | KST115 | 15,00 | 25,00 | 6 |
| RHME16000KST135H6HF | RHME16000KST135H6HF | KST135 | 16,00 | 25,00 | 6 |
| RHME17000KST135H6HF | RHME17000KST135H6HF | KST135 | 17,00 | 25,00 | 6 |
| RHME17463KST135H6HF | RHME17463KST135H6HF | KST135 | 17,46 | 25,00 | 6 |
| RHME18000KST155H6HF | RHME18000KST155H6HF | KST155 | 18,00 | 25,00 | 6 |
| RHME19000KST155H6HF | RHME19000KST155H6HF | KST155 | 19,00 | 25,00 | 6 |
| RHME19050KST155H6HF | RHME19050KST155H6HF | KST155 | 19,05 | 25,00 | 6 |
| RHME20000KST175H6HF | RHME20000KST175H6HF | KST175 | 20,00 | 25,00 | 6 |
| RHME21000KST175H6HF | RHME21000KST175H6HF | KST175 | 21,00 | 25,00 | 6 |
| RHME22000KST175H6HF | RHME22000KST175H6HF | KST175 | 22,00 | 25,00 | 6 |
| RHME22225KST175H6HF | RHME22225KST175H6HF | KST175 | 22,22 | 25,00 | 6 |
| RHME23000KST200H6HF | RHME23000KST200H6HF | KST200 | 23,00 | 25,00 | 6 |
| RHME23813KST200H6HF | RHME23813KST200H6HF | KST200 | 23,81 | 25,00 | 6 |
| RHME24000KST200H6HF | RHME24000KST200H6HF | KST200 | 24,00 | 25,00 | 6 |
| RHME25000KST200H6HF | RHME25000KST200H6HF | KST200 | 25,00 | 30,00 | 6 |
| RHME25400KST200H6HF | RHME25400KST200H6HF | KST200 | 25,40 | 30,00 | 6 |
| RHME26000KST200H6HF | RHME26000KST200H6HF | KST200 | 26,00 | 30,00 | 8 |
| RHME27000KST200H6HF | RHME27000KST200H6HF | KST200 | 27,00 | 30,00 | 8 |
| RHME28000KST250H6HF | RHME28000KST250H6HF | KST250 | 28,00 | 36,00 | 8 |
| RHME30000KST250H6HF | RHME30000KST250H6HF | KST250 | 30,00 | 36,00 | 8 |
| RHME31750KST250H6HF | RHME31750KST250H6HF | KST250 | 31,75 | 36,00 | 8 |
| RHME32000KST250H6HF | RHME32000KST250H6HF | KST250 | 32,00 | 36,00 | 8 |
| RHME34000KST300H6HF | RHME34000KST300H6HF | KST300 | 33,99 | 36,00 | 8 |
| RHME36000KST300H6HF | RHME36000KST300H6HF | KST300 | 35,99 | 36,00 | 8 |
| RHME38000KST350H6HF | RHME38000KST350H6HF | KST350 | 37,99 | 36,00 | 8 |
| RHME40000KST350H6HF | RHME40000KST350H6HF | KST350 | 39,99 | 36,00 | 8 |
| RHME42000KST350H6HF | RHME42000KST350H6HF | KST350 | 41,99 | 36,00 | 8 |

NOTE: Uncoated carbide grade K605™ is available on request.

- Tool body shipped with screw for axial use.
- Order reamer head separately.



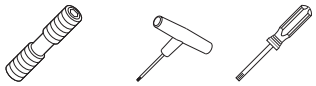



*For information on L1 (Head), see pages B29–B30.

L Assy = L1 (RHM Head) + L (Shank)

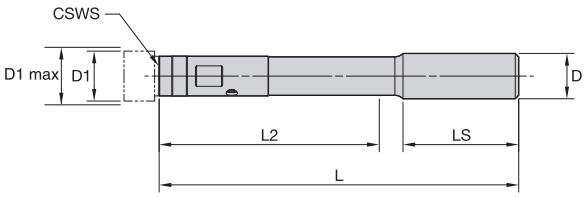


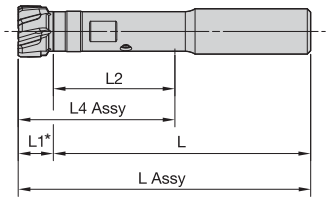
## Round Shank Axial Actuation • Metric • 3 x D



| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L | L2 | LS | central lock screw | Torx wrench | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4056174 | SS16KST115AR3M | KST115 | 14,00 | 15,999 | 16,00 | 91,00 | 35,00 | 48,00 | KST115115AS | – | 170.028 | 3,0 |
| 4056175 | SS20KST135AR3M | KST135 | 16,00 | 17,999 | 20,00 | 99,00 | 39,00 | 51,00 | KST135155AS | – | 170.085 | 4,0 |
| 4056176 | SS20KST155AR3M | KST155 | 18,00 | 19,999 | 20,00 | 106,00 | 45,00 | 51,00 | KST135155AS | – | 170.085 | 4,0 |
| 3861185 | SS20KST175AR3M | KST175 | 20,00 | 22,499 | 20,00 | 113,50 | 51,50 | 51,00 | KST175200AS | TT15 | – | 5,0 |
| 3861186 | SS20KST200AR3M | KST200 | 22,50 | 27,499 | 20,00 | 130,50 | 65,50 | 51,00 | KST175200AS | TT15 | – | 5,0 |
| 3861187 | SS25KST250AR3M | KST250 | 27,50 | 32,499 | 25,00 | 152,50 | 80,50 | 56,00 | KST250250AS | TT25 | – | 9,0 |
| 3861188 | SS32KST300AR3M | KST300 | 32,50 | 37,499 | 32,00 | 174,00 | 94,00 | 61,00 | KST300350AS | TT30 | – | 13,0 |
| 3861189 | SS32KST350AR3M | KST350 | 37,50 | 42,000 | 32,00 | 190,00 | 108,00 | 61,00 | KST300350AS | TT30 | – | 13,0 |

- Tool body shipped with screw for axial use.
- Order reamer head separately.

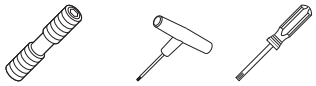


*For information on L1 (Head), see pages B29–B30.

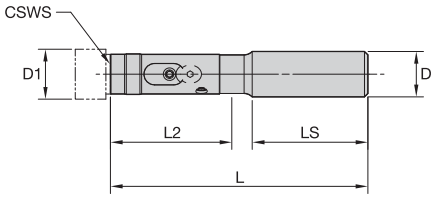
L Assy = L1 (RHM Head) + L (Shank)

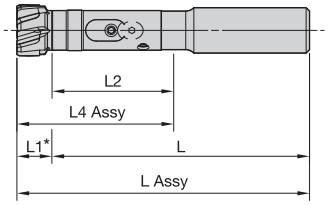
## Round Shank Axial Actuation • Metric • 5 x D



| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L | L2 | LS | central lock screw | Torx wrench | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4056177 | SS16KST115AR5M | KST115 | 14,00 | 15,999 | 16,00 | 123,00 | 67,00 | 48,00 | KST115115AS | – | 170.028 | 3,0 |
| 4056178 | SS20KST135AR5M | KST135 | 16,00 | 17,999 | 20,00 | 135,00 | 75,00 | 51,00 | KST135155AS | – | 170.085 | 4,0 |
| 4056179 | SS20KST155AR5M | KST155 | 18,00 | 19,999 | 20,00 | 146,00 | 85,00 | 51,00 | KST135155AS | – | 170.085 | 4,0 |
| 3861190 | SS20KST175AR5M | KST175 | 20,00 | 22,499 | 20,00 | 158,50 | 96,50 | 51,00 | KST175200AS | TT15 | – | 5,0 |
| 3861191 | SS20KST200AR5M | KST200 | 22,50 | 27,499 | 20,00 | 185,50 | 120,50 | 51,00 | KST175200AS | TT15 | – | 5,0 |
| 3861192 | SS25KST250AR5M | KST250 | 27,50 | 32,499 | 25,00 | 217,50 | 145,50 | 56,00 | KST250250AS | TT25 | – | 9,0 |
| 3861193 | SS32KST300AR5M | KST300 | 32,50 | 37,499 | 32,00 | 249,00 | 169,00 | 61,00 | KST300350AS | TT30 | – | 13,0 |
| 3861194 | SS32KST350AR5M | KST350 | 37,50 | 42,000 | 32,00 | 274,00 | 192,00 | 61,00 | KST300350AS | TT30 | – | 13,0 |

- Tool body shipped with pull stud for radial use.
- Order reamer head separately.



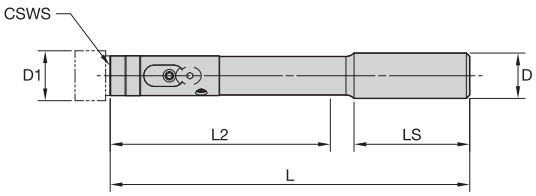

*For information on L1 (Head), see pages B29–B30.

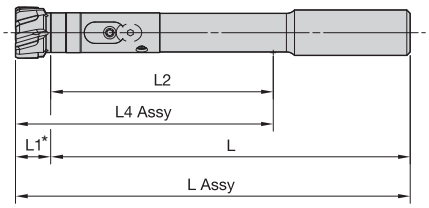
L Assy = L1 (RHM Head) + L (Shank)

## Round Shank Radial Actuation • Metric • 3 x D

| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L | L2 | LS | retention knob | clamp set | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3861195** | **SS20KST175RR3M** | KST175 | 20,00 | 22,50 | 20,00 | 113,50 | 51,50 | 51,00 | **KST175200RK** | **KST175CS** | **TT15** | 5,0 |
| **3861196** | **SS20KST200RR3M** | KST200 | 22,50 | 27,50 | 20,00 | 130,50 | 65,50 | 51,00 | **KST175200RK** | **KST200CS** | **TT15** | 5,0 |
| **3861197** | **SS25KST250RR3M** | KST250 | 27,50 | 32,50 | 25,00 | 152,50 | 80,50 | 56,00 | **KST250250RK** | **KST250CS** | **TT25** | 9,0 |
| **3861198** | **SS32KST300RR3M** | KST300 | 32,50 | 37,50 | 32,00 | 174,00 | 94,00 | 61,00 | **KST300350RK** | **KST300CS** | **TT30** | 13,0 |
| **3861199** | **SS32KST350RR3M** | KST350 | 37,50 | 42,00 | 32,00 | 190,00 | 108,00 | 61,00 | **KST300350RK** | **KST350CS** | **TT30** | 13,0 |

- Tool body shipped with pull stud for radial use.
- Order reamer head separately.



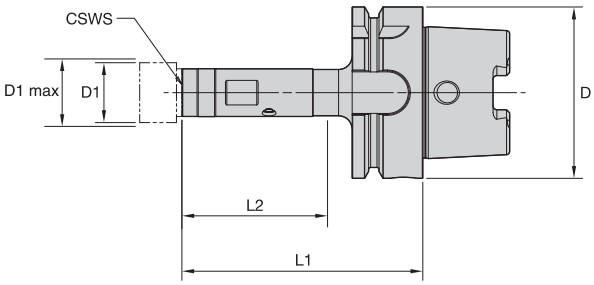
*For information on L1 (Head), see pages B29–B30.

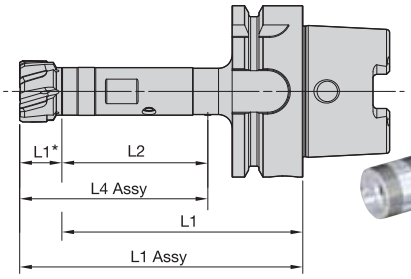
L Assy = L1 (RHM Head) + L (Shank)

## Round Shank Radial Actuation • Metric • 5 x D

| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L | L2 | LS | retention knob | clamp set | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3861200** | **SS20KST175RR5M** | KST175 | 20,00 | 22,50 | 20,00 | 158,50 | 96,50 | 51,00 | **KST175200RK** | **KST175CS** | **TT15** | 5,0 |
| **3861201** | **SS20KST200RR5M** | KST200 | 22,50 | 27,50 | 20,00 | 185,50 | 120,50 | 51,00 | **KST175200RK** | **KST200CS** | **TT15** | 5,0 |
| **3861202** | **SS25KST250RR5M** | KST250 | 27,50 | 32,50 | 25,00 | 217,50 | 145,50 | 56,00 | **KST250250RK** | **KST250CS** | **TT25** | 9,0 |
| **3861203** | **SS32KST300RR5M** | KST300 | 32,50 | 37,50 | 32,00 | 249,00 | 169,00 | 61,00 | **KST300350RK** | **KST300CS** | **TT30** | 13,0 |
| **3861204** | **SS32KST350RR5M** | KST350 | 37,50 | 42,00 | 32,00 | 274,00 | 192,00 | 61,00 | **KST300350RK** | **KST350CS** | **TT30** | 13,0 |

- Tool body shipped with screw for axial use.
- Order reamer head separately.



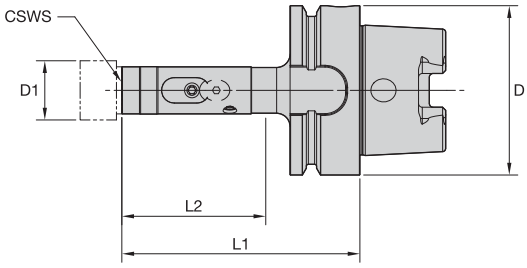
*For information on L1 (Head), see pages B29–B30.

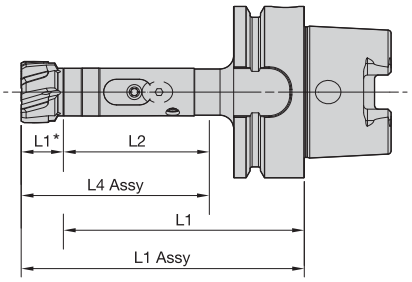
L1 Assy = L1 Head + L1 Shank

## HSK63A Shank Axial Actuation • 3 x D

| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L1 | L2 | central lock screw | Torx wrench | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4056180** | **HSK63AKST115AR3M** | KST115 | 14,00 | 15,999 | 63,00 | 69,00 | 35,00 | **KST115115AS** | **–** | **170.028** | 3,0 |
| **4056181** | **HSK63AKST135AR3M** | KST135 | 16,00 | 17,999 | 63,00 | 74,00 | 39,00 | **KST135155AS** | **–** | **170.085** | 4,0 |
| **4056182** | **HSK63AKST155AR3M** | KST155 | 18,00 | 19,999 | 63,00 | 81,00 | 45,00 | **KST135155AS** | **–** | **170.085** | 4,0 |
| **3860911** | **HSK63AKST175AR3M** | KST175 | 20,00 | 22,499 | 63,00 | 88,50 | 51,50 | **KST175200AS** | **TT15** | **–** | 5,0 |
| **3860912** | **HSK63AKST200AR3M** | KST200 | 22,50 | 27,499 | 63,00 | 105,50 | 65,50 | **KST175200AS** | **TT15** | **–** | 5,0 |
| **3860963** | **HSK63AKST250AR3M** | KST250 | 27,50 | 32,499 | 63,00 | 122,50 | 80,50 | **KST250250AS** | **TT25** | **–** | 9,0 |
| **3860964** | **HSK63AKST300AR3M** | KST300 | 32,50 | 37,499 | 63,00 | 139,00 | 94,00 | **KST300350AS** | **TT30** | **–** | 13,0 |
| **3860965** | **HSK63AKST350AR3M** | KST350 | 37,50 | 42,000 | 63,00 | 155,00 | 108,00 | **KST300350AS** | **TT30** | **–** | 13,0 |

- Tool body shipped with pull stud for radial use.
- Order reamer head separately.



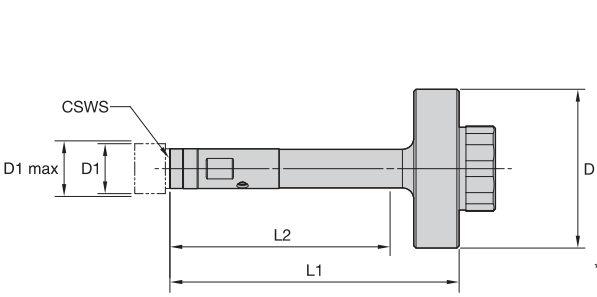
*For information on L1 (Head), see pages B29–B30.

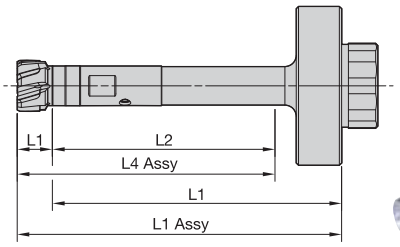
L1 Assy = L1 Head + L1 Shank

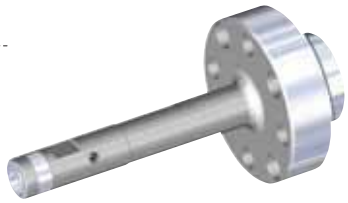
## HSK63A Shank Radial Actuation • 3 x D

| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L1 | L2 | retention knob | clamp set | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3860966** | **HSK63AKST175RR3M** | KST175 | 20,00 | 22,49 | 63,00 | 88,50 | 51,50 | **KST175200RK** | **KST175CS** | **TT15** | 5,0 |
| **3860967** | **HSK63AKST200RR3M** | KST200 | 22,50 | 27,49 | 63,00 | 105,50 | 65,50 | **KST175200RK** | **KST200CS** | **TT15** | 5,0 |
| **3860968** | **HSK63AKST250RR3M** | KST250 | 27,50 | 32,49 | 63,00 | 122,50 | 80,50 | **KST250250RK** | **KST250CS** | **TT25** | 9,0 |
| **3860969** | **HSK63AKST300RR3M** | KST300 | 32,50 | 37,49 | 63,00 | 139,00 | 94,00 | **KST300350RK** | **KST300CS** | **TT30** | 13,0 |
| **3860970** | **HSK63AKST350RR3M** | KST350 | 37,50 | 42,00 | 63,00 | 155,00 | 108,00 | **KST300350RK** | **KST350CS** | **TT30** | 13,0 |

- Tool body shipped with screw for axial use.
- Order reamer head separately.
- Order taper shank separately, see Kennametal Innovations Master Catalogue Cutting Tools 2013, page K129.



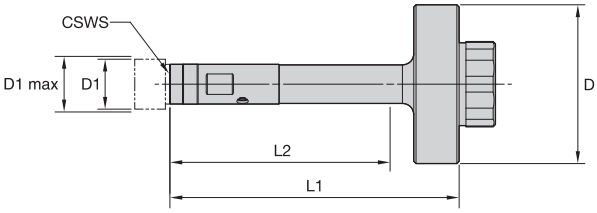



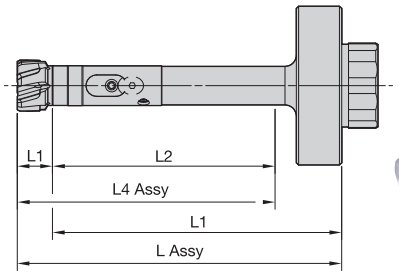
*For information on L1 (Head), see pages B29–B30.
L1 Assy = L1 Head + L1 Shank

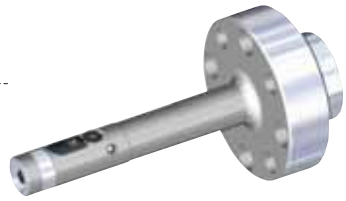
## SIF70 Shank Axial Actuation • 5 x D

| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L1 | L2 | central lock screw | Torx wrench | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4056183 | SIF70KST115AR5M | KST115 | 14,00 | 15,999 | 70,00 | 95,00 | 67,00 | KST115115AS | – | 170.028 | 3,0 |
| 4056184 | SIF70KST135AR5M | KST135 | 16,00 | 17,999 | 70,00 | 104,00 | 75,00 | KST135155AS | – | 170.085 | 4,0 |
| 4056185 | SIF70KST155AR5M | KST155 | 18,00 | 19,999 | 70,00 | 115,00 | 85,00 | KST135155AS | – | 170.085 | 4,0 |
| 3860971 | SIF70KST175AR5M | KST175 | 20,00 | 22,499 | 70,00 | 127,50 | 96,50 | KST175200AS | TT15 | – | 5,0 |
| 3860972 | SIF70KST200AR5M | KST200 | 22,50 | 27,499 | 70,00 | 154,50 | 120,50 | KST175200AS | TT15 | – | 5,0 |
| 3860973 | SIF70KST250AR5M | KST250 | 27,50 | 32,499 | 70,00 | 181,50 | 145,50 | KST250250AS | TT25 | – | 9,0 |
| 3860974 | SIF70KST300AR5M | KST300 | 32,50 | 37,499 | 70,00 | 208,00 | 169,00 | KST300350AS | TT30 | – | 13,0 |
| 3860975 | SIF70KST350AR5M | KST350 | 37,50 | 42,000 | 70,00 | 233,00 | 192,00 | KST300350AS | TT30 | – | 13,0 |

- Tool body shipped with pull stud for radial use.
- Order reamer head separately.
- Order taper shank separately, see Kennametal Innovations Master Catalogue Cutting Tools 2013, page K129.



*For information on L1 (Head), see pages B29–B30.
L1 Assy = L1 Head + L1 Shank

## SIF70 Shank Radial Actuation • 5 x D

| order number | catalogue number | CSWS system size | D1 mm | D1 max mm | D | L1 | L2 | retention knob | clamp set | Torx wrench | Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3860976 | SIF70KST175RR5M | KST175 | 20,00 | 22,49 | 70,00 | 127,50 | 96,50 | KST175200RK | KST175CS | TT15 | 5,0 |
| 3860977 | SIF70KST200RR5M | KST200 | 22,50 | 27,49 | 70,00 | 154,50 | 120,50 | KST175200RK | KST200CS | TT15 | 5,0 |
| 3860978 | SIF70KST250RR5M | KST250 | 27,50 | 32,49 | 70,00 | 181,50 | 145,50 | KST250250RK | KST250CS | TT25 | 9,0 |
| 3860979 | SIF70KST300RR5M | KST300 | 32,50 | 37,49 | 70,00 | 208,00 | 169,00 | KST300350RK | KST300CS | TT30 | 13,0 |
| 3860980 | SIF70KST350RR5M | KST350 | 37,50 | 42,00 | 70,00 | 233,00 | 192,00 | KST300350RK | KST350CS | TT30 | 13,0 |

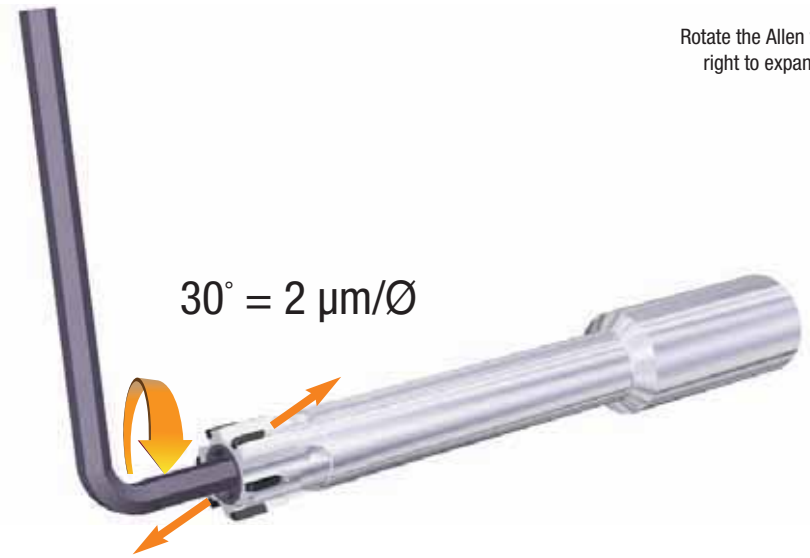
## RHM-E™ • Metric



| Material Group | | KT325 | | | KT6215 | | | K605 | | | KC6005 | | | KC6305 | | | Metric | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cutting Speed — vc | | | Cutting Speed — vc | | | Cutting Speed — vc | | | Cutting Speed — vc | | | Cutting Speed — vc | | | Recommended Feed Rate per Tooth | | | | | | |
| | | Range — m/min | | | Range — m/min | | | Range — m/min | | | Range — m/min | | | Range — m/min | | | Tool Diameter (mm) | 14,00—19,99 | | 20,00—32,00 | | 32,50—42,00 | |
| | | min | Starting Value | max | min | Starting Value | max | min | Starting Value | max | min | Starting Value | max | min | Starting Value | max | Feed/Tooth | min | max | min | max | min | max |
| P | 1 | 150 | **180** | 210 | 180 | **210** | 240 | 40 | **60** | 70 | 90 | **120** | 155 | 90 | **120** | 155 | mm/z | 0,10 | 0,20 | 0,10 | 0,22 | 0,10 | 0,25 |
| | 2 | 150 | **180** | 210 | 180 | **210** | 240 | 40 | **60** | 70 | 90 | **120** | 155 | 90 | **120** | 155 | mm/z | 0,10 | 0,20 | 0,10 | 0,22 | 0,10 | 0,25 |
| | 3 | 130 | **160** | 180 | 150 | **180** | 210 | 30 | **40** | 50 | 75 | **100** | 130 | 75 | **100** | 130 | mm/z | 0,10 | 0,20 | 0,10 | 0,22 | 0,10 | 0,25 |
| | 4 | 100 | **130** | 150 | 120 | **150** | 170 | 25 | **40** | 45 | 50 | **80** | 105 | 50 | **80** | 105 | mm/z | 0,10 | 0,20 | 0,10 | 0,22 | 0,10 | 0,25 |
| | 5 | 80 | **100** | 120 | 100 | **130** | 150 | 10 | **20** | 30 | 30 | **40** | 55 | 30 | **40** | 55 | mm/z | 0,08 | 0,18 | 0,08 | 0,20 | 0,08 | 0,22 |
| | 6 | 80 | **100** | 120 | 100 | **130** | 150 | 10 | **20** | 30 | 30 | **40** | 55 | 30 | **40** | 55 | mm/z | 0,08 | 0,18 | 0,08 | 0,20 | 0,08 | 0,22 |
| M | 1 | – | – | – | – | – | – | 8 | **10** | 15 | – | – | – | 15 | **20** | 28 | mm/z | 0,08 | 0,15 | 0,08 | 0,18 | 0,08 | 0,20 |
| | 2 | – | – | – | – | – | – | 8 | **10** | 15 | – | – | – | 15 | **20** | 28 | mm/z | 0,08 | 0,15 | 0,08 | 0,18 | 0,08 | 0,20 |
| | 3 | – | – | – | – | – | – | 8 | **10** | 15 | – | – | – | 15 | **20** | 28 | mm/z | 0,08 | 0,15 | 0,08 | 0,18 | 0,08 | 0,20 |
| K | 1 | 150 | **180** | 200 | 180 | **210** | 240 | 30 | **50** | 60 | 80 | **110** | 130 | 80 | **110** | 130 | mm/z | 0,10 | 0,20 | 0,10 | 0,22 | 0,10 | 0,25 |
| | 2 | 130 | **160** | 180 | 150 | **180** | 210 | 25 | **40** | 45 | 65 | **90** | 110 | 65 | **90** | 110 | mm/z | 0,10 | 0,20 | 0,10 | 0,22 | 0,10 | 0,25 |
| | 3 | 100 | **130** | 160 | 120 | **150** | 170 | 20 | **30** | 40 | 50 | **70** | 90 | 50 | **70** | 90 | mm/z | 0,10 | 0,18 | 0,10 | 0,20 | 0,10 | 0,22 |
| N | 1 | – | – | – | – | – | – | 110 | **150** | 195 | – | – | – | – | – | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 | 0,10 | 0,30 |
| | 2 | – | – | – | – | – | – | 110 | **150** | 195 | – | – | – | – | – | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 | 0,10 | 0,30 |
| | 3 | – | – | – | – | – | – | 110 | **150** | 195 | – | – | – | – | – | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 | 0,10 | 0,30 |
| | 4 | – | – | – | – | – | – | 110 | **150** | 195 | – | – | – | – | – | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 | 0,10 | 0,30 |
| | 5 | – | – | – | – | – | – | 105 | **140** | 180 | – | – | – | – | – | – | mm/z | 0,10 | 0,30 | 0,10 | 0,30 | 0,10 | 0,30 |
| S | 1 | – | – | – | – | – | – | 8 | **10** | 15 | – | – | – | 15 | **20** | 28 | mm/z | 0,06 | 0,15 | 0,10 | 0,18 | 0,10 | 0,20 |
| | 2 | – | – | – | – | – | – | 8 | **10** | 15 | – | – | – | 15 | **20** | 28 | mm/z | 0,06 | 0,15 | 0,10 | 0,18 | 0,10 | 0,20 |
| | 3 | – | – | – | – | – | – | 15 | **20** | 30 | – | – | – | 20 | **30** | 40 | mm/z | 0,08 | 0,18 | 0,10 | 0,20 | 0,10 | 0,20 |
| | 4 | – | – | – | – | – | – | 15 | **20** | 30 | – | – | – | 20 | **30** | 40 | mm/z | 0,08 | 0,18 | 0,10 | 0,20 | 0,10 | 0,20 |

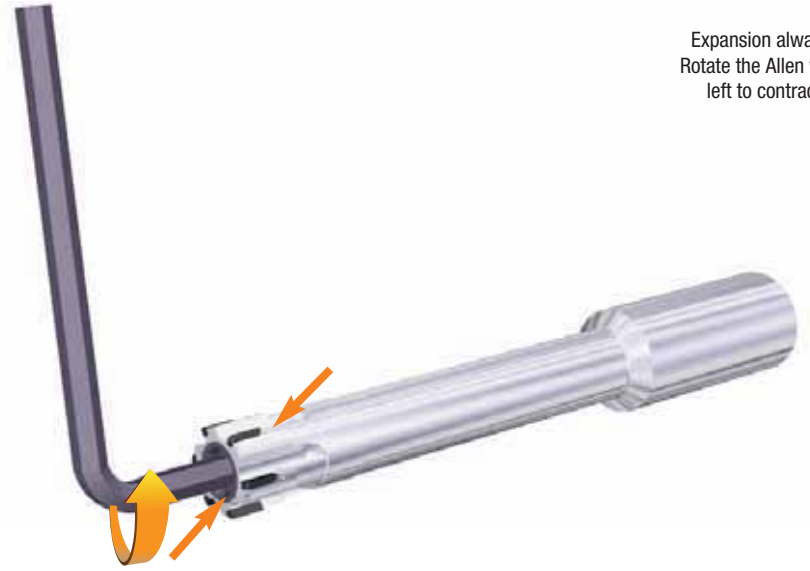
## To Expand

Rotate the Allen wrench to the right to expand the reamer.




## To Contract

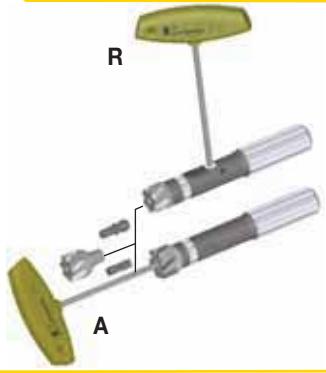
Expansion always reversible: Rotate the Allen wrench to the left to contract the reamer.



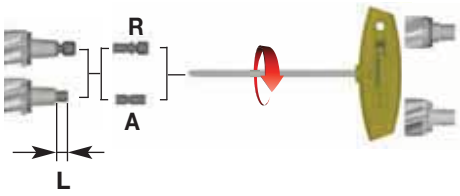
- 30° = 2 µm linear expansion.
- 720° = 2 revolutions; = 48 µm maximum expansion.
- Hard stop after 720° expansion. You cannot over expand!
- The expansion occurs in the elastic material behaviour.
- You cannot reduce the diameter below D1.

## Assemble

1

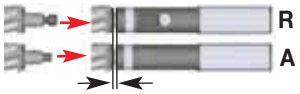



2

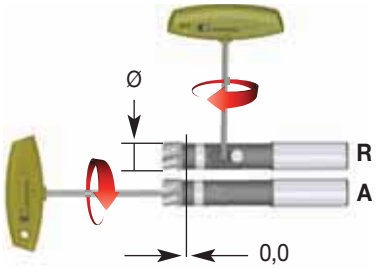



| ø (mm) | | L (mm) |
|---|---|---|
| 14,000 | 27,499 | 5–5,5 |
| 27,500 | 42,000 | 5,5–6 |

3




4

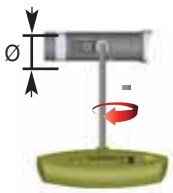



| ø (mm) | | | (Nm) |
|---|---|---|---|
| 14,000 | 15,999 | DT - 8 | 2 |
| 16,000 | 19,999 | DT - 10 | 3 |
| 20,000 | 27,499 | TT - 15 | 5 |
| 27,500 | 32,499 | TT - 25 | 9 |
| 32,500 | 42,000 | TT - 30 | 13 |

**Disassemble** 4 → 3 → 2 → 1

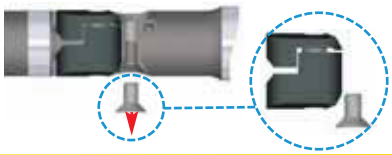
## Disassemble

1

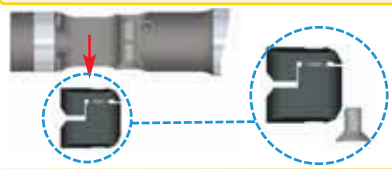



| ø (mm) | | | (Nm) |
|---|---|---|---|
| 17,5 | KST175CS | 2,5 | 2,5 |
| 20 | KST200CS | 2,5 | 2,5 |
| 25 | KST250CS | 3 | 5 |
| 30 | KST300CS | 4 | 9 |
| 35 | KST350CS | 4 | 9 |

2

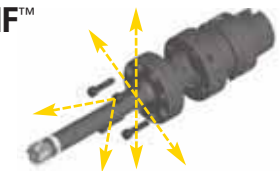


3

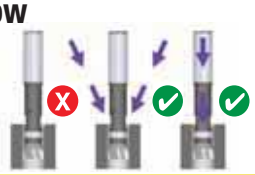


**Assemble** 3 → 2 → 1

### SIF™



### Coolant flow

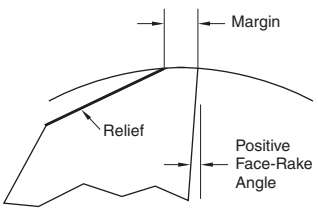


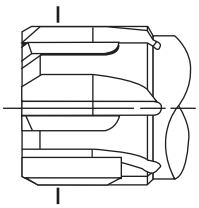
### Application

# Basic Design Overview • Multiflute Reaming Tooling

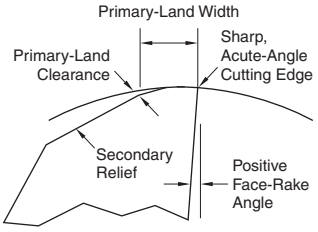
Kennametal offers two basic reaming designs, cylindrical margin land and up sharp. The cylindrical margin land design is used for all standard items of the RMS™, RMB™, and RHM™ reaming platforms. Engineered-solution tooling based on up sharp reaming design offers high hole quality and long tool life in exotic cases and high-temp alloys as only the sharp cutting edges contact the workpiece.

### Cylindrical Margin Reaming "C"

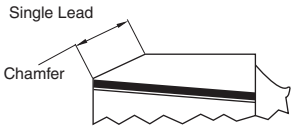


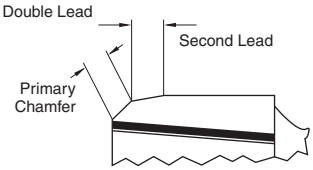



### Up Sharp Reaming "U" & "NC"




## Basic Lead Differences



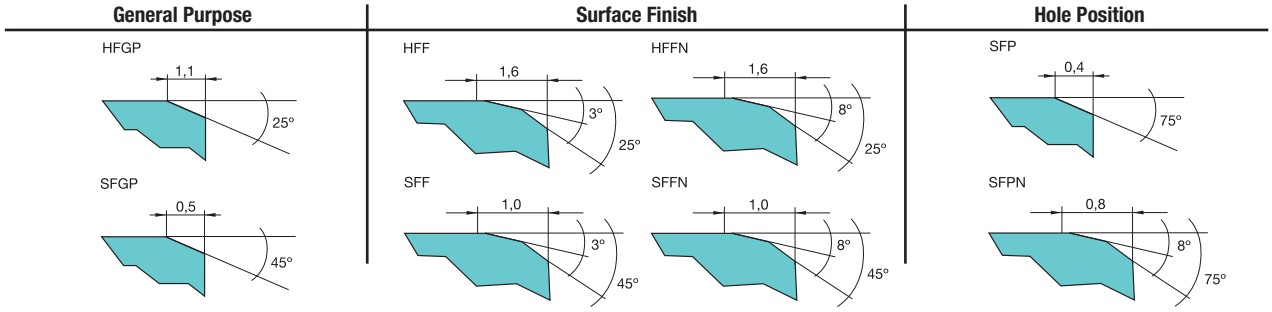

### Single Lead

The single lead chamfer design is used with all standard RMS, RMB, and RHM reaming tooling and enables the tool to be applied on various materials without customisation. Design can be modified to meet specific applications such as thin walls, straightness correction, etc.

### Double Lead

Double lead designs are available as engineered solutions and enable higher surface quality and feed rates in general. Lead dimensions require customisation regarding the material to be machined for best machining results.

## Lead Design Overview




## Lead Nomenclature

**HFGPC**

| HF | GP | C |
|---|---|---|
| Flute | Application | Reaming Edge |
| **HF** = Helix Flute<br>**SF** = Straight Flute | **GP** = General Purpose<br>**F** = Fine Surface<br>**FN** = Fine Surface Non-Ferrous<br>**P** = Position Accuracy<br>**PN** = Position Accuracy Non-Ferrous<br>**C1** = Chip Control Geometry | **C** = Cylindrical<br>**U** = Up Sharp<br>**NC** = Narrow Cylindrical |

## General Purpose

| workpiece material | | hole type | surface requirement | recommended geometry | design | recommended grade |
|---|---|---|---|---|---|---|
| P | steel | through | IT 7, Ra <0.8 steel | HFGP | C | KT325 and KT6215 (Ra < 0.8), KC6305 (Ra <1.6) |
| | | blind | | SFGP | | |
| K | cast iron | through | It 7, Ra <1.6 CI | HFGP | C | KT325 and KT6215 (Ra < 0.8), KC6305 (Ra <1.6) |
| | | blind | | SFGP | | |
| M | stainless steel | through | IT 7, Ra <1.0 | HFGP | C | KC6305 |
| | | blind | | SFGP | | |
| S | high-temp alloys | through | IT 7, Ra <0.6 | HFGP | U | KC6305 |
| | | blind | | SFGP | | |
| N | non-ferrous | through | IT 7, Ra <0.8 | HFGP | C | K605, KD1415 |
| | | | | | U | |
| | | blind | | SFGP | C | |
| | | | | | U | |

## Extra Surface Finish

| workpiece material | | hole type | surface requirement | recommended geometry | design | recommended grade |
|---|---|---|---|---|---|---|
| P | steel | through | IT 7, Ra <0.8 | HFFN | C | KT325 and KT6215 (Ra <0.4), KC6305 (Ra <0.8) |
| | | blind | | SFFN | | |
| K | cast iron | through | IT 7, Ra <0.8 | HFFN | C | KT325 and KT6215 (Ra <0.4), KC6305 (Ra <0.8) |
| | | blind | | SFFN | | |
| N | non-ferrous | through | IT 7, Ra <0.4 | HFFN | C | K605, KD1415 |
| | | | | | U | |
| | | blind | | SFFN | C | |
| | | | | | U | |

## Additional Hole Position Accuracy

| workpiece material | | hole type | surface requirement | recommended geometry | design | recommended grade |
|---|---|---|---|---|---|---|
| P | steel | through | IT 7, Ra <0.8 steel | SFP | C | KT325, KT6215, KC6305 |
| | | blind | | | | |
| K | cast iron | through | It 7, Ra <1.6 CI | SFP | C | KT325, KT6215, KC6305 |
| | | blind | | | | |
| M | stainless steel | through | IT 7, Ra <1.0 | SFP | C | KC6305 |
| | | blind | | | NC | |
| S | high-temp alloys | through | IT 7, Ra <0.6 | SFP | U | KC6305 |
| | | blind | | | | |
| N | non-ferrous | through | Ra <0.8 | SFP | C | K605, KD1415 |
| | | blind | | | U | |
| | | through | Ra <0.4 | SFPN | C | |
| | | blind | | | U | |

## Extra Chip Control

| workpiece material | | hole type | surface requirement | recommended geometry | design | recommended grade |
|---|---|---|---|---|---|---|
| P | steel (long chipping) | blind | Ra 0.4–1.6 | SFC1 | C | KT325, KT6215, KC6305 |
| | | | | | U | |

# Tube Sheet Grooving Tool

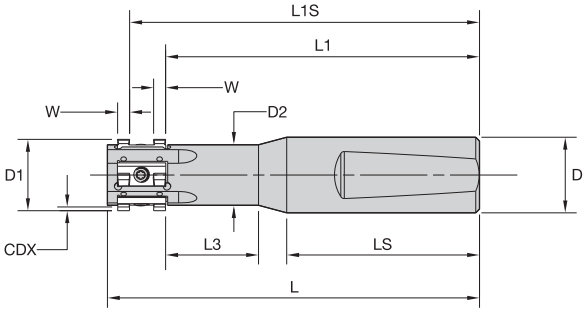
## Primary Application

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

# Features and Benefits

## Higher Productivity and Profitability

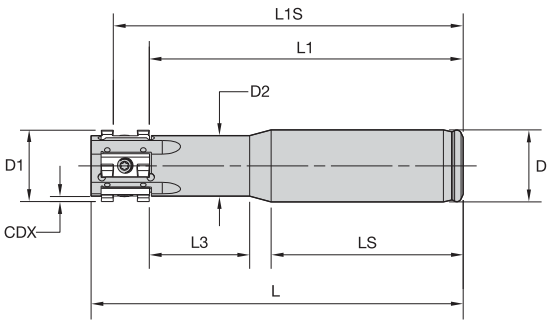
- Two edges per insert.
- Up to four inserts, working at the same time.
- Rigid tool body design for highest productivity and grooving quality.
- Milling tool for maximum flexibility in hole diameter and interrupted cut for chip control.
- KCU45 grade for machining a variety of materials used for heat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



## Tube Sheet Groover End Mill Version • Metric

| order number | catalogue number | D1 mm | D1 in | D2 | D mm | D in | L | LS | L1 | L1S | L3 | CDX | insert screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5134143** | **KGEM1905R1WN20M** | 18,87 | .743 | 16,00 | 20,00 | .787 | 98,42 | 50,80 | 83,03 | 92,55 | 24,58 | 1,00 | **MS1861** |
| **5134145** | **KGEM1905R3WN20M** | 18,87 | .743 | 16,00 | 20,00 | .787 | 123,82 | 50,80 | 108,44 | 117,96 | 49,99 | 1,00 | **MS1861** |

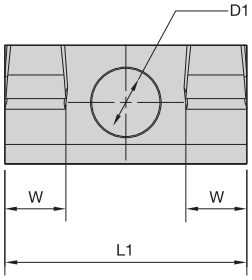
NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

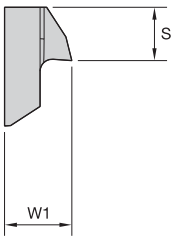


## Tube Sheet Groover End Mill Version • Inch

| order number | catalogue number | D1 mm | D1 in | D2 | D | L | LS | L1 | L1S | L3 | CDX | insert screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5134142** | **KGEM0750R1SS075** | 18,87 | .743 | .63 | .75 | 3 7/8 | 2.000 | 3.269 | 3.644 | 1.045 | .039 | **MS1861** |
| **5134144** | **KGEM0750R3SS075** | 18,87 | .743 | .63 | .75 | 4 7/8 | 2.000 | 4.269 | 4.644 | 2.045 | .039 | **MS1861** |

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



● first choice
○ alternate choice

## Tube Sheet Groover Insert

| | D1 | | L1 | | S | | W1 | | W | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| catalogue number | mm | in | mm | in | mm | in | mm | in | mm | in | KCU45 |
| KGIP0125N0189GD | 2,80 | .110 | 12,80 | .504 | 2,82 | .111 | 3,56 | .140 | 3,18 | .125 | ● |

## Tube Sheet Groover Speed and Feed Chart

| | |
|---|---|
| P | A516-Grade70 |
| M | 304SS/Duplex |
| S | Hastelloy |

| Material Group | fz (mm/tooth) | tooth | RPM | vc (m/min) | VFC (mm/min) | VFL (mm/min) | DH (mm) | DT (mm) |
|---|---|---|---|---|---|---|---|---|
| P | 0,05–0,075 | 4 | 1300–1500 | 77–89 | 2,46–4,27 | 264–457 | 19,05 | 18,87 |
| M | 0,05–0,075 | 4 | 600–900 | 35–53 | 1,70–2,57 | 183–274 | 19,05 | 18,87 |
| S | 0,05–0,075 | 4 | 250–300 | 15–18 | 0,48–0,86 | 51–91 | 19,05 | 18,87 |

Nomenclature:

fz: feed per tooth

VFL: linear feed rate = fz x number of tooth x RPM

VFC: compensated feed = VFL x (DH - DT)/DH

DT: tool diameter

DH: hole diameter

NOTE: Choose low-feed (fz) for long tools and less rigid machine tools.
Choose low RPM for lower coolant.

# Romicron™ AVS Fine-Boring System

## Primary Application

The Romicron AVS tooling portfolio offers a diameter range from 25–79mm (.98–3.11") with five head sizes. It substitutes the Romicron SVS fine-boring platform with the following advantages:

- Implemented self-balancing system.
- Capability for up to 20,000 RPM.
- Operating with coolant pressure up to 120 bar.
- Improved CLB feature due to the new design.

The Romicron AVS offers all of the features and benefits you've come to expect from Romicron, like reduced setup times and scrap rates, fast adjustment, and avoidance of measurement equipment. Additionally, it operates with standard insert sizes for use in all materials. The all-new AVS heads match existing adaptors and extensions, but the cartridge designs have the implemented self-balancing system.

# Features and Benefits

## Higher Productivity and Profitability

- Higher cutting speeds due to higher RPM level and improved coolant pressure.
- Better chip evacuation leads to higher process reliability.
- Improved CLB capabilities for unmanned operation.

## Ease of Use and Adjustment

- No tools, e.g., wrenches, are needed to adjust the Romicron.
- No measurement devices needed. Just count the "clicks".
- Save time with the self-balancing system.
- New design makes it easy to clean.

## Customisation

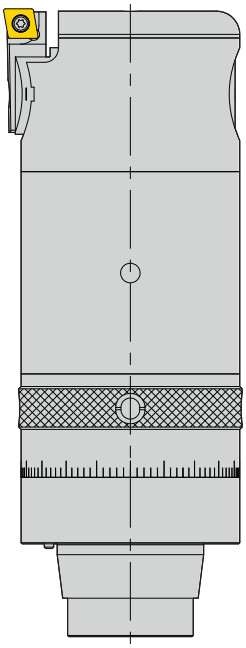
- Engineered solutions available for multistep or high length-to-diameter tooling.
- Anti-chatter devices and various non-standard machine spindle coupling sizes are available.

Boring range, coolant capacity, and maximum RPM features for all Romicron boring heads.

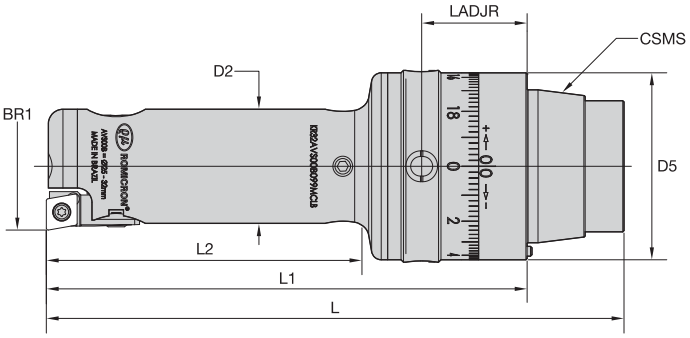
| | head size | bore range |
|---|---|---|
| • 25,000 RPM max.<br>• Balanceable.<br>• 1,050 psi coolant capacity.<br>• 1,050 psi/70 bar coolant capacity.<br>• Movable zero reference. | **SVUBB1** | 4mm .157" – 16,5mm .650" |
| • 10,000 RPM max.<br>• Balanceable.<br>• 1,050 psi coolant capacity.<br>• 1,050 psi/70 bar coolant capacity.<br>• Movable zero reference. | **SVUBB2** | 6mm .236" – 25,5mm 1.00" |
| • 20,000 RPM.<br>• Prebalanced.<br>• 1740 psi/120 bar coolant capacity. | **AVS00B** | 25mm .984" – 32mm 1.26" |
| • 20,000 RPM.<br>• Prebalanced.<br>• 1740 psi/120 bar coolant capacity. | **AVS0B** | 31,5mm 1.24" – 42,5mm 1.67" |
| • 20,000 RPM.<br>• Prebalanced.<br>• 1740 psi/120 bar coolant capacity. | **AVS1B** | 42mm 1.65" – 53mm 2.08" |
| • 20,000 RPM.<br>• Prebalanced.<br>• 1740 psi/120 bar coolant capacity. | **AVS2B** | 52mm 2.04" – 66mm 2.59" |
| • 20,000 RPM.<br>• Prebalanced.<br>• 1740 psi/120 bar coolant capacity. | **AVS3B** | 65mm 2.55" – 79mm 3.11" |
| • 4,500 RPM.<br>• Prebalanced.<br>• 300 psi/20 bar coolant capacity. | **SVS4B** | 78mm 3.07" – 98mm 3.85" |
| • 4,500 RPM.<br>• Prebalanced.<br>• 300 psi/20 bar coolant capacity. | **SVS5B** | 97mm 3.81" – 117mm 4.60" |
| • 3,500 RPM.<br>• Prebalanced.<br>• 300 psi/20 bar coolant capacity. | **SVS6B** | 116mm 4.56" – 139mm 5.47" |
| • 6,000 RPM.<br>• Balanceable.<br>• 300 psi/20 bar coolant capacity.<br>• Movable zero reference. | **SVU65** | 71mm 2.79" – 111mm 4.37" |
| • 6,000 RPM.<br>• Balanceable.<br>• 300 psi/20 bar coolant capacity.<br>• Movable zero reference. | **SVU92** | 101mm 3.97" – 213mm 8.38" |
| • 6,000 RPM max.<br>• Balanceable.<br>• 300 psi/20 bar coolant capacity.<br>• Movable zero reference. | **SVU120** | 139mm 5.47" – 326mm 12.83" |

## AVS System • Tooling Tree

| cartridge range | cartridge size | bore range | head size |
|---|---|---|---|
| 25–27,5mm (.984–1.083") | 1Y | (25–32mm) (.984–1.260") | AVS00B |
| 27,25–29,75mm (1.073–1.171") | 2Y | | |
| 29,5–32mm (1.161–1.260") | 3Y | | |
| 31,5–35,5mm (1.240–1.398") | 1X | 31,5–42,5mm (1.240–1.673") | AVS0B |
| 35–39mm (1.378–1.535") | 2X | | |
| 38,5–42,5mm (1.516–1.673") | 3X | | |
| 42–46mm (1.654–1.811") | 1X | 42–53mm (1.654–2.087") | AVS1B |
| 45,5–49,5mm (1.791–1.949") | 2X | | |
| 49–53mm (1.929–2.087") | 3X | | |
| 52–57mm (2.047–2.244") | 1W | 52–66mm (2.047–2.598") | AVS2B |
| 56,5–61,5mm (2.224–2.421") | 2W | | |
| 61–66mm (2.402–2.598") | 3W | | |
| 65–70mm (2.559–2.756") | 1W | 65–79mm (2.559–3.110") | AVS3B |
| 69,5–74,5mm (2.736–2.933") | 2W | | |
| 74–79mm" (2.913–3.110) | 3W | | |



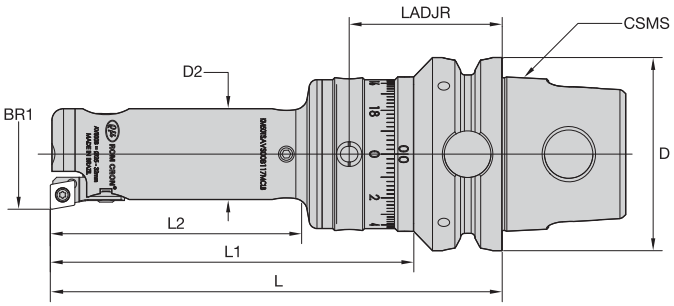
- Order cartridges separately.
- Order taper shank separately.



## Romicron AVS • KR Backend

| order number | catalogue number | BR1 bore range mm | CSMS system size | D2 mm | D5 mm | L mm | L1 mm | L2 mm | LADJR mm | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **5124812** | **KR32AVS00B099MCLB** | 25,000-32,000 | KR32 | 23,5 | 39,5 | 119,0 | 99,0 | 64,0 | 21,7 | 0,6 |
| **5124814** | **KR32AVS0B116MCLB** | 31,500-42,500 | KR32 | 30,0 | 39,5 | 136,0 | 116,0 | 85,0 | 21,7 | 0,8 |
| **5124816** | **KR32AVS1B100MCLB** | 42,000-53,000 | KR32 | 38,5 | 39,5 | 120,0 | 100,0 | 100,0 | 21,7 | 0,9 |
| **5124818** | **KR32AVS2B115MCLB** | 52,000-66,000 | KR32 | 47,0 | 48,0 | 135,0 | 115,0 | 115,0 | 29,2 | 1,5 |
| **5124820** | **KR32AVS3B115MCLB** | 65,000-79,000 | KR32 | 47,0 | 48,0 | 135,0 | 115,0 | 115,0 | 29,2 | 1,5 |

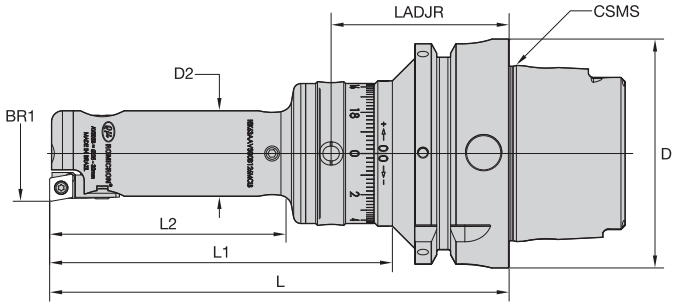
- Order cartridges separately.

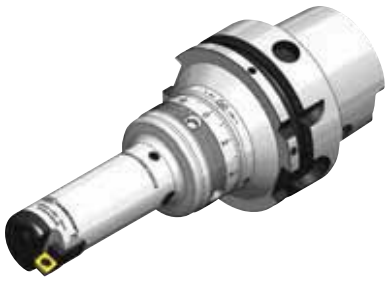


## Romicron AVS • KM™ Backend

| order number | catalogue number | BR1 bore range mm | CSMS system size | D mm | D2 mm | L mm | L1 mm | L2 mm | LADJR mm | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **5124801** | **KM40TSAVS00B111MCLB** | 25,000-32,000 | KM40TS | 40,000 | 23,5 | 136,0 | 111,0 | 63,5 | 34,0 | 0,6 |
| **5124802** | **KM40TSAVS0B128MCLB** | 31,500-42,500 | KM40TS | 40,000 | 30,0 | 153,0 | 128,0 | 83,0 | 34,0 | 0,8 |
| **5124803** | **KM40TSAVS1B112MCLB** | 42,000-53,000 | KM40TS | 40,000 | 38,5 | 137,0 | 112,0 | 74,0 | 34,0 | 1,0 |
| **5124804** | **KM40TSAVS2B127MCLB** | 52,000-66,000 | KM40TS | 40,000 | 47,0 | 152,0 | 127,0 | 127,0 | 41,3 | 1,6 |
| **5124805** | **KM50TSAVS00B117MCLB** | 25,000-32,000 | KM50TS | 50,000 | 23,5 | 149,0 | 117,0 | 63,5 | 39,7 | 0,8 |
| **5124807** | **KM50TSAVS0B134MCLB** | 31,500-42,500 | KM50TS | 50,000 | 30,0 | 166,0 | 134,0 | 83,0 | 39,7 | 1,0 |
| **5124808** | **KM50TSAVS1B118MCLB** | 42,000-53,000 | KM50TS | 50,000 | 38,5 | 150,0 | 118,0 | – | 39,6 | 1,2 |
| **5124809** | **KM50TSAVS2B128MCLB** | 52,000-66,000 | KM50TS | 50,000 | 47,0 | 160,0 | 128,0 | 128,0 | 42,3 | 1,7 |
| **5124810** | **KM50TSAVS3B128MCLB** | 65,000-79,000 | KM50TS | 50,000 | 47,0 | 160,0 | 128,0 | 128,0 | 42,3 | 1,7 |
| **5124811** | **KM63TSAVS3B1230MCLB** | 65,000-79,000 | KM63TS | 63,000 | 47,0 | 170,0 | 130,0 | 106,0 | 44,3 | 2,0 |

• Order cartridges separately.



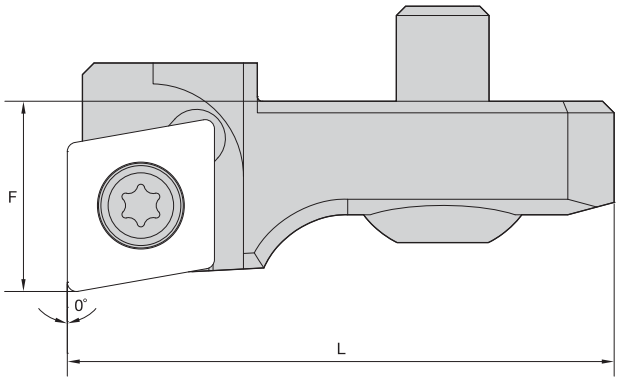





## Romicron AVS • HSK Backend

| order number | catalogue number | BR1 bore range mm | CSMS system size | D mm | D2 mm | L mm | L1 mm | L2 mm | LADJR mm | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| 5124576 | HSK63AAVS00B126MCLB | 25,000-32,000 | HSK63A | 63,0 | 23,5 | 158,0 | 126,0 | 63,5 | 49,0 | 1,2 |
| 5124577 | HSK63AAVS0B143MCLB | 31,500-42,500 | HSK63A | 63,0 | 30,0 | 175,0 | 143,0 | 83,0 | 49,0 | 1,4 |
| 5124578 | HSK63AAVS1B127MCLB | 42,000-53,000 | HSK63A | 63,0 | 38,5 | 159,0 | 127,0 | 95,0 | 49,0 | 1,6 |
| 5124579 | HSK63AAVS2B139MCLB | 52,000-66,000 | HSK63A | 63,0 | 47,0 | 171,0 | 139,0 | 109,0 | 53,5 | 2,2 |
| 5124800 | HSK63AAVS3B139MCLB | 65,000-79,000 | HSK63A | 63,0 | 47,0 | 171,0 | 139,0 | 109,0 | 53,5 | 2,2 |

• Order inserts separately.



## Romicron • Cartridges SCF

| order number | catalogue number | L mm | F mm | gage insert | reference head | cartridge size | kg |
|---|---|---|---|---|---|---|---|
| 5124822 | KRCSCFPR061Y | 19,20 | 4,76 | CP..0602../CP..215... | AVS00B | 1Y | – |
| 5124823 | KRCSCFPR062Y | 19,20 | 5,88 | CP..0602../CP..215... | AVS00B | 2Y | – |
| 5124824 | KRCSCFPR063Y | 19,20 | 7,01 | CP..0602../CP..215... | AVS00B | 3Y | – |
| 5124825 | KRCSCFPR061X | 23,75 | 6,46 | CP..0602../CP..215... | AVS1B,AVS0B | 1X | 0,01 |
| 5124826 | KRCSCFPR062X | 23,60 | 8,21 | CP..0602../CP..215... | AVS1B,AVS0B | 2X | 0,01 |
| 5124827 | KRCSCFPR063X | 23,60 | 9,96 | CP..0602../CP..215... | AVS1B,AVS0B | 3X | 0,01 |
| 5124828 | KRCSCFPR061W | 26,60 | 6,45 | CP..0602../CP..215... | AVS3B1,AVS2B1 | 1W | 0,01 |
| 5124829 | KRCSCFPR062W | 26,75 | 8,70 | CP..0602../CP..215... | AVS2B1,AVS3B1 | 2W | 0,01 |
| 5124850 | KRCSCFPR063W | 26,60 | 10,95 | CP..0602../CP..215... | AVS3B1,AVS2B1 | 3W | 0,01 |

## Romicron™ • Finishing • Metric

Holemaking

| Material Group | | Condition | Geometry -LF | -UF | -FP | -FW | Cutting Speed m/min min | Starting Value | max | Feed Rate mm/r -LF | -UF | -FP | -FW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | | KCP05 | | | | 180 | **435** | 495 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | | | KTP10 | | 180 | **435** | 495 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 180 | **400** | 495 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCP10 | | | | 180 | **395** | 465 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | KC9110 | | | | 180 | **395** | 495 | 0,06 - 0,25 | 0,04 - 0,16 | – | – |
| | | | KCP25 | | | | 140 | **280** | 360 | 0,06 - 0,10 | 0,04 - 0,08 | 0,06 - 0,12 | 0,08 - 0,16 |
| | | | KC9125 | | | | 140 | **280** | 360 | 0,06 - 0,10 | 0,04 - 0,08 | – | – |
| | 2 | | KCP05 | | | | 180 | **265** | 400 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | |
| | | | | | KTP10 | | 180 | **265** | 400 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 190 | **270** | 390 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCP10 | | | | 180 | **240** | 330 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | KC9110 | | | | 180 | **240** | 330 | 0,06 - 0,25 | 0,04 - 0,16 | – | – |
| | | | KCP25 | | | | 145 | **195** | 320 | 0,06 - 0,10 | 0,04 - 0,08 | 0,06 - 0,12 | 0,08 - 0,16 |
| | | | KC9125 | | | | 145 | **195** | 320 | 0,06 - 0,10 | 0,04 - 0,08 | – | – |
| | 3 | | KCP05 | | | | 180 | **205** | 275 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | | | KTP10 | | 180 | **205** | 275 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 180 | **210** | 275 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCP10 | | | | 160 | **190** | 250 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | KC9110 | | | | 155 | **190** | 240 | 0,06 - 0,25 | 0,04 - 0,16 | – | – |
| | | | KCP25 | | | | 135 | **155** | 225 | 0,06 - 0,10 | 0,04 - 0,08 | 0,06 - 0,12 | 0,08 - 0,16 |
| | | | KC9125 | | | | 135 | **155** | 225 | 0,06 - 0,10 | 0,04 - 0,08 | – | – |
| | 4 | | KCP05 | | | | 90 | **160** | 220 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | | | KTP10 | | 90 | **160** | 220 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 90 | **180** | 220 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCP10 | | | | 90 | **145** | 195 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | KC9110 | | | | 90 | **145** | 195 | 0,06 - 0,25 | 0,04 - 0,16 | – | – |
| | | | KCP25 | | | | 75 | **105** | 180 | 0,06 - 0,10 | 0,04 - 0,08 | 0,06 - 0,12 | 0,08 - 0,16 |
| | | | KC9125 | | | | 75 | **105** | 180 | 0,06 - 0,10 | 0,04 - 0,08 | – | – |
| | 5 | | KCP05 | | | | 150 | **240** | 315 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | | | KTP10 | | 150 | **240** | 315 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 150 | **250** | 315 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCP10 | | | | 150 | **215** | 300 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | KC9110 | | | | 150 | **215** | 300 | 0,06 - 0,25 | 0,04 - 0,16 | – | – |
| | | | KCP25 | | | | 120 | **195** | 255 | 0,06 - 0,10 | 0,04 - 0,08 | 0,06 - 0,12 | 0,08 - 0,16 |
| | | | KC9125 | | | | 120 | **195** | 255 | 0,06 - 0,10 | 0,04 - 0,08 | – | – |
| | 6 | | KCP05 | | | | 140 | **200** | 300 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | | | KTP10 | | 140 | **200** | 300 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 140 | **200** | 300 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCP10 | | | | 120 | **180** | 275 | 0,06 - 0,25 | 0,04 - 0,16 | 0,06 - 0,25 | – |
| | | | KC9110 | | | | 120 | **180** | 225 | 0,06 - 0,25 | 0,04 - 0,16 | – | – |
| | | | KCP25 | | | | 105 | **150** | 225 | 0,06 - 0,10 | 0,04 - 0,08 | 0,06 - 0,12 | 0,08 - 0,16 |
| | | | KC9125 | | | | 105 | **150** | 225 | 0,06 - 0,10 | 0,04 - 0,08 | – | – |

| Material Group | | Condition | Geometry -LF | -UF | -FP | -FW | Cutting Speed m/min min | Starting Value | max | Feed Rate mm/r -LF | -UF | -FP | -FW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 1 | | | | KTP10 | | 140 | **230** | 315 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 140 | **230** | 315 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KC5010 | | | KC5010 | 130 | **215** | 245 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCM15 | | KCM15 | | 105 | **180** | 240 | 0,06 - 0,12 | – | 0,06 - 0,12 | – |
| | | | KC9225 | | | KC9225 | 105 | **180** | 240 | 0,06 - 0,12 | – | – | 0,08 - 0,16 |
| | 2 | | | | KTP10 | | 140 | **215** | 295 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 140 | **215** | 295 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KC5010 | | | KC5010 | 130 | **200** | 245 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCM15 | | KCM15 | | 105 | **165** | 250 | 0,06 - 0,12 | – | 0,06 - 0,12 | – |
| | | | KC9225 | | | KC9225 | 100 | **160** | 230 | 0,06 - 0,12 | – | – | 0,08 - 0,16 |
| | 3 | | | | KTP10 | | 140 | **200** | 300 | – | – | 0,06 - 0,25 | – |
| | | | KT315 | | | KT315 | 140 | **200** | 300 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KC5010 | | | KC5010 | 130 | **185** | 230 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KCM15 | | KCM15 | | 115 | **150** | 255 | 0,06 - 0,12 | – | 0,06 - 0,12 | – |
| | | | KC9225 | | | KC9225 | 110 | **150** | 230 | 0,06 - 0,12 | – | – | 0,08 - 0,16 |

## Romicron™ • Finishing • Metric



| Material Group | | Condition | Geometry | | | | Cutting Speed m/min | | | Feed Rate mm/r | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | -LF | -UF | -FP | -FW | min | Starting Value | max | -LF | -UF | -FP | -FW |
| K | 1 | | KCK20 | | KCK20 | | 200 | 300 | 540 | 0,06 - 0,25 | – | 0,06 - 0,25 | 0,08 - 0,30 |
| | | | KT315 | | | KT315 | 165 | 275 | 490 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KC9315 | | | | 110 | 275 | 450 | 0,06 - 0,25 | – | – | – |
| | | | KC9320 | | | | 100 | 240 | 400 | 0,06 - 0,12 | – | – | – |
| | 2 | | KCK20 | | KCK20 | | 150 | 240 | 420 | 0,06 - 0,25 | – | 0,06 - 0,25 | 0,08 - 0,30 |
| | | | KT315 | | | KT315 | 180 | 275 | 360 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KC5010 | | | KC5010 | 100 | 200 | 265 | 0,06 - 0,25 | 0,04 - 0,16 | – | 0,08 - 0,30 |
| | | | KC9315 | | | | 145 | 260 | 360 | 0,06 - 0,25 | – | – | – |
| | | | KC9320 | | | | 140 | 240 | 330 | 0,06 - 0,12 | – | – | – |
| | 3 | | KCK20 | | KCK20 | | 140 | 210 | 350 | 0,06 - 0,25 | – | 0,06 - 0,25 | 0,08 - 0,30 |
| | | | KT315 | | | KT315 | 180 | 230 | 320 | 0,06 - 0,25 | – | – | 0,08 - 0,30 |
| | | | KC5010 | | | KC5010 | 120 | 150 | 225 | 0,06 - 0,25 | 0,04 - 0,16 | – | 0,08 - 0,30 |
| | | | KC9315 | | | | 145 | 215 | 275 | 0,06 - 0,25 | – | – | – |
| | | | KC9320 | | | | 140 | 210 | 260 | 0,06 - 0,12 | – | – | – |

| Material Group | | Condition | Geometry | | | | Cutting Speed m/min | | | Feed Rate mm/r | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | -LF | -FWL20 | – | – | min | Starting Value | max | -LF | -FWL20 | – | – |
| N | 1 | | KC5410 | | | | 200 | 550 | 1000 | 0,10 - 0,40 | 0,20 - 0,50 | – | – |
| | | | KC5410 | | | | 200 | 550 | 1000 | 0,10 - 0,20 | – | – | – |
| | | | | | KD1400 | | 450 | 765 | 3000 | – | – | 0,06 - 0,15 | – |
| | 2 | | | | KD1425 | | 375 | 580 | 1150 | – | – | 0,06 - 0,25 | – |
| | | | | | KD1400 | | 400 | 650 | 1250 | – | – | 0,06 - 0,15 | – |
| | 3 | | KC5410 | | | | 125 | 275 | 525 | 0,10 - 0,40 | 0,20 - 0,50 | – | – |
| | | | | | KD1425 | | 250 | 500 | 875 | – | – | 0,06 - 0,25 | – |
| | | | KC5410 | | | | 125 | 275 | 525 | 0,10 - 0,20 | – | – | – |
| | | | | | KD1400 | | 375 | 520 | 1000 | – | – | 0,06 - 0,12 | – |
| | 5 | | KC5410 | | | | 125 | 200 | 375 | 0,10 - 0,40 | – | – | – |
| | | | KC5410 | | | | 125 | 200 | 375 | 0,10 - 0,20 | – | – | – |

| Material Group | | Condition | Geometry | | | | Cutting Speed m/min | | | Feed Rate mm/r | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | -LF | -UF | -FP | -FW | min | Starting Value | max | -LF | -UF | -FP | -FW |
| S | 1 | | | | KCU10 | | 30 | 55 | 125 | – | – | 0,06 - 0,25 | – |
| | | | K313 | | | | 10 | 30 | 60 | 0,06 - 0,25 | – | – | – |
| | | | KC5010 | | | KC5010 | 30 | 55 | 120 | 0,06 - 0,25 | 0,04 - 0,16 | | 0,08 - 0,30 |
| | | | | | KCU10 | | 30 | 55 | 125 | – | – | 0,06 - 0,25 | – |
| | | | KC5010 | | | KC5010 | 30 | 55 | 120 | 0,06 - 0,25 | 0,04 - 0,16 | | 0,08 - 0,30 |
| | | | | | KCU25 | | 10 | 40 | 50 | – | – | 0,06 - 0,12 | – |
| | | | KC5025 | | | | 10 | 40 | 50 | 0,06 - 0,10 | – | – | – |
| | 2 | | | | KCU10 | | 30 | 35 | 125 | – | – | 0,06 - 0,25 | – |
| | | | K313 | | | | 10 | 35 | 60 | 0,06 - 0,25 | – | – | – |
| | | | KC5010 | | | KC5010 | 30 | 60 | 120 | 0,06 - 0,25 | 0,04 - 0,16 | | 0,08 - 0,30 |
| | | | | | KCU10 | | 30 | 35 | 125 | – | – | 0,06 - 0,25 | – |
| | | | KC5010 | | | KC5010 | 30 | 60 | 120 | 0,06 - 0,25 | 0,04 - 0,16 | – | 0,08 - 0,30 |
| | | | | | KCU25 | | 10 | 30 | 50 | – | – | 0,06 - 0,12 | – |
| | | | KC5025 | | | | 10 | 30 | 50 | 0,06 - 0,10 | – | – | – |
| | 3 | | | | KCU10 | | 30 | 70 | 125 | – | – | 0,06 - 0,25 | – |
| | | | K313 | | | | 10 | 40 | 60 | 0,06 - 0,25 | – | – | – |
| | | | KC5010 | | | KC5010 | 30 | 70 | 120 | 0,06 - 0,25 | 0,04 - 0,16 | | 0,08 - 0,30 |
| | | | | | KCU10 | | 30 | 35 | 125 | – | – | 0,06 - 0,25 | – |
| | | | KC5010 | | | KC5010 | 30 | 70 | 120 | 0,06 - 0,25 | 0,04 - 0,16 | – | 0,08 - 0,30 |
| | | | | | KCU25 | | 25 | 40 | 60 | – | – | 0,06 - 0,12 | – |
| | | | KC5025 | | | | 25 | 40 | 60 | 0,06 - 0,10 | – | – | – |
| | 4 | | | | KCU10 | | 45 | 70 | 140 | – | – | 0,06 - 0,25 | – |
| | | | K313 | | | | 15 | 45 | 65 | 0,06 - 0,25 | – | – | – |
| | | | KC5010 | | | KC5010 | 45 | 70 | 140 | 0,06 - 0,25 | 0,04 - 0,16 | | 0,08 - 0,30 |
| | | | | | KCU10 | | 45 | 70 | 140 | – | – | 0,06 - 0,25 | – |
| | | | KC5010 | | | KC5010 | 45 | 70 | 140 | 0,06 - 0,25 | 0,04 - 0,16 | – | 0,08 - 0,30 |
| | | | | | KCU25 | | 25 | 55 | 90 | – | – | 0,06 - 0,12 | – |
| | | | KC5025 | | | | 15 | 55 | 90 | 0,06 - 0,10 | – | – | – |

# Romicron Assembly Instructions

The required parts for the adaptor assembly are identified in Figures 1 and 2. The SVS model is shown. The instructions are also valid for the SVU and SVUBB models

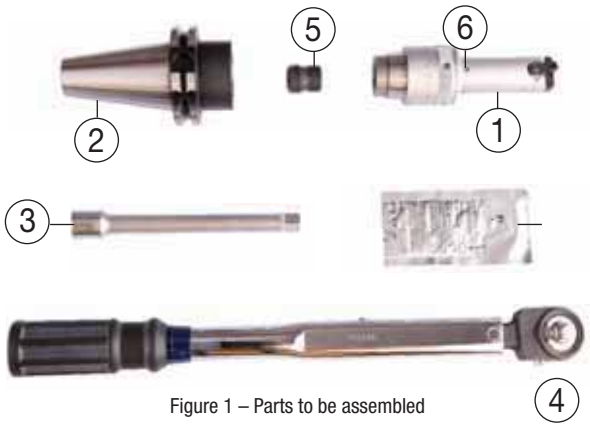



Figure 1 – Parts to be assembled

| | |
|---|---|
| 1 | Boring head |
| 2 | Taper shank |
| 3 | Square extension (3/8" or 1/2") |
| 4 | Torque wrench |
| 5 | Differential connector |
| 6 | Positioning pin |
| 7 | Lubricant ASL-3G |

**WARNING:**
**Before starting the assembly procedure, ensure that all surfaces to be assembled together are free of dirt and completely clean.**

Figure 2 – Assembled tool

A

A. Remove the Differential Connector (5) from the Taper Shank (2).

B

B. Lubricate the thread on the Differential Connector (5) with Lubricant ASL-3G (7), supplied with the Taper Shank (2).

C

C. Screw the Differential Connector (5) into the rear thread on the Boring Head (1) until the end of the thread. At this time it is not necessary to tighten the Differential Connector (5). Remember that the Differential Connector (5) has two different screws, so there is no way to assemble the wrong side.

# Romicron Assembly Instructions

D

D. Screw the front end of the Taper Shank (2) onto the Differential Connector (5), now located at the back on the Boring Head (1). Screw carefully until the Positioning Pin (6) gently touches the Taper Shank (2) face. Stop!

F

F. Insert the square end of the Extension (3) through the Taper Shank (2) and into the Differential Connector (5). Keeping the Positioning Pin (6) and the positioning slot aligned, turn the Extensions (3) counter-clockwise until you see that two Romicron faces are meshing. Ensure that the Positioning Pin (6) is inserted into the slot on the Taper Shank (2).

E

E. Unscrew the Taper Shank (2) a little bit until the Positioning Pin (6) is aligned with the positioning slot mark in the Taper Shank (2) face.

G

G. Tighten the Differential Connector (5) with the specified required torque, as shown on the table below. Use the Torque Wrench (4) to do this.

### Tightening Torque Specifications

| joint size | Torque Nm | drive square |
|---|---|---|
| KR32 | 30 | 3/8" |
| KR50 | 40 | 3/8" |
| KR63 | 55 | 1/2" |
| KR80 | 65 | 1/2" |

**Following these procedures will result in a rigid surface contact between the taper and the boring head face.**

# Setting Fixture

## Primary Application

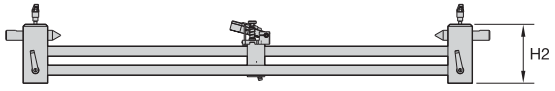
The newly developed Kennametal Setting Fixture is helping customers to pre-adjust a wide range of guide pad tools. The setting fixture kits include all required components for fast and precise adjustment, especially for the padded reamer families working with RIR™, RIQ™, and RI8 inserts. Kits with two adjustment gages are available for adjusting back taper and diameter at the same time. It is also capable of adjusting two different diameters of step reamers simultaneously. For RIQ and RI8 reamers, there are kits with only one gage available as there is no back taper adjustment required. Additional equipment also enables the measurement of multistep reamers.

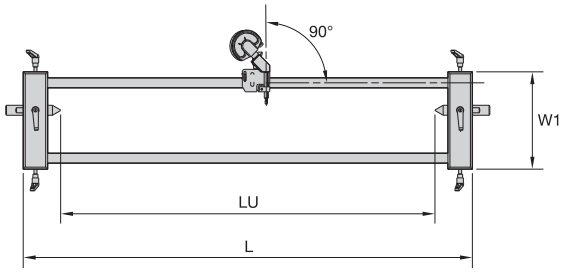
Due to its high rigidity and easy assembly, the setting fixture helps customers to adjust reaming tools with high reliability and repeatability.

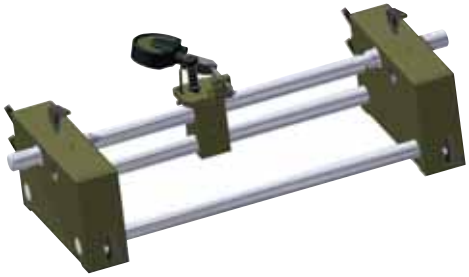
# Features and Benefits

## Higher Precision and Ease of Use

- Number of gages according to applied tooling platform.
- Two different lengths available.
- Rigid.
- Reliable.
- Modular system.
- Additional equipment available.

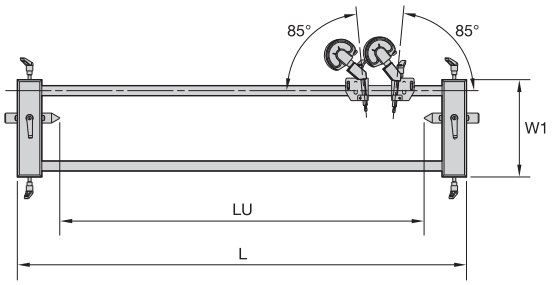


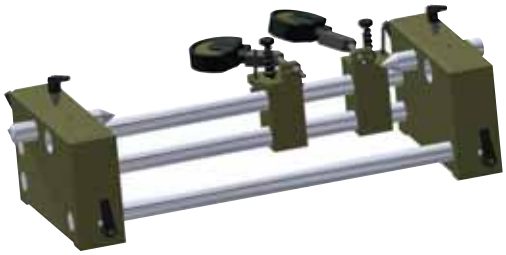



## Setting Fixture • One Gage

| order number | catalogue number | H2 | | L | | LU | | W1 | |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | in | mm | in | mm | in | mm | in |
| **5025599** | **SF300M1RS** | 118 | 4.646 | 450 | 17.717 | 300 | 11.811 | 195 | 7.677 |
| **5025670** | **SF750M1RS** | 118 | 4.646 | 900 | 35.443 | 750 | 29.527 | 195 | 7.677 |



## Setting Fixture • Two Gage

| order number | catalogue number | H2 | | L | | LU | | W1 | |
|---|---|---|---|---|---|---|---|---|---|
| | | mm | in | mm | in | mm | in | mm | in |
| **5025597** | **SF300M1LA1RA** | 118 | 4.646 | 450 | 17.717 | 300 | 11.811 | 195 | 7.677 |
| **5025598** | **SF750M1LA1RA** | 118 | 4.646 | 900 | 35.443 | 750 | 29.527 | 195 | 7.677 |

## Contact Pins Set

| order number | catalogue number |
|---|---|
| 5025686 | SFCPS |

## Clamp Handle for End Blocks and Axial Slides

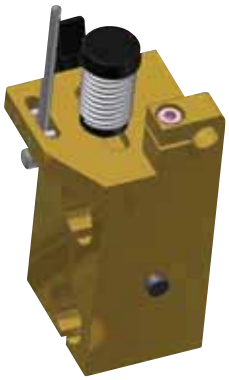
| order number | catalogue number |
|---|---|
| 5025682 | SFEBCH |

## End Block including Screws

| order number | catalogue number |
|---|---|
| 5025681 | SFEBS |

## Support Bars (450mm and 900mm)

| order number | catalogue number |
|---|---|
| 5025684 | SFSB450 |
| 5025685 | SFSB900 |

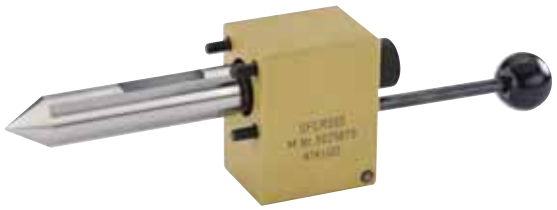


## Axial Slides

| order number | catalogue number |
|---|---|
| 5025683 | SFSLSS |

## Standard Centre Ø20mm

| order number | catalogue number |
|---|---|
| 5025676 | SFCR20 |



## Spring-Loaded Centre Ø20mm

| order number | catalogue number |
|---|---|
| 5025679 | SFCR20S |

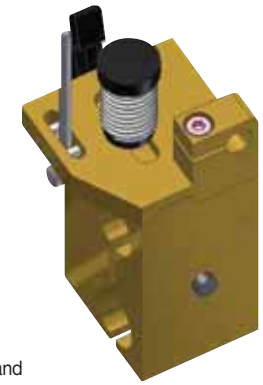
## HSK Centre

| order number | catalogue number |
|---|---|
| 5025677 | SFCRHSK3263 |
| 5025678 | SFCRHSK63100 |

## Gage Set

| order number | catalogue number |
|---|---|
| 5025675 | SFMGS |

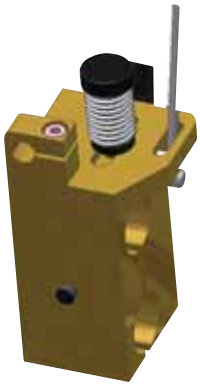
Right Hand



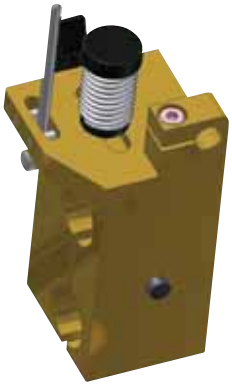
Left Hand

## Axial Slide • 85°

| order number | catalogue number |
|---|---|
| 5025674 | SFSLLA |
| 5025673 | SFSLRA |



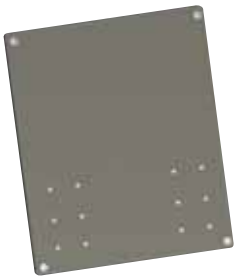
Right Hand



Left Hand

## Axial Slide • 90° with Angle Fine Adjustment

| order number | catalogue number |
|---|---|
| 5025672 | SFSLLS |
| 5025671 | SFSLRS |

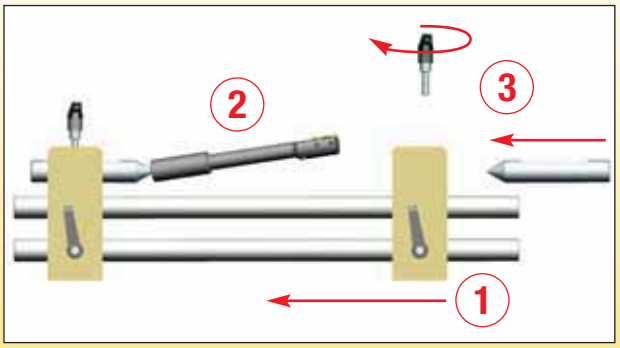


## Base Plate for Vertical Setup

| order number | catalogue number |
|---|---|
| 5025680 | SFVB |

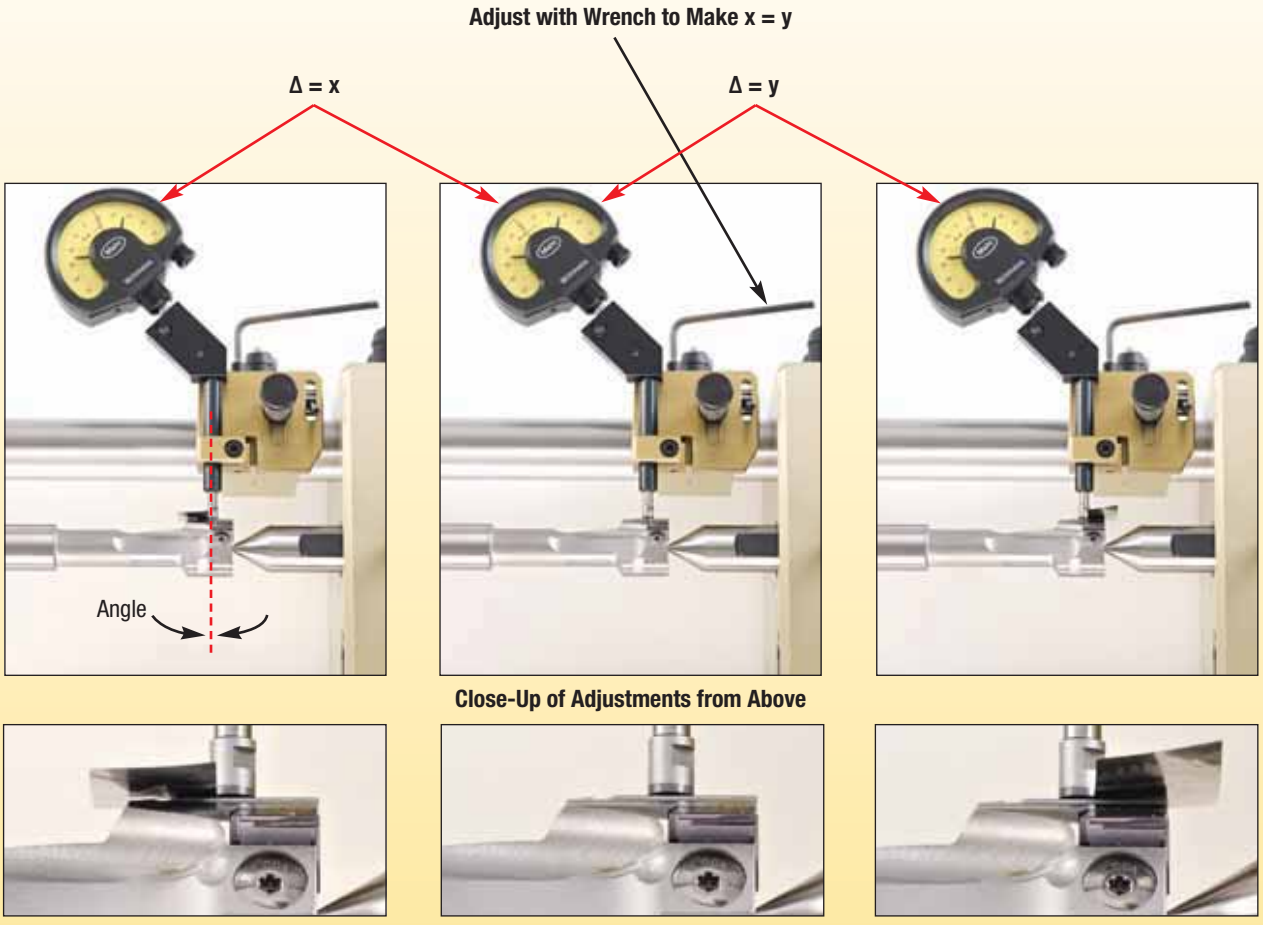
## Handling of the Setting Fixture

1. Slide bases along rails to suit the length of reamer and tighten clamp screws.
2. Insert the tool into the setting fixture.
3. Carefully locate centres in reamer and tighten clamp screw.




## Preadjusting Setting Fixture

**Calibrate 90° slide:** This condition is required for a precise measurement.

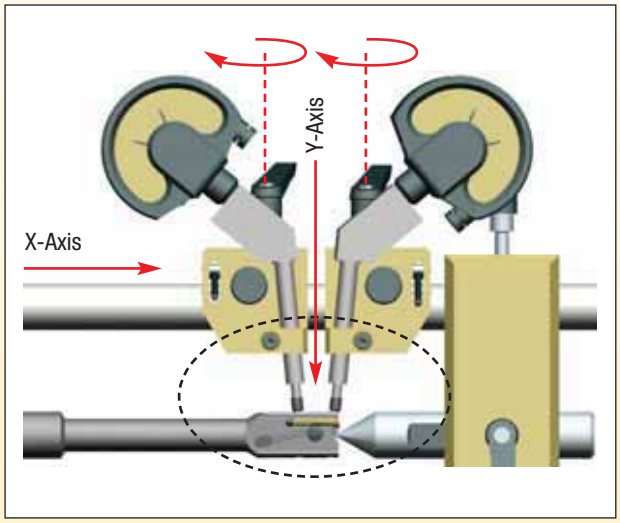



**Result:** Probe contact face and guide pad are parallel when x = y.
That condition is required for a precise measurement.

## Handling RIR™/RIQ™

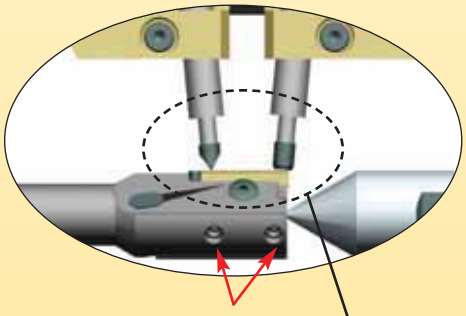
### Adjusting RIR Insert

1. Position the axial slide along the X- and Y-axes.
   Position the first dial indicator at the front of the guide pad and the second dial indicator near the rear of the guide pad.
   Clamp screw when slide is in position. Zero both indicators.

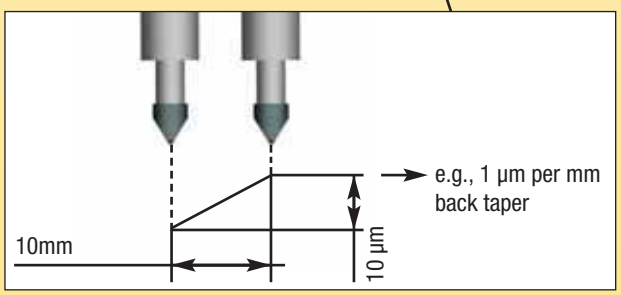



2. Rotate the tool between centres to find the highest point of the blade as indicated on the dial indicators.

3. Use the front adjusting screw the to adjust overhang to + approximately 0,010mm (.0004") above the guide pad.
   Adjust the rear adjusting screw to a final setting, approximately -0,010— -0,015mm (.0004–.0006") smaller than front overhang. (see drawing for precise values)

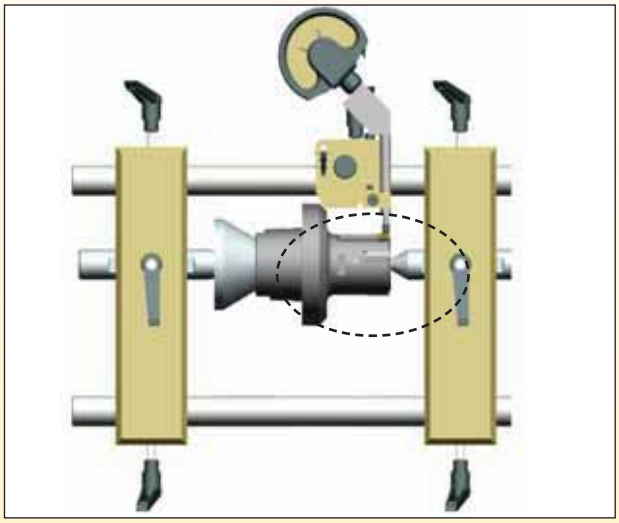


Adjust insert to size and adjust the back taper using the two screws.



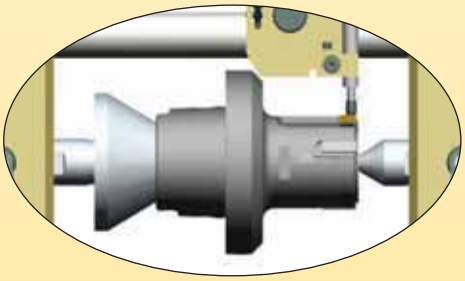

### Adjusting RIQ Insert

1. Position the axial slide along the X and Y-axes.
   Position the dial indicator at the front of the guide pad.
   Clamp screw when slide is in position. Zero the indicator.



2. Rotate the tool between centres to find the highest point of the insert as indicated on the dial indicator.

3. Use the adjusting screw to adjust overhang to approximately 0,010mm above the guide pad.



NOTE: For detailed instruction for RIR and RIQ see Kennametal Innovations Master Catalogue Cutting Tools, page K124.

# Line Expansion

## High-Performance HSS-E-PM Taps

beyond™

### Primary Application

The High-Performance High-Speed Steel (HSS-E-PM) Taps are manufactured to both ANSI and DIN standards from powder metal, offering high productivity and reliable thread quality and are engineered for greater wear- and heat-resistance. HSS-E-PM tools can be used on CNC-synchronous tapping machines as well as conventional non-rigid tapping machines for tapping through and blind holes in a variety of materials and are particularly efficient in tapping soft steel and aluminium.

The precision h6 shank enables usage in precision round toolholders as well as in conventional square drive tap holders.

## Features and Benefits

### Improved Performance, Wide Range of Choices

- Higher strength and wider range of applications versus carbide taps.
- Higher tapping speed capability and longer life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines.
- Forming taps for soft steel and aluminium.
- Selection of taps for all materials:
  - Steel
  - Stainless steel
  - Iron
  - Aluminium, cast, and wrought
  - Aerospace
  - Hard steel

### Customisation

- Customised taps are available with short lead times from semi-finished blanks.

Solid Carbide = **bold**
HSS-E-PM = regular

## Through Holes

## Blind Holes

| | | Through Holes | | | | Blind Holes | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Cutting | | Forming | | Cutting | | Forming | |
| | | Flood | Internal Coolant | Flood | Internal Coolant | Flood | Internal Coolant | Flood | Internal Coolant |
| P | <32 HRC | **T320_KC7542** T620_KP6525 | **T321_KC7542** T621_KP6525 | T622_KSP21 | **T381_KC7542** T623_KSP21 | T630_KP6525 T630_KP6505 T632_KP6525 T650_KP6525 | **T331_KC7542** T631_KP6525 T633_KP6525 T651_KP6525 | T622_KSP21 | **T391_KC7542** T623_KSP21 |
| | 32–44 HRC | T600_KSP2 | — | — | — | T602_KSP21 T604_KSH26 | — | — | — |
| M | | T620_KM6515 | T621_KM6515 | — | — | T630_KM6515 | T631_KM6515 | — | — |
| K | | **T340_KC7542** T640_KP6525 | T641_KP6525 | — | — | T640_KP6525 T642_KP6525 | **T351_KC7542** T641_KP6525 T643_KP6525 | — | — |
| N | Wrought, Low Si | T670_KSN38 | — | T622_KSN28 | **T481_KC7512** T623_KSN28 | T680_KSN38 | — | T622_KSN28 | **T491_KC7512** T623_KSN28 |
| | Cast, Si<12% | T640_KP6525 | **T461_KC7512** T641_KP6525 | T622_KSN28 | **T481_KC7512** T623_KSN28 | T640_KP6525 T642_KP6525 | **T471_KC7512** T641_KP6525 T643_KP6525 | T622_KSN28 | **T491_KC7512** T623_KSN28 |
| S | Titanium Alloys | T614_KSN25 | — | — | — | — | — | — | — |
| | Ni and Co Alloys | T610_KSSH22 | — | — | — | T612_KSSH22 | — | — | — |
| H | 44–55 HRC | T606_KSSH22 | — | — | — | T606_KSSH22 | — | — | — |
| | 55–63 HRC | **T410_KCU36** | — | — | — | **T410_KCU36** | — | — | — |

## HSS Taps Identification System

**T620MF120X150R6HX-D4**

**T620NC06250-11R3BX-A**

**Metric**

| T620 | MF | 120 | X | 150 | R | 6HX | -D4 |
|---|---|---|---|---|---|---|---|

**Inch**

| T620 | NC | 06250 | - | 11 | R | 3BX | -A |
|---|---|---|---|---|---|---|---|
| Tap Design | Type of Thread | Nominal Diameter of Thread | | Pitch | Cutting Direction | Tolerance Class | Taps Dimension |
| | | mm or inch (depending on type) | | mm or TPI (depending on type) | | | |

**M** = Metric coarse-pitch thread (ISO form)

**MF** = Metric fine-pitch thread (ISO form)

**NC** = Unified coarse series thread

**NF** = Unified fine series thread

**A** = ANSI

**D1** = DIN 371

**D4** = DIN 374

**D6** = DIN 376

**D74** = DIN 2174

**J** = JIS

**XL** = DIN extra length

**DA** = DIN length and ANSI shank

**Style**

**T620** = Steel and stainless steel, through holes, LH spiral flute, solid

**T621** = Steel and stainless steel, through holes, LH spiral flute, internal coolant

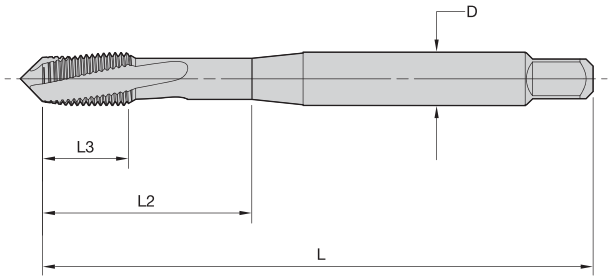
**T630** = Steel and stainless steel, blind holes, RH spiral flute, solid

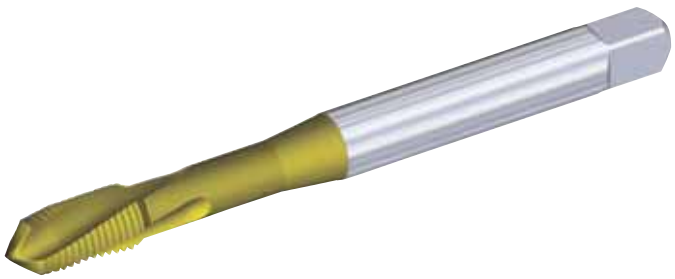
**T631** = Steel and stainless steel, blind holes, RH spiral flute, internal coolant

**T640** = Cast iron, through and blind holes, straight flute, solid

**T641** = Cast iron, through and blind holes, straight flute, internal coolant

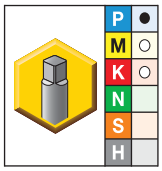
NOTE: Other taps styles, see page B84.



KP6525 • TiCN+ TiN for steel.

## T620 • DIN 371 and 376 • Form D Plug Chamfer • Machine Screw and Fractional

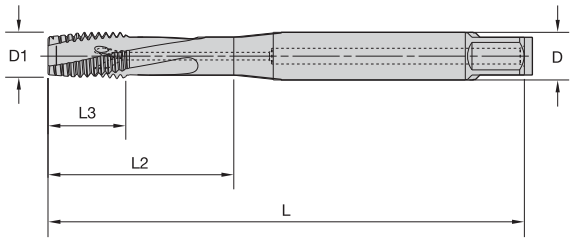


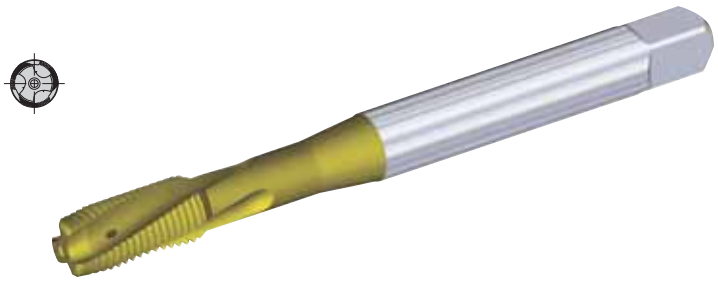

● first choice
○ alternate choice

| KP6525 | metric dimensions D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T620NC#06-32R2BX-D1** | 6-32 | 56 | 9 | 20 | 4,0 | 2 | DIN 371 | 2BX |
| **T620NF#06-40R2BX-D1** | 6-40 | 56 | 9 | 20 | 4,0 | 2 | DIN 371 | 2BX |
| **T620NC#08-32R2BX-D1** | 8-32 | 63 | 10 | 21 | 4,5 | 2 | DIN 371 | 2BX |
| **T620NC#10-24R2BX-D1** | 10-24 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 2BX |
| **T620NF#10-32R2BX-D1** | 10-32 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 2BX |
| **T620NC02500-20R3BX-D1** | 1/4-20 | 80 | 13 | 30 | 7,0 | 3 | DIN 371 | 3BX |
| **T620NF02500-28R3BX-D1** | 1/4-28 | 80 | 13 | 30 | 7,0 | 3 | DIN 371 | 3BX |
| **T620NC03125-18R3BX-D1** | 5/16-18 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 3BX |
| **T620NF03125-24R3BX-D1** | 5/16-24 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 3BX |
| **T620NC03750-16R3BX-D1** | 3/8-16 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 3BX |
| **T620NF03750-24R3BX-D1** | 3/8-24 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 3BX |
| **T620NC04375-14R3BX-D6** | 7/16-14 | 100 | 15 | 41 | 8,0 | 3 | DIN 376 | 3BX |
| **T620NF04375-20R3BX-D6** | 7/16-20 | 100 | 15 | 41 | 8,0 | 3 | DIN 376 | 3BX |
| **T620NC05000-13R3BX-D6** | 1/2-13 | 110 | 20 | 47 | 9,0 | 3 | DIN 376 | 3BX |
| **T620NF05000-20R3BX-D6** | 1/2-20 | 110 | 20 | 47 | 9,0 | 3 | DIN 376 | 3BX |

**Shank Tolerance**

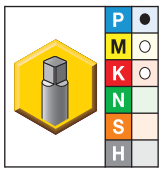
| D fractional | tolerance h6 |
|---|---|
| >3–6 | +0, -0,008 |
| >6–10 | +0, -0,009 |
| <10–18 | +0, -0,011 |



KP6525 • TiCN+ TiN for steel.

## T621 • DIN 371 and 376 • Form D Plug Chamfer • Through Coolant • Fractional

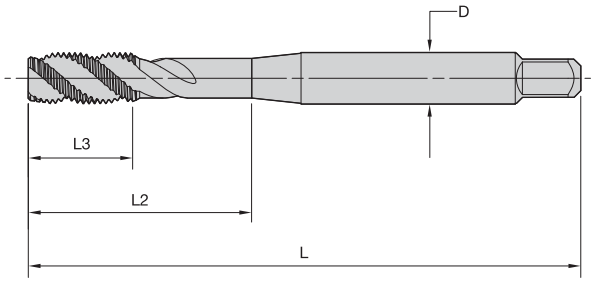


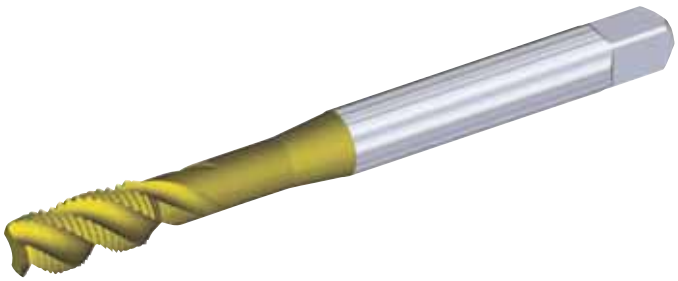

● first choice
○ alternate choice

| KP6525 | metric dimensions D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T621NC02500-20R3BX-D1** | 1/4-20 | 80 | 13 | 30 | 7,0 | 3 | DIN 371 | 3BX |
| **T621NF02500-28R3BX-D1** | 1/4-28 | 80 | 13 | 30 | 7,0 | 3 | DIN 371 | 3BX |
| **T621NC03125-18R3BX-D1** | 5/16-18 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 3BX |
| **T621NF03125-24R3BX-D1** | 5/16-24 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 3BX |
| **T621NC03750-16R3BX-D1** | 3/8-16 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 3BX |
| **T621NF03750-24R3BX-D1** | 3/8-24 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 3BX |
| **T621NC04375-14R3BX-D6** | 7/16-14 | 100 | 15 | 41 | 8,0 | 3 | DIN 376 | 3BX |
| **T621NF04375-20R3BX-D6** | 7/16-20 | 100 | 15 | 41 | 8,0 | 3 | DIN 376 | 3BX |
| **T621NC05000-13R3BX-D6** | 1/2-13 | 110 | 20 | 47 | 9,0 | 3 | DIN 376 | 3BX |
| **T621NF05000-20R3BX-D6** | 1/2-20 | 110 | 20 | 47 | 9,0 | 3 | DIN 376 | 3BX |

**Shank Tolerance**

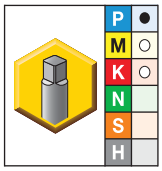
| D fractional | tolerance h6 |
|---|---|
| >3–6 | +0, -0,008 |
| >6–10 | +0, -0,009 |
| <10–18 | +0, -0,011 |



KP6525 • TiCN+ TiN for steel.

## T630 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional

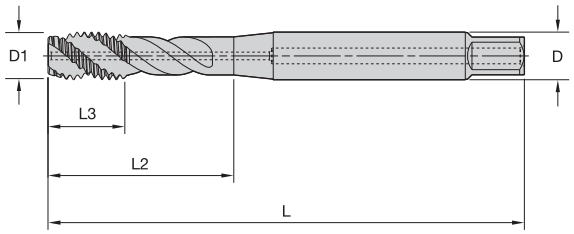


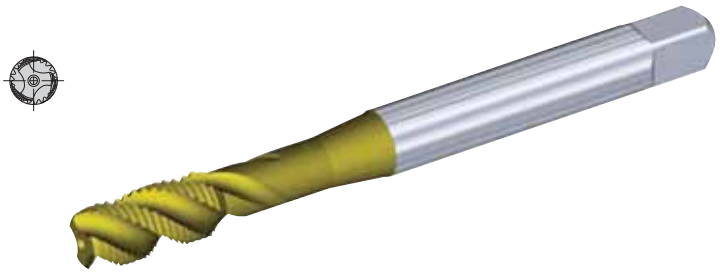

● first choice
○ alternate choice

| KP6525 | metric dimensions D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T630NC#06-32R2BX-D1** | 6-32 | 56 | 9 | 20 | 4,0 | 3 | DIN 371 | 2BX |
| **T630NF#06-40R2BX-D1** | 6-40 | 56 | 9 | 20 | 4,0 | 3 | DIN 371 | 2BX |
| **T630NC#08-32R2BX-D1** | 8-32 | 63 | 10 | 21 | 4,5 | 3 | DIN 371 | 2BX |
| **T630NC#10-24R2BX-D1** | 10-24 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 2BX |
| **T630NF#10-32R2BX-D1** | 10-32 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 2BX |
| **T630NC02500-20R3BX-D1** | 1/4-20 | 80 | 13 | 30 | 7,0 | 3 | DIN 371 | 3BX |
| **T630NF02500-28R3BX-D1** | 1/4-28 | 80 | 13 | 30 | 7,0 | 3 | DIN 371 | 3BX |
| **T630NC03125-18R3BX-D1** | 5/16-18 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 3BX |
| **T630NF03125-24R3BX-D1** | 5/16-24 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 3BX |
| **T630NC03750-16R3BX-D1** | 3/8-16 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 3BX |
| **T630NF03750-24R3BX-D1** | 3/8-24 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 3BX |
| **T630NC04375-14R3BX-D6** | 7/16-14 | 100 | 15 | 41 | 8,0 | 4 | DIN 376 | 3BX |
| **T630NF04375-20R3BX-D6** | 7/16-20 | 100 | 15 | 41 | 8,0 | 4 | DIN 376 | 3BX |
| **T630NC05000-13R3BX-D6** | 1/2-13 | 110 | 20 | 47 | 9,0 | 4 | DIN 376 | 3BX |
| **T630NF05000-20R3BX-D6** | 1/2-20 | 110 | 20 | 47 | 9,0 | 4 | DIN 376 | 3BX |

**Shank Tolerance**

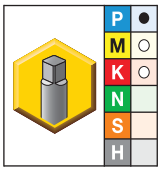
| D fractional | tolerance h6 |
|---|---|
| >3–6 | +0, -0,008 |
| >6–10 | +0, -0,009 |
| <10–18 | +0, -0,011 |



KP6525 • TiCN+ TiN for steel.

## T631 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional

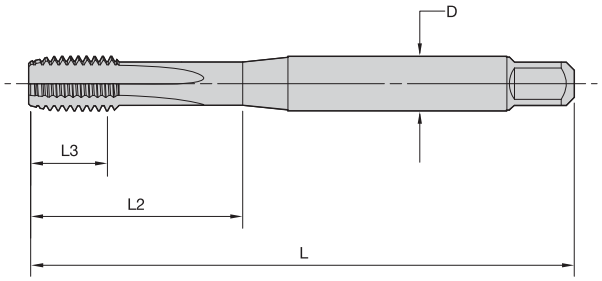


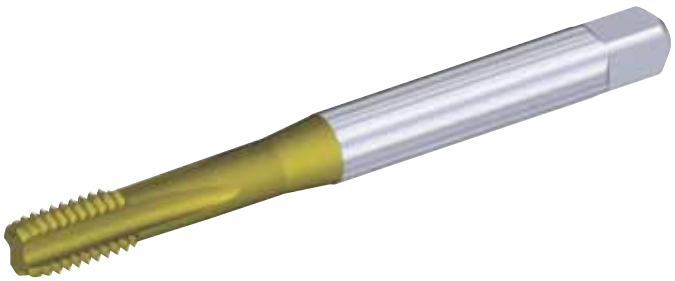

● first choice
○ alternate choice

| KP6525 | metric dimensions D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| T631NC02500-20R3BX-D1 | 1/4 - 20 | 80 | 13 | 30 | 7 | 3 | DIN 371 | 3BX |
| T631NF02500-28R3BX-D1 | 1/4 - 28 | 80 | 13 | 30 | 7 | 3 | DIN 371 | 3BX |
| T631NC03125-18R3BX-D1 | 5/16 - 18 | 90 | 13 | 35 | 8 | 3 | DIN 371 | 3BX |
| T631NF03125-24R3BX-D1 | 5/16 - 24 | 90 | 13 | 35 | 8 | 3 | DIN 371 | 3BX |
| T631NC03750-16R3BX-D1 | 3/8 - 16 | 100 | 16 | 39 | 10 | 3 | DIN 371 | 3BX |
| T631NF03750-24R3BX-D1 | 3/8 - 24 | 100 | 16 | 39 | 10 | 3 | DIN 371 | 3BX |
| T631NC04375-14R3BX-D6 | 7/16 - 14 | 100 | 15 | 41 | 8 | 4 | DIN 376 | 3BX |
| T631NF04375-20R3BX-D6 | 7/16 - 20 | 100 | 15 | 41 | 8 | 4 | DIN 376 | 3BX |
| T631NC05000-13R3BX-D6 | 1/2 - 13 | 110 | 20 | 47 | 9 | 4 | DIN 376 | 3BX |
| T631NF05000-20R3BX-D6 | 1/2 - 20 | 110 | 20 | 47 | 9 | 4 | DIN 376 | 3BX |

**Shank Tolerance**

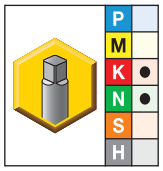
| D fractional | tolerance h6 |
|---|---|
| >3–6 | +0, -0,008 |
| >6–10 | +0, -0,009 |
| <10–18 | +0, -0,011 |



KP6525 • TiCN+ TiN for cast iron and cast aluminium.

## T640 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional

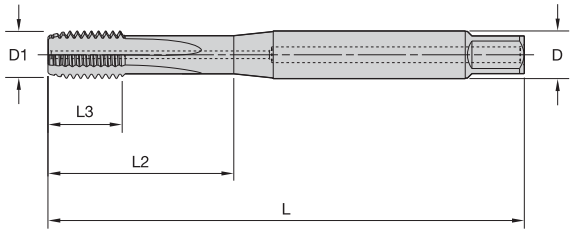


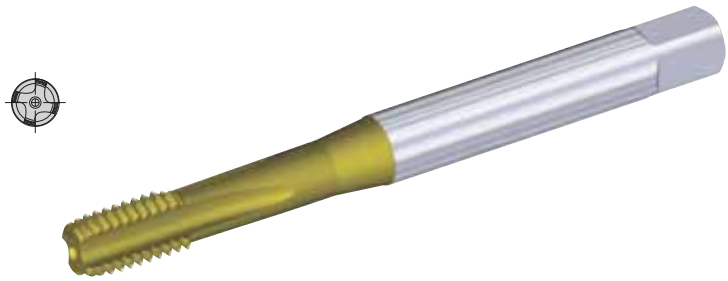

● first choice
○ alternate choice

| KP6525 | metric dimensions D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T640NC#06-32R2BX-D1** | 6-32 | 56 | 9 | 20 | 4,0 | 3 | DIN 371 | 2BX |
| **T640NF#06-40R2BX-D1** | 6-40 | 56 | 9 | 20 | 4,0 | 3 | DIN 371 | 2BX |
| **T640NC#08-32R2BX-D1** | 8-32 | 63 | 10 | 21 | 4,5 | 3 | DIN 371 | 2BX |
| **T640NC#10-24R2BX-D1** | 10-24 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 2BX |
| **T640NF#10-32R2BX-D1** | 10-32 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 2BX |
| **T640NC02500-20R3BX-D1** | 1/4-20 | 80 | 13 | 30 | 7,0 | 4 | DIN 371 | 3BX |
| **T640NF02500-28R3BX-D1** | 1/4-28 | 80 | 13 | 30 | 7,0 | 4 | DIN 371 | 3BX |
| **T640NC03125-18R3BX-D1** | 5/16-18 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 3BX |
| **T640NF03125-24R3BX-D1** | 5/16-24 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 3BX |
| **T640NC03750-16R3BX-D1** | 3/8-16 | 100 | 16 | 39 | 10,0 | 4 | DIN 371 | 3BX |
| **T640NF03750-24R3BX-D1** | 3/8-24 | 100 | 16 | 39 | 10,0 | 4 | DIN 371 | 3BX |
| **T640NC04375-14R3BX-D6** | 7/16-14 | 100 | 15 | 41 | 8,0 | 4 | DIN 376 | 3BX |
| **T640NF04375-20R3BX-D6** | 7/16-20 | 100 | 15 | 41 | 8,0 | 4 | DIN 376 | 3BX |
| **T640NC05000-13R3BX-D6** | 1/2-13 | 110 | 20 | 47 | 9,0 | 4 | DIN 376 | 3BX |
| **T640NF05000-20R3BX-D6** | 1/2-20 | 110 | 20 | 47 | 9,0 | 4 | DIN 376 | 3BX |

**Shank Tolerance**

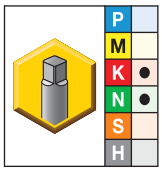
| D fractional | tolerance h6 |
|---|---|
| **>3–6** | **+0, -0,008** |
| **>6–10** | **+0, -0,009** |
| **<10–18** | **+0, -0,011** |



KP6525 • TiCN+ TiN for cast iron and cast aluminium.

## T641 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional




● first choice
○ alternate choice

| KP6525 | metric dimensions D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T641NC02500-20R3BX-D1** | 1/4 - 20 | 80 | 13 | 30 | 7,0 | 4 | DIN 371 | 3BX |
| **T641NF02500-28R3BX-D1** | 1/4 - 28 | 80 | 13 | 30 | 7,0 | 4 | DIN 371 | 3BX |
| **T641NC03750-16R3BX-D1** | 5/16 - 16 | 100 | 16 | 39 | 10,0 | 4 | DIN 371 | 3BX |
| **T641NF03125-24R3BX-D1** | 5/16 - 24 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 3BX |
| **T641NC03125-18R3BX-D1** | 3/8 - 18 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 3BX |
| **T641NF03750-24R3BX-D1** | 3/8 - 24 | 100 | 16 | 39 | 10,0 | 4 | DIN 371 | 3BX |
| **T641NC04375-14R3BX-D6** | 7/16 - 14 | 100 | 15 | 41 | 8,0 | 4 | DIN 376 | 3BX |
| **T641NF04375-20R3BX-D6** | 7/16 - 20 | 100 | 15 | 41 | 8,0 | 4 | DIN 376 | 3BX |
| **T641NC05000-13R3BX-D6** | 1/2 - 13 | 110 | 20 | 47 | 9,0 | 4 | DIN 376 | 3BX |
| **T641NF05000-20R3BX-D6** | 1/2 - 20 | 110 | 20 | 47 | 9,0 | 4 | DIN 376 | 3BX |

**Shank Tolerance**

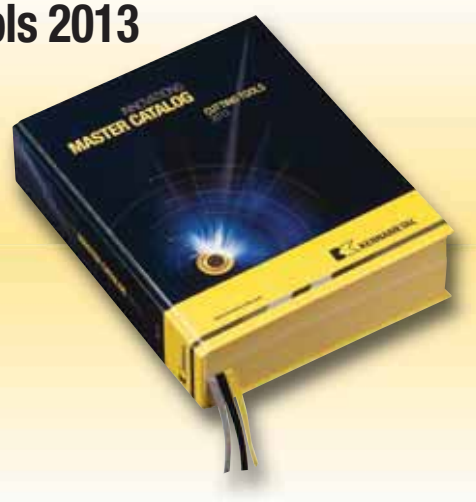
| D fractional | tolerance h6 |
|---|---|
| >3–6 | +0, -0,008 |
| >6–10 | +0, -0,009 |
| <10–18 | +0, -0,011 |

| Material Group | | Through Holes | | | | | Blind Holes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Range – m/min | | | | | Range – m/min | | |
| | | Tap Style | Grade | min | Starting Value | max | Tap Style | Grade | min | Starting Value | max |
| P | 1 | T620 | KP6525 | 20 | **30** | 45 | T630,T632,T650 | KP6525 | 14 | **21** | 32 |
| | | T622 | KSP21 | 18 | **30** | 50 | T622 | KSP21 | 13 | **21** | 35 |
| | 2 | T620 | KP6525 | 17 | **25** | 38 | T630,T632,T650 | KP6525 | 12 | **18** | 26 |
| | | T622 | KSP21 | 15 | **25** | 42 | T622 | KSP21 | 10 | **18** | 29 |
| | 3 | T620 | KP6525 | 12 | **15** | 20 | T630,T632,T650 | KP6525 | 8 | **11** | 14 |
| | 4 | T600 | KSP21 | 5 | **6** | 8 | T602, T604 | KSP21 | 3 | **4** | 5 |
| | 5 | T620 | KP6525 | 12 | **15** | 20 | T630,T632,T650 | KP6525 | 8 | **11** | 14 |
| | 6 | T600 | KSP21 | 6 | **8** | 10 | T602, T604 | KSP21 | 4 | **6** | 7 |
| M | 1 | T620 | KM6515 | 12 | **15** | 20 | T630,T632,T650 | KM6515 | 8 | **11** | 14 |
| | 2 | T620 | KM6515 | 9 | **12** | 16 | T630,T632,T650 | KM6515 | 6 | **8** | 11 |
| | 3 | T620 | KM6515 | 8 | **10** | 13 | T630,T632,T650 | KM6515 | 5 | **7** | 9 |
| K | 1 | T640 | KP6525 | 35 | **45** | 59 | T640, T642 | KP6525 | 24 | **32** | 41 |
| | 2 | T640 | KP6525 | 31 | **40** | 52 | T640, T642 | KP6525 | 22 | **28** | 36 |
| | 3 | T640 | KP6525 | 23 | **30** | 39 | T640, T642 | KP6525 | 16 | **21** | 27 |
| N | 1 | T670 | KSN38 | 42 | **55** | 72 | T680 | KSN38 | 30 | **39** | 50 |
| | | T622 | KSN28 | 37 | **55** | 83 | T622 | KSN28 | 26 | **39** | 58 |
| | 2 | T640 | KP6525 | 38 | **50** | 65 | T640, T642 | KP6525 | 27 | **35** | 46 |
| | | T622 | KSN28 | 33 | **50** | 75 | T622 | KSN28 | 23 | **35** | 53 |
| | 4 | T640 | KP6525 | 4 | **6** | 9 | T640, T642 | KP6525 | 3 | **4** | 5 |
| S | 1 | T620 | KP6525 | 8 | **12** | 18 | T630, T632 | KP6525 | 6 | **8** | 11 |
| | 2 | T610 | KSSH22 | 3 | **5** | 8 | T612 | KSSH22 | 3 | **4** | 5 |
| | 3 | T610 | KSSH22 | 3 | **4** | 6 | T612 | KSSH22 | 2 | **3** | 4 |
| | 4 | T614 | KSN25 | 3 | **4** | 6 | T616 | KSN25 | 2 | **3** | 4 |
| H | 1 | T606 | KSSH22 | 1,3 | **2,0** | 3,0 | T606 | KSSH22 | 1,1 | **1,4** | 1,8 |
| | 2 | T606 | KSSH22 | 1,0 | **1,5** | 2,3 | T606 | KSSH22 | 0,8 | **1,1** | 1,4 |

NOTE: Increase speed by up to 25% when using coolant taps (T621, T623, T631, T633, T641, T643, T651).
Use grade KP6505 in steels. Use 50% of the recommended speed listed for grade KP6525™.


## Innovations Master Catalogue Cutting Tools 2013

**The complete Beyond™ High-Performance Taps Portfolio can be found in section L.**



beyond™

# New Beyond™ Grades for Solid Carbide Drills

## What has changed?

- Kennametal has established a unique post-coat treatment procedure in the manufacturing process of new tools.
- The average metal removal rate and tool life performance improves dramatically (minimum 10–30%).
- The new technology improves chip evacuation, especially on deep holes and in difficult cutting conditions.
- Low cutting forces and torques starting with the first hole.

### The KCK10™ Beyond Grade

- A further development of KC7410™.
- Well-known from Kennametal modular drill series.
- Applied in cast iron materials.

### The KCPK15™ Beyond Grade

- A further development of KC7315™.
- Well-known from other major drilling product lines, such as B22_HP series, Unidrill, or modular drills.
- Applied to steel workpieces.

### The KCM15™ Beyond Grade

- A further development of KC7515™.
- Well-known from former B21_HP series.
- Applied in stainless steel materials.

www.kennametal.com

KENNAMETAL®

# Solid End Milling

**Beyond Ceramic EADE Solid End Mills . . . . . C2–C11**
**High-Performance Solid Carbide End Mills . . . . . C12–C64**
HARVI I . . . . . C12–C22
HARVI II . . . . . C24–C29
HARVI II Long . . . . . C30–C34
HARVI III . . . . . C36–C44
KC643M Key Way Cutter . . . . . C46–C50
Roughing . . . . . C52–C64
**Catalogue Numbering System . . . . . C66–C67**

# Beyond™ EADE Solid Ceramic End Mills

## Primary Application

EADE Solid Ceramic End Mills offer higher productivity and tool life in roughing nickel-based high-temperature alloys. Beyond grade KYS40™ delivers best-in-class tool life and exceptionally high Metal Removal Rates (MRR), surpassing those of other solutions on the market today.

- Outstanding reduction of machining time.
- Less tool changes, due to higher tool life.
- Benefit from throw-away type of tooling.

# Features and Benefits

### Advanced Technology

- KYS40 Beyond grade solid SiAlON ceramic designed for machining nickel-based high-temperature alloys.
- Cutting speeds up to 1000 m/min increase Metal Removal Rate (MRR).
- Tool life up to 5x that of carbide.

### Extensive Standard Offering

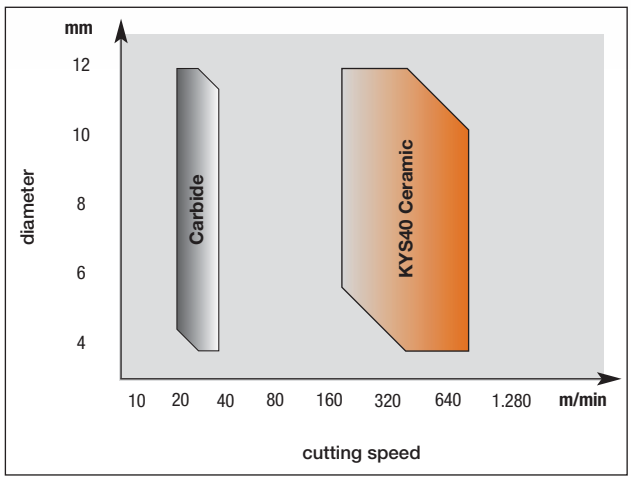
- 4-flute tooling for pocketing and slotting. Undersize end mills leaving stock for finishing operations.
- 6-flute tooling for face milling and profiling.

### Customisation

- Engineered solutions are available upon request.

### Highest Cutting Speed Capability

- Increase compared to carbide.



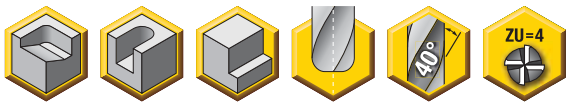
**Ceramic optimised end geometry**
Increase in shearing action.
Improves corner stability.

**Enlarged core design**
Increases tool rigidity for less deflection.

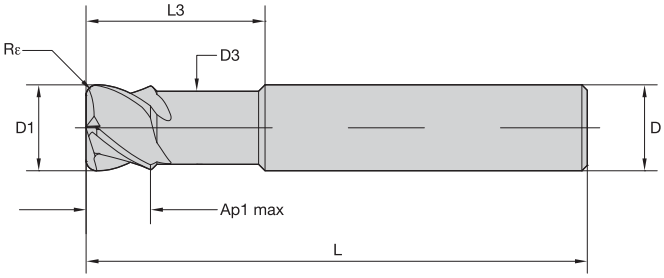
**40° helix angle**
Improves chip evacuation.

**KYS40™ Beyond™ grade**
Enables highest cutting speeds.

- Kennametal standard dimensions.
- Non-centre cutting.
- Ramping up to 2,5°.
- Optimised geometry for roughing nickel-based high-temperature alloys.



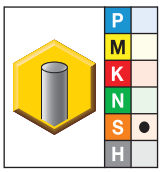


beyond

## EADE • 4-Flute with Neck • Metric

NEW!




● first choice
○ alternate choice

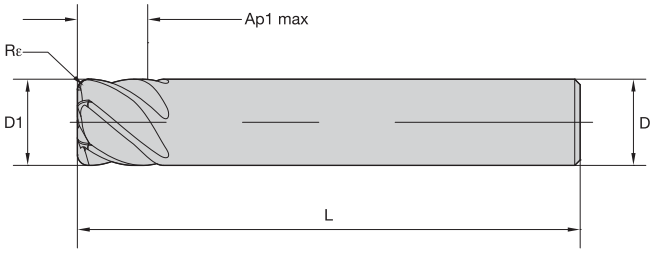
| KYS40 | D1 | D | D3 | Ap1 max | L | L3 | Rε |
|---|---|---|---|---|---|---|---|
| **EADE0380A4AQE** | 3,80 | 6,00 | 3,65 | 3,00 | 50,00 | 8,00 | 0,50 |
| **EADE0400A4AQE** | 4,00 | 6,00 | 3,84 | 3,00 | 50,00 | 8,00 | 0,50 |
| **EADE0570A4AQF** | 5,70 | 6,00 | 5,47 | 4,50 | 50,00 | 12,00 | 0,75 |
| **EADE0600A4AQF** | 6,00 | 6,00 | 5,76 | 4,50 | 50,00 | 12,00 | 0,75 |
| **EADE0760A4AQG** | 7,60 | 8,00 | 7,30 | 6,00 | 57,00 | 16,00 | 1,00 |
| **EADE0800A4AQG** | 8,00 | 8,00 | 7,68 | 6,00 | 57,00 | 16,00 | 1,00 |
| **EADE0950A4AQH** | 9,50 | 10,00 | 9,12 | 7,50 | 63,00 | 20,00 | 1,25 |
| **EADE1000A4AQH** | 10,00 | 10,00 | 9,60 | 7,50 | 63,00 | 20,00 | 1,25 |
| **EADE1140A4AQJ** | 11,40 | 12,00 | 10,94 | 9,00 | 70,00 | 24,00 | 1,50 |
| **EADE1200A4AQJ** | 12,00 | 12,00 | 11,52 | 9,00 | 70,00 | 24,00 | 1,50 |

NOTE: For application data, see page C6.
For full slotting, profiling, and 3D-milling, do not exceed 0,5mm of Ap.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

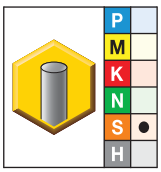
- Kennametal standard dimensions.
- Non-centre cutting.
- Ramping up to 2°.
- Optimised geometry for roughing nickel-based high-temperature alloys.



beyond

## EADE • 6-Flute • Metric

NEW!




● first choice
○ alternate choice

| KYS40 | D1 | D | Ap1 max | L | Rε |
|---|---|---|---|---|---|
| **EADE0400A6ARE** | 4,00 | 6,00 | 3,00 | 50,00 | 0,50 |
| **EADE0600A6ARF** | 6,00 | 6,00 | 4,50 | 50,00 | 0,75 |
| **EADE0800A6ARG** | 8,00 | 8,00 | 6,00 | 57,00 | 1,00 |
| **EADE1000A6ARH** | 10,00 | 10,00 | 7,50 | 63,00 | 1,25 |
| **EADE1200A6ARJ** | 12,00 | 12,00 | 9,00 | 70,00 | 1,50 |

NOTE: For application data, see page C6.
For face milling, profiling, and 3D-milling, do not exceed 0,5mm of Ap.

**End Mill Tolerances**

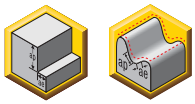
| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

## 4-Flute with Neck • Metric

| Material Group | | Side Milling (A) and Slotting (B) A ap | Side Milling (A) and Slotting (B) A ae | Side Milling (A) and Slotting (B) B ap | KYS40 Cutting Speed — vc m/min min | KYS40 Cutting Speed — vc m/min max | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. mm | D1 — Diameter 4,0 | 6,0 | 8,0 | 10,0 | 12,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 3 | Ap1 max | 0,1 x D* | 0,5 x D | 250 | 1000 | fz | 0,020 | 0,024 | 0,028 | 0,030 | 0,032 |

* For above cutting data, do not exceed an overall ae of 1mm.

## 6-Flute • Metric



| Material Group | | Side Milling (A) and Profiling A ap | Side Milling (A) and Profiling A ae | KYS40 Cutting Speed — vc m/min min | KYS40 Cutting Speed — vc m/min max | Recommended feed per tooth (fz=mm/th) for side milling (A). mm | D1 — Diameter 4,0 | 6,0 | 8,0 | 10,0 | 12,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 3 | Ap1 max | 0,1 x D* | 250 | 1000 | fz | 0,020 | 0,024 | 0,028 | 0,030 | 0,032 |

* For above cutting data, do not exceed an overall ae of 1mm.

# INTRODUCING

## The New Kennametal Innovations iPad® Application

Available as a **Free Download** from the iTunes® App Store℠.

### Now Available

The Kennametal Innovations iPad® app features interactive, cutting-edge animations and real-world demonstrations of Kennametal's productivity-enhancing technologies for machining and industrial processes. With selectable data, it is quick and convenient to compare complimenting and competitive products.

### Easy to Download

Go to the iTunes® App Store, and search for "Kennametal". Then follow the directions on downloading. It's simple, fast, and free.

### Easy to Use

The simple navigation makes it easy to search via keywords to find specific tooling solutions and product groups. The user-driven navigation map offers drop-down menus with supplemental information, including expandable, and customisable, charts and graphs.

## EADE 4-Flute End Mill

**CHALLENGE**

- Roughing a slot at turbine blade.
- Depth of slot 22mm.
- INCONEL® 718 material.
- Dry machining.

**SOLUTION**

- Engineered solution EADE KYS40™ ceramic end mill with extended neck.
- Ø 11,4mm with 4 effective cutting edges and 1,5mm corner radii.

**CUTTING DATA**

- vc 800 m/min
- fz 0,03 mm/z
- ap 0,5mm
- ae 11,4mm

**RESULT**

- **Customer proprietary information.**

**BENEFIT**

- **Machining time of 1 minute 54 seconds for one slot only.**
- **Metal removal rate of 15 cm³/min consistently achieved.**
- **Productivity significantly increased.**

## EADE 4-Flute End Mill

**CHALLENGE**

- Rough profiling of small turbine blades.
- INCONEL 718 material.
- Dry machining.

**SOLUTION**

- Standard EADE KYS40 ceramic end mill.
- Ø 11,4mm with 4 effective cutting edges and standard neck.

**CUTTING DATA**

- vc 645 m/min
- fz 0,03 mm/z
- ap 0,5mm
- ae 11,4mm

**RESULT**

- **3x tool life compared to 2x tool life with competitive solution in less time.**

**BENEFIT**

- **3x higher productivity as a result of increased cutting data.**
- **50% higher tool life compared to competitive carbide end mill.**

## EADE 6-Flute End Mill

**CHALLENGE**

- Rough profiling of aerospace parts.
- Haynes® 288 and INCONEL® 718 material.
- Dry machining.

**SOLUTION**

- Standard EADE KYS40™ ceramic end mill.
- Ø 10mm with 6 effective cutting edges.

**CUTTING DATA**

- vc 462 m/min
- fz 0,03 mm/z
- ap 0,5–1mm
- ae varying

**RESULT**

- **Customer proprietary information.**

**BENEFIT**

- **Machining time reduced.**
- **Productivity significantly increased.**

## EADE 6-Flute End Mill

**CHALLENGE**

- Rough profiling of blisk (blade integrated disk).
- INCONEL 718 material (42 HRC).
- Compressed air coolant.

**SOLUTION**

- Standard EADE KYS40 ceramic end mill.
- Ø 12mm with 6 effective cutting edges.

**CUTTING DATA**

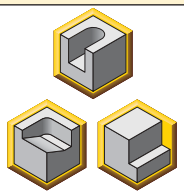
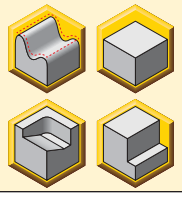
- vc 679 m/min
- fz 0,03 mm/z
- ap varying up to 0,5mm
- ae varying

**RESULT**

- **2 blisk segments machined with one tool.**
- **12 minute machining time per segment.**

**BENEFIT**

- **Unprecedented reduction in machining time.**

| | |
|---|---|
| **Materials to Cut** | • Nickel-based high-temperature alloys.<br>• Cobalt-based alloys after consulting technical assistance.<br>• P6 and M1-3 stainless steels after consulting technical assistance.<br>• Do not apply on iron-based high-temperature alloys. |
| **Cutting Speed** | • Maximum RPM machine can provide recommended cutting speed: 250–1000 m/min.<br>• Highly dynamic machines recommended.<br>• Use of spindle speeders applicable (no wet coolant). |
| **Feed Rate** | • Refer to cutting data recommendation.<br>• General starting condition fz 0,03 mm/z. |
| **Depth of cut** | • Refer to cutting data recommendation.<br>• General starting condition ap 0,5mm. |
| **Coolant** | • Power cool nozzle preferred to flush chips away.<br>• Pressurised air applicable.<br>• Minimal Quantity Lubrication (MQL) and dry applicable.<br>• No coolant with emulsion or oil due to thermal shock. |
| **Adaptation** | • Hydraulic chuck with or without sleeve preferred.<br>• Collet or milling power chucks applicable.<br>• Balancing at 25,000 RPM (2,5G) preferred.<br>• Shrink adaptation not recommended. |
| **Roughing Application** | Yes |
| **Finishing Applications** | No |
| **Milling Strategy** | • Conventional milling preferred at lower speeds.<br>• Climb milling preferred at higher speeds. |
| **4-Flute EADE** | • Slotting and pocketing.<br>• Common sizes and undersize leaving finishing stock.<br>• Side milling possible up to ap max with increased feed.<br>• Non-centre cutting.<br>• Ramping and helical interpolation possible under 2.5°.  |
| **6-Flute EADE** | • Profiling and face milling.<br>• Non-centre cutting.<br>• Side milling possible up to ap max with increased feed.<br>• Ramping and helical interpolation possible under 2°.  |
| **Engineered Solutions** | Available upon request |
| **Reconditioning Service** | Not applicable |

## Wear Indication

**New**

**Used**

Wear rate 0,48mm.
Still good to use.

**End of Tool Life**

Wear rate 1,4mm.
End of tool life reached.

## Chip Formation

**Carbide**

Regular curled chips. Shape and length depend on end mill geometry and cutting data.

**Ceramic**

Chips are nearly like dust. Pressurised air coolant recommended to blow away chips.

## Causes of and Remedies for End Milling Problems

| problem | cause | remedy |
|---|---|---|
| **Excessive burr formation** | • Softness of material to cut.<br>• Excessive wear on radii. | • Use undersize end mills that leave stock for finishing operation.<br>• Replace tool as end of tool life reached.<br>• Check tool runout. |
| **Sudden breakage** | • Vibration of the workpiece.<br>• Unstable tool clamping.<br>• Use of 6-flute tooling in slotting. | • Check workpiece and tool clamping.<br>• Use of 4-flute EADE recommended. |
| **Chips sticking** | • Lack of cutting speed. | • Increase cutting speed. |
| **Chipping** | • Unstable tool and/or workpiece clamping.<br>• Initial cutting speed too high. | • Check workpiece and tool clamping.<br>• Reduce cutting speed during initial cut and increase as cutting continues. |
| **Thermal cracks** | • Wet coolant. | • Do not use wet coolant. |

# HARVI I™ High-Performance Solid Carbide End Mills

## Designed for roughing and finishing with one tool on almost all materials.

### Primary Application

HARVI I offers plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials. They are designed to provide maximum Metal Removal Rates (MRR) and to achieve superior surface conditions. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock. To prevent pull out of end mills during heavy cuts, HARVI I is available equipped with **SAFE-LOCK**™ by HAIMER®.

- Roughing and finishing with one tool.
- Outstanding Metal Removal Rates increase productivity.
- KCPM15™ and KCSM15™ Beyond™ grades for long tool life.

## Features and Benefits

### Advanced Technology

- Four unequally spaced flutes for chatter-free machining at high feed rates.
- Centre cutting design for plunging and improved ramping and helical interpolation capabilities.
- 1 x D full slotting capability in:
  - Steel
  - Stainless steel
  - Titanium

### Tailored Grades

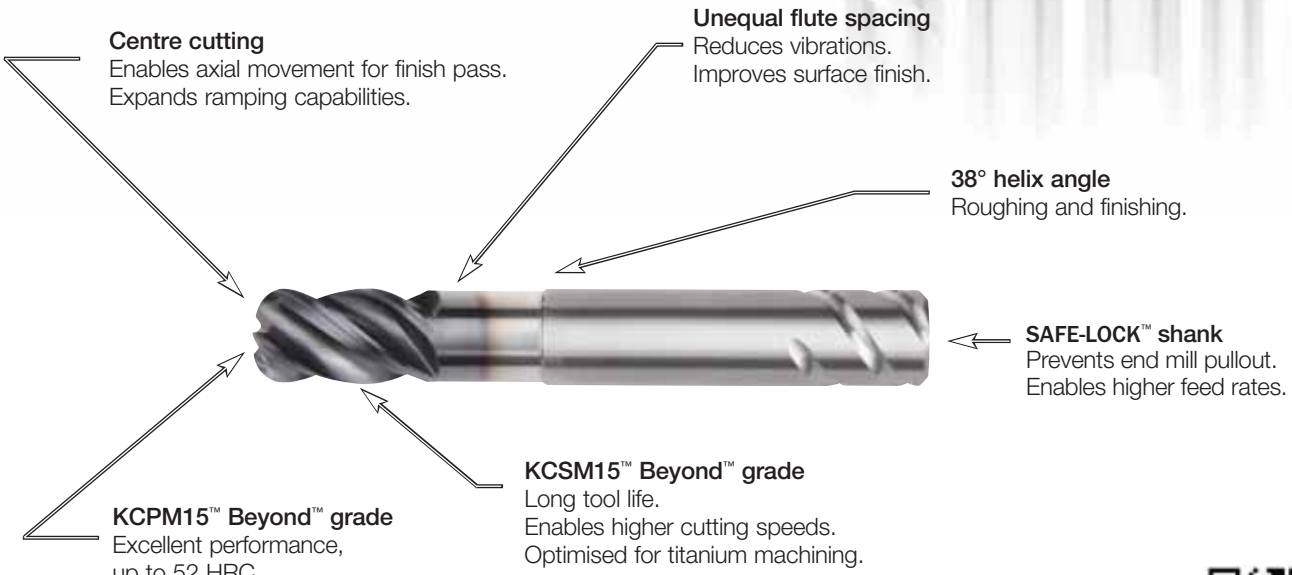
- Proprietary KCPM15 Beyond grade for outstanding wear protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear.
- Proprietary KCSM15 Beyond grade for exceptional tool life results in titanium.
- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

### Customisation

- Intermediate diameters available.
- Expanded length of tool, as well as increased length of cut, possible.
- Internal coolant axial, as well as radial, available.
- Various shank options and non-standard coatings available.
- Multiple steps possible.

### Extensive Standard Offering

- Diameter range 4–25mm.
- Necked, corner radii, and square-end offering.
- Extended reach length.
- Ball nose with extended reach length.
- Chip divider geometry for reduced power consumption and improved chip formation in difficult-to-cut materials.



**Centre cutting**
Enables axial movement for finish pass.
Expands ramping capabilities.

**Unequal flute spacing**
Reduces vibrations.
Improves surface finish.

**38° helix angle**
Roughing and finishing.

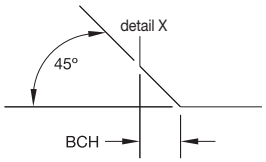
**SAFE-LOCK™ shank**
Prevents end mill pullout.
Enables higher feed rates.

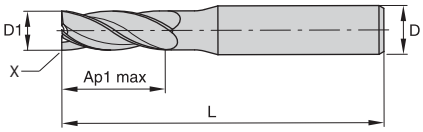
**KCSM15™ Beyond™ grade**
Long tool life.
Enables higher cutting speeds.
Optimised for titanium machining.

**KCPM15™ Beyond™ grade**
Excellent performance,
up to 52 HRC.
Optimised for steel and
stainless steel machining.

*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*

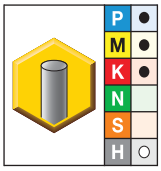
- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.

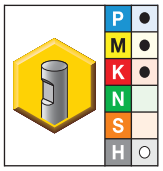


beyond

## F4AS...DL • 4-Flute • Metric




● first choice
○ alternate choice

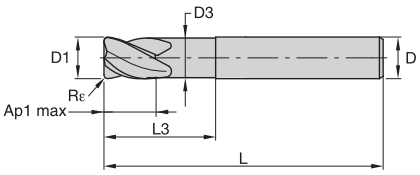
| KCPM15 | KCPM15 | D1 | D | Ap1 max | L | BCH |
|---|---|---|---|---|---|---|
| **F4AS0400ADL38** | **F4AS0400BDL38** | 4,00 | 6,00 | 12,00 | 55,00 | 0,40 |
| **F4AS0500ADL38** | **F4AS0500BDL38** | 5,00 | 6,00 | 13,00 | 57,00 | 0,40 |
| **F4AS0600ADL38** | **F4AS0600BDL38** | 6,00 | 6,00 | 13,00 | 57,00 | 0,40 |
| **F4AS0800ADL38** | **F4AS0800BDL38** | 8,00 | 8,00 | 16,00 | 63,00 | 0,40 |
| **F4AS1000ADL38** | **F4AS1000BDL38** | 10,00 | 10,00 | 22,00 | 72,00 | 0,50 |
| **F4AS1200ADL38** | **F4AS1200BDL38** | 12,00 | 12,00 | 26,00 | 83,00 | 0,50 |
| **F4AS1400ADL38** | **F4AS1400BDL38** | 14,00 | 14,00 | 26,00 | 83,00 | 0,50 |
| **F4AS1600ADL38** | **F4AS1600BDL38** | 16,00 | 16,00 | 32,00 | 92,00 | 0,50 |
| **F4AS1800ADL38** | **F4AS1800BDL38** | 18,00 | 18,00 | 32,00 | 92,00 | 0,50 |
| **F4AS2000ADL38** | **F4AS2000BDL38** | 20,00 | 20,00 | 38,00 | 104,00 | 0,50 |
| **F4AS2500ADL38** | **F4AS2500BDL38** | 25,00 | 25,00 | 45,00 | 121,00 | 0,50 |

NOTE: For application data, see page C20.

**End Mill Tolerances**

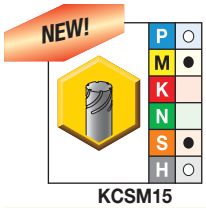
| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

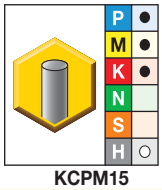
- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.

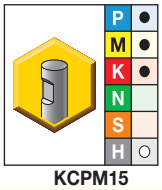


beyond

## UBDE • F4AS.. • 4-Flute with Neck • Metric



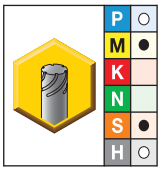



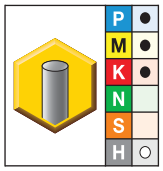

● first choice
○ alternate choice

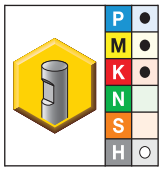
| KCSM15 | KCPM15 | KCPM15 | D1 | D | D3 | Ap1 max | L3 | L | Rε |
|---|---|---|---|---|---|---|---|---|---|
| – | F4AS0600AWM38R050 | F4AS0600BWM38R050 | 6,00 | 6,00 | 5,64 | 9,00 | 18,00 | 63,00 | 0,50 |
| – | F4AS0600AWM38R100 | F4AS0600BWM38R100 | 6,00 | 6,00 | 5,64 | 9,00 | 18,00 | 63,00 | 1,00 |
| – | F4AS0800AWM38R050 | F4AS0800BWM38R050 | 8,00 | 8,00 | 7,52 | 12,00 | 24,00 | 68,00 | 0,50 |
| – | F4AS0800AWM38R100 | F4AS0800BWM38R100 | 8,00 | 8,00 | 7,52 | 12,00 | 24,00 | 68,00 | 1,00 |
| – | F4AS1000AWL38R050 | F4AS1000BWL38R050 | 10,00 | 10,00 | 9,40 | 15,00 | 30,00 | 76,00 | 0,50 |
| – | F4AS1000AWL38R100 | F4AS1000BWL38R100 | 10,00 | 10,00 | 9,40 | 15,00 | 30,00 | 76,00 | 1,00 |
| – | F4AS1000AWL38R200 | F4AS1000BWL38R200 | 10,00 | 10,00 | 9,40 | 15,00 | 30,00 | 76,00 | 2,00 |
| – | F4AS1000AWL38R300 | F4AS1000BWL38R300 | 10,00 | 10,00 | 9,40 | 15,00 | 30,00 | 76,00 | 3,00 |
| – | F4AS1000AWL38R400 | F4AS1000BWL38R400 | 10,00 | 10,00 | 9,40 | 15,00 | 30,00 | 76,00 | 4,00 |
| UBDE1200E4AQE | F4AS1200AWL38R050 | F4AS1200BWL38R050 | 12,00 | 12,00 | 11,28 | 18,00 | 36,00 | 83,00 | 0,50 |
| UBDE1200E4AQG | F4AS1200AWL38R100 | F4AS1200BWL38R100 | 12,00 | 12,00 | 11,28 | 18,00 | 36,00 | 83,00 | 1,00 |
| UBDE1200E4AQK | F4AS1200AWL38R200 | F4AS1200BWL38R200 | 12,00 | 12,00 | 11,28 | 18,00 | 36,00 | 83,00 | 2,00 |
| UBDE1200E4AQM | F4AS1200AWL38R300 | F4AS1200BWL38R300 | 12,00 | 12,00 | 11,28 | 18,00 | 36,00 | 83,00 | 3,00 |
| UBDE1200E4AQN | F4AS1200AWL38R400 | F4AS1200BWL38R400 | 12,00 | 12,00 | 11,28 | 18,00 | 36,00 | 83,00 | 4,00 |
| UBDE1600E4AQE | F4AS1600AWX38R050 | F4AS1600BWX38R050 | 16,00 | 16,00 | 15,04 | 24,00 | 48,00 | 100,00 | 0,50 |
| UBDE1600E4AQG | F4AS1600AWX38R100 | F4AS1600BWX38R100 | 16,00 | 16,00 | 15,04 | 24,00 | 48,00 | 100,00 | 1,00 |
| UBDE1600E4AQK | F4AS1600AWX38R200 | F4AS1600BWX38R200 | 16,00 | 16,00 | 15,04 | 24,00 | 48,00 | 100,00 | 2,00 |
| UBDE1600E4AQM | F4AS1600AWX38R300 | F4AS1600BWX38R300 | 16,00 | 16,00 | 15,04 | 24,00 | 48,00 | 100,00 | 3,00 |
| UBDE1600E4AQN | F4AS1600AWX38R400 | F4AS1600BWX38R400 | 16,00 | 16,00 | 15,04 | 24,00 | 48,00 | 100,00 | 4,00 |
| UBDE2000E4AQE | F4AS2000AWX38R050 | F4AS2000BWX38R050 | 20,00 | 20,00 | 18,80 | 30,00 | 60,00 | 115,00 | 0,50 |

*(continued)*

*(UBDE • F4AS.. • 4-Flute with Neck • Metric continued)*



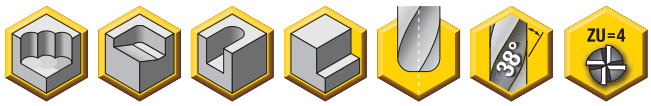

| KCSM15 | KCPM15 | KCPM15 | D1 | D | D3 | Ap1 max | L3 | L | Rε |
|---|---|---|---|---|---|---|---|---|---|
| **UBDE2000E4AQG** | **F4AS2000AWX38R100** | **F4AS2000BWX38R100** | 20,00 | 20,00 | 18,80 | 30,00 | 60,00 | 115,00 | 1,00 |
| **UBDE2000E4AQK** | **F4AS2000AWX38R200** | **F4AS2000BWX38R200** | 20,00 | 20,00 | 18,80 | 30,00 | 60,00 | 115,00 | 2,00 |
| **UBDE2000E4AQM** | **F4AS2000AWX38R300** | **F4AS2000BWX38R300** | 20,00 | 20,00 | 18,80 | 30,00 | 60,00 | 115,00 | 3,00 |
| **UBDE2000E4AQN** | **F4AS2000AWX38R400** | **F4AS2000BWX38R400** | 20,00 | 20,00 | 18,80 | 30,00 | 60,00 | 115,00 | 4,00 |
| **UBDE2500E4AQE** | **F4AS2500AWX38R050** | **F4AS2500BWX38R050** | 25,00 | 25,00 | 23,50 | 37,50 | 75,00 | 135,00 | 0,50 |
| **UBDE2500E4AQG** | **F4AS2500AWX38R100** | **F4AS2500BWX38R100** | 25,00 | 25,00 | 23,50 | 37,50 | 75,00 | 135,00 | 1,00 |
| **UBDE2500E4AQK** | **F4AS2500AWX38R200** | **F4AS2500BWX38R200** | 25,00 | 25,00 | 23,50 | 37,50 | 75,00 | 135,00 | 2,00 |
| **UBDE2500E4AQM** | **F4AS2500AWX38R300** | **F4AS2500BWX38R300** | 25,00 | 25,00 | 23,50 | 37,50 | 75,00 | 135,00 | 3,00 |
| **UBDE2500E4AQN** | **F4AS2500AWX38R400** | **F4AS2500BWX38R400** | 25,00 | 25,00 | 23,50 | 37,50 | 75,00 | 135,00 | 4,00 |

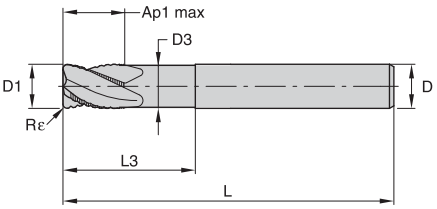
NOTE: For application data, see page C21.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

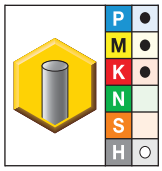
- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Chipbreaker profile.

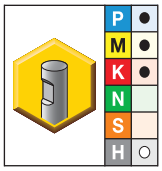


beyond

## F4BS.. • 4-Flute with Neck and Chipbreaker • Metric




● first choice
○ alternate choice

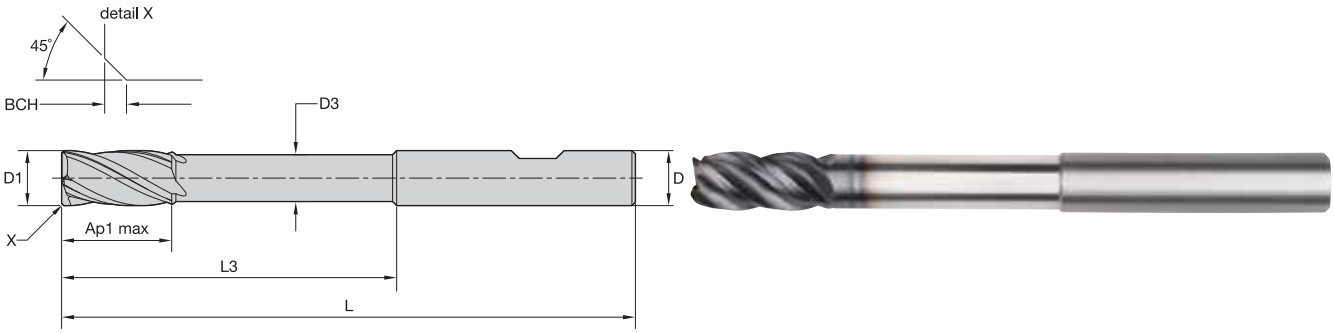
| KCPM15 | KCPM15 | D1 | D | D3 | Ap1 max | L3 | L | Rε |
|---|---|---|---|---|---|---|---|---|
| F4BS0600AWM38R050 | F4BS0600BWM38R050 | 6,00 | 6,00 | 5,80 | 9,00 | 18,00 | 63,00 | 0,50 |
| F4BS0600AWM38R100 | F4BS0600BWM38R100 | 6,00 | 6,00 | 5,80 | 9,00 | 18,00 | 63,00 | 1,00 |
| F4BS0800AWM38R050 | F4BS0800BWM38R050 | 8,00 | 8,00 | 7,80 | 12,00 | 24,00 | 68,00 | 0,50 |
| F4BS0800AWM38R100 | F4BS0800BWM38R100 | 8,00 | 8,00 | 7,80 | 12,00 | 24,00 | 68,00 | 1,00 |
| F4BS1000AWL38R050 | F4BS1000BWL38R050 | 10,00 | 10,00 | 9,50 | 15,00 | 30,00 | 76,00 | 0,50 |
| F4BS1000AWL38R100 | F4BS1000BWL38R100 | 10,00 | 10,00 | 9,50 | 15,00 | 30,00 | 76,00 | 1,00 |
| F4BS1000AWL38R200 | F4BS1000BWL38R200 | 10,00 | 10,00 | 9,50 | 15,00 | 30,00 | 76,00 | 2,00 |
| F4BS1000AWL38R300 | F4BS1000BWL38R300 | 10,00 | 10,00 | 9,50 | 15,00 | 30,00 | 76,00 | 3,00 |
| F4BS1000AWL38R400 | F4BS1000BWL38R400 | 10,00 | 10,00 | 9,50 | 15,00 | 30,00 | 76,00 | 4,00 |
| F4BS1200AWL38R050 | F4BS1200BWL38R050 | 12,00 | 12,00 | 11,50 | 18,00 | 36,00 | 84,00 | 0,50 |
| F4BS1200AWL38R100 | F4BS1200BWL38R100 | 12,00 | 12,00 | 11,50 | 18,00 | 36,00 | 84,00 | 1,00 |
| F4BS1200AWL38R200 | F4BS1200BWL38R200 | 12,00 | 12,00 | 11,50 | 18,00 | 36,00 | 84,00 | 2,00 |
| F4BS1200AWL38R300 | F4BS1200BWL38R300 | 12,00 | 12,00 | 11,50 | 18,00 | 36,00 | 84,00 | 3,00 |
| F4BS1200AWL38R400 | F4BS1200BWL38R400 | 12,00 | 12,00 | 11,50 | 18,00 | 36,00 | 84,00 | 4,00 |
| F4BS1600AWX38R050 | F4BS1600BWX38R050 | 16,00 | 16,00 | 15,00 | 24,00 | 48,00 | 100,00 | 0,50 |
| F4BS1600AWX38R100 | F4BS1600BWX38R100 | 16,00 | 16,00 | 15,00 | 24,00 | 48,00 | 100,00 | 1,00 |
| F4BS1600AWX38R200 | F4BS1600BWX38R200 | 16,00 | 16,00 | 15,00 | 24,00 | 48,00 | 100,00 | 2,00 |
| F4BS1600AWX38R300 | F4BS1600BWX38R300 | 16,00 | 16,00 | 15,00 | 24,00 | 48,00 | 100,00 | 3,00 |
| F4BS1600AWX38R400 | F4BS1600BWX38R400 | 16,00 | 16,00 | 15,00 | 24,00 | 48,00 | 100,00 | 4,00 |
| F4BS2000AWX38R050 | F4BS2000BWX38R050 | 20,00 | 20,00 | 19,00 | 30,00 | 60,00 | 115,00 | 0,50 |
| F4BS2000AWX38R100 | F4BS2000BWX38R100 | 20,00 | 20,00 | 19,00 | 30,00 | 60,00 | 115,00 | 1,00 |
| F4BS2000AWX38R200 | F4BS2000BWX38R200 | 20,00 | 20,00 | 19,00 | 30,00 | 60,00 | 115,00 | 2,00 |
| F4BS2000AWX38R300 | F4BS2000BWX38R300 | 20,00 | 20,00 | 19,00 | 30,00 | 60,00 | 115,00 | 3,00 |
| F4BS2000AWX38R400 | F4BS2000BWX38R400 | 20,00 | 20,00 | 19,00 | 30,00 | 60,00 | 115,00 | 4,00 |
| F4BS2500AWX38R050 | F4BS2500BWX38R050 | 25,00 | 25,00 | 24,00 | 37,50 | 75,00 | 135,00 | 0,50 |
| F4BS2500AWX38R100 | F4BS2500BWX38R100 | 25,00 | 25,00 | 24,00 | 37,50 | 75,00 | 135,00 | 1,00 |
| F4BS2500AWX38R200 | F4BS2500BWX38R200 | 25,00 | 25,00 | 24,00 | 37,50 | 75,00 | 135,00 | 2,00 |
| F4BS2500AWX38R300 | F4BS2500BWX38R300 | 25,00 | 25,00 | 24,00 | 37,50 | 75,00 | 135,00 | 3,00 |
| F4BS2500AWX38R400 | F4BS2500BWX38R400 | 25,00 | 25,00 | 24,00 | 37,50 | 75,00 | 135,00 | 4,00 |

NOTE: For application data, see page C21.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.




beyond

## UADE • 4-Flute Extended Reach • Metric

● first choice
○ alternate choice

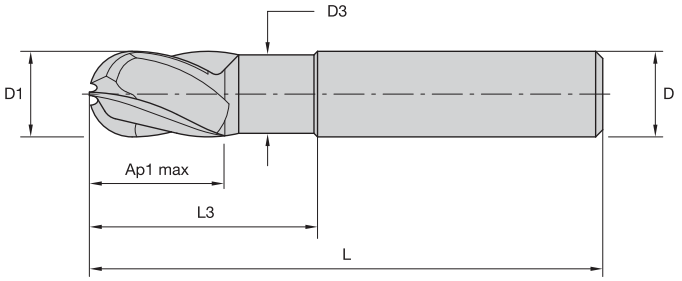
| KCPM15 | KCPM15 | D1 | D | D3 | Ap1 max | L3 | L | BCH |
|---|---|---|---|---|---|---|---|---|
| **UADE0600A4AL** | **UADE0600B4AL** | 6,0 | 6 | 5,50 | 12,00 | 42,00 | 100 | 0,40 |
| **UADE0800A4AL** | **UADE0800B4AL** | 8,0 | 8 | 7,30 | 16,00 | 62,00 | 100 | 0,40 |
| **UADE1000A4AL** | **UADE1000B4AL** | 10,0 | 10 | 9,10 | 20,00 | 60,00 | 100 | 0,50 |
| **UADE1200A4AL** | **UADE1200B4AL** | 12,0 | 12 | 11,00 | 24,00 | 73,00 | 125 | 0,50 |
| **UADE1600A4AL** | **UADE1600B4AL** | 16,0 | 16 | 15,00 | 32,00 | 100,00 | 150 | 0,50 |
| **UADE2000A4AL** | **UADE2000B4AL** | 20,0 | 20 | 19,00 | 40,00 | 98,00 | 175 | 0,50 |

NOTE: For application data, see page C22.

**End Mill Tolerances**

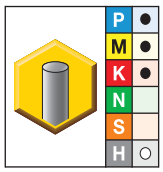
| D1 | tolerance e8 | D | tolerance h6 + / - |
|---|---|---|---|
| ≤ 3 | -0,014/-0,028 | ≤ 3 | 0/0,006 |
| > 3-6 | -0,020/-0,038 | > 3–6 | 0/0,008 |
| > 6–10 | -0,025/-0,047 | > 6–10 | 0/0,009 |
| > 10–18 | -0,032/-0,059 | > 10–18 | 0/0,011 |
| > 18–30 | -0,040/-0,073 | > 18–30 | 0/0,013 |

- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



beyond

## F4AW.. • 4-Flute Extended Reach • Ball Nose • Metric




● first choice
○ alternate choice

| KCPM15 | D1 | D | D3 | Ap1 max | L3 | L |
|---|---|---|---|---|---|---|
| **F4AW0600AWL38E120** | 6,00 | 6,00 | 5,80 | 6,00 | 12,00 | 76,00 |
| **F4AW0800AWL38E160** | 8,00 | 8,00 | 7,80 | 8,00 | 16,00 | 100,00 |
| **F4AW1000AWX38E200** | 10,00 | 10,00 | 9,50 | 10,00 | 20,00 | 121,50 |
| **F4AW1200AWX38E240** | 12,00 | 12,00 | 11,50 | 12,00 | 24,00 | 125,00 |
| **F4AW1600AWX38E320** | 16,00 | 16,00 | 15,00 | 16,00 | 32,00 | 150,00 |

NOTE: For application data, see page C22.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

## HARVI I™ • F4AS...DL • Unequal Flute Spacing

| Material Group | | Side Milling (A) and Slotting (B) A ap | A ae | B ap | KCPM15 Cutting Speed — vc m/min min | max | mm | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. D1 — Diameter 4,0 | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 4 | 1,5 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,021 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |
| | 5 | 1,5 x D | 0,5 x D | 1 x D | 60 | 100 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 6 | 1,5 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| M | 1 | 1,5 x D | 0,5 x D | 1 x D | 90 | 115 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 70 | fz | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 150 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 100 | 130 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| H | 1 | 1,5 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,021 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |

## HARVI I • UBDE • Unequal Flute Spacing • With Neck

| Material Group | | Side Milling (A) and Slotting (B) A ap | A ae | B ap | KCSM15 Cutting Speed — vc m/min min | max | mm | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10%. D1 — Diameter 12,0 | 16,0 | 20,0 | 25,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,083 | 0,101 | 0,114 | 0,124 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,070 | 0,087 | 0,101 | 0,114 |
| | 4 | 1,5 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,062 | 0,077 | 0,088 | 0,098 |
| | 5 | 1,5 x D | 0,5 x D | 1 x D | 60 | 100 | fz | 0,056 | 0,070 | 0,081 | 0,091 |
| | 6 | 1,5 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,047 | 0,057 | 0,065 | 0,071 |
| M | 1 | 1,5 x D | 0,5 x D | 1 x D | 90 | 115 | fz | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,056 | 0,070 | 0,081 | 0,091 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 70 | fz | 0,047 | 0,057 | 0,065 | 0,071 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 150 | fz | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,056 | 0,070 | 0,081 | 0,091 |
| S | 1 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,3 x D | 0,3 x D | 25 | 40 | fz | 0,037 | 0,046 | 0,054 | 0,061 |
| | 4 | 1,5 x D | 0,5 x D | 1 x D | 50 | 80 | fz | 0,052 | 0,064 | 0,074 | 0,084 |
| H | 1 | 1,5 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,062 | 0,077 | 0,088 | 0,098 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

## HARVI I™ • F4AS.. WM-WX-WL • Unequal Flute Spacing • With Neck

| Material Group | | Side Milling (A) and Slotting (B) | | | KCSM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10% | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | B | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | | |
| | | ap | ae | ap | min | max | mm | 4,0 | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 | 32,0 |
| P | 0 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 | 0,134 |
| | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 | 0,134 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 | 0,134 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 | 0,130 |
| | 4 | 1,5 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,021 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 | 0,109 |
| | 5 | 1,5 x D | 0,5 x D | 1 x D | 60 | 100 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 | 0,104 |
| | 6 | 1,5 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 | 0,078 |
| M | 1 | 1,5 x D | 0,5 x D | 1 x D | 90 | 115 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 | 0,130 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 | 0,104 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 70 | fz | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 | 0,078 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 150 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 | 0,134 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 | 0,130 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 | 0,104 |
| S | 1 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 | 0,130 |
| | 2 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 | 0,130 |
| | 3 | 1,5 x D | 0,3 x D | 0,3 x D | 25 | 40 | fz | 0,013 | 0,019 | 0,026 | 0,032 | 0,037 | 0,046 | 0,054 | 0,061 | 0,070 |
| | 4 | 1,5 x D | 0,5 x D | 1 x D | 50 | 80 | fz | 0,016 | 0,026 | 0,037 | 0,045 | 0,052 | 0,064 | 0,074 | 0,084 | 0,095 |
| H | 1 | 1,5 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,021 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 | 0,109 |

## HARVI I • F4BS.. WM-WX-WL • Unequal Flute Spacing • With Neck • Chipbreaker

| Material Group | | Side Milling (A) and Slotting (B) | | | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | B | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 4 | 1,5 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |
| | 5 | 1,5 x D | 0,5 x D | 1 x D | 60 | 100 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 6 | 1,5 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| M | 1 | 1,5 x D | 0,5 x D | 1 x D | 90 | 115 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 70 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 150 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 100 | 130 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| H | 1 | 1,5 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

## HARVI I™ • UADE • Unequal Flute Spacing • Extended Reach

| Material Group | | Side Milling (A) and Slotting (B) | | | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10%. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | B | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 |
| P | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 4 | 1,5 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |
| | 5 | 1,5 x D | 0,5 x D | 1 x D | 60 | 100 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 6 | 1,5 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| M | 1 | 1,5 x D | 0,5 x D | 1 x D | 90 | 115 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 70 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 150 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 100 | 130 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| S | 1 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1,5 x D | 0,3 x D | 0,3 x D | 25 | 40 | fz | 0,019 | 0,026 | 0,032 | 0,037 | 0,046 | 0,054 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 4 | 1,5 x D | 0,5 x D | 1 x D | 50 | 60 | fz | 0,026 | 0,037 | 0,045 | 0,052 | 0,064 | 0,074 |
| H | 1 | 1,5 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |

## HARVI I • F4AW..WL-WX • Unequal Flute Spacing • Extended Reach • Ball Nose

| Material Group | | Side Milling (A) and Slotting (B) | | | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20% | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | B | Cutting Speed — vc m/min | | | D1 — Diameter | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 |
| P | 0 | 0,5 x D | 0,5 x D | 0,5 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 |
| | 1 | 0,5 x D | 0,5 x D | 0,5 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 |
| | 2 | 0,5 x D | 0,5 x D | 0,5 x D | 140 | 190 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 |
| | 3 | 0,5 x D | 0,5 x D | 0,5 x D | 120 | 160 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 |
| | 4 | 0,5 x D | 0,5 x D | 0,5 x D | 90 | 150 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 |
| | 5 | 0,5 x D | 0,5 x D | 0,5 x D | 60 | 100 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 |
| | 6 | 0,5 x D | 0,5 x D | 0,5 x D | 50 | 75 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 |
| M | 1 | 0,5 x D | 0,5 x D | 0,5 x D | 90 | 115 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 |
| | 2 | 0,5 x D | 0,5 x D | 0,5 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 |
| | 3 | 0,5 x D | 0,5 x D | 0,5 x D | 60 | 70 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 |
| K | 1 | 0,5 x D | 0,5 x D | 0,5 x D | 120 | 150 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 |
| | 2 | 0,5 x D | 0,5 x D | 0,5 x D | 110 | 130 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 |
| | 3 | 0,5 x D | 0,5 x D | 0,5 x D | 110 | 130 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 |
| H | 1 | 0,5 x D | 0,5 x D | 0,5 x D | 80 | 140 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

# MaxiMet™

## Superior Finishing

**Designed to significantly reduce machining time in aluminium! The innovative geometry designs include a wiper facet for superior surface finish on aluminium parts. MaxiMet handles roughing and finishing cuts with one tool.**

- Use only one tool for roughing and finishing operations.
- Slotting is effective up to full 1 x D axial depth; side milling is effective up to 0.5 x D radial, by 1.5 x D axial depth.
- Three-flute series uses unequal flute spacing for chatter-free performance.
- Effective in a full range of machine speeds.
- Multiple corner radii and extended neck configurations are available as standard.

Visit **www.kennametal.com** or contact your local Authorised Kennametal Distributor.

**www.kennametal.com**

KENNAMETAL®

# HARVI II™ High-Performance Solid Carbide End Mills

## High-feed roughing and finishing with one tool at highest length of cut.

### Primary Application

HARVI II is designed to provide maximum metal removal rates with five unequally spaced flutes for roughing and finishing operations in side milling, slotting, and profiling. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock. To prevent pull out of end mills during heavy cuts, HARVI II is available equipped with **SAFE-LOCK**™ by HAIMER™.

- 1 x D slotting in titanium and stainless steels with five unequally spaced flutes
- Roughing and finishing with one tool
- KCPM15™ and KCSM15™ Beyond™ grades for highest tool life

## Features and Benefits

### Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates.
- Proprietary parabolic core design increasing stability.
- Ramping up to 3°.
- 1 x D full slotting capability in:
  - Titanium
  - Stainless steel

### Tailored Grades

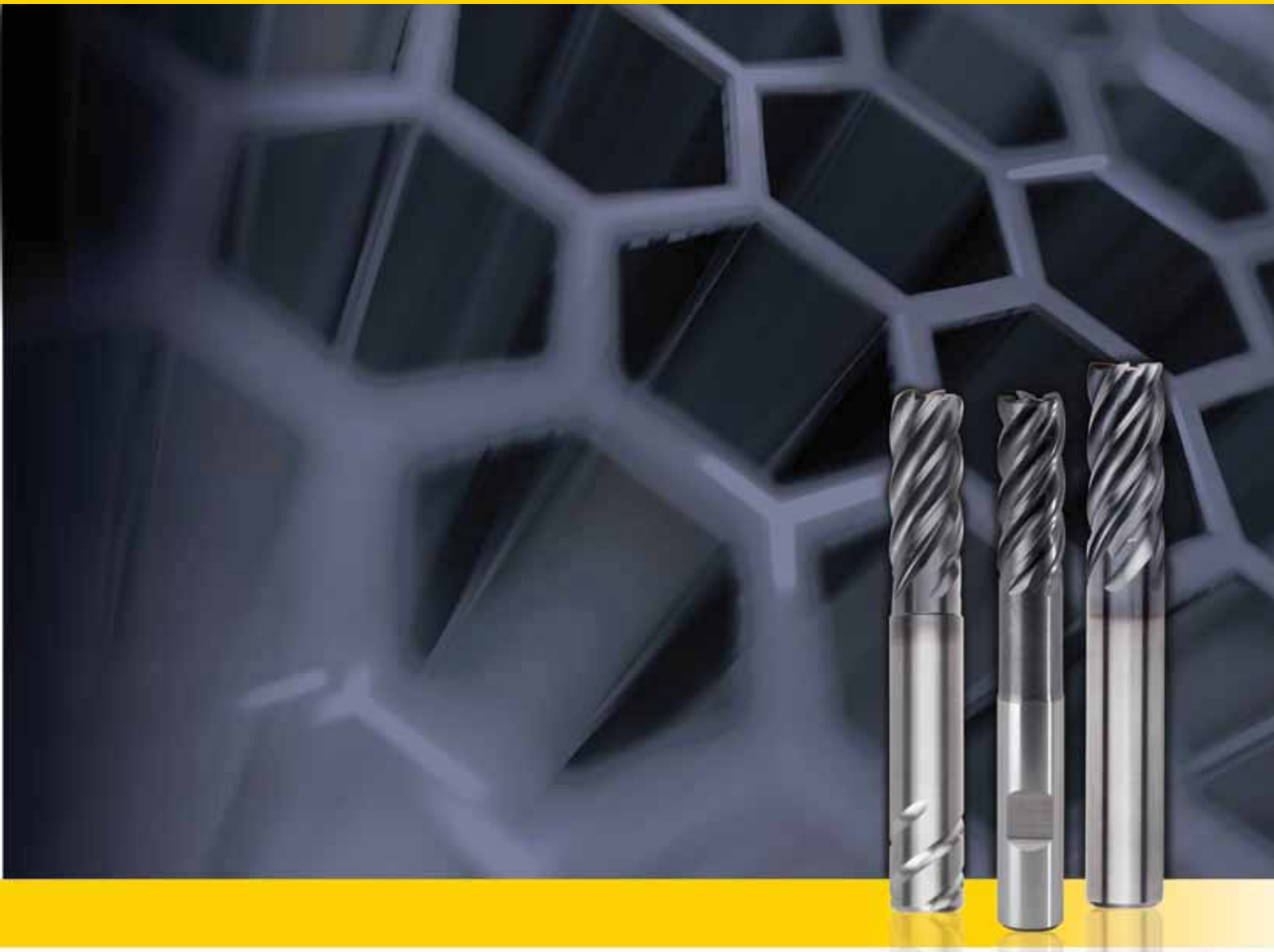
- Proprietary KCPM15 Beyond grade for outstanding wear protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear.
- Proprietary KCSM15 Beyond grade for exceptional tool life results in titanium.
- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

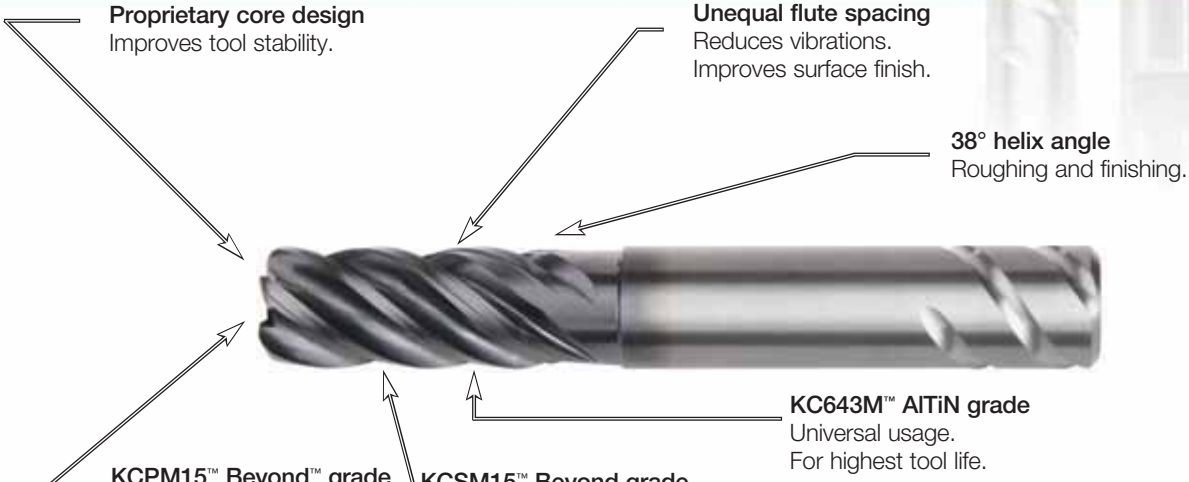
### Customisation

- Intermediate diameters available .
- Expanded length of tool, as well as increased length of cut, possible.
- Chip divider geometry available for reduced power consumption and improved chip formation in difficult-to-cut materials.
- Ball-nose version possible.
- Internal coolant axial as well as radial available.
- Various shank options and non-standard coatings available.
- Multiple steps possible.

### Extensive Standard Offering

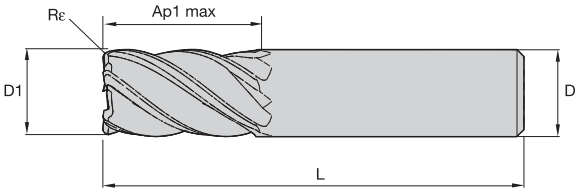
- Diameter range 4–25mm.
- Necked, corner radii, and square-end offering.





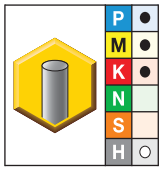

*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*

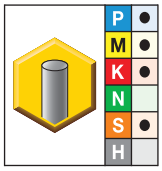
- Kennametal standard dimensions.
- Non-centre cutting.
- Ramping up to 3°.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Five-flute geometry enables slotting up to 1 x D.

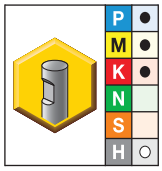


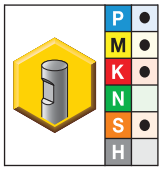
beyond

## UCDE • 5-Flute • Metric




● first choice
○ alternate choice

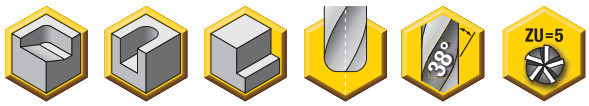
| KCPM15 | KC643M | KCPM15 | KC643M | D1 | D | Ap1 max | L | Rε |
|---|---|---|---|---|---|---|---|---|
| **UCDE0400A5ARA** | **UCDE0400A5ARA** | **UCDE0400B5ARA** | **UCDE0400B5ARA** | 4,00 | 6,00 | 11,00 | 55,00 | 0,25 |
| **UCDE0400A5ASA** | **UCDE0400A5ASA** | – | – | 4,00 | 6,00 | 11,00 | 55,00 | – |
| **UCDE0500A5ARA** | **UCDE0500A5ARA** | **UCDE0500B5ARA** | **UCDE0500B5ARA** | 5,00 | 6,00 | 13,00 | 57,00 | 0,25 |
| **UCDE0500A5ASA** | **UCDE0500A5ASA** | – | – | 5,00 | 6,00 | 13,00 | 57,00 | – |
| **UCDE0600A5ARA** | **UCDE0600A5ARA** | **UCDE0600B5ARA** | **UCDE0600B5ARA** | 6,00 | 6,00 | 13,00 | 57,00 | 0,40 |
| **UCDE0600A5ASA** | **UCDE0600A5ASA** | – | – | 6,00 | 6,00 | 13,00 | 57,00 | – |
| **UCDE0700A5ARA** | **UCDE0700A5ARA** | **UCDE0700B5ARA** | **UCDE0700B5ARA** | 7,00 | 8,00 | 16,00 | 63,00 | 0,40 |
| **UCDE0700A5ASA** | **UCDE0700A5ASA** | – | – | 7,00 | 8,00 | 16,00 | 63,00 | – |
| **UCDE0800A5ARA** | **UCDE0800A5ARA** | **UCDE0800B5ARA** | **UCDE0800B5ARA** | 8,00 | 8,00 | 19,00 | 63,00 | 0,50 |
| **UCDE0800A5ASA** | **UCDE0800A5ASA** | – | – | 8,00 | 8,00 | 19,00 | 63,00 | – |
| **UCDE0900A5ARA** | **UCDE0900A5ARA** | **UCDE0900B5ARA** | **UCDE0900B5ARA** | 9,00 | 10,00 | 19,00 | 72,00 | 0,50 |
| **UCDE0900A5ASA** | **UCDE0900A5ASA** | – | – | 9,00 | 10,00 | 19,00 | 72,00 | – |
| **UCDE1000A5ARA** | **UCDE1000A5ARA** | **UCDE1000B5ARA** | **UCDE1000B5ARA** | 10,00 | 10,00 | 22,00 | 72,00 | 0,50 |
| **UCDE1000A5ASA** | **UCDE1000A5ASA** | – | – | 10,00 | 10,00 | 22,00 | 72,00 | – |
| **UCDE1200A5ARA** | **UCDE1200A5ARA** | **UCDE1200B5ARA** | **UCDE1200B5ARA** | 12,00 | 12,00 | 26,00 | 83,00 | 0,75 |
| **UCDE1200A5ASA** | **UCDE1200A5ASA** | – | – | 12,00 | 12,00 | 26,00 | 83,00 | – |
| **UCDE1400A5ARA** | **UCDE1400A5ARA** | **UCDE1400B5ARA** | **UCDE1400B5ARA** | 14,00 | 14,00 | 26,00 | 83,00 | 0,75 |
| **UCDE1400A5ASA** | **UCDE1400A5ASA** | – | – | 14,00 | 14,00 | 26,00 | 83,00 | – |
| **UCDE1600A5ARA** | **UCDE1600A5ARA** | **UCDE1600B5ARA** | **UCDE1600B5ARA** | 16,00 | 16,00 | 32,00 | 92,00 | 0,75 |
| **UCDE1600A5ASA** | **UCDE1600A5ASA** | – | – | 16,00 | 16,00 | 32,00 | 92,00 | – |
| **UCDE1800A5ARA** | **UCDE1800A5ARA** | **UCDE1800B5ARA** | **UCDE1800B5ARA** | 18,00 | 18,00 | 32,00 | 92,00 | 0,75 |
| **UCDE1800A5ASA** | **UCDE1800A5ASA** | – | – | 18,00 | 18,00 | 32,00 | 92,00 | – |
| **UCDE2000A5ARA** | **UCDE2000A5ARA** | **UCDE2000B5ARA** | **UCDE2000B5ARA** | 20,00 | 20,00 | 38,00 | 104,00 | 0,75 |
| **UCDE2000A5ASA** | **UCDE2000A5ASA** | – | – | 20,00 | 20,00 | 38,00 | 104,00 | – |
| **UCDE2500A5ARA** | **UCDE2500A5ARA** | **UCDE2500B5ARA** | **UCDE2500B5ARA** | 25,00 | 25,00 | 45,00 | 121,00 | 0,75 |
| **UCDE2500A5ASA** | **UCDE2500A5ASA** | – | – | 25,00 | 25,00 | 45,00 | 121,00 | – |

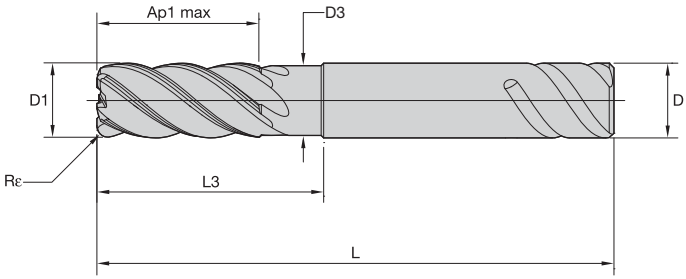
NOTE: For application data, see page C29.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

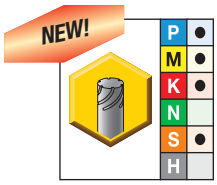
- Kennametal standard dimensions.
- Non-centre cutting.
- Ramping up to 3°.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Five-flute geometry enables slotting up to 1 x D.

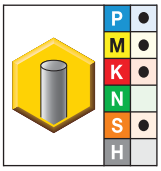


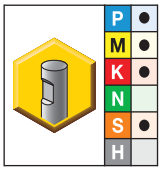



beyond

## UDDE • 5-Flute with Neck • Metric



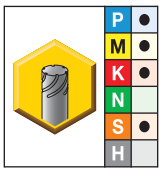



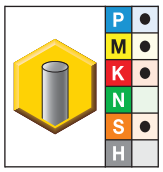

● first choice
○ alternate choice

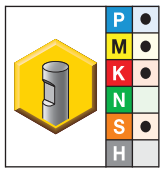
| KCSM15 | KC643M | KC643M | D1 | D | D3 | Ap1 max | L3 | L | Rε |
|---|---|---|---|---|---|---|---|---|---|
| – | – | UDDE0600B5ARA | 6,00 | 6,00 | 5,64 | 13,00 | 18,00 | 63,00 | 0,20 |
| – | UDDE0600A5ARA | UDDE0600B5ARB | 6,00 | 6,00 | 5,64 | 13,00 | 18,00 | 63,00 | 0,50 |
| – | UDDE0600A5ARB | UDDE0600B5ARC | 6,00 | 6,00 | 5,64 | 13,00 | 18,00 | 63,00 | 1,00 |
| – | UDDE0600A5ARC | UDDE0600B5ARD | 6,00 | 6,00 | 5,64 | 13,00 | 18,00 | 63,00 | 1,50 |
| – | UDDE0600A5ASA | – | 6,00 | 6,00 | 5,64 | 13,00 | 18,00 | 63,00 | – |
| – | – | UDDE0800B5ARA | 8,00 | 8,00 | 7,52 | 19,00 | 24,00 | 76,00 | 0,20 |
| – | UDDE0800A5ARA | UDDE0800B5ARB | 8,00 | 8,00 | 7,52 | 19,00 | 24,00 | 76,00 | 0,50 |
| – | UDDE0800A5ARB | UDDE0800B5ARC | 8,00 | 8,00 | 7,52 | 19,00 | 24,00 | 76,00 | 1,00 |
| – | UDDE0800A5ARC | UDDE0800B5ARD | 8,00 | 8,00 | 7,52 | 19,00 | 24,00 | 76,00 | 2,00 |
| – | UDDE0800A5ASA | – | 8,00 | 8,00 | 7,52 | 19,00 | 24,00 | 76,00 | – |
| – | UDDE1000A5ARA | UDDE1000B5ARA | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 0,50 |
| – | UDDE1000A5ARB | UDDE1000B5ARB | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 1,00 |
| – | UDDE1000A5ARC | UDDE1000B5ARC | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 2,00 |
| – | UDDE1000A5ARD | UDDE1000B5ARD | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 2,50 |
| – | UDDE1000A5ASA | – | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | – |
| UDDE1200E5AQE | UDDE1200A5ARA | UDDE1200B5ARA | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 0,50 |
| UDDE1200E5AQG | UDDE1200A5ARB | UDDE1200B5ARB | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 1,00 |
| UDDE1200E5AQK | UDDE1200A5ARC | UDDE1200B5ARC | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 2,00 |
| UDDE1200E5AQM | UDDE1200A5ARD | UDDE1200B5ARD | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 3,00 |
| – | UDDE1200A5ASA | – | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | – |
| – | UDDE1400A5ARA | UDDE1400B5ARA | 14,00 | 14,00 | 13,15 | 26,00 | 42,00 | 84,00 | 0,50 |
| – | UDDE1400A5ARB | UDDE1400B5ARB | 14,00 | 14,00 | 13,15 | 26,00 | 42,00 | 84,00 | 1,00 |
| – | UDDE1400A5ARC | UDDE1400B5ARC | 14,00 | 14,00 | 13,15 | 26,00 | 42,00 | 84,00 | 2,00 |
| – | UDDE1400A5ARD | UDDE1400B5ARD | 14,00 | 14,00 | 13,15 | 26,00 | 42,00 | 84,00 | 3,00 |

*(continued)*

*(UDDE • 5-Flute with Neck • Metric continued)*




| KCSM15 | KC643M | KC643M | D1 | D | D3 | Ap1 max | L3 | L | Rε |
|---|---|---|---|---|---|---|---|---|---|
| – | UDDE1400A5ASA | – | 14,00 | 14,00 | 13,15 | 26,00 | 42,00 | 84,00 | – |
| UDDE1600E5AQE | UDDE1600A5ARA | UDDE1600B5ARA | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 0,50 |
| UDDE1600E5AQG | UDDE1600A5ARB | UDDE1600B5ARB | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 1,00 |
| UDDE1600E5AQK | UDDE1600A5ARC | UDDE1600B5ARC | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 2,00 |
| UDDE1600E5AQM | UDDE1600A5ARD | UDDE1600B5ARD | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 3,00 |
| UDDE1600E5AQN | UDDE1600A5ARE | UDDE1600B5ARE | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 4,00 |
| – | UDDE1600A5ASA | – | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | – |
| UDDE2000E5AQE | UDDE2000A5ARA | UDDE2000B5ARA | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 0,50 |
| UDDE2000E5AQG | UDDE2000A5ARB | UDDE2000B5ARB | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 1,00 |
| UDDE2000E5AQK | UDDE2000A5ARC | UDDE2000B5ARC | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 2,00 |
| UDDE2000E5AQM | UDDE2000A5ARD | UDDE2000B5ARD | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 3,00 |
| UDDE2000E5AQN | UDDE2000A5ARE | UDDE2000B5ARE | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 4,00 |
| – | UDDE2000A5ASA | – | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | – |
| UDDE2500E5AQE | UDDE2500A5ARA | UDDE2500B5ARA | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 0,50 |
| UDDE2500E5AQG | UDDE2500A5ARB | UDDE2500B5ARB | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 1,00 |
| UDDE2500E5AQK | UDDE2500A5ARC | UDDE2500B5ARC | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 2,00 |
| UDDE2500E5AQM | UDDE2500A5ARD | UDDE2500B5ARD | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 3,00 |
| UDDE2500E5AQN | UDDE2500A5ARE | UDDE2500B5ARE | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 4,00 |
| – | UDDE2500A5ASA | – | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | – |

NOTE: For application data, see page C29.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014 / -0,028 | ≤3 | +0 / -0,006 |
| >3–6 | -0,020 / -0,038 | >3–6 | +0 / -0,008 |
| >6–10 | -0,025 / -0,047 | >6–10 | +0 / -0,009 |
| >10–18 | -0,032 / -0,059 | >10–18 | +0 / -0,011 |
| >18–30 | -0,040 / -0,073 | >18–30 | +0 / -0,013 |

## HARVI II™ • UCDE • Unequal Flute Spacing

| Material Group | | Side Milling (A) and Slotting (B) | | | KCSM15 KC643M | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10%. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | B | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 0 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 4 | 1,5 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |
| | 5 | 1,5 x D | 0,5 x D | 1 x D | 60 | 100 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 6 | 1,5 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| M | 1 | 1,5 x D | 0,5 x D | 1 x D | 90 | 115 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 70 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 150 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| S | 1 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,3 x D | 0,3 x D | 25 | 40 | fz | 0,019 | 0,026 | 0,032 | 0,037 | 0,046 | 0,054 | 0,061 |
| | 4 | 1,5 x D | 0,5 x D | 1 x D | 50 | 80 | fz | 0,026 | 0,037 | 0,045 | 0,052 | 0,064 | 0,074 | 0,084 |
| H | 1 | 1,5 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |

## HARVI II • UDDE • Unequal Flute Spacing • With Neck

| Material Group | | Side Milling (A) and Slotting (B) | | | KCSM15 KC643M | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10%. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | B | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 0 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 4 | 1,5 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |
| | 5 | 1,5 x D | 0,5 x D | 1 x D | 60 | 100 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 6 | 1,5 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| M | 1 | 1,5 x D | 0,5 x D | 1 x D | 90 | 115 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 60 | 70 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 150 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 | 0,124 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,5 x D | 1 x D | 110 | 130 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| S | 1 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | 1,5 x D | 0,3 x D | 0,3 x D | 25 | 40 | fz | 0,019 | 0,026 | 0,032 | 0,037 | 0,046 | 0,054 | 0,061 |
| | 4 | 1,5 x D | 0,5 x D | 1 x D | 50 | 80 | fz | 0,026 | 0,037 | 0,045 | 0,052 | 0,064 | 0,074 | 0,084 |
| H | 1 | 1,5 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |

# HARVI II™ Long High-Performance Solid Carbide End Mills

## 3 x D and 5 x D lengths of cut without reduced feed rates when machining corners.

### Primary Application

HARVI II™ Long is designed for machining titanium, steels, and stainless steels with excellent surface finishes at maximum Metal Removal Rates (MRR). The extended cutting length enables the HARVI II Long to machine deep pockets with thin walls in semi-finishing and finishing operations. It also reduces the number of cuts when machining wing profiles for the aerospace industry.

- 5 x D side milling finishing operations in titanium and stainless steels.
- Exceptionally straight walls.
- Universal KC643M™ grade for long tool life.

## Features and Benefits

### Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates, improving surface finish and tool life.
- 3 x D and 5 x D lengths for reduced number of cuts.
- Innovative core design increases stability for exceptionally straight walls.
- Improved feed rate in corner machining operations versus conventional cutters.

### Tailored Grades

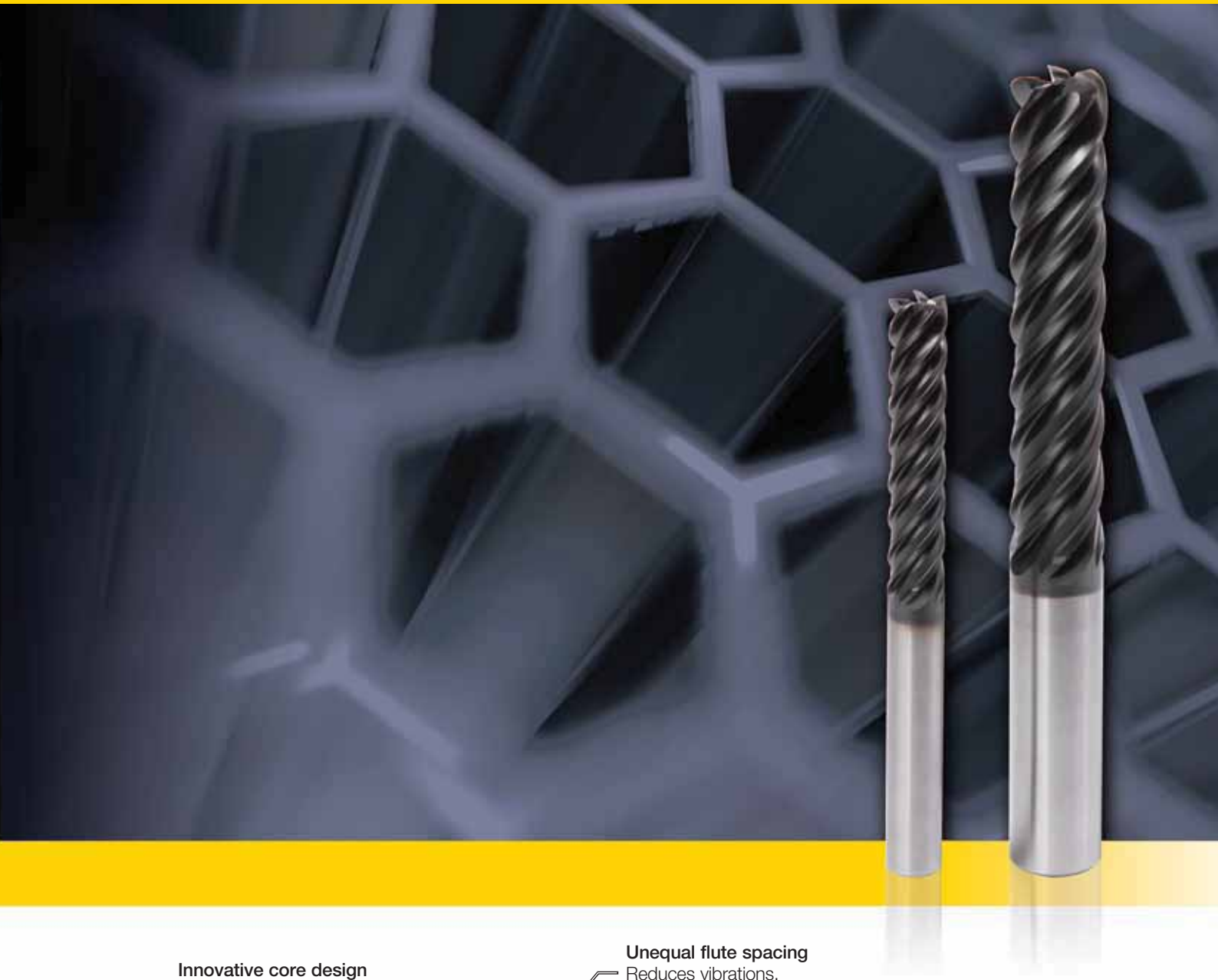
- Universal KC643M grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

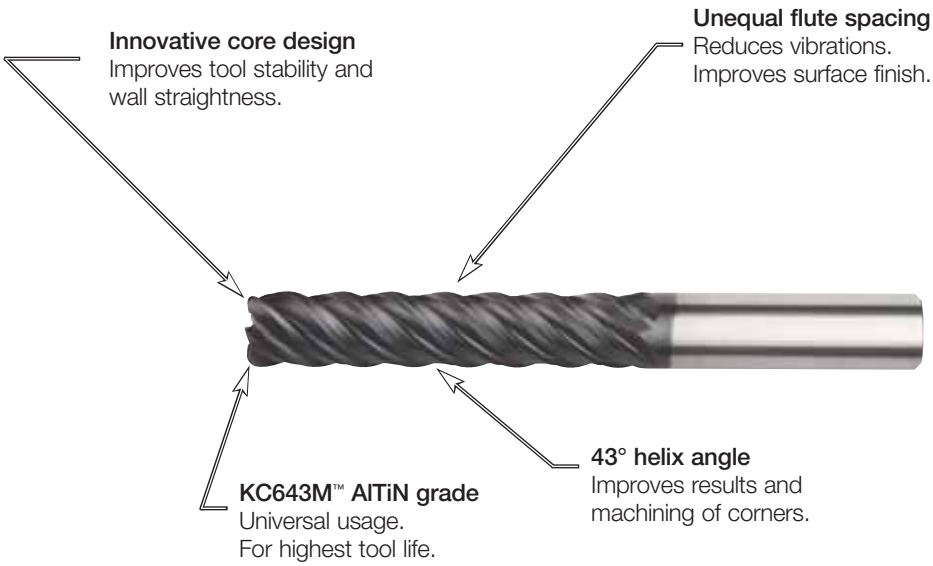
### Customisation

- Intermediate diameters available.
- Chip divider geometry available for reduced power consumption and improved chip formation in difficult-to-cut materials.
- Internal coolant axial, as well as radial, available.
- Various shank options and non-standard coatings available.

### Extensive Standard Offering

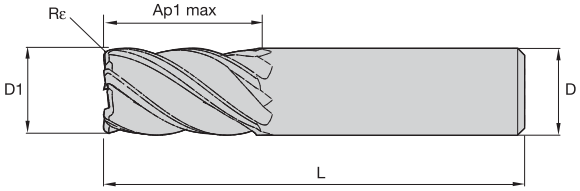
- Diameter range 6–25mm.
- Various corner radii in stock.



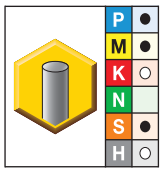



*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*

- Kennametal standard dimensions.
- Non-centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- For finishing and semi-finishing applications.
- Optimised geometry for machining corners at deep cavities.



## UGDE • 5-Flute • Metric

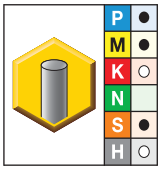



● first choice
○ alternate choice

| KC643M | D1 | D | Ap1 max | L | Rε |
|---|---|---|---|---|---|
| **UGDE0600A5ARA** | 6,00 | 6,00 | 18,00 | 63,00 | 0,20 |
| **UGDE0600A5ARB** | 6,00 | 6,00 | 18,00 | 63,00 | 0,50 |
| **UGDE0600A5ARC** | 6,00 | 6,00 | 18,00 | 63,00 | 1,00 |
| **UGDE0600A5BRA** | 6,00 | 6,00 | 30,00 | 76,00 | 0,20 |
| **UGDE0600A5BRB** | 6,00 | 6,00 | 30,00 | 76,00 | 0,50 |
| **UGDE0600A5BRC** | 6,00 | 6,00 | 30,00 | 76,00 | 1,00 |
| **UGDE0800A5ARA** | 8,00 | 8,00 | 24,00 | 67,00 | 0,20 |
| **UGDE0800A5ARB** | 8,00 | 8,00 | 24,00 | 67,00 | 0,50 |
| **UGDE0800A5ARC** | 8,00 | 8,00 | 24,00 | 67,00 | 1,00 |
| **UGDE0800A5BRA** | 8,00 | 8,00 | 40,00 | 87,00 | 0,20 |
| **UGDE0800A5BRB** | 8,00 | 8,00 | 40,00 | 87,00 | 0,50 |
| **UGDE0800A5BRC** | 8,00 | 8,00 | 40,00 | 87,00 | 1,00 |
| **UGDE1000A5ARA** | 10,00 | 10,00 | 30,00 | 76,00 | 0,50 |
| **UGDE1000A5ARB** | 10,00 | 10,00 | 30,00 | 76,00 | 1,00 |
| **UGDE1000A5ARC** | 10,00 | 10,00 | 30,00 | 76,00 | 2,00 |
| **UGDE1000A5ARD** | 10,00 | 10,00 | 30,00 | 76,00 | 2,50 |
| **UGDE1000A5BRA** | 10,00 | 10,00 | 50,00 | 100,00 | 0,50 |
| **UGDE1000A5BRB** | 10,00 | 10,00 | 50,00 | 100,00 | 1,00 |
| **UGDE1000A5BRC** | 10,00 | 10,00 | 50,00 | 100,00 | 2,00 |
| **UGDE1000A5BRD** | 10,00 | 10,00 | 50,00 | 100,00 | 2,50 |
| **UGDE1200A5ARA** | 12,00 | 12,00 | 36,00 | 100,00 | 0,50 |
| **UGDE1200A5ARB** | 12,00 | 12,00 | 36,00 | 100,00 | 1,00 |
| **UGDE1200A5ARC** | 12,00 | 12,00 | 36,00 | 100,00 | 2,00 |
| **UGDE1200A5ARD** | 12,00 | 12,00 | 36,00 | 100,00 | 2,50 |
| **UGDE1200A5BRA** | 12,00 | 12,00 | 36,00 | 125,00 | 0,50 |
| **UGDE1200A5BRB** | 12,00 | 12,00 | 60,00 | 125,00 | 1,00 |
| **UGDE1200A5BRC** | 12,00 | 12,00 | 60,00 | 125,00 | 2,00 |
| **UGDE1200A5BRD** | 12,00 | 12,00 | 60,00 | 125,00 | 2,50 |
| **UGDE1400A5ARD** | 14,00 | 14,00 | 42,00 | 100,00 | 3,00 |
| **UGDE1400A5BRD** | 14,00 | 14,00 | 70,00 | 120,00 | 3,00 |

*(continued)*

*(UGDE • 5-Flute • Metric continued)*




| KC643M | D1 | D | Ap1 max | L | Rε |
|---|---|---|---|---|---|
| **UGDE1600A5ARA** | 16,00 | 16,00 | 48,00 | 110,00 | 1,00 |
| **UGDE1600A5ARB** | 16,00 | 16,00 | 48,00 | 110,00 | 2,00 |
| **UGDE1600A5ARC** | 16,00 | 16,00 | 48,00 | 110,00 | 2,50 |
| **UGDE1600A5ARD** | 16,00 | 16,00 | 48,00 | 110,00 | 3,00 |
| **UGDE1600A5ARE** | 16,00 | 16,00 | 48,00 | 110,00 | 4,00 |
| **UGDE1600A5BRA** | 16,00 | 16,00 | 80,00 | 141,00 | 1,00 |
| **UGDE1600A5BRB** | 16,00 | 16,00 | 80,00 | 141,00 | 2,00 |
| **UGDE1600A5BRC** | 16,00 | 16,00 | 80,00 | 141,00 | 2,50 |
| **UGDE1600A5BRD** | 16,00 | 16,00 | 80,00 | 141,00 | 3,00 |
| **UGDE1600A5BRE** | 16,00 | 16,00 | 80,00 | 141,00 | 4,00 |
| **UGDE2000A5ARA** | 20,00 | 20,00 | 60,00 | 125,00 | 1,00 |
| **UGDE2000A5ARB** | 20,00 | 20,00 | 60,00 | 125,00 | 2,00 |
| **UGDE2000A5ARC** | 20,00 | 20,00 | 60,00 | 125,00 | 2,50 |
| **UGDE2000A5ARD** | 20,00 | 20,00 | 60,00 | 125,00 | 3,00 |
| **UGDE2000A5ARE** | 20,00 | 20,00 | 60,00 | 125,00 | 4,00 |
| **UGDE2000A5BRA** | 20,00 | 20,00 | 100,00 | 166,00 | 1,00 |
| **UGDE2000A5BRB** | 20,00 | 20,00 | 100,00 | 166,00 | 2,00 |
| **UGDE2000A5BRC** | 20,00 | 20,00 | 100,00 | 166,00 | 2,50 |
| **UGDE2000A5BRD** | 20,00 | 20,00 | 100,00 | 166,00 | 3,00 |
| **UGDE2000A5BRE** | 20,00 | 20,00 | 100,00 | 166,00 | 4,00 |
| **UGDE2500A5ARA** | 25,00 | 25,00 | 75,00 | 150,00 | 1,00 |
| **UGDE2500A5ARB** | 25,00 | 25,00 | 75,00 | 150,00 | 2,00 |
| **UGDE2500A5ARC** | 25,00 | 25,00 | 75,00 | 150,00 | 2,50 |
| **UGDE2500A5ARD** | 25,00 | 25,00 | 75,00 | 150,00 | 3,00 |
| **UGDE2500A5ARE** | 25,00 | 25,00 | 75,00 | 150,00 | 4,00 |
| **UGDE2500A5BRA** | 25,00 | 25,00 | 125,00 | 190,00 | 1,00 |
| **UGDE2500A5BRB** | 25,00 | 25,00 | 125,00 | 190,00 | 2,00 |
| **UGDE2500A5BRC** | 25,00 | 25,00 | 125,00 | 190,00 | 2,50 |
| **UGDE2500A5BRD** | 25,00 | 25,00 | 125,00 | 190,00 | 3,00 |
| **UGDE2500A5BRE** | 25,00 | 25,00 | 125,00 | 190,00 | 4,00 |

NOTE: For application data, see page C34.

**End Mill Tolerances**

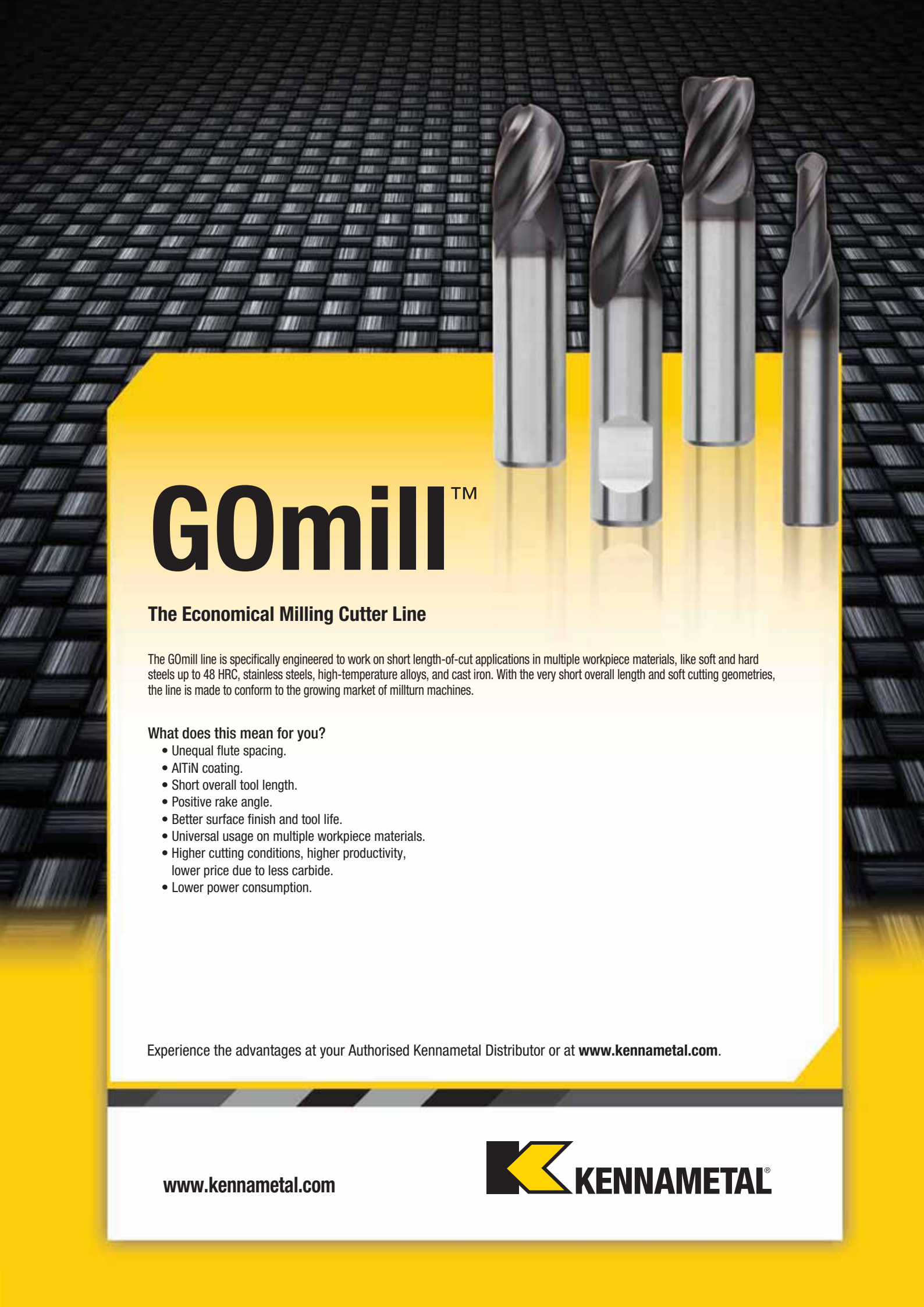
| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

## HARVI II™ • UGDE • Unequal Flute Spacing • 3 x D and 5 x D Lengths of Cut

| Material Group | | Side Milling (A) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | KC643M | | Recommended feed per tooth (fz=inch/th) for side milling (A). For slotting (B), reduce fz by 20%. | | | | | | | | |
| | | | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | | |
| | | ap | ae | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 14,0 | 16,0 | 20,0 | 25,0 |
| P | 1 | Ap1 max | 0,05 x D* | 300 | 400 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,092 | 0,101 | 0,114 | 0,124 |
| | 2 | Ap1 max | 0,05 x D* | 280 | 380 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,092 | 0,101 | 0,114 | 0,124 |
| | 3 | Ap1 max | 0,05 x D* | 240 | 320 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,101 | 0,114 |
| | 4 | Ap1 max | 0,05 x D* | 180 | 300 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,070 | 0,077 | 0,088 | 0,098 |
| | 5 | Ap1 max | 0,05 x D* | 120 | 200 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,063 | 0,070 | 0,081 | 0,091 |
| | 6 | Ap1 max | 0,05 x D* | 100 | 150 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,052 | 0,057 | 0,065 | 0,071 |
| M | 1 | Ap1 max | 0,05 x D* | 180 | 230 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,101 | 0,114 |
| | 2 | Ap1 max | 0,05 x D* | 120 | 160 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,063 | 0,070 | 0,081 | 0,091 |
| | 3 | Ap1 max | 0,05 x D* | 120 | 140 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,052 | 0,057 | 0,065 | 0,071 |
| K | 1 | Ap1 max | 0,05 x D* | 240 | 300 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,092 | 0,101 | 0,114 | 0,124 |
| | 2 | Ap1 max | 0,05 x D* | 220 | 260 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,101 | 0,114 |
| | 3 | Ap1 max | 0,05 x D* | 200 | 260 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,063 | 0,070 | 0,081 | 0,091 |
| S | 1 | Ap1 max | 0,05 x D* | 100 | 180 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,101 | 0,114 |
| | 2 | Ap1 max | 0,05 x D* | 100 | 180 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,101 | 0,114 |
| | 3 | Ap1 max | 0,05 x D* | 50 | 80 | fz | 0,019 | 0,026 | 0,032 | 0,037 | 0,042 | 0,046 | 0,054 | 0,061 |
| | 4 | Ap1 max | 0,05 x D* | 100 | 120 | fz | 0,026 | 0,037 | 0,045 | 0,052 | 0,058 | 0,064 | 0,074 | 0,084 |
| H | 1 | Ap1 max | 0,05 x D* | 160 | 280 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,070 | 0,077 | 0,088 | 0,098 |

* For the above cutting data, do not exceed an overall ae of 0,8mm.

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centres, please adjust parameters accordingly on >12mm diameter.



# GOmill™

## The Economical Milling Cutter Line

The GOmill line is specifically engineered to work on short length-of-cut applications in multiple workpiece materials, like soft and hard steels up to 48 HRC, stainless steels, high-temperature alloys, and cast iron. With the very short overall length and soft cutting geometries, the line is made to conform to the growing market of millturn machines.

### What does this mean for you?

- Unequal flute spacing.
- AlTiN coating.
- Short overall tool length.
- Positive rake angle.
- Better surface finish and tool life.
- Universal usage on multiple workpiece materials.
- Higher cutting conditions, higher productivity, lower price due to less carbide.
- Lower power consumption.

Experience the advantages at your Authorised Kennametal Distributor or at **www.kennametal.com**.

www.kennametal.com

KENNAMETAL®

# HARVI III™ High-Performance Solid Carbide End Mills

## Primary Application

HARVI III takes high-performance profiling, semi-finishing, and finishing to the next level. Designed to provide maximum metal removal rates in titanium and stainless steel while achieving supreme surface conditions. A wide range of diameters and corner radii are available from stock as well as **SAFE-LOCK**™ by HAIMER® shanks.

- Outstanding metal removal rates increase productivity.
- Highest tool life due to eccentric relief grind and proprietary KCSM15™ Beyond™ grade.
- Increased process safety with **SAFE-LOCK**™ shanks.

# Features and Benefits

### Advanced Technology

- Six unequally spaced flutes for chatter-free machining at high feed rates.
- Less cutting forces and pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core provides highest tool stability at roughing and finishing operations.
- Centre cutting design for higher flexibility as well as radial and axial finishing pass after roughing operation.

### Tailored Grade

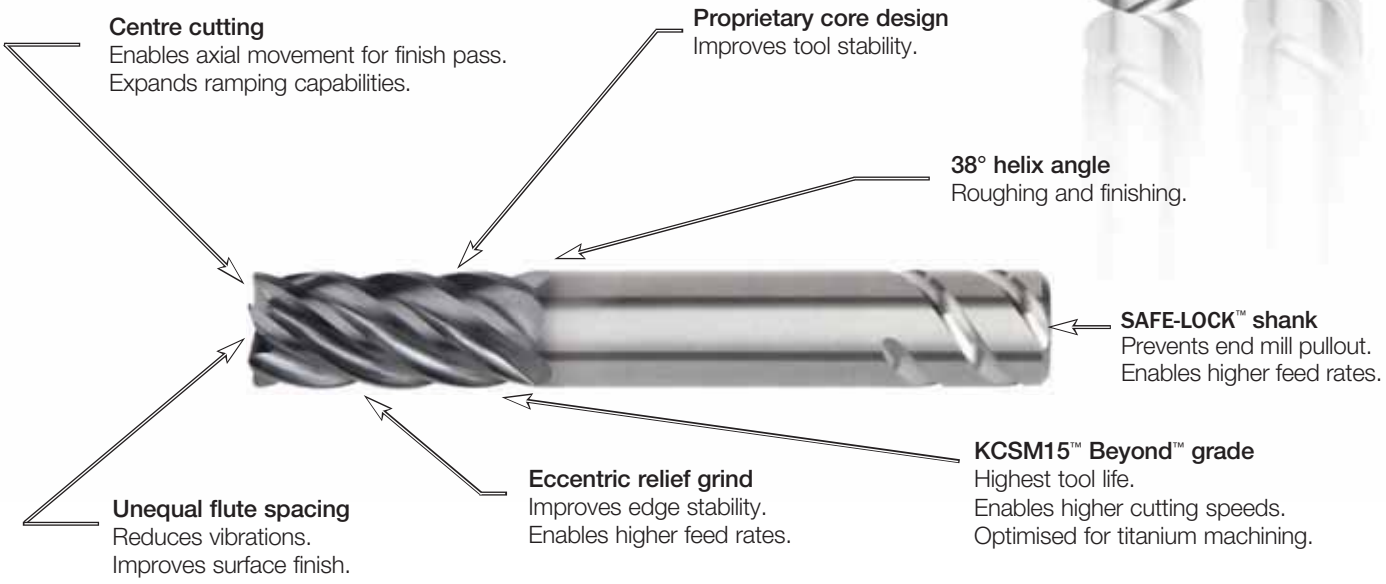
- Proprietary KCSM15 Beyond grade for exceptional tool life in titanium and stainless steels.

### Customisation

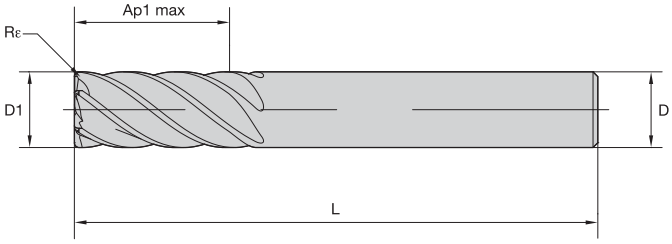
- Engineered solutions, including ball nose versions, are available upon request.

### Extensive Standard Offering

- Diameter ranges 10–25mm.
- Necked, corner radii, and square-end offering.
- Round shank and **SAFE-LOCK**™.


**Centre cutting**
Enables axial movement for finish pass.
Expands ramping capabilities.
**Proprietary core design**
Improves tool stability.
**38° helix angle**
Roughing and finishing.
**SAFE-LOCK™ shank**
Prevents end mill pullout.
Enables higher feed rates.
**KCSM15™ Beyond™ grade**
Highest tool life.
Enables higher cutting speeds.
Optimised for titanium machining.
**Eccentric relief grind**
Improves edge stability.
Enables higher feed rates.
**Unequal flute spacing**
Reduces vibrations.
Improves surface finish.

- Kennametal standard dimensions.
- Centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



beyond

## UJDE • 6-Flute with Eccentric Relief Grind • Metric

● first choice
○ alternate choice

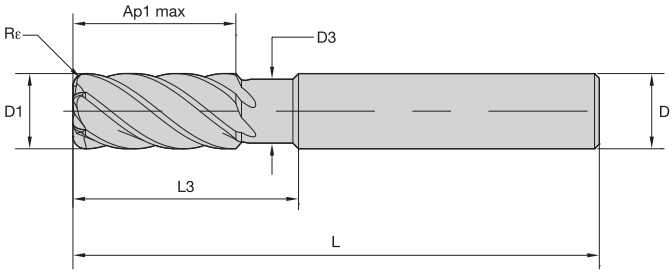
| KCSM15 | KCSM15 | D1 | D | Ap1 max | L | Rε |
|---|---|---|---|---|---|---|
| – | **UJDE1000A6ARE** | 10,00 | 10,00 | 22,00 | 72,00 | 0,50 |
| – | **UJDE1000A6AS** | 10,00 | 10,00 | 22,00 | 72,00 | – |
| **UJDE1200E6ARF** | **UJDE1200A6ARF** | 12,00 | 12,00 | 26,00 | 83,00 | 0,75 |
| – | **UJDE1200A6AS** | 12,00 | 12,00 | 26,00 | 83,00 | – |
| **UJDE1400E6ARF** | **UJDE1400A6ARF** | 14,00 | 14,00 | 26,00 | 83,00 | 0,75 |
| – | **UJDE1400A6AS** | 14,00 | 14,00 | 26,00 | 83,00 | – |
| **UJDE1600E6ARF** | **UJDE1600A6ARF** | 16,00 | 16,00 | 32,00 | 92,00 | 0,75 |
| – | **UJDE1600A6AS** | 16,00 | 16,00 | 32,00 | 92,00 | – |
| **UJDE2000E6ARF** | **UJDE2000A6ARF** | 20,00 | 20,00 | 38,00 | 104,00 | 0,75 |
| – | **UJDE2000A6AS** | 20,00 | 20,00 | 38,00 | 115,00 | – |
| **UJDE2500E6ARF** | **UJDE2500A6ARF** | 25,00 | 25,00 | 45,00 | 121,00 | 0,75 |
| – | **UJDE2500A6AS** | 25,00 | 25,00 | 45,00 | 135,00 | – |

NOTE: For application data, see page C41.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

- Kennametal standard dimensions.
- Centre cutting.
- Optimised geometry for titanium machining.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



beyond

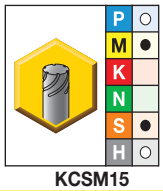
## UJDE • 6-Flute with Eccentric Relief Grind and Neck • Metric

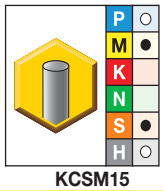
● first choice
○ alternate choice

| KCSM15 | KCSM15 | D1 | D | D3 | Ap1 max | L3 | L | Rε |
|---|---|---|---|---|---|---|---|---|
| – | UJDE1000A6AQE | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 0,50 |
| – | UJDE1000A6AQG | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 1,00 |
| – | UJDE1000A6AQK | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 2,00 |
| – | UJDE1000A6AQM | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | 3,00 |
| – | UJDE1000A6ANS | 10,00 | 10,00 | 9,40 | 22,00 | 30,00 | 76,00 | – |
| UJDE1200E6AQE | UJDE1200A6AQE | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 0,50 |
| UJDE1200E6AQG | UJDE1200A6AQG | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 1,00 |
| UJDE1200E6AQK | UJDE1200A6AQK | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 2,00 |
| UJDE1200E6AQM | UJDE1200A6AQM | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | 3,00 |
| – | UJDE1200A6ANS | 12,00 | 12,00 | 11,28 | 26,00 | 36,00 | 83,00 | – |
| UJDE1600E6AQE | UJDE1600A6AQE | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 0,50 |
| UJDE1600E6AQG | UJDE1600A6AQG | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 1,00 |
| UJDE1600E6AQK | UJDE1600A6AQK | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 2,00 |
| UJDE1600E6AQM | UJDE1600A6AQM | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 3,00 |
| UJDE1600E6AQN | UJDE1600A6AQN | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | 4,00 |
| – | UJDE1600A6ANS | 16,00 | 16,00 | 15,04 | 32,00 | 48,00 | 100,00 | – |
| UJDE2000E6AQE | UJDE2000A6AQE | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 0,50 |
| UJDE2000E6AQG | UJDE2000A6AQG | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 1,00 |

*(continued)*

*(UJDE • 6-Flute with Eccentric Relief Grind and Neck • Metric continued)*




| KCSM15 | KCSM15 | D1 | D | D3 | Ap1 max | L3 | L | Rε |
|---|---|---|---|---|---|---|---|---|
| **UJDE2000E6AQK** | **UJDE2000A6AQK** | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 2,00 |
| **UJDE2000E6AQM** | **UJDE2000A6AQM** | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 3,00 |
| **UJDE2000E6AQN** | **UJDE2000A6AQN** | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | 4,00 |
| **–** | **UJDE2000A6ANS** | 20,00 | 20,00 | 18,80 | 38,00 | 60,00 | 115,00 | – |
| **UJDE2500E6AQE** | **UJDE2500A6AQE** | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 0,50 |
| **UJDE2500E6AQG** | **UJDE2500A6AQG** | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 1,00 |
| **UJDE2500E6AQK** | **UJDE2500A6AQK** | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 2,00 |
| **UJDE2500E6AQM** | **UJDE2500A6AQM** | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 3,00 |
| **UJDE2500E6AQN** | **UJDE2500A6AQN** | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | 4,00 |
| **–** | **UJDE2500A6ANS** | 25,00 | 25,00 | 23,50 | 45,00 | 75,00 | 135,00 | – |

NOTE: For application data, see page C43.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014 / -0,028 | ≤3 | +0 / -0,006 |
| >3–6 | -0,020 / -0,038 | >3–6 | +0 / -0,008 |
| >6–10 | -0,025 / -0,047 | >6–10 | +0 / -0,009 |
| >10–18 | -0,032 / -0,059 | >10–18 | +0 / -0,011 |
| >18–30 | -0,040 / -0,073 | >18–30 | +0 / -0,013 |

## HARVI III™ • UJDE • Unequal Flute Spacing • Roughing

| Material Group | | Side Milling (A) | | KCSM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | |
| | | ap | ae | min | max | mm | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 4 | Ap1 max | 0,4 x D | 90 | 150 | fz | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |
| | 5 | Ap1 max | 0,4 x D | 60 | 100 | fz | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| M | 1 | Ap1 max | 0,4 x D | 90 | 115 | fz | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | Ap1 max | 0,4 x D | 60 | 80 | fz | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 3 | Ap1 max | 0,4 x D | 60 | 70 | fz | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| S | 1 | Ap1 max | 0,4 x D | 50 | 90 | fz | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | Ap1 max | 0,4 x D | 50 | 90 | fz | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | Ap1 max | 0,4 x D | 25 | 40 | fz | 0,032 | 0,037 | 0,046 | 0,054 | 0,061 |
| | 4 | Ap1 max | 0,4 x D | 50 | 80 | fz | 0,045 | 0,052 | 0,064 | 0,074 | 0,084 |
| H | 1 | Ap1 max | 0,4 x D | 80 | 140 | fz | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |

## HARVI III • UJDE • Unequal Flute Spacing • Finishing

| Material Group | | Side Milling (A) | | KCSM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | |
| | | ap | ae | min | max | mm | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 4 | Ap1 max | 0,06 x D | 171 | 285 | fz | 0,065 | 0,075 | 0,092 | 0,106 | 0,117 |
| | 5 | Ap1 max | 0,06 x D | 114 | 190 | fz | 0,058 | 0,067 | 0,084 | 0,097 | 0,109 |
| M | 1 | Ap1 max | 0,06 x D | 171 | 218 | fz | 0,073 | 0,084 | 0,105 | 0,121 | 0,137 |
| | 2 | Ap1 max | 0,06 x D | 114 | 152 | fz | 0,058 | 0,067 | 0,084 | 0,097 | 0,109 |
| | 3 | Ap1 max | 0,06 x D | 114 | 133 | fz | 0,048 | 0,056 | 0,068 | 0,078 | 0,085 |
| S | 1 | Ap1 max | 0,06 x D | 95 | 171 | fz | 0,073 | 0,084 | 0,105 | 0,121 | 0,137 |
| | 2 | Ap1 max | 0,06 x D | 95 | 171 | fz | 0,073 | 0,084 | 0,105 | 0,121 | 0,137 |
| | 3 | Ap1 max | 0,06 x D | 48 | 76 | fz | 0,038 | 0,045 | 0,056 | 0,065 | 0,074 |
| | 4 | Ap1 max | 0,06 x D | 95 | 152 | fz | 0,053 | 0,062 | 0,077 | 0,089 | 0,100 |
| H | 1 | Ap1 max | 0,06 x D | 152 | 266 | fz | 0,065 | 0,075 | 0,092 | 0,106 | 0,117 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

Solid End Milling

## HARVI III™ • UJDE • Unequal Flute Spacing • Roughing • With Neck

| Material Group | | Side Milling (A) | | KCSM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | |
| | | ap | ae | min | max | mm | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 4 | Ap1 max | 0,4 x D | 90 | 150 | fz | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |
| | 5 | Ap1 max | 0,4 x D | 60 | 100 | fz | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| M | 1 | Ap1 max | 0,4 x D | 90 | 115 | fz | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | Ap1 max | 0,4 x D | 60 | 80 | fz | 0,048 | 0,056 | 0,070 | 0,081 | 0,091 |
| | 3 | Ap1 max | 0,4 x D | 60 | 70 | fz | 0,040 | 0,047 | 0,057 | 0,065 | 0,071 |
| S | 1 | Ap1 max | 0,4 x D | 50 | 90 | fz | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 2 | Ap1 max | 0,4 x D | 50 | 90 | fz | 0,061 | 0,070 | 0,087 | 0,101 | 0,114 |
| | 3 | Ap1 max | 0,4 x D | 25 | 40 | fz | 0,032 | 0,037 | 0,046 | 0,054 | 0,061 |
| | 4 | Ap1 max | 0,4 x D | 50 | 80 | fz | 0,045 | 0,052 | 0,064 | 0,074 | 0,084 |
| H | 1 | Ap1 max | 0,4 x D | 80 | 140 | fz | 0,054 | 0,062 | 0,077 | 0,088 | 0,098 |

## HARVI III • UJDE • Unequal Flute Spacing • Finishing • With Neck

| Material Group | | Side Milling (A) | | KCSM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | |
| | | ap | ae | min | max | mm | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 4 | Ap1 max | 0,06 x D | 171 | 285 | fz | 0,065 | 0,075 | 0,092 | 0,106 | 0,117 |
| | 5 | Ap1 max | 0,06 x D | 114 | 190 | fz | 0,058 | 0,067 | 0,084 | 0,097 | 0,109 |
| M | 1 | Ap1 max | 0,06 x D | 171 | 218 | fz | 0,073 | 0,084 | 0,105 | 0,121 | 0,137 |
| | 2 | Ap1 max | 0,06 x D | 114 | 152 | fz | 0,058 | 0,067 | 0,084 | 0,097 | 0,109 |
| | 3 | Ap1 max | 0,06 x D | 114 | 133 | fz | 0,048 | 0,056 | 0,068 | 0,078 | 0,085 |
| S | 1 | Ap1 max | 0,06 x D | 95 | 171 | fz | 0,073 | 0,084 | 0,105 | 0,121 | 0,137 |
| | 2 | Ap1 max | 0,06 x D | 95 | 171 | fz | 0,073 | 0,084 | 0,105 | 0,121 | 0,137 |
| | 3 | Ap1 max | 0,06 x D | 48 | 76 | fz | 0,038 | 0,045 | 0,056 | 0,065 | 0,074 |
| | 4 | Ap1 max | 0,06 x D | 95 | 152 | fz | 0,053 | 0,062 | 0,077 | 0,089 | 0,100 |
| H | 1 | Ap1 max | 0,06 x D | 152 | 266 | fz | 0,065 | 0,075 | 0,092 | 0,106 | 0,117 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

## HARVI III with Eccentric Relief

**CHALLENGE**

- Rough profile of extruded beams.
- Varying depths of cut.
- Titanium Alloy Beta (Ti Al6V4).
- External coolant.

**SOLUTION**

- HARVI III Ø 25,4mm with eccentric relief in KCSM15.
- 6 effective teeth with centre cut.

**CUTTING DATA**

- vc 56 m/min
- fz 0,07 mm/z

**RESULT**

- **56 workpieces tool life.**
- **Surface finish Ra 1,6 µm.**

**BENEFIT**

- **Up to 7x higher tool life compared to competition.**
- **Exceptional surface finish.**
- **Improved chip shearing and cutting efficiency.**

## HARVI III with Eccentric Relief

**CHALLENGE**

- Milling of various parts.
- Titanium Alloy Alpha (Ti Al6V4).
- External coolant.

**SOLUTION**

- HARVI III Ø 19,05mm with eccentric relief in KCSM15.
- 6 effective teeth with centre cut.

**CUTTING DATA**

- vc 55 m/min
- fz 0,06 mm/z

**RESULT**

- **300 workpieces tool life.**

**BENEFIT**

- **Up to 590 machine hours freed per year.**
- **Up to 5x higher tool life compared to competition.**

## HARVI III with Eccentric Relief

**CHALLENGE**

- Finish profile of beams.
- Titanium Beta Alloy (Ti Al6V4).
- External coolant.

**SOLUTION**

- HARVI III Ø 15,88mm with eccentric relief in KCSM15.
- 6 effective teeth with centre cut.

**CUTTING DATA**

- vc 89 m/min
- fz 0,11 mm/z

**RESULT**

- **12 workpieces tool life.**
- **Surface finish Ra 1,6 µm.**

**BENEFIT**

- **Up to 3x higher tool life compared to competition.**
- **Exceptional surface finish with no chatter.**
- **Improving overall finishing performance.**

## HARVI III with Eccentric Relief

**CHALLENGE**

- Full depth roughing.
- Titanium Alloy Alpha (Ti Al6V4).
- External coolant.

**SOLUTION**

- HARVI III Ø 19,05mm with eccentric relief in KCSM15.
- 6 effective teeth with centre cut.
- 1,5mm corner radii.

**CUTTING DATA**

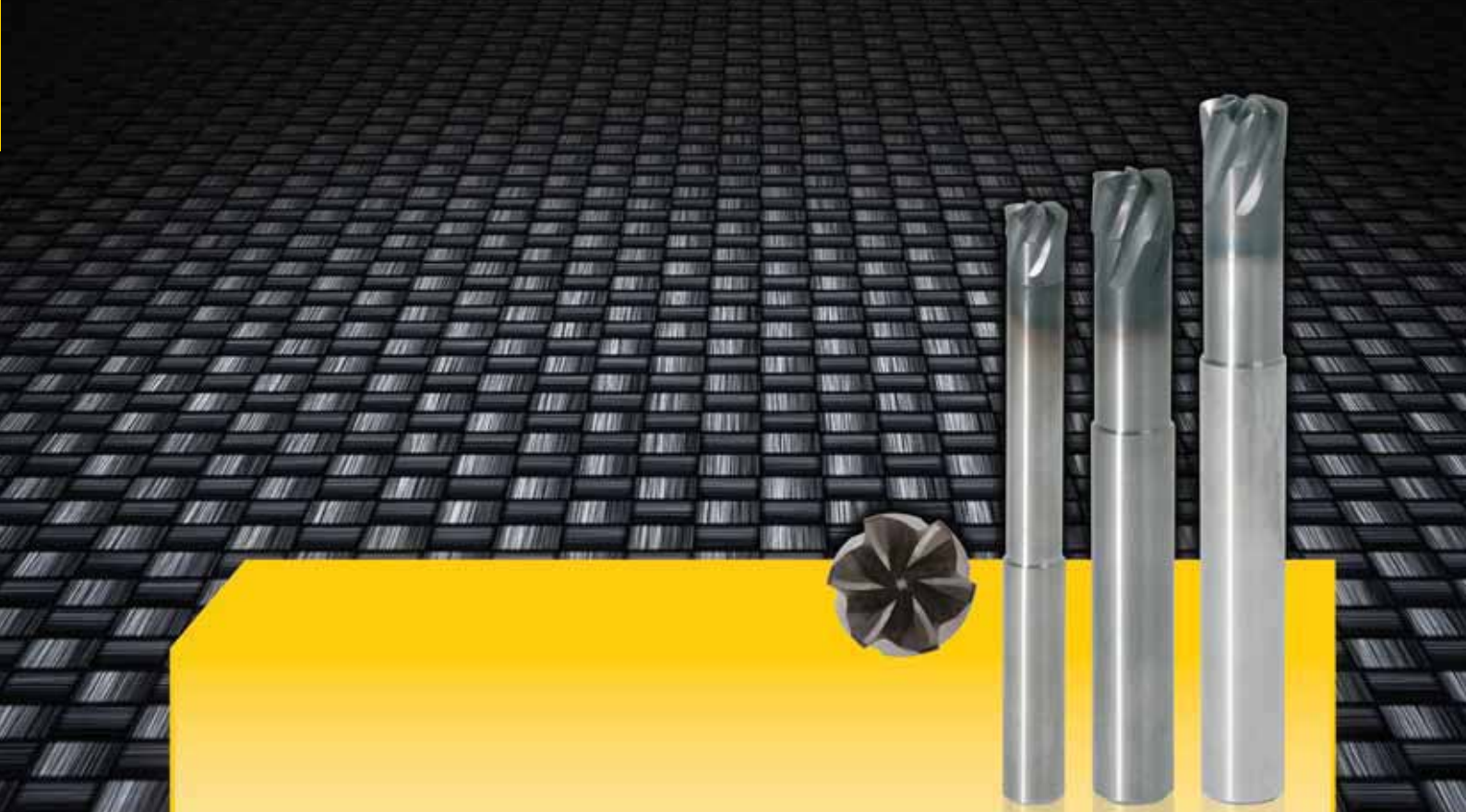
- vc 49 m/min
- fz 0,08 mm/z

**RESULT**

- **7 workpieces tool life.**
- **Flank wear only.**

**BENEFIT**

- **Up to 191 machine hours freed per year.**
- **Up to 33% higher tool life compared to competition.**



# KenFeed™

## End Mills for High-Feed Milling

Specifically engineered to machine hardened steel up to 65 HRC at extreme speeds and feeds

## Features and Benefits

- Unique tool with new 6-flute style for high productivity.
- Necked shanks provide extended reach in deep cavities.
- High-feed rates up to 0,6mm per tooth on a 20mm tool.
- Machine hardened materials at 2–3x the metal removal rate of competitive end mills.
- Wide range of cutting diameters: down to 6mm for small and medium pocket work.
- Innovative new geometry maximises metal removal rates.
- High metal removal rates lower manufacturing costs.

Experience the advantages at your Authorised Kennametal Distributor or at **www.kennametal.com**.

www.kennametal.com

KENNAMETAL®

# KC643M™ Key Way Cutter

## Primary Application

F2AU and F3AU Key Way Cutters offer highest precision when machining slots for a shaft to hub connection. The corner radii increases workpiece durability as crack causing forces between floor and wall are minimised. To produce key slots according to ISO, the radii are adjusted accordingly to match this standard.

New KC643M Key Way Cutters replace old KC635M™ and KC625M™ versions.

- Highest accuracy with finishing (conventional milling)
- Roughing and finishing with one tool
- Less tool changes due to higher tool life

# Features and Benefits

### Advanced Technology

- Unequally spaced flutes with F3AU for chatter-free machining at high feed rates.
- F2AU designed for unstable machining conditions.
- Radii transition created between floor and wall at key slot increases durability of machined components by preventing cracks.
- True 90° wall straightness due to tapered peripheral edges creating a defined passive force during finishing cut (conventional cut).
- Roughing and finishing with one tool resulting in less tool changes and less tooling inventory necessary.

### Tailored Grade

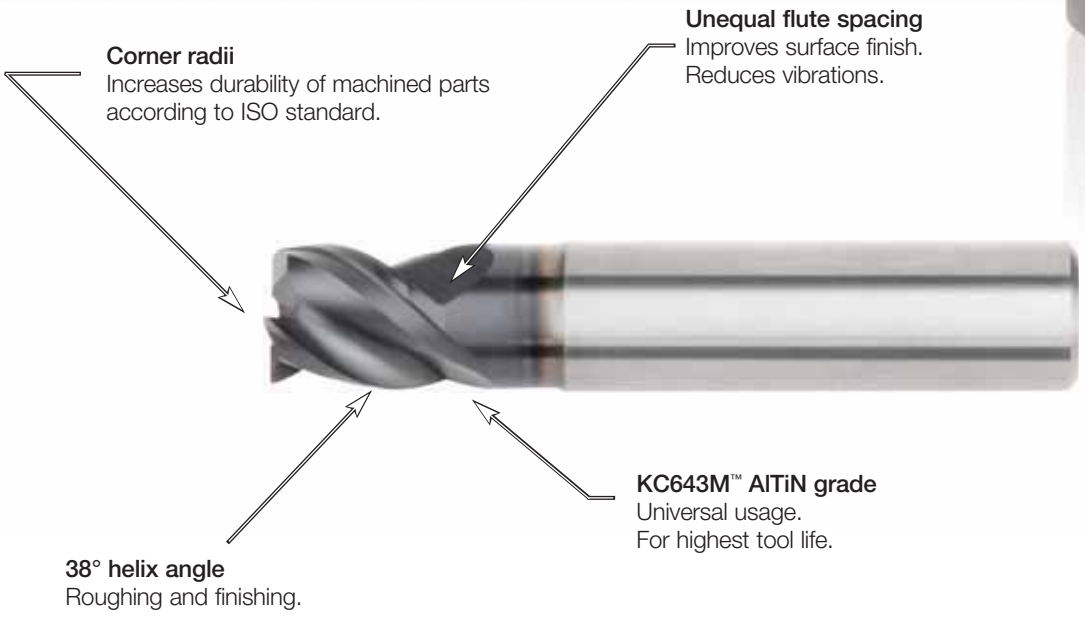
- Universal KC643M grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

### Customisation

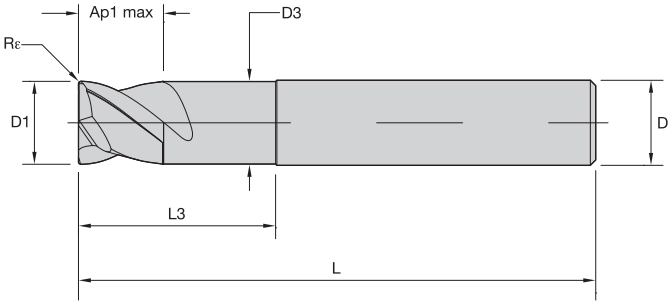
- Expanded length of tool as well as increased length of cut possible.
- Internal coolant axial as well as radial available.
- Various shank and non-standard coatings options available.

### Extensive Standard Offering

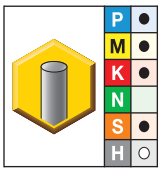
- Diameter range 1,80–19,70mm.
- 2-flute and 3-flute tooling in stock.

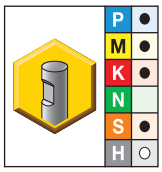

**Corner radii**
Increases durability of machined parts according to ISO standard.
**Unequal flute spacing**
Improves surface finish.
Reduces vibrations.
**KC643M™ AlTiN grade**
Universal usage.
For highest tool life.
**38° helix angle**
Roughing and finishing.

- Kennametal standard dimensions.
- Centre cutting.
- Single tool for roughing and finishing applications requiring fewer setups.
- Optimised for unstable machining conditions.



## F2AU.. • 2-Flute • Metric




● first choice
○ alternate choice

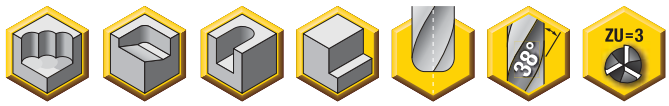
| KC643M | KC643M | D1 | D | D3 | Ap1 max | L | L3 | Rε |
|---|---|---|---|---|---|---|---|---|
| **F2AU0180ADK38** | – | 1,80 | 4,00 | 1,75 | 2,00 | 36,00 | 6,00 | 0,12 |
| **F2AU0280ADK38** | **F2AU0280BDK38** | 2,80 | 6,00 | 2,75 | 4,00 | 50,00 | 12,00 | 0,12 |
| **F2AU0380ADK38** | **F2AU0380BDK38** | 3,80 | 6,00 | 3,71 | 5,00 | 54,00 | 16,00 | 0,12 |
| **F2AU0480ADK38** | **F2AU0480BDK38** | 4,80 | 6,00 | 4,71 | 6,00 | 54,00 | 16,00 | 0,20 |
| **F2AU0575ADK38** | **F2AU0575BDK38** | 5,75 | 6,00 | 5,71 | 7,00 | 54,00 | 18,00 | 0,20 |
| **F2AU0775ADK38** | **F2AU0775BDK38** | 7,75 | 8,00 | 7,70 | 9,00 | 58,00 | 22,00 | 0,20 |
| **F2AU0970ADK38** | **F2AU0970BDK38** | 9,70 | 10,00 | 9,65 | 11,00 | 66,00 | 26,00 | 0,33 |
| **F2AU1170ADK38** | **F2AU1170BDK38** | 11,70 | 12,00 | 11,64 | 12,00 | 73,00 | 28,00 | 0,33 |
| **F2AU1370ADK38** | **F2AU1370BDK38** | 13,70 | 14,00 | 13,64 | 14,00 | 75,00 | 30,00 | 0,33 |
| **F2AU1570ADK38** | **F2AU1570BDK38** | 15,70 | 16,00 | 15,64 | 16,00 | 82,00 | 34,00 | 0,33 |
| **F2AU1770ADK38** | **F2AU1770BDK38** | 17,70 | 18,00 | 17,64 | 18,00 | 84,00 | 36,00 | 0,40 |
| **F2AU1970ADK38** | **F2AU1970BDK38** | 19,70 | 20,00 | 19,63 | 20,00 | 92,00 | 42,00 | 0,40 |

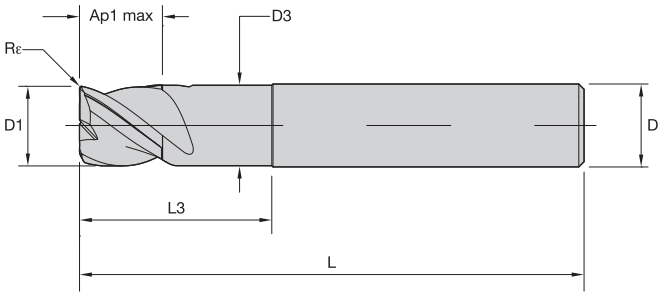
NOTE: For application data, see page C50.

**End Mill Tolerances**

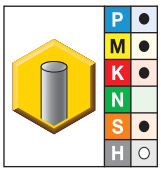
| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

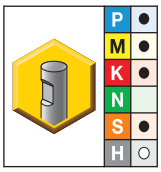
- Kennametal standard dimensions.
- Centre cutting.
- Unequal flute spacing minimises chatter for smoother machining.
- Single tool for roughing and finishing applications requiring fewer setups.
- Optimised for high Metal Removal Rates (MRR) under stable machining conditions.



## F3AU.. • 3-Flute • Metric




● first choice
○ alternate choice

| KC643M | KC643M | D1 | D | D3 | Ap1 max | L | L3 | Rε |
|---|---|---|---|---|---|---|---|---|
| **F3AU0280ADK38** | **F3AU0280BDK38** | 2,80 | 6,00 | 2,75 | 4,00 | 50,00 | 12,00 | 0,12 |
| **F3AU0380ADK38** | **F3AU0380BDK38** | 3,80 | 6,00 | 3,71 | 5,00 | 54,00 | 16,00 | 0,12 |
| **F3AU0480ADK38** | **F3AU0480BDK38** | 4,80 | 6,00 | 4,71 | 6,00 | 54,00 | 16,00 | 0,20 |
| **F3AU0575ADK38** | **F3AU0575BDK38** | 5,75 | 6,00 | 5,71 | 7,00 | 54,00 | 18,00 | 0,20 |
| **F3AU0775ADK38** | **F3AU0775BDK38** | 7,75 | 8,00 | 7,70 | 9,00 | 58,00 | 22,00 | 0,20 |
| **F3AU0970ADK38** | **F3AU0970BDK38** | 9,70 | 10,00 | 9,65 | 11,00 | 66,00 | 26,00 | 0,33 |
| **F3AU1170ADK38** | **F3AU1170BDK38** | 11,70 | 12,00 | 11,64 | 12,00 | 73,00 | 28,00 | 0,33 |
| **F3AU1370ADK38** | **F3AU1370BDK38** | 13,70 | 14,00 | 13,64 | 14,00 | 75,00 | 30,00 | 0,33 |
| **F3AU1570ADK38** | **F3AU1570BDK38** | 15,70 | 16,00 | 15,64 | 16,00 | 82,00 | 34,00 | 0,33 |
| **F3AU1770ADK38** | **F3AU1770BDK38** | 17,70 | 18,00 | 17,64 | 18,00 | 84,00 | 36,00 | 0,40 |
| **F3AU1970ADK38** | **F3AU1970BDK38** | 19,70 | 20,00 | 19,63 | 20,00 | 92,00 | 42,00 | 0,40 |

NOTE: For application data, see page C50.

**End Mill Tolerances**

| D1 | tolerance e8 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,014/-0,028 | ≤3 | +0/-0,006 |
| >3–6 | -0,020/-0,038 | >3–6 | +0/-0,008 |
| >6–10 | -0,025/-0,047 | >6–10 | +0/-0,009 |
| >10–18 | -0,032/-0,059 | >10–18 | +0/-0,011 |
| >18–30 | -0,040/-0,073 | >18–30 | +0/-0,013 |

## F2AU...A/BDK38...

| Material Group | | Side Milling (A) and Slotting (B) A ap | A ae | B ap | KC643M Cutting Speed — vc m/min min | max | mm | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10%. D1 — Diameter 2,0 | 3,0 | 4,0 | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 0 | 1 x D | 0,5 x D | 0,75 x D | 150 | 200 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 1 | 1 x D | 0,5 x D | 0,75 x D | 150 | 200 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,5 x D | 0,75 x D | 140 | 190 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 3 | 1 x D | 0,5 x D | 0,75 x D | 120 | 160 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 4 | 1 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,010 | 0,016 | 0,021 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |
| | 5 | 1 x D | 0,5 x D | 0,75 x D | 60 | 100 | fz | 0,009 | 0,014 | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 6 | 1 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,008 | 0,012 | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| M | 1 | 1 x D | 0,5 x D | 0,75 x D | 90 | 115 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1 x D | 0,5 x D | 0,75 x D | 60 | 80 | fz | 0,009 | 0,014 | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 3 | 1 x D | 0,5 x D | 0,75 x D | 60 | 70 | fz | 0,008 | 0,012 | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| K | 1 | 1 x D | 0,5 x D | 0,75 x D | 120 | 150 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,5 x D | 0,75 x D | 110 | 130 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 3 | 1 x D | 0,5 x D | 0,75 x D | 110 | 130 | fz | 0,009 | 0,014 | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| S | 1 | 1 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 3 | 1 x D | 0,3 x D | 0,3 x D | 25 | 40 | fz | 0,006 | 0,009 | 0,013 | 0,019 | 0,026 | 0,032 | 0,037 | 0,046 | 0,054 |
| | 4 | 1 x D | 0,5 x D | 0,75 x D | 50 | 80 | fz | 0,007 | 0,011 | 0,016 | 0,026 | 0,037 | 0,045 | 0,052 | 0,064 | 0,074 |
| H | 1 | 1 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,010 | 0,016 | 0,0210 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |

## F3AU...A/BDK38... • Unequal Flute Spacing

| Material Group | | A ap | A ae | B ap | KC643M Cutting Speed — vc m/min min | max | mm | Recommended feed per tooth (fz=mm/th) for side milling (A). For Slotting (B), reduce fz by 10%. D1 — Diameter 2,0 | 3,0 | 4,0 | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 0 | 1 x D | 0,5 x D | 0,75 x D | 150 | 200 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 1 | 1 x D | 0,5 x D | 0,75 x D | 150 | 200 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,5 x D | 0,75 x D | 140 | 190 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 3 | 1 x D | 0,5 x D | 0,75 x D | 120 | 160 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 4 | 1 x D | 0,5 x D | 0,75 x D | 90 | 150 | fz | 0,010 | 0,016 | 0,021 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |
| | 5 | 1 x D | 0,5 x D | 0,75 x D | 60 | 100 | fz | 0,009 | 0,014 | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 6 | 1 x D | 0,5 x D | 0,75 x D | 50 | 75 | fz | 0,008 | 0,012 | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| M | 1 | 1 x D | 0,5 x D | 0,75 x D | 90 | 115 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1 x D | 0,5 x D | 0,75 x D | 60 | 80 | fz | 0,009 | 0,014 | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 3 | 1 x D | 0,5 x D | 0,75 x D | 60 | 70 | fz | 0,008 | 0,012 | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| K | 1 | 1 x D | 0,5 x D | 0,75 x D | 120 | 150 | fz | 0,014 | 0,021 | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,5 x D | 0,75 x D | 110 | 130 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 3 | 1 x D | 0,5 x D | 0,75 x D | 110 | 130 | fz | 0,009 | 0,014 | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| S | 1 | 1 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1 x D | 0,3 x D | 0,3 x D | 50 | 90 | fz | 0,011 | 0,017 | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 3 | 1 x D | 0,3 x D | 0,3 x D | 25 | 40 | fz | 0,006 | 0,009 | 0,013 | 0,019 | 0,026 | 0,032 | 0,037 | 0,046 | 0,054 |
| | 4 | 1 x D | 0,5 x D | 0,75 x D | 50 | 80 | fz | 0,007 | 0,011 | 0,016 | 0,026 | 0,037 | 0,045 | 0,052 | 0,064 | 0,074 |
| H | 1 | 1 x D | 0,5 x D | 0,75 x D | 80 | 140 | fz | 0,010 | 0,016 | 0,0210 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

# KCN05™

## CFRP Machining Tooling

**Engineered for machining difficult CFRP (Carbon-Fibre Reinforced Polymer) and non-ferrous components. KCN05 solid carbide tooling provides excellent tool life and produce smooth finishes with improved edge quality.**

- Excellent tool life due to KCN05 diamond-film coating.
- Proprietary substrate improves coating adhesion improving tool life.
- Design minimises delamination and burr formation.
- Compression-style end mills for trimming operations.
- Left-hand down cut and ball nose cutters for machining cavities.
- Burr-style router for highest Material Removal Rates (MRR).

Visit **www.kennametal.com** or contact your local Authorised Kennametal Distributor.

**www.kennametal.com**

KENNAMETAL®

# High-Performance Solid Carbide Roughing End Mills

## Highest metal removal rates – even on unstable machines or unstable workpiece clamping.

### Primary Application

HP Rougher can be applied on a wide range of workpiece materials such as steels, stainless steels, cast irons, and in certain cases, hardened materials. Tailored roughing profiles reduce cutting forces to the necessary level or combine roughing and semi-finishing for less tool changes.

- High-performance universal tools for almost all cutting materials.
- Lowering cutting forces and spindle power consumption.
- Centre cutting for plunging, ramping, profiling, high-feed slotting, and side milling.

## Features and Benefits

### Advanced Technology

- Up to full length of cut for:
  - Slotting
  - Side milling
  - Profiling
  - Semi-finishing
- Various roughing profiles available to choose from for the right balance between cutting forces, feed rates, and surface quality targeted.
- Internal coolant for improved chip evacuation and extended tool life.

### Tailored Grades

- Proprietary KCPM15™ Beyond™ grade for outstanding wear protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear.

### Customisation

- Intermediate diameters available.
- Corner radii for near-shape roughing operations available.
- Various shank options, including **SAFE-LOCK**™, and non-standard coatings available.

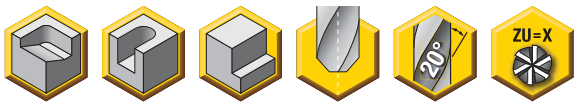
### Extensive Standard Offering

- Diameter ranges 4–25mm.
- Weldon® shank for maximum torque transmission.

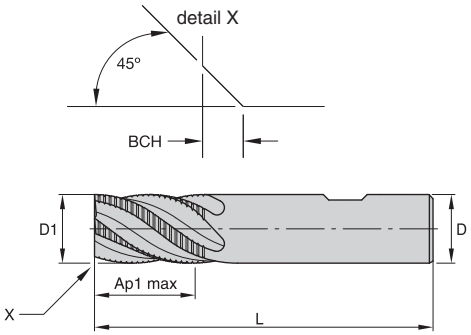
*To learn more,* ***scan the QR codes above.***

*For instructions on how to scan, please see page xxv.*

- Kennametal standard dimensions.
- Centre cutting.
- Cord profile.

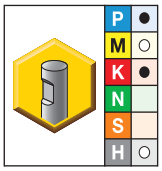




beyond

## F3BH-F4BJ-F5BJ...WS-WM-WL-WX • Metric




● first choice
○ alternate choice

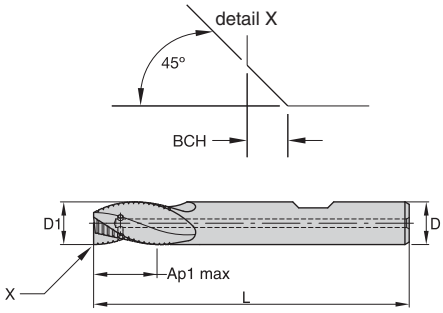
| KCPM15 | D1 | D | Ap1 max | L | BCH | Z U |
|---|---|---|---|---|---|---|
| **F3BH0400BWS20L110** | 4,00 | 6,00 | 11,00 | 55,00 | 0,30 | 3 |
| **F3BH0500BWS20L130** | 5,00 | 6,00 | 13,00 | 57,00 | 0,30 | 3 |
| **F3BH0600BWS20L080** | 6,00 | 6,00 | 8,00 | 54,00 | 0,30 | 3 |
| **F3BH0600BWS20L130** | 6,00 | 6,00 | 13,00 | 57,00 | 0,30 | 3 |
| **F3BH0800BWS20L110** | 8,00 | 8,00 | 11,00 | 58,00 | 0,30 | 3 |
| **F3BH0800BWM20L160** | 8,00 | 8,00 | 16,00 | 63,00 | 0,30 | 3 |
| **F4BJ1000BWM20L130** | 10,00 | 10,00 | 13,00 | 66,00 | 0,50 | 4 |
| **F4BJ1000BWM20L220** | 10,00 | 10,00 | 22,00 | 72,00 | 0,50 | 4 |
| **F4BJ1200BWM20L160** | 12,00 | 12,00 | 16,00 | 73,00 | 0,50 | 4 |
| **F4BJ1200BWL20L260** | 12,00 | 12,00 | 26,00 | 83,00 | 0,50 | 4 |
| **F4BJ1400BWL20L260** | 14,00 | 14,00 | 26,00 | 83,00 | 0,50 | 4 |
| **F4BJ1600BWL20L190** | 16,00 | 16,00 | 19,00 | 82,00 | 0,50 | 4 |
| **F4BJ1600BWL20L320** | 16,00 | 16,00 | 32,00 | 92,00 | 0,50 | 4 |
| **F4BJ2000BWL20L220** | 20,00 | 20,00 | 22,00 | 92,00 | 0,50 | 4 |
| **F4BJ2000BWX20L380** | 20,00 | 20,00 | 38,00 | 104,00 | 0,50 | 4 |
| **F5BJ2500BWX20L450** | 25,00 | 25,00 | 45,00 | 121,00 | 0,50 | 5 |

NOTE: For application data, see page C61.

**End Mill Tolerances**

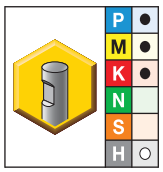
| D1 | tolerance d11 | D | tolerance h6 |
|---|---|---|---|
| ≤ 3 | -0,020/-0,080 | ≤ 3 | +0/-0,006 |
| >3–6 | -0,030/-0,105 | >3–6 | +0/-0,008 |
| >6–10 | -0,040/-0,130 | >6–10 | +0/-0,009 |
| >10–18 | -0,050/0,160 | >10–18 | +0/-0,011 |
| >18–30 | -0,065/-0,195 | >18–30 | +0/-0,013 |

- Kennametal standard dimensions.
- Centre cutting.
- Cord profile.
- Internal coolant for optimised chip removal and increased tool life.



beyond

## F3BH-F4BJ...WS-WM-WL-WX • Internal Coolant • Metric




● first choice
○ alternate choice

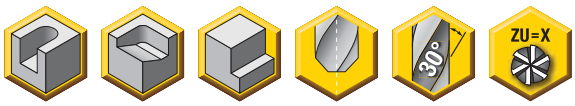
| KCPM15 | D1 | D | Ap1 max | L | BCH | Z U |
|---|---|---|---|---|---|---|
| **F3BH0800BWS20C110** | 8,00 | 8,00 | 11,00 | 58,00 | 0,30 | 3 |
| **F3BH0800BWM20C160** | 8,00 | 8,00 | 16,00 | 63,00 | 0,30 | 3 |
| **F4BJ1000BWM20C130** | 10,00 | 10,00 | 13,00 | 66,00 | 0,50 | 4 |
| **F4BJ1000BWM20C220** | 10,00 | 10,00 | 22,00 | 72,00 | 0,50 | 4 |
| **F4BJ1200BWM20C160** | 12,00 | 12,00 | 16,00 | 73,00 | 0,50 | 4 |
| **F4BJ1200BWL20C260** | 12,00 | 12,00 | 26,00 | 83,00 | 0,50 | 4 |
| **F4BJ1600BWL20C190** | 16,00 | 16,00 | 19,00 | 82,00 | 0,50 | 4 |
| **F4BJ1600BWL20C320** | 16,00 | 16,00 | 32,00 | 92,00 | 0,50 | 4 |
| **F4BJ2000BWL20C220** | 20,00 | 20,00 | 22,00 | 92,00 | 0,50 | 4 |
| **F4BJ2000BWX20C380** | 20,00 | 20,00 | 38,00 | 104,00 | 0,50 | 4 |

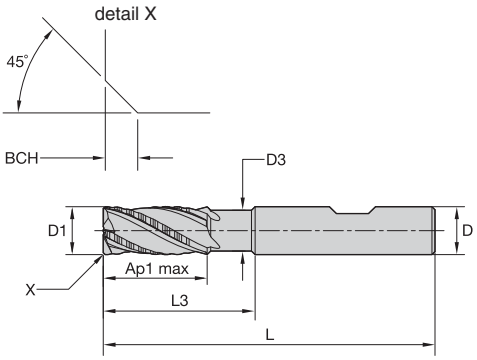
NOTE: For application data, see page C61.

**End Mill Tolerances**

| D1 | tolerance d11 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,020/-0,080 | ≤3 | +0/-0,006 |
| >3–6 | -0,030/-0,105 | >3–6 | +0/-0,008 |
| >6–10 | -0,040/-0,130 | >6–10 | +0/-0,009 |
| >10–18 | -0,050/-0,160 | >10–18 | +0/-0,011 |
| >18–30 | -0,065/-0,195 | >18–30 | +0/-0,013 |

- Kennametal standard dimensions.
- Centre cutting.
- Flat shallow profile.



beyond

## ■ RUDC.. • With Neck • Metric

NEW!

● first choice
○ alternate choice

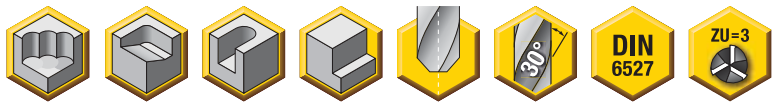
| KCPM15 | D1 | D | D3 | Ap1 max | L3 | L | BCH | Z U |
|---|---|---|---|---|---|---|---|---|
| **RUDC0400B3BN** | 4,0 | 6 | 3,60 | 8,00 | 21,00 | 57 | 0,30 | 3 |
| **RUDC0500B3BN** | 5,0 | 6 | 4,60 | 13,00 | 21,00 | 57 | 0,30 | 3 |
| **RUDC0600B3BN** | 6,0 | 6 | 5,50 | 13,00 | 21,00 | 57 | 0,30 | 3 |
| **RUDC0800B3BN** | 8,0 | 8 | 7,50 | 16,00 | 27,00 | 63 | 0,30 | 3 |
| **RUDC1000B4BN** | 10,0 | 10 | 9,50 | 22,00 | 32,00 | 72 | 0,50 | 4 |
| **RUDC1200B4BN** | 12,0 | 12 | 11,00 | 26,00 | 38,00 | 83 | 0,50 | 4 |
| **RUDC1400B4BN** | 14,0 | 14 | 13,00 | 26,00 | 38,00 | 83 | 0,50 | 4 |
| **RUDC1600B4BN** | 16,0 | 16 | 15,00 | 32,00 | 44,00 | 92 | 0,50 | 4 |
| **RUDC1800B4BN** | 18,0 | 18 | 17,00 | 32,00 | 44,00 | 92 | 0,50 | 4 |
| **RUDC2000B4BN** | 20,0 | 20 | 19,00 | 38,00 | 54,00 | 104 | 0,50 | 4 |
| **RUDC2500B5BN** | 25,0 | 25 | 24,00 | 45,00 | 65,00 | 121 | 0,50 | 5 |

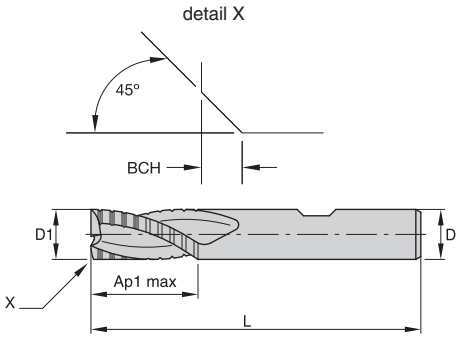
NOTE: For application data, see page C62.

**End Mill Tolerances**

| D1 | tolerance d11 | D | tolerance h6 + / - |
|---|---|---|---|
| ≤ 3 | -0,020/-0,080 | ≤ 3 | 0/0,006 |
| > 3–6 | -0,030/-0,105 | > 3–6 | 0/0,008 |
| > 6–10 | -0,040/-0,130 | > 6–10 | 0/0,009 |
| > 10–18 | -0,050/-0,160 | > 10–18 | 0/0,011 |
| > 18–30 | -0,065/-0,195 | > 18–30 | 0/0,013 |

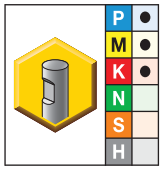
- Centre cutting.
- Flat shallow profile.



beyond

## F3BH...DL • DIN 6527 • Long • Metric




● first choice
○ alternate choice

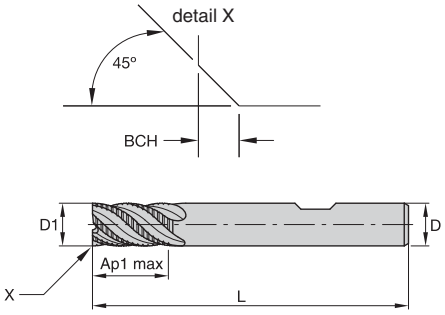
| KCPM15 | D1 | D | Ap1 max | L | BCH |
|---|---|---|---|---|---|
| **F3BH0400BDL30** | 4,00 | 6,00 | 8,00 | 57,00 | 0,10 |
| **F3BH0500BDL30** | 5,00 | 6,00 | 13,00 | 57,00 | 0,10 |
| **F3BH0600BDL30** | 6,00 | 6,00 | 13,00 | 57,00 | 0,10 |
| **F3BH0800BDL30** | 8,00 | 8,00 | 16,00 | 63,00 | 0,20 |
| **F3BH1000BDL30** | 10,00 | 10,00 | 19,00 | 72,00 | 0,30 |
| **F3BH1200BDL30** | 12,00 | 12,00 | 22,00 | 83,00 | 0,30 |
| **F3BH1600BDL30** | 16,00 | 16,00 | 26,00 | 92,00 | 0,40 |
| **F3BH2000BDL30** | 20,00 | 20,00 | 32,00 | 104,00 | 0,40 |
| **F3BH2500BDL30** | 25,00 | 25,00 | 45,00 | 121,00 | 0,40 |

NOTE: For application data, see page C62.

**End Mill Tolerances**

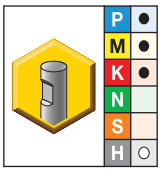
| D1 | tolerance h11 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | +0/-0,060 | ≤3 | +0/-0,006 |
| >3–6 | +0/-0,075 | >3–6 | +0/-0,008 |
| >6–10 | +0/-0,090 | >6–10 | +0/-0,009 |
| >10–18 | +0/-0,110 | >10–18 | +0/-0,011 |
| >18–30 | +0/-0,130 | >18–30 | +0/-0,013 |

- Centre cutting.
- Flat shallow profile.



beyond

## F4BJ-F6BJ...DL • DIN 6527 • Long • Metric




● first choice
○ alternate choice

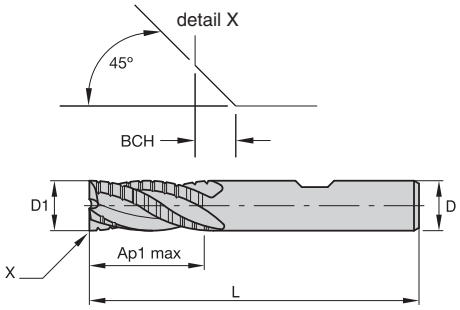
| KCPM15 | D1 | D | Ap1 max | L | BCH | Z U |
|---|---|---|---|---|---|---|
| **F4BJ0600BDL45** | 6,00 | 6,00 | 13,00 | 57,00 | 0,10 | 4 |
| **F4BJ0800BDL45** | 8,00 | 8,00 | 19,00 | 63,00 | 0,20 | 4 |
| **F4BJ1000BDL45** | 10,00 | 10,00 | 22,00 | 72,00 | 0,30 | 4 |
| **F4BJ1200BDL45** | 12,00 | 12,00 | 26,00 | 83,00 | 0,30 | 4 |
| **F6BJ1600BDL45** | 16,00 | 16,00 | 32,00 | 92,00 | 1,00 | 6 |
| **F6BJ2000BDL45** | 20,00 | 20,00 | 38,00 | 104,00 | 1,25 | 6 |
| **F6BJ2500BDL45** | 25,00 | 25,00 | 45,00 | 121,00 | 1,25 | 6 |

NOTE: For application data, see page C62.

**End Mill Tolerances**

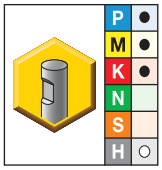
| D1 | tolerance h11 | D | tolerance h6 |
|---|---|---|---|
| ≤ 3 | +0/-0,060 | ≤ 3 | +0/-0,006 |
| >3–6 | +0/-0,075 | >3–6 | +0/-0,008 |
| >6–10 | +0/-0,090 | >6–10 | +0/-0,009 |
| >10–18 | +0/-0,110 | >10–18 | +0/-0,011 |
| >18–30 | +0/-0,130 | >18–30 | +0/-0,013 |

- Centre cutting.
- Chipbreaker profile.



beyond

## F4BJ...DL • DIN 6527 • Long • Metric




● first choice
○ alternate choice

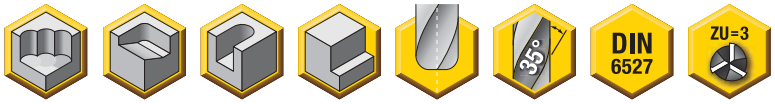
| KCPM15 | D1 | D | Ap1 max | L | BCH |
|---|---|---|---|---|---|
| **F4BJ0600BDL30** | 6,00 | 6,00 | 13,00 | 57,00 | 0,10 |
| **F4BJ0800BDL30** | 8,00 | 8,00 | 19,00 | 63,00 | 0,20 |
| **F4BJ1000BDL30** | 10,00 | 10,00 | 22,00 | 72,00 | 0,30 |
| **F4BJ1200BDL30** | 12,00 | 12,00 | 26,00 | 83,00 | 0,30 |
| **F4BJ1400BDL30** | 14,00 | 14,00 | 26,00 | 83,00 | 0,30 |
| **F4BJ1600BDL30** | 16,00 | 16,00 | 32,00 | 92,00 | 0,40 |
| **F4BJ1800BDL30** | 18,00 | 18,00 | 32,00 | 92,00 | 0,40 |
| **F4BJ2000BDL30** | 20,00 | 20,00 | 38,00 | 104,00 | 0,40 |

NOTE: For application data, see page C63.

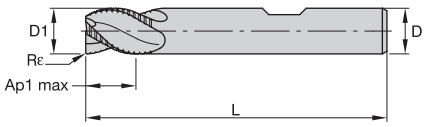
**End Mill Tolerances**

| D1 | tolerance h11 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | +0/-0,060 | ≤3 | +0/-0,006 |
| >3–6 | +0/-0,075 | >3–6 | +0/-0,008 |
| >6–10 | +0/-0,090 | >6–10 | +0/-0,009 |
| >10–18 | +0/-0,110 | >10–18 | +0/-0,011 |
| >18–30 | +0/-0,130 | >18–30 | +0/-0,013 |

- Centre cutting.
- Chipbreaker profile.

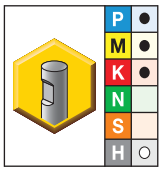




beyond

## F3BS...DK-DL • DIN 6527 • Short • Long • Metric




● first choice
○ alternate choice

| KCPM15 | D1 | D | Ap1 max | L | Rε |
|---|---|---|---|---|---|
| **F3BS0600BDK35** | 6,00 | 6,00 | 7,00 | 54,00 | 0,45 |
| **F3BS0600BDL35** | 6,00 | 6,00 | 10,00 | 57,00 | 0,45 |
| **F3BS0800BDK35** | 8,00 | 8,00 | 9,00 | 58,00 | 0,45 |
| **F3BS0800BDL35** | 8,00 | 8,00 | 16,00 | 63,00 | 0,45 |
| **F3BS1000BDK35** | 10,00 | 10,00 | 11,00 | 66,00 | 0,45 |
| **F3BS1000BDL35** | 10,00 | 10,00 | 19,00 | 72,00 | 0,45 |
| **F3BS1200BDK35** | 12,00 | 12,00 | 12,00 | 73,00 | 0,45 |
| **F3BS1200BDL35** | 12,00 | 12,00 | 22,00 | 83,00 | 0,45 |
| **F3BS1400BDK35** | 14,00 | 14,00 | 14,00 | 75,00 | 0,45 |
| **F3BS1400BDL35** | 14,00 | 14,00 | 22,00 | 83,00 | 0,45 |
| **F3BS1600BDK35** | 16,00 | 16,00 | 16,00 | 82,00 | 0,45 |
| **F3BS1600BDL35** | 16,00 | 16,00 | 26,00 | 92,00 | 0,45 |
| **F3BS2000BDK35** | 20,00 | 20,00 | 20,00 | 92,00 | 0,45 |
| **F3BS2000BDL35** | 20,00 | 20,00 | 32,00 | 104,00 | 0,45 |

NOTE: For application data, see page C64.

**End Mill Tolerances**

| D1 | tolerance d11 | D | tolerance h6 |
|---|---|---|---|
| ≤3 | -0,020/-0,080 | ≤3 | +0/-0,006 |
| >3–6 | -0,030/-0,105 | >3–6 | +0/-0,008 |
| >6–10 | -0,040/-0,130 | >6–10 | +0/-0,009 |
| >10–18 | -0,050/-0,160 | >10–18 | +0/-0,011 |
| >18–30 | -0,065/-0,195 | >18–30 | +0/-0,013 |

## F3BH-F4BJ-F5BJ...WS-WM-WL-WX

| Material Group | | A | | B | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | | |
| | | ap | ae | ap | min | max | mm | 4,0 | 6,0 | 8,0 | 10,0 | 12,0 | 14,0 | 16,0 | 18,0 | 20,0 |
| P | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,024 | 0,037 | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,024 | 0,037 | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 |
| | 3 | 1,5 x D | 0,4 x D | 0,75 x D | 120 | 160 | fz | 0,020 | 0,031 | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 |
| | 4 | 1 x D | 0,3 x D | 0,5 x D | 90 | 150 | fz | 0,018 | 0,028 | 0,037 | 0,044 | 0,054 | 0,060 | 0,066 | 0,072 | 0,076 |
| | 5 | 1,5 x D | 0,4 x D | 0,75 x D | 60 | 100 | fz | 0,016 | 0,025 | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 |
| M | 1 | 1 x D | 0,4 x D | 0,75 x D | 80 | 100 | fz | 0,020 | 0,031 | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,016 | 0,025 | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,014 | 0,021 | 0,026 | 0,032 | 0,039 | 0,044 | 0,048 | 0,052 | 0,056 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,024 | 0,037 | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 |
| | 2 | 1,5 x D | 0,4 x D | 1 x D | 110 | 140 | fz | 0,020 | 0,031 | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 |
| | 3 | 1,5 x D | 0,4 x D | 1 x D | 100 | 130 | fz | 0,016 | 0,025 | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 |
| H | 1 | 1,0 x D | 0,3 x D | 0,5 x D | 80 | 140 | fz | 0,018 | 0,028 | 0,037 | 0,044 | 0,054 | 0,060 | 0,066 | 0,072 | 0,076 |

## F3BH-F4BJ...WS-WM-WL-WX • Internal Coolant

| Material Group | | A | | B | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | |
| | | ap | ae | ap | min | max | mm | 8,0 | 10,0 | 12,0 | 14,0 | 16,0 | 18,0 | 20,0 |
| P | 1 | 1,5 x D | 0,5 x D | 1 x D | 150 | 200 | fz | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 |
| | 2 | 1,5 x D | 0,5 x D | 1 x D | 140 | 190 | fz | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 |
| | 3 | 1,5 x D | 0,4 x D | 0,75 x D | 120 | 160 | fz | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 |
| | 4 | 1 x D | 0,3 x D | 0,5 x D | 90 | 150 | fz | 0,037 | 0,044 | 0,054 | 0,060 | 0,066 | 0,072 | 0,076 |
| | 5 | 1,5 x D | 0,4 x D | 0,75 x D | 60 | 100 | fz | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 |
| M | 1 | 1 x D | 0,4 x D | 0,75 x D | 80 | 100 | fz | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,026 | 0,032 | 0,039 | 0,044 | 0,048 | 0,052 | 0,056 |
| K | 1 | 1,5 x D | 0,5 x D | 1 x D | 120 | 160 | fz | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 |
| | 2 | 1,5 x D | 0,4 x D | 1 x D | 110 | 140 | fz | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 |
| | 3 | 1,5 x D | 0,4 x D | 1 x D | 100 | 130 | fz | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 |
| H | 1 | 1,0 x D | 0,3 x D | 0,5 x D | 80 | 140 | fz | 0,037 | 0,044 | 0,054 | 0,060 | 0,066 | 0,072 | 0,076 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

Solid End Milling

## RUDC.. • With Neck

| Material Group | | Side Milling (A) and Slotting (B) A ap | A ae | B ap | KCPM15 Cutting Speed — vc m/min min | | max | mm | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10%. D1 — Diameter 4,0 | 5,0 | 6,0 | 8,0 | 10,0 | 12,0 | 14,0 | 16,0 | 18,0 | 20,0 | 25,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 1.5 x D | 0.5 x D | 1 x D | 150 | – | 200 | fz | 0,024 | 0,031 | 0,037 | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 | 0,105 |
| | 2 | 1.5 x D | 0.5 x D | 1 x D | 140 | – | 190 | fz | 0,024 | 0,031 | 0,037 | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 | 0,105 |
| | 3 | 1.5 x D | 0.4 x D | 0.75 x D | 120 | – | 160 | fz | 0,020 | 0,025 | 0,031 | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 | 0,097 |
| | 4 | 1 x D | 0.3 x D | 0.5 x D | 90 | – | 150 | fz | 0,018 | 0,023 | 0,028 | 0,037 | 0,044 | 0,054 | 0,060 | 0,066 | 0,072 | 0,076 | 0,083 |
| | 5 | 1.5 x D | 0.4 x D | 0.75 x D | 60 | – | 100 | fz | 0,016 | 0,021 | 0,025 | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 | 0,077 |
| M | 1 | 1 x D | 0.4 x D | 0.75 x D | 80 | – | 100 | fz | 0,020 | 0,025 | 0,031 | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 | 0,097 |
| | 2 | 1 x D | 0.4 x D | 0.75 x D | 60 | – | 80 | fz | 0,016 | 0,021 | 0,025 | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 | 0,077 |
| | 3 | 1 x D | 0.4 x D | 0.75 x D | 60 | – | 80 | fz | 0,014 | 0,017 | 0,021 | 0,026 | 0,032 | 0,039 | 0,044 | 0,048 | 0,052 | 0,056 | 0,060 |
| K | 1 | 1.5 x D | 0.5 x D | 1 x D | 120 | – | 160 | fz | 0,024 | 0,031 | 0,037 | 0,049 | 0,059 | 0,072 | 0,080 | 0,087 | 0,093 | 0,098 | 0,105 |
| | 2 | 1.5 x D | 0.4 x D | 1 x D | 110 | – | 140 | fz | 0,020 | 0,025 | 0,031 | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 | 0,097 |
| | 3 | 1.5 x D | 0.4 x D | 1 x D | 100 | – | 130 | fz | 0,016 | 0,021 | 0,025 | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 | 0,077 |
| S | 1 | 1.5 x D | 0.4 x D | 0.75 x D | 50 | – | 90 | fz | 0,020 | 0,025 | 0,031 | 0,041 | 0,049 | 0,061 | 0,068 | 0,075 | 0,082 | 0,087 | 0,097 |
| | 2 | 1.5 x D | 0.4 x D | 0.75 x D | 50 | – | 80 | fz | 0,016 | 0,021 | 0,025 | 0,033 | 0,039 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 | 0,077 |
| H | 1 | 1.0 x D | 0.3 x D | 0.5 x D | 80 | – | 140 | fz | 0,018 | 0,023 | 0,028 | 0,037 | 0,044 | 0,054 | 0,060 | 0,066 | 0,072 | 0,076 | 0,083 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameters.

## F3BH...DL • DIN 6527 • Long

| Material Group | | A ap | A ae | B ap | KCPM15 Cutting Speed — vc m/min min | max | mm | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 10%. D1 — Diameter 4,0 | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 1 x D | 0,4 x D | 0,75 x D | 150 | 200 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 140 | 190 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 120 | 160 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 4 | 1 x D | 0,3 x D | 0,3 x D | 90 | 150 | fz | 0,021 | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |
| | 5 | 1 x D | 0,4 x D | 0,75 x D | 60 | 100 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 6 | 1 x D | 0,3 x D | 0,3 x D | 50 | 75 | fz | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| M | 1 | 1 x D | 0,4 x D | 0,75 x D | 80 | 100 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,016 | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| K | 1 | 1 x D | 0,4 x D | 0,75 x D | 120 | 160 | fz | 0,028 | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 110 | 140 | fz | 0,023 | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 100 | 130 | fz | 0,019 | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |

## F4BJ-F6BJ...DL • DIN 6527 • Long

| Material Group | | A | | B | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 | 25,0 |
| P | 3 | 1 x D | 0,5 x D | 0,5 x D | 120 | 160 | fz | 0,031 | 0,043 | 0,051 | 0,063 | 0,078 | 0,101 | 0,114 |
| | 4 | 1 x D | 0,3 x D | 0,4 x D | 90 | 150 | fz | 0,028 | 0,038 | 0,046 | 0,056 | 0,069 | 0,088 | 0,098 |
| | 5 | 1 x D | 0,5 x D | 0,5 x D | 60 | 100 | fz | 0,025 | 0,034 | 0,041 | 0,051 | 0,063 | 0,081 | 0,091 |
| | 6 | 1 x D | 0,3 x D | 0,4 x D | 50 | 75 | fz | 0,021 | 0,029 | 0,034 | 0,042 | 0,051 | 0,065 | 0,071 |
| M | 1 | 1 x D | 0,5 x D | 0,5 x D | 80 | 100 | fz | 0,031 | 0,043 | 0,051 | 0,063 | 0,078 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,5 x D | 0,5 x D | 60 | 80 | fz | 0,025 | 0,034 | 0,041 | 0,051 | 0,063 | 0,081 | 0,091 |
| | 3 | 1 x D | 0,5 x D | 0,5 x D | 60 | 80 | fz | 0,021 | 0,029 | 0,034 | 0,042 | 0,051 | 0,065 | 0,071 |
| K | 1 | 1 x D | 0,5 x D | 0,5 x D | 120 | 160 | fz | 0,037 | 0,051 | 0,061 | 0,075 | 0,091 | 0,114 | 0,124 |
| | 2 | 1 x D | 0,5 x D | 0,5 x D | 110 | 140 | fz | 0,031 | 0,043 | 0,051 | 0,063 | 0,078 | 0,101 | 0,114 |
| | 3 | 1 x D | 0,5 x D | 0,5 x D | 100 | 130 | fz | 0,025 | 0,034 | 0,041 | 0,051 | 0,063 | 0,081 | 0,091 |
| H | 1 | 1 x D | 0,3 x D | 0,3 x D | 80 | 140 | fz | 0,028 | 0,038 | 0,046 | 0,056 | 0,069 | 0,088 | 0,098 |
| | 2 | 1 x D | 0,2 x D | 0,2 x D | 70 | 120 | fz | 0,021 | 0,029 | 0,034 | 0,042 | 0,051 | 0,065 | 0,071 |
| | 3 | 1 x D | 0,2 x D | 0,2 x D | 60 | 90 | fz | 0,017 | 0,023 | 0,027 | 0,034 | 0,041 | 0,052 | 0,057 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.



## F4BJ...DL • DIN 6527 • Long

| Material Group | | A | | B | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 14,0 | 16,0 | 18,0 | 20,0 |
| P | 1 | 1,5 x D | 0,4 x D | 1 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,092 | 0,101 | 0,107 | 0,114 |
| | 2 | 1,5 x D | 0,4 x D | 1 x D | 140 | 190 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,092 | 0,101 | 0,107 | 0,114 |
| | 3 | 1,5 x D | 0,4 x D | 0,75 x D | 120 | 160 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,094 | 0,101 |
| | 4 | 1,5 x D | 0,3 x D | 0,3 x D | 90 | 150 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,070 | 0,077 | 0,082 | 0,088 |
| | 5 | 1,5 x D | 0,4 x D | 0,75 x D | 60 | 100 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,063 | 0,070 | 0,075 | 0,081 |
| | 6 | 1,5 x D | 0,3 x D | 0,3 x D | 50 | 75 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,052 | 0,057 | 0,061 | 0,065 |
| M | 1 | 1,5 x D | 0,4 x D | 0,75 x D | 80 | 100 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,094 | 0,101 |
| | 2 | 1,5 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,063 | 0,070 | 0,075 | 0,081 |
| | 3 | 1,5 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,052 | 0,057 | 0,061 | 0,065 |
| K | 1 | 1,5 x D | 0,4 x D | 1 x D | 120 | 160 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,092 | 0,101 | 0,107 | 0,114 |
| | 2 | 1,5 x D | 0,4 x D | 1 x D | 110 | 140 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,079 | 0,087 | 0,094 | 0,101 |
| | 3 | 1,5 x D | 0,4 x D | 1 x D | 100 | 130 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,063 | 0,070 | 0,075 | 0,081 |
| H | 1 | 1,5 x D | 0,3 x D | 0,3 x D | 100 | 140 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,070 | 0,077 | 0,082 | 0,088 |

## F3BS...DK-DL • DIN 6527 • Short • Long



| Material Group | | A | | B | KCPM15 | | Recommended feed per tooth (fz=mm/th) for side milling (A). For slotting (B), reduce fz by 20%. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Cutting Speed — vc m/min | | | D1 — Diameter | | | | | |
| | | ap | ae | ap | min | max | mm | 6,0 | 8,0 | 10,0 | 12,0 | 16,0 | 20,0 |
| P | 1 | 1 x D | 0,4 x D | 0,75 x D | 150 | 200 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 140 | 190 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 120 | 160 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 4 | 1 x D | 0,3 x D | 0,3 x D | 90 | 150 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |
| | 5 | 1 x D | 0,4 x D | 0,75 x D | 60 | 100 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 6 | 1 x D | 0,3 x D | 0,3 x D | 50 | 75 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| M | 1 | 1 x D | 0,4 x D | 0,75 x D | 80 | 100 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 60 | 80 | fz | 0,025 | 0,034 | 0,040 | 0,047 | 0,057 | 0,065 |
| K | 1 | 1 x D | 0,4 x D | 0,75 x D | 120 | 160 | fz | 0,044 | 0,060 | 0,072 | 0,083 | 0,101 | 0,114 |
| | 2 | 1 x D | 0,4 x D | 0,75 x D | 110 | 140 | fz | 0,036 | 0,050 | 0,061 | 0,070 | 0,087 | 0,101 |
| | 3 | 1 x D | 0,4 x D | 0,75 x D | 100 | 130 | fz | 0,029 | 0,040 | 0,048 | 0,056 | 0,070 | 0,081 |
| H | 1 | 1 x D | 0,3 x D | 0,3 x D | 100 | 140 | fz | 0,033 | 0,045 | 0,054 | 0,062 | 0,077 | 0,088 |

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameter.

## Looking for a product that's not shown in this catalogue?

# Check the Kennametal website!

Solid End Milling

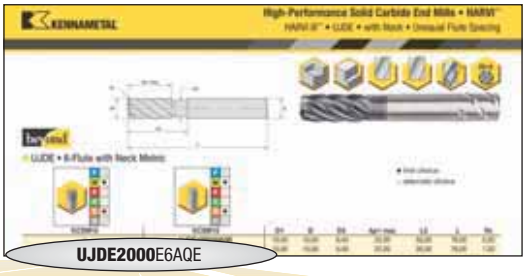
### Online product catalogue available 24/7

Visit **http://www.kennametal.com/endmilling/** to browse our electronic catalogue any time you're looking for Kennametal's best tooling solutions. It's fast, free, and always available. The online e-catalogue is updated weekly with products and solutions for milling, turning, holemaking, and tooling systems applications.

KENNAMETAL

## 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.






### UJ

End Mill Family
1, 2

- **AA =** Aluminium
- **AB =** MaxiMet™ — aluminium
- **CB =** CFPR burr style
- **CC =** CFRP compression
- **CD =** CFPR down cutter
- **CR =** CFRP ball nose
- **GA =** General application
- **KH =** KenFeed™ (for hard steels)
- **KM =** KenFeed (for medium steels)
- **KS =** KenFeed (for material group P)
- **KT =** KenFeed (for material group S)
- **MA =** Micro
- **PA =** Precision
- **RA =** Rougher — aluminium design 1
- **RB =** Rougher — aluminium design 2
- **RF =** Rougher chipbreaker design 1
- **RG =** Rougher chipbreaker design 2
- **RK =** Rougher — fine pitch profile design 1
- **RL =** Rougher — fine pitch profile design 2
- **RP =** HARVI I™ — coarse pitch profile
- **RQ =** Rougher — coarse pitch profile design
- **RU =** Rougher — flat shallow profile
- **UA =** HARVI I (for material group M)
- **UB =** HARVI (for material group S)
- **UC =** HARVI II™ (for material group M)
- **UD =** HARVI II (for material group S)
- **UG =** HARVI II long (3 x D and 5 x D)
- **UH =** HARVI III™ centrecut and eccentric (material group M)
- **UJ =** HARVI III centrecut and eccentric (material group S)
- **UE =** GOmill™
- **UM =** Multiflute (for material group S)
- **FM =** Finisher multiflute
- **EA =** Ceramic end mill for nickel-based alloys

### D

End Mill Shape
3

- **A =** Ball nose RH — double end
- **B =** Ball nose RH
- **C =** Square end RH — double end
- **D =** Square end RH
- **J =** Ball nose LH — double end
- **K =** Ball nose LH
- **L =** Square end LH — double end
- **M =** Square end LH
- **N =** Square end RH + LH

### E

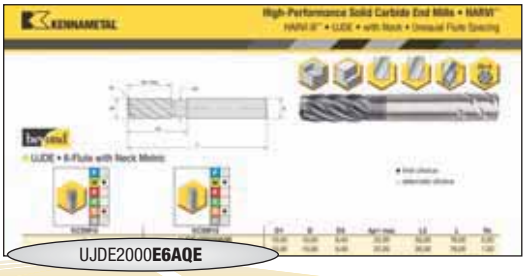
Helix Angle
4

- **A =** 0–10
- **B =** 11–20
- **C =** 21–30
- **D =** 31–35
- **E =** 36–40
- **F =** 41–45
- **G =** 46–60

### 2000

Diameter
mm
5, 6, 7, 8

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




| E | 6 | A | Q | E |
|---|---|---|---|---|
| Shank Style<br>9 | Number of Flutes<br>10 | Length of Cut<br>11 | Special End Mill Characteristics<br>12 | Radius<br>mm<br>13 |
| **A =** Plain<br>**B =** Weldon®<br>**C =** Whistle Notch™<br>**D =** Weldon and Whistle Notch<br>**E =** SAFE-LOCK™ | **1**<br>**2**<br>**3**<br>**4**<br>**5**<br>**6**<br>**7**<br>**8**<br>**9**<br>**A** = 10<br>**B** = 11<br>**C** = 12<br>**M** = multi | **A =** Short<br>**B =** Regular<br>**C =** Long<br>**D =** X Long<br>**E =** XX Long | **C =** Coolant<br>**H =** Chamfer<br>**L =** Extended reach + neck<br>**N =** Necked<br>**P =** Tapered<br>**Q =** Necked and radius<br>**R =** Radius<br>**S =** Square (sharp)<br>**T =** Toroid<br>**U =** Necked + sharp<br>**V =** Necked + chamfer<br>**X =** Necked + sharp + coolant<br>**Y =** Necked + radius + coolant<br>**Z =** Necked + chamfer + coolant | **A =** 0,2<br>**B =** 0,25<br>**C =** 0,3<br>**D =** 0,4<br>**E =** 0,5<br>**F =** 0,75<br>**G =** 1,0<br>**H =** 1,25<br>**J =** 1,5<br>**K =** 2,0<br>**L =** 2,5<br>**M =** 3,0<br>**N =** 4,0<br>**O =** 6,3<br>**S =** Sharp<br>**X =** Custom |

# High-Performance Solid Carbide End Mills

SAFE-λOCK™
by HAIMER

In High-Performance Cutting (HPC), slow microcreeping can cause the cutting tool to be pulled out of the chuck, **turning high-quality workpieces to scrap.**

## Be on the Safe Side with SAFE-LOCK™ in High-Performance Cutting (HPC)

## Benefits

- Highly accurate clamping due to positive connection.
- No loss of accuracy.
- No pull out or spinning of the tool.
- No damage to the workpiece or machine.
- Groove on tool shank is directed so the tool will be pulled into the chuck (depending on direction of rotation).

## Order Information

Kennametal high-performance end mills with a shank diameter of 12mm and larger are available with **SAFE-LOCK™** technology, as a special tool, upon request. Please contact your local customer service location to receive a quote.

### Features

- Form-closed clamping.
- High accuracy clamping.
- Helical grooves.

### Functions

- No pull out.
- Excellent runout.
- Adjustable clamping length.

### Benefits

- Reduce scrap rate.
- Higher tool life.
- No need to change NC programme after regrinding.

### HARVI III™ for Highest Metal Removal Rates

The HARVI III UJDE proprietary design with **unequal flute spacing** has a unique core geometry for chatter-free machining and eccentric relief for highest tool life.

### SAFE-LOCK™

The safety belt for high-performance solid carbide end mills provides a form-closed clamping with high accuracy and helical grooves for length adjustment.

# Indexable Milling


**KSOM Mini Line Expansion . . . . . D2–D8**

**Mill 1–7 . . . . . D10–D15**

**KenFeed 2X • Double-Sided High-Feed Milling Platform . . . . . D16–D28**

KenFeed 2X iC 09 . . . . . D18–D22

KenFeed 2X iC 13 . . . . . D24–D28

**KSSM High-Feed Beyond Blast . . . . . D30–D35**

**Rodeka Series • Double-Sided Round Inserts . . . . . D36–D59**

Rodeka 10 . . . . . D38–D44

Rodeka 12 . . . . . D45–D51

Rodeka 16 . . . . . D52–D54

Rodeka 12X Turbine Blades . . . . . D56–D59

**KSRM • Round Inserts, Specially Developed for Titanium and Stainless Steel . . . . . D60–D72**

RP.T1204 . . . . . D62–D67

RP.T1605 . . . . . D68–D72

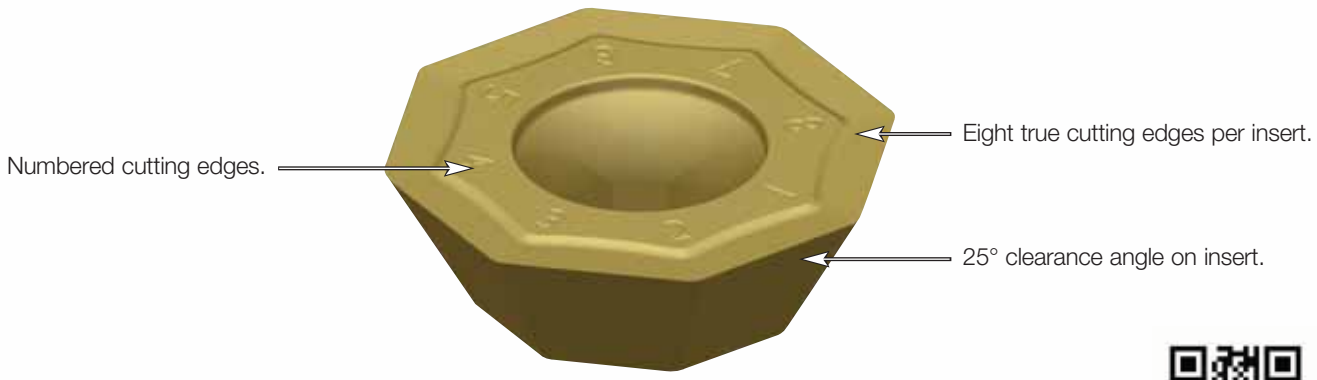
# KSOM™ Mini Line Expansion

## Primary Application

Specially engineered to create lower cutting forces, the KSOM Mini enables a super soft cutting effect resulting in unbeatable surface floor finishing and flatness quality.

## Features and Benefits

- Up to eight cutting edges per insert.
- Excellent performance in stainless steel and high-temperature alloys.
- Exceeds expectations when machining root blades on finishing operations.
- Higher effective rake angle, reduces cutting forces.




*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*

The KSOM™ Mini exceeds expectations when machining root blades on finishing operations.

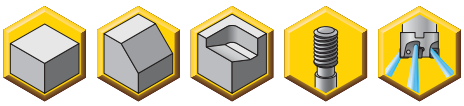
**Fine pitch cutter version offered**
Diameter 32–80mm (1.25–3").

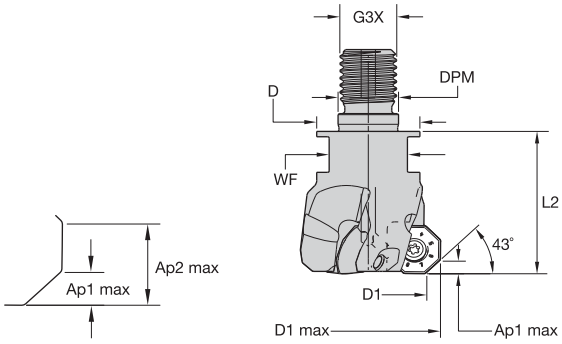
**Only one screw used for** ease-of-use without additional adjustments.

**Eight index positions** for competitive cost per edge.

All cutters with internal coolant.

- Eight cutting edges per insert.
- Super soft cutting effect for superior surface floor finishing.



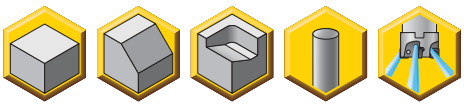


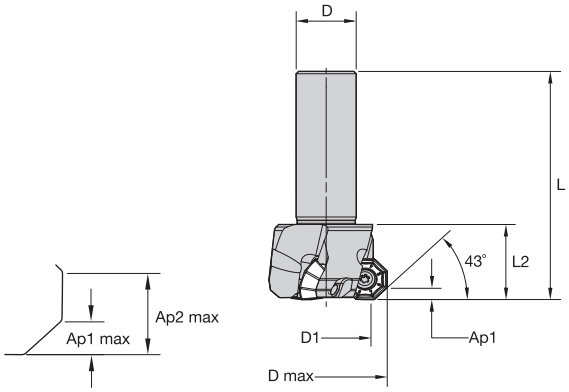
Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges), reduce feed rate by 40%



## Screw-On End Mills

| order number | catalogue number | D1 | D1 max | D | DPM | G3X | L2 | WF | Ap1 max | Z | max ramp angle | kg | max RPM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5358886** | **KSOM32Z03M16OF06X** | 32 | 41,1 | 29 | 17 | M16 | 40 | 22 | 3,5 | 3 | 11.0° | 0,22 | 19890 |
| **5358887** | **KSOM40Z04M16OF06X** | 40 | 49,0 | 29 | 17 | M16 | 40 | 22 | 3,5 | 4 | 7.5° | 0,27 | 15920 |





Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges), reduce feed rate by 40%

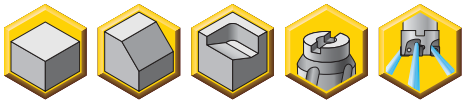
## Cylindrical End Mills

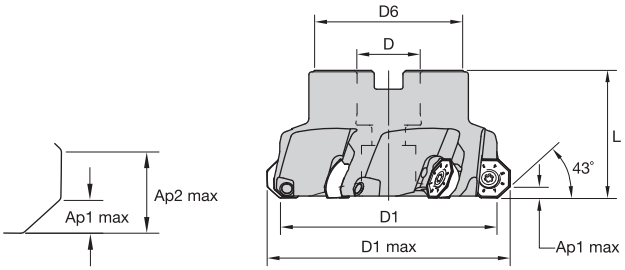
| order number | catalogue number | D1 | D1 max | D | L | L2 | Ap1 max | Z | max ramp angle | kg | max RPM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5358888** | **KSOM32Z03A32OF06X** | 32 | 41,1 | 32 | 90 | 29 | 3,5 | 3 | 11.0° | 0,52 | 19890 |

## Spare Parts

| D1 | insert screw | Nm | Torx Plus wrench |
|---|---|---|---|
| 32 | **193.433** | 6,0 | **TTP15** |
| 40 | **193.433** | 6,0 | **TTP15** |

- Eight cutting edges per insert.
- Super soft cutting effect for superior surface floor finishing.





Ap1 max = 3,5mm (8 edges)
Ap2 max = 9mm (4 edges), reduce feed rate by 40%

## Shell Mills

| order number | catalogue number | D1 | D1 max | D | D6 | L | Ap1 max | Z | max ramp angle | kg | max RPM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5358889** | **KSOM40Z04OF06X** | 40 | 49,0 | 16 | 33 | 40 | 3,5 | 4 | 7.5° | 0,23 | 15920 |
| **5358930** | **KSOM50Z06OF06X** | 50 | 58,8 | 22 | 42 | 43 | 3,5 | 6 | 5.0° | 0,37 | 12730 |
| **5358931** | **KSOM63Z07OF06X** | 63 | 71,7 | 22 | 50 | 43 | 3,5 | 7 | 3.9° | 0,61 | 10110 |
| **5358932** | **KSOM80Z09OF06X** | 80 | 88,7 | 27 | 60 | 50 | 3,5 | 9 | 2.9° | 1,09 | 7960 |

## Spare Parts

| D1 | insert screw | Nm | Torx Plus wrench | low-head cap screw | socket-head cap screw |
|---|---|---|---|---|---|
| 40 | **193.433** | 6,0 | **TTP15** | **–** | **MS1294** |
| 50 | **193.433** | 6,0 | **TTP15** | **129.025** | **–** |
| 63 | **193.433** | 6,0 | **TTP15** | **–** | **125.025** |
| 80 | **193.433** | 6,0 | **TTP15** | **–** | **125.230** |

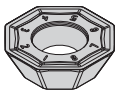
## Insert Selection Guide

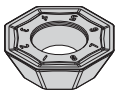
| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .E..NLB | KC725M | **.E..NGB** | **KC725M** | .S..NHB | KC725M |
| P3–P4 | .E..NLB | KCPK30 | **.E..NGB** | **KCPK30** | .S..NHB | KCPK30 |
| P5–P6 | .E..NLB | KCPK30 | **.E..NLB** | **KCPK30** | .E..NGB | KCPK30 |
| M1–M2 | .E..NLB | KC725M | **.E..NGB** | **KC725M** | .S..NHB | KC725M |
| M3 | .E..NLB | KCPK30 | **.E..NLB** | **KCPK30** | .S..NLB | KC522M |
| K1–K2 | – | – | **.S..NHB** | **KCPM20** | .S..NHB | KCPK30 |
| K3 | .E..NLB | KCPK30 | **.E..NGB** | **KCPK30** | .S..NHB | KCPK30 |
| N1–N2 | – | – | **–** | **–** | – | – |
| N3 | – | – | **–** | **–** | – | – |
| S1–S2 | .E..NLB | KC725M | **.E..NGB** | **KC725M** | .S..NHB | KC725M |
| S3 | .E..NLB | KC725M | **.E..NGB** | **KC725M** | .S..NHB | KC725M |
| S4 | .E..NGB | KC725M | **.S..NHB** | **KC725M** | – | – |
| H1 | – | – | **–** | **–** | – | – |

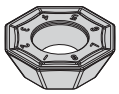


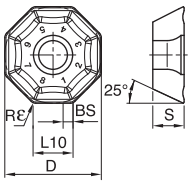
## Indexable Inserts

- -LB light geometry is the first choice for turbine blade applications.
- -GB medium geometry for roughing and finishing operations on all materials.
- -HB geometry with the strongest cutting edge is the first choice for roughing operations on steel and cast iron.


OF.T-LB


OFKT-GB


OF.T- HB




● first choice
○ alternate choice

beyond

| | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|
| P | | ○ | ● | | ● | ● |
| M | | | ● | ● | | ○ | ○ |
| K | ● | ○ | | | ● | ○ | ○ |
| N | | | | | | | |
| S | | | ● | ● | | | |
| H | | | | | | | |

### OFKT-LB

| catalogue number | D | S | L10 | BS | Rε | hm | cutting edges | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **OFKT06L5AFENLB** | 14,70 | 5,00 | 6,00 | 1,23 | 0,8 | 0,10 | 8 | | ● | ● | ● | | ● |
| **OFKT06L5AFSNLB** | 14,70 | 5,00 | 6,00 | 1,21 | 0,8 | 0,22 | 8 | ● | ● | ● | | | ● |

### OFKT-GB

| catalogue number | D | S | L10 | BS | Rε | hm | cutting edges | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **OFKT06L5AFENGB** | 14,70 | 5,00 | 6,00 | – | 0,8 | 0,15 | 8 | ● | ● | ● | ● | ● | ● |

### OFPT-HB

| catalogue number | D | S | L10 | BS | Rε | hm | cutting edges | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **OFPT06L5AFSNHB** | 14,70 | 5,00 | 6,00 | – | 0,8 | 0,21 | 8 | ● | | ● | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KCK15 | | | KC520M | | | KCPM20 | | | KC522M | | | KC725M | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | – | – | – | – | – | – | 660 | **580** | 535 | 395 | **345** | 325 | 315 | **275** | 255 | 545 | **475** | 440 |
| | 2 | – | – | – | – | – | – | 410 | **370** | 330 | 330 | **290** | 240 | 260 | **230** | 195 | 335 | **305** | 275 |
| | 3 | – | – | – | – | – | – | 370 | **330** | 305 | 305 | **255** | 215 | 240 | **205** | 170 | 305 | **275** | 250 |
| | 4 | – | – | – | – | – | – | 275 | **255** | 230 | 270 | **225** | 180 | 215 | **180** | 145 | 225 | **210** | 190 |
| | 5 | – | – | – | – | – | – | 330 | **300** | 275 | 225 | **200** | 180 | 180 | **160** | 145 | 310 | **275** | 255 |
| | 6 | – | – | – | – | – | – | 230 | **200** | 175 | 200 | **150** | 120 | 160 | **120** | 95 | 190 | **165** | – |
| M | 1 | – | – | – | – | – | – | 270 | **240** | 205 | 245 | **215** | 200 | 205 | **180** | 165 | 250 | **220** | 190 |
| | 2 | – | – | – | – | – | – | 245 | **215** | 190 | 225 | **190** | 160 | 185 | **160** | 130 | 225 | **195** | 170 |
| | 3 | – | – | – | – | – | – | 195 | **175** | 150 | 170 | **145** | 115 | 140 | **120** | 95 | 175 | **160** | 140 |
| K | 1 | 505 | **460** | 410 | 325 | **295** | 260 | 435 | **390** | 350 | 275 | **250** | 220 | – | – | – | – | – | – |
| | 2 | 400 | **355** | 330 | 255 | **225** | 215 | 345 | **310** | 280 | 215 | **195** | 180 | – | – | – | – | – | – |
| | 3 | 335 | **300** | 275 | 215 | **190** | 170 | 290 | **255** | 240 | 180 | **160** | 145 | – | – | – | – | – | – |
| N | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | – | – | – | – | – | – | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 2 | – | – | – | – | – | – | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 3 | – | – | – | – | – | – | – | – | – | 60 | **50** | 35 | 55 | **45** | 30 | 55 | **45** | 30 |
| | 4 | – | – | – | – | – | – | – | – | – | 85 | **60** | 45 | 75 | **55** | 35 | 75 | **55** | 35 |
| H | 1 | – | – | – | – | – | – | 170 | **140** | 115 | 145 | **110** | 85 | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm] at Ap1 max value

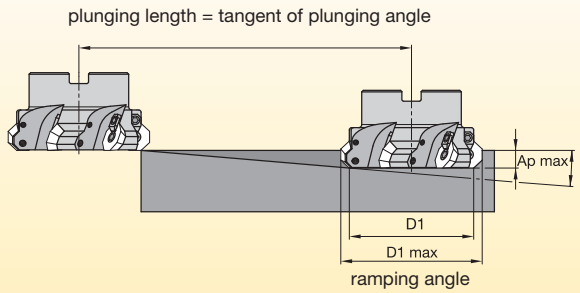
| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..NLB | 0,25 | **0,37** | 0,43 | 0,18 | **0,28** | 0,32 | 0,16 | **0,24** | 0,28 | 0,15 | **0,22** | 0,26 | 0,15 | **0,22** | 0,26 | .E..NLB |
| .S..NLB | 0,57 | **0,69** | 0,79 | 0,42 | **0,51** | 0,59 | 0,37 | **0,45** | 0,52 | 0,34 | **0,42** | 0,48 | 0,34 | **0,41** | 0,47 | .S..NLB |
| .E..NGB | 0,52 | **0,55** | 0,65 | 0,39 | **0,41** | 0,48 | 0,34 | **0,36** | 0,42 | 0,32 | **0,34** | 0,39 | 0,31 | **0,33** | 0,38 | .E..NGB |
| .S..NHB | 0,57 | **0,78** | 0,91 | 0,42 | **0,58** | 0,68 | 0,37 | **0,5** | 0,59 | 0,34 | **0,47** | 0,55 | 0,34 | **0,46** | 0,54 | .S..NHB |

NOTE: Use “Light Machining” values as starting feed rate.
Ap2 max = 9mm (4 edges). Reduce general purpose and heavy machining values by 40%.

# KSOM Mini Application • OF.T06L5

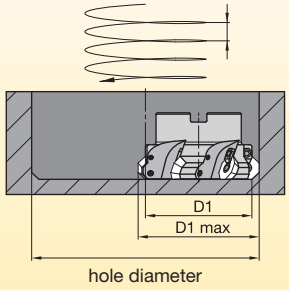
## Ramping




**Metric Version**

| D1 mm | D1 max mm | Ap max mm | ramping angle (°) | ramping length mm |
|---|---|---|---|---|
| 32 | 41,1 | 9 | 11,0 | 46,3 |
| 40 | 49,0 | 9 | 7,5 | 68,4 |
| 50 | 58,9 | 9 | 5,0 | 102,9 |
| 63 | 71,8 | 9 | 3,9 | 132,0 |
| 80 | 88,7 | 9 | 2,9 | 177,7 |

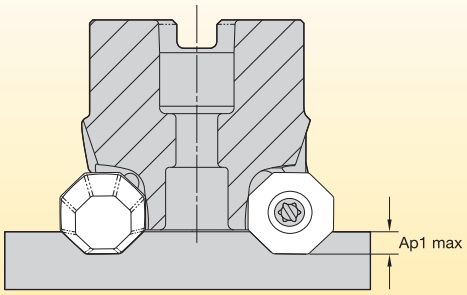
## Helical Interpolation




**Metric Version**

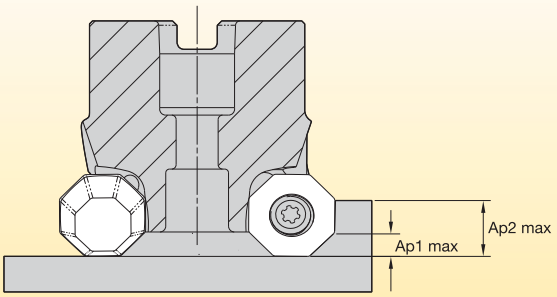
| D1 mm | D1 max mm | hole diameter min mm | hole diameter max mm | Ap/rev mm |
|---|---|---|---|---|
| 32 | 41,1 | 61,7 | 81,7 | 4,7 |
| 40 | 49,0 | 77,5 | 97,6 | 4,7 |
| 50 | 58,9 | 97,4 | 117,4 | 4,7 |
| 63 | 71,8 | 123,3 | 143,3 | 4,7 |
| 80 | 88,7 | 157,2 | 177,2 | 4,7 |

## Plunging




| max plunging depth | mm |
|---|---|
| Ap1 max | 3,2 |

## Face Milling




| max DOC Ap | mm | chipload (fz) |
|---|---|---|
| Ap1 max | 3,5 | 1 x fx |
| Ap2 max | 9,0 | 0,6 x fz |

# Turbine Blade Machining

Kennametal offers both standard and customised tooling solutions to cost-effectively machine near-net shape blades, blade root, and air foil forms. Utilising indexable carbide inserts, solid carbide end mills, and ceramic indexable insert cutters, Kennametal offers the expertise of a global supplier with products that provide maximum productivity on difficult-to-machine materials common in energy turbine components. A wide range of proven tooling solutions provides manufacturing flexibility and downtime reduction.

## Rough Milling Solutions:

Dodeka™ Mini

Rodeka™

Mill 1™

*To learn more,* ***scan here****.*
*For instructions on how to scan, please see page xxv.*

**www.kennametal.com**

KENNAMETAL®

# Mill 1-7™ • High-Performance Shoulder Mill

## Primary Application

The Mill 1-7 line is engineered for small component machining and covers multiple applications, including ramping, slotting, and plunging. Mill 1-7 provides solutions for roughing and finishing operations in energy, aerospace, and general engineering, where small diameter end mills are required.

## Features and Benefits

- Mill 1-7 inserts enable the use of higher density cutters, providing greater feed and higher metal removal rates.
- Super positive rake provides soft action and low cutting forces for smooth entry and exit from the component. Run at higher feed rates while using less power.
- Inserts are designed with elliptical cutting edges and are optimised for a straight 90° wall.
- Inserts are available in three grades: KC725M™, KCPK30™, and KC522M™.
- Ramping, slotting, and plunging capabilities in one platform.

Internal coolant/air supply.

All pockets are machined into heat-treated material, which guarantees runout and pocket strength.

20º rake face angle and 13º clearance angle for soft cutting action and reduced cutting forces.

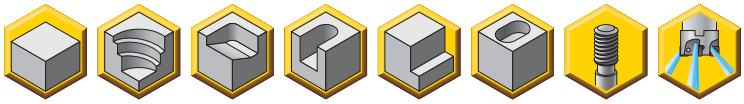
Elliptical edge generates 90º wall.

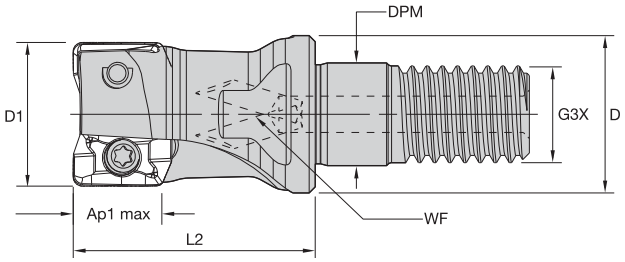
Chip gash designed for excellent chip evacuation.

Insert screw: Torx 6

Increase ramping capability up to 5.5º.

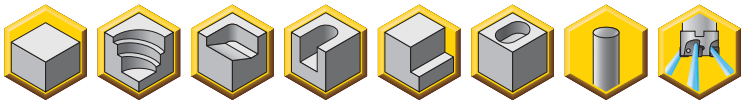
Margin along the main cutting edge and wiper facet for extra strength.

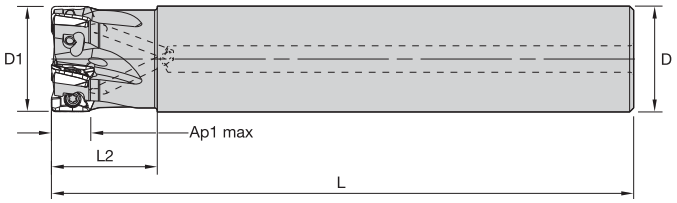




## End Mills • Screw-On

| order number | catalogue number | D1 | D | DPM | G3X | L2 | WF | Ap1 max | Z | max ramp angle | kg | max RPM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5190197** | **12A02R020M08ED07** | 11,87 | 13,00 | 8,50 | M8 | 20,00 | 9,95 | 6,96 | 2 | 5.2° | 0,02 | 64510 |





## End Mills • Cylindrical Shank

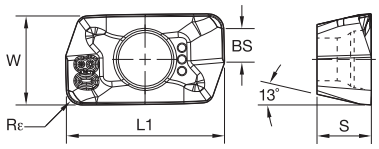
| order number | catalogue number | D1 | D | L | L2 | Ap1 max | Z | max ramp angle | kg | max RPM |
|---|---|---|---|---|---|---|---|---|---|---|
| **5190190** | **12A02R018A12ED07** | 12,00 | 12,00 | 100,00 | 18,00 | 6,96 | 2 | 5.2° | 0,08 | 64510 |
| **5190191** | **16A03R020A16ED07** | 16,00 | 16,00 | 100,00 | 20,00 | 6,98 | 3 | 2.9° | 0,14 | 55790 |
| **5190192** | **20A05R020A20ED07** | 20,00 | 20,00 | 110,00 | 20,00 | 6,93 | 5 | 2.0° | 0,24 | 49860 |

## Insert Selection Guide

| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .S..GE | KC725M | **.S..GE** | **KC725M** | .S..GE | KC725M |
| P3–P4 | .S..GE | KCPK30 | **.S..GE** | **KCPK30** | .S..GE | KCPK30 |
| P5–P6 | .S..GE | KC522M | **.S..GE** | **KC522M** | .S..GE | KC522M |
| M1–M2 | .S..GE | KC725M | **.S..GE** | **KC725M** | .S..GE | KC725M |
| M3 | .S..GE | KC725M | **.S..GE** | **KC725M** | .S..GE | KC725M |
| K1–K2 | .S..GE | KCPK30 | **.S..GE** | **KCPK30** | .S..GE | KCPK30 |
| K3 | .S..GE | KCPK30 | **.S..GE** | **KCPK30** | .S..GE | KCPK30 |
| N1–N2 | – | – | **–** | **–** | – | – |
| N3 | – | – | **–** | **–** | – | – |
| S1–S2 | .S..GE | KC725M | **.S..GE** | **KC725M** | .S..GE | KC522M |
| S3 | .S..GE | KC725M | **.S..GE** | **KC522M** | .S..GE | KC522M |
| S4 | .S..GE | KC725M | **.S..GE** | **KC522M** | .S..GE | KC522M |
| H1 | .S..GE | KC522M | **.S..GE** | **KC522M** | .S..GE | KC522M |



## Indexable Inserts




● first choice
○ alternate choice

| | | KC522M | KC725M | KCPK30 |
|---|---|---|---|---|
| P | | ○ | ● | ● |
| M | | ● | ● | ○ |
| K | | ○ | | ○ |
| N | | | | |
| S | | ● | ● | |
| H | | ● | | |

### EDPT-S.GE

| catalogue number | L1 | W | S | BS | Rε | cutting edges | KC522M | KC725M | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| **EDPT070308PDSRGE** | 8,19 | 4,69 | 2,80 | 1,70 | 0,8 | 2 | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KC522M | | | KC725M | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 330 | **285** | 270 | 260 | **230** | 215 | 455 | **395** | 370 |
| | 2 | 275 | **240** | 200 | 220 | **190** | 160 | 280 | **255** | 230 |
| | 3 | 255 | **215** | 175 | 200 | **170** | 140 | 255 | **230** | 205 |
| | 4 | 225 | **185** | 150 | 180 | **150** | 120 | 190 | **175** | 160 |
| | 5 | 185 | **170** | 150 | 150 | **135** | 120 | 260 | **230** | 210 |
| | 6 | 165 | **125** | 100 | 130 | **100** | 80 | 160 | **135** | – |
| M | 1 | 205 | **180** | 165 | 170 | **150** | 135 | 205 | **185** | 155 |
| | 2 | 185 | **160** | 130 | 155 | **130** | 110 | 185 | **160** | 140 |
| | 3 | 140 | **120** | 95 | 115 | **100** | 80 | 145 | **130** | 115 |
| K | 1 | 230 | **205** | 185 | – | **–** | – | 295 | **265** | 240 |
| | 2 | 180 | **160** | 150 | – | **–** | – | 235 | **210** | 190 |
| | 3 | 150 | **135** | 120 | – | **–** | – | 195 | **175** | 160 |
| N | 1-2 | – | **–** | – | – | **–** | – | – | **–** | – |
| | 3 | – | **–** | – | – | **–** | – | – | **–** | – |
| S | 1 | 40 | **35** | 25 | 35 | **30** | 25 | – | **–** | – |
| | 2 | 40 | **35** | 25 | 35 | **30** | 25 | – | **–** | – |
| | 3 | 50 | **40** | 25 | 45 | **35** | 25 | – | **–** | – |
| | 4 | 70 | **50** | 35 | 60 | **45** | 30 | – | **–** | – |
| H | 1 | 120 | **90** | 70 | – | **–** | – | – | **–** | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

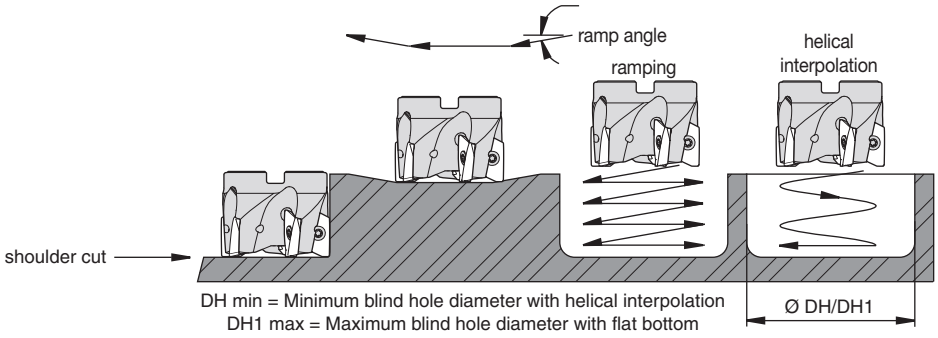
## Recommended Starting Feeds [mm]

| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .S..GE | 0,13 | **0,20** | 0,27 | 0,10 | **0,15** | 0,20 | 0,09 | **0,13** | 0,17 | 0,08 | **0,12** | 0,16 | 0,08 | **0,12** | 0,16 | .S..GE |

NOTE: Use “Light Machining” values as starting feed rate.

## Application Examples

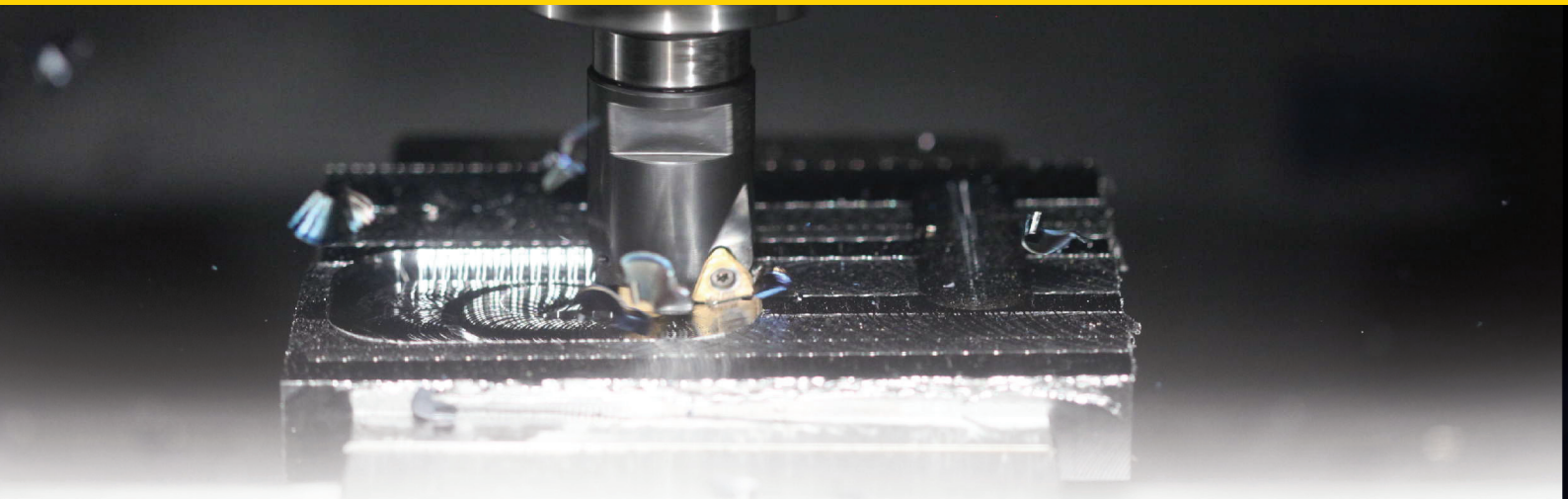



| cutting diameter | max ramp angle to non-cutting corner tangent | DH min (min hole diameter) | DH1 min (min flat-bottomed hole diameter) | max diameter with no flat-bottom |
|---|---|---|---|---|
| 12 | 5,49° | 14,62 | 21,43 | 24 |
| 16 | 2,92° | 22,52 | 28,04 | 32 |
| 20 | 2,01° | 30,51 | 36,49 | 40 |

| Mill 1-7 | |
|---|---|
| max ADOC | 6,98 |
| fz | 0,10–0,68 |
| hm | 0,09 |

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| S | High-Temp Alloys |

| Coating | Grade Description | wear resistance ⟷ toughness: 05 10 15 20 25 30 35 40 45 |
|---|---|---|
| KC725M | A high-performance TiAlN-PVD-coated carbide grade for milling steel, stainless steel, and ductile cast iron. The good thermal shock resistance of the substrate makes this grade ideal for both wet and dry machining. KC725M is primarily for use in general and heavy machining. | P, M, S |
| KCPK30 | A multilayered TiN-TiCN-$Al_2O_3$-CVD-coated carbide grade with advanced Beyond™ post-coat treatment and a very tough substrate. KCPK30 has a wide application area in general and rough milling of steels and cast irons. It performs best dry but can also be used wet. | P, K |
| KC522M | AlTiN-PVD-coated carbide grade engineered to provide better performance in general machining of high-temperature alloys and stainless steel. KC522M resists breakage and offers improved wear resistance and increased strength. | P, M, K, S |



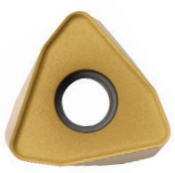
# KenFeed™ 2X • The Ultimate and Innovative Concept for Applying the Latest High-Feed Milling Strategies

## Primary Application

KenFeed 2X is a double-sided trigon insert with six cutting edges engineered to provide you a superior metal removal rate (MRR) and productivity through high feed rates for roughing operations. Smaller depths-of-cut at extremely high feed rates result in lower cutting forces, reducing vibrations and increasing process reliability.

## Features and Benefits

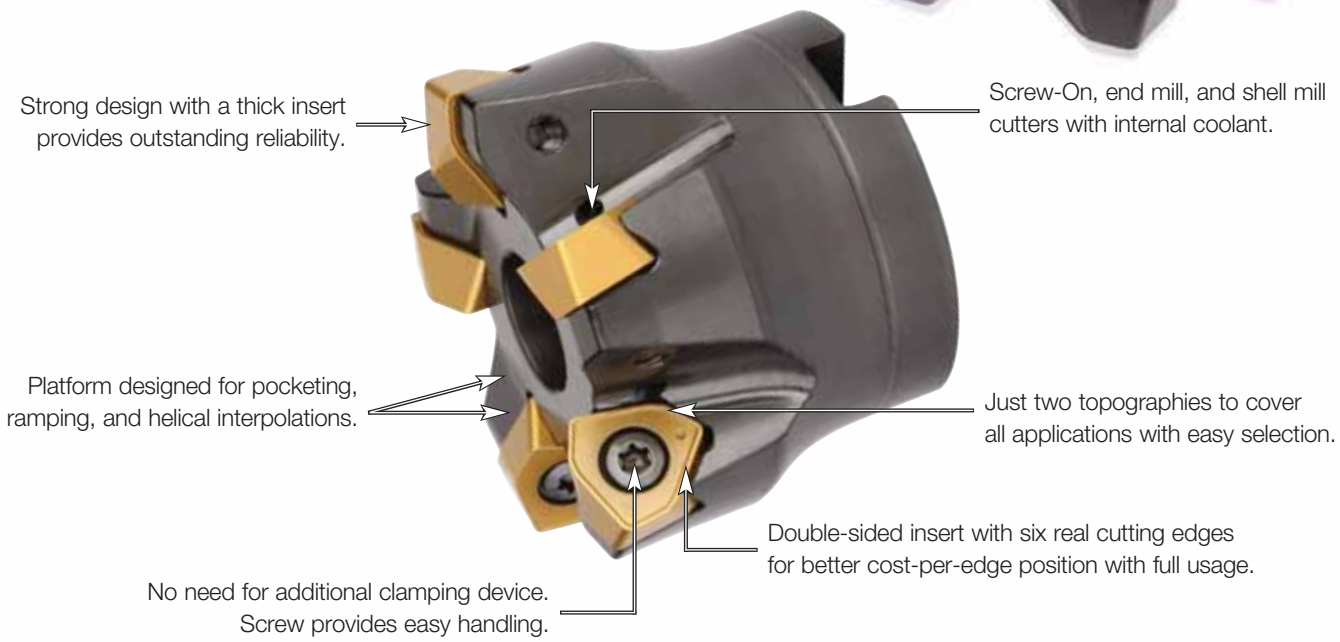
- Six cutting edges per insert. Double-sided solution with unique design.
- Two different insert sizes and two topography styles per size, covering any type of material, component, and application.
- KenFeed 2X is specially suitable for long, deep applications, up to 10 x L/D ratio.



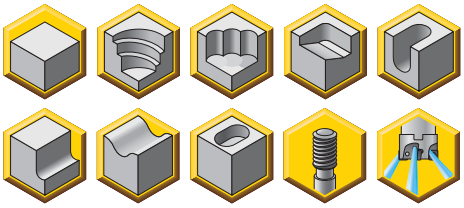
9mm iC Insert **WOEJ094....**
Up to 1,5mm Ap max.
Diameter 25–80mm

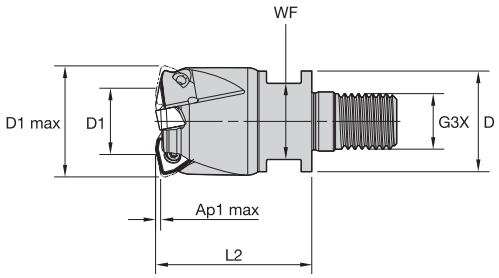
13mm iC Insert **WOEJ1304....**
Up to 2mm Ap max.
Diameter 40–125mm

*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*


Strong design with a thick insert provides outstanding reliability.
Screw-On, end mill, and shell mill cutters with internal coolant.
Platform designed for pocketing, ramping, and helical interpolations.
Just two topographies to cover all applications with easy selection.
Double-sided insert with six real cutting edges for better cost-per-edge position with full usage.
No need for additional clamping device. Screw provides easy handling.

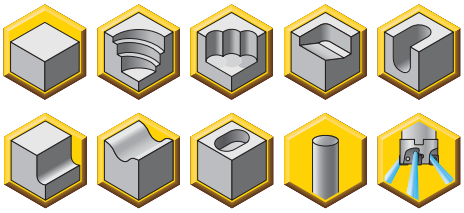
- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 2,5mm fz.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.

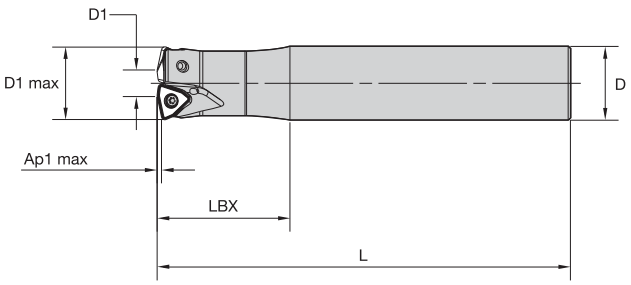




## Screw-On End Mills

| order number | catalogue number | D1 max | D1 | D | WF | G3X | L2 | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4113983** | **KF2X25Z02M12WO09** | 25 | 9 | 21 | 17 | M12 | 35 | 1,5 | 2 | 0,09 | 37000 | WOEJ090512__ |
| **4113984** | **KF2X32Z03M16WO09** | 32 | 16 | 29 | 22 | M16 | 45 | 1,5 | 3 | 0,22 | 30900 | WOEJ090512__ |
| **4113985** | **KF2X35Z03M16WO09** | 35 | 19 | 29 | 22 | M16 | 45 | 1,5 | 3 | 0,24 | 29000 | WOEJ090512__ |
| **4113986** | **KF2X42Z04M16WO09** | 42 | 26 | 29 | 22 | M16 | 45 | 1,5 | 4 | 0,28 | 25800 | WOEJ090512__ |





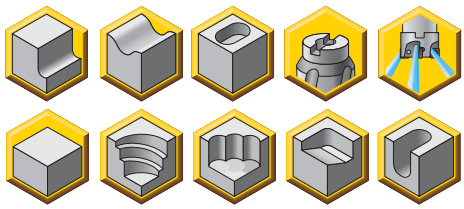
## End Mills

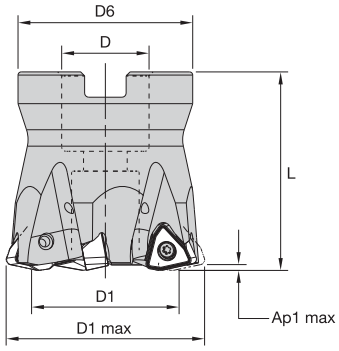
| order number | catalogue number | D1 max | D1 | D | L | LBX | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4113987** | **KF2X25Z02A25WO09L140** | 25 | 9 | 25 | 140 | 45 | 1,5 | 2 | 0,46 | 37000 | WOEJ090512__ |
| **4113988** | **KF2X25Z02A25WO09L200** | 25 | 9 | 25 | 200 | 45 | 1,5 | 2 | 0,68 | 37000 | WOEJ090512__ |
| **4113989** | **KF2X25Z02A25WO09L300** | 25 | 9 | 25 | 300 | 45 | 1,5 | 2 | 1,05 | 37000 | WOEJ090512__ |
| **4113990** | **KF2X28Z02A25WO09L200** | 28 | 11 | 25 | 200 | 45 | 1,5 | 2 | 0,70 | 34000 | WOEJ090512__ |
| **4113991** | **KF2X32Z03A32WO09L150** | 32 | 16 | 32 | 150 | 50 | 1,5 | 3 | 0,82 | 30900 | WOEJ090512__ |
| **4113992** | **KF2X32Z03A32WO09L200** | 32 | 16 | 32 | 200 | 50 | 1,5 | 3 | 1,13 | 30900 | WOEJ090512__ |
| **4113993** | **KF2X32Z03A32WO09L300** | 32 | 16 | 32 | 300 | 50 | 1,5 | 3 | 1,75 | 30900 | WOEJ090512__ |
| **4113994** | **KF2X35Z03A32WO09L200** | 35 | 19 | 32 | 200 | 45 | 1,5 | 3 | 1,16 | 29000 | WOEJ090512__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 25 | **MS2219** | 1,0 | **DT9IP** |
| 28 | **MS2219** | 1,0 | **DT9IP** |
| 32 | **MS2219** | 1,0 | **DT9IP** |
| 35 | **MS2219** | 1,0 | **DT9IP** |
| 42 | **MS2219** | 1,0 | **DT9IP** |

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 2,5mm fz.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.





## Face Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4113995** | **KF2X40Z04WO09** | 40 | 24 | 22 | 37 | 40 | 1,5 | 4 | 0,18 | 26600 | WOEJ090512__ |
| **4113996** | **KF2X50Z05WO09** | 50 | 34 | 22 | 44 | 50 | 1,5 | 5 | 0,39 | 23100 | WOEJ090512__ |
| **4113997** | **KF2X52Z05WO09** | 52 | 36 | 22 | 44 | 50 | 1,5 | 5 | 0,42 | 22600 | WOEJ090512__ |
| **5396014** | **KF2X63Z05S22WO09** | 63 | 47 | 22 | 49 | 50 | 1,5 | 5 | 0,76 | 20100 | WOEJ090512__ |
| **4113998** | **KF2X63Z05WO09** | 63 | 47 | 22 | 60 | 50 | 1,5 | 5 | 0,76 | 20100 | WOEJ090512__ |
| **5396015** | **KF2X66Z06S22WO09** | 66 | 50 | 22 | 49 | 50 | 1,5 | 6 | 0,78 | 19600 | WOEJ090512__ |
| **4113999** | **KF2X66Z06WO09** | 66 | 50 | 27 | 60 | 50 | 1,5 | 6 | 0,78 | 19600 | WOEJ090512__ |
| **4114000** | **KF2X80Z07WO09** | 80 | 64 | 27 | 60 | 50 | 1,5 | 7 | 1,07 | 17500 | WOEJ090512__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver | socket-head cap screw | mounting screw |
|---|---|---|---|---|---|
| 40 | **MS2219** | 1,0 | **DT8IP** | **–** | **KLSSM22-39-CG** |
| 50 | **MS2219** | 1,0 | **DT9IP** | **125.025** | – |
| 52 | **MS2219** | 1,0 | **DT9IP** | **125.025** | – |
| 63 | **MS2219** | 1,0 | **DT9IP** | **125.025** | – |
| 66 | **MS2219** | 1,0 | **DT9IP** | **125.225** | – |
| 80 | **MS2219** | 1,0 | **DT9IP** | **125.230** | – |

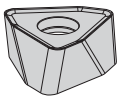
## Insert Selection Guide

| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .S..GD | KC522M | **.S..GD** | **KCPK30** | .S..GD | KCPK30 |
| P3–P4 | .S..HD | KC522M | **.S..HD** | **KCPK30** | .S..HD | KCPK30 |
| P5–P6 | .S..HD | KC522M | **.S..HD** | **KCPK30** | .S..HD | KCPK30 |
| M1–M2 | .S..GD | KC522M | **.S..GD** | **KC725M** | .S..GD | KC725M |
| M3 | .S..GD | KC725M | **.S..GD** | **KCPK30** | .S..HD | KCPK30 |
| K1– K2 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| K3 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| N1–N2 | – | – | **–** | **–** | – | – |
| N3 | – | – | **–** | **–** | – | – |
| S1–S2 | .S..GD | KC522M | **.S..GD** | **KC725M** | – | – |
| S3 | .S..GD | KC725M | **.S..GD** | **KC725M** | – | – |
| S4 | .S..GD | KC725M | **.S..GD** | **KC725M** | – | – |
| H1 | .S..HD | KC522M | **–** | **–** | – | – |

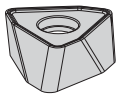


## Indexable Inserts • WOEJ09....

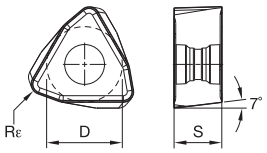
- Double-sided insert with six cutting edges.
- Unique and strong insert design that enables high-feed conditions, up to 2,5mm fz.
- -HD geometry is the first choice for steels, high-strength steels, and cast iron.
- -GD provides lower cutting forces, first choice for soft materials.



WOEJ-GD



WOEJ-HD




● first choice
○ alternate choice

| | | KC522M | KC725M | KCK15 | KCPK30 |
|---|---|---|---|---|---|
| P | | ○ | ● | | ● |
| M | | ● | ● | | ○ |
| K | | ○ | | ● | ○ |
| N | | | | | |
| S | | ● | ● | | |
| H | | ○ | | | |

## WOEJ-GD

| catalogue number | D | Rε | S | cutting edges | KC522M | KC725M | KCK15 | KCPK30 |
|---|---|---|---|---|---|---|---|---|
| **WOEJ090512SRGD** | 8,90 | 1,20 | 5,40 | 6 | ● | ● | | ● |

## WOEJ-HD

| catalogue number | D | Rε | S | cutting edges | KC522M | KC725M | KCK15 | KCPK30 |
|---|---|---|---|---|---|---|---|---|
| **WOEJ090512SRHD** | 8,90 | 1,20 | 5,50 | 6 | ● | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KC522M | | | KC725M | | | KCK15 | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 395 | **345** | 325 | 315 | **275** | 255 | – | – | – | 545 | **475** | 440 |
| | 2 | 330 | **290** | 240 | 260 | **230** | 195 | – | – | – | 335 | **305** | 275 |
| | 3 | 305 | **255** | 215 | 240 | **205** | 170 | – | – | – | 305 | **275** | 250 |
| | 4 | 270 | **225** | 180 | 215 | **180** | 145 | – | – | – | 225 | **210** | 190 |
| | 5 | 225 | **200** | 180 | 180 | **160** | 145 | – | – | – | 310 | **275** | 255 |
| | 6 | 200 | **150** | 120 | 160 | **120** | 95 | – | – | – | 190 | **165** | – |
| M | 1 | 245 | **215** | 200 | 205 | **180** | 165 | – | – | – | 250 | **220** | 190 |
| | 2 | 225 | **190** | 160 | 185 | **160** | 130 | – | – | – | 225 | **195** | 170 |
| | 3 | 170 | **145** | 115 | 140 | **120** | 95 | – | – | – | 175 | **160** | 140 |
| K | 1 | 275 | **250** | 220 | – | – | – | 505 | **460** | 410 | 355 | **320** | 285 |
| | 2 | 215 | **195** | 180 | – | – | – | 400 | **355** | 330 | 280 | **255** | 230 |
| | 3 | 180 | **160** | 145 | – | – | – | 335 | **300** | 275 | 235 | **210** | 195 |
| N | 1 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | 50 | **45** | 35 | 45 | **35** | 30 | – | – | – | – | – | – |
| | 2 | 50 | **45** | 35 | 45 | **35** | 30 | – | – | – | – | – | – |
| | 3 | 60 | **50** | 35 | 55 | **45** | 30 | – | – | – | – | – | – |
| | 4 | 85 | **60** | 45 | 75 | **55** | 35 | – | – | – | – | – | – |
| H | 1 | 145 | **110** | 85 | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

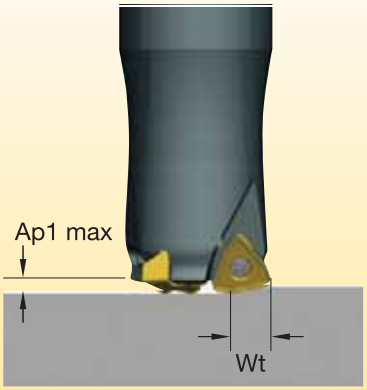
| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .S..GD | 0,82 | **1,63** | 3,33 | 0,61 | **1,21** | 2,43 | 0,53 | **1,05** | 2,11 | 0,50 | **0,98** | 1,97 | 0,49 | **0,96** | 1,92 | .S..GD |
| .S..HD | 0,82 | **2,08** | 3,39 | 0,61 | **1,54** | 2,47 | 0,53 | **1,34** | 2,14 | 0,50 | **1,25** | 2,00 | 0,49 | **1,22** | 1,95 | .S..HD |

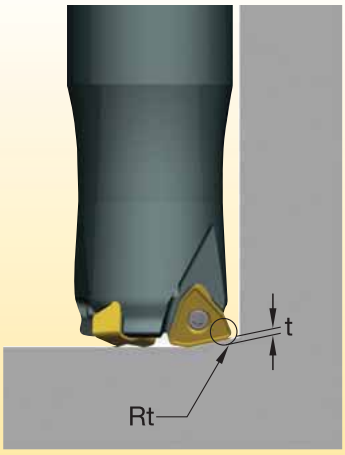
NOTE: Use “Light Machining” values as starting feed rate.

## General Programming Information for Applying KenFeed 2X • iC 09

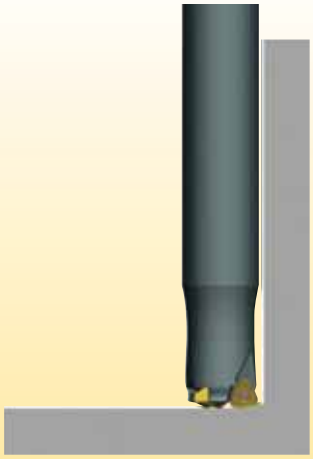
| Rt | Wt | t |
|---|---|---|
| 2.70 | 8.15 | 1.15 |




**Small Ap1 values and higher feed rates generate lower cutting forces versus traditional milling strategies.**

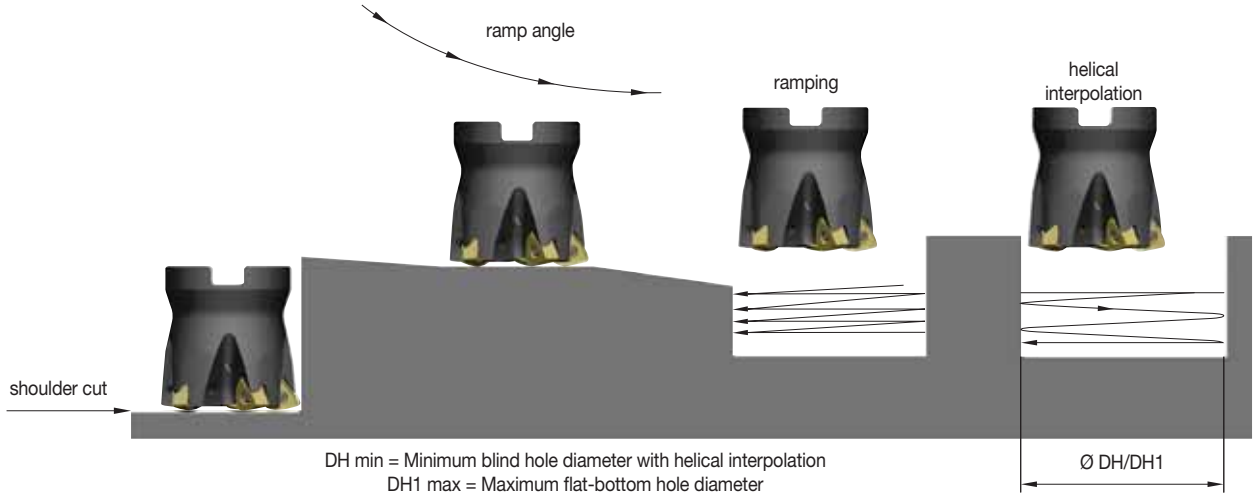



**For CAM programming, the loads can be programmed as a toroidal tool type by using the Rt value as the insert radius.**



**Recommended when long overhang is necessary due to lower radial forces. Maximum L/D ratio of 10 x D.**

## Maximum Linear Ramping and Helical Interpolation from Solid




| cutter type | catalogue number | recommended ramping angle (for continuous ramping process) | max ramp angle when Ap max (not for continuous ramping process) | max ramp angle for 360° helical interpolation | min hole diameter (DH min) | max flat-bottom hole diameter (DH1 max) | max diameter (no flat bottom) |
|---|---|---|---|---|---|---|---|
| Screw-On | **KF2X2X25Z02M12WO09** | 3.6° | 5.4° | 3.1° | 26,5 | 33,7 | 50 |
| | **KF2X32Z03M16WO09** | 1.8° | 2.7° | 1.7° | 41,2 | 48,4 | 64 |
| | **KF2X35Z03M16WO09** | 1.6° | 2.4° | 1.4° | 46,8 | 54,0 | 70 |
| | **KF2X42Z04M16WO09** | 1.2° | 1.9° | 0.8° | 68,7 | 75,9 | 84 |
| End Mills | **KF2X25Z02A25WO09L140** | 3.6° | 5.4° | 3.1° | 26,5 | 33,7 | 50 |
| | **KF2X25Z02A25WO09L200** | 3.6° | 5.4° | 3.1° | 26,5 | 33,7 | 50 |
| | **KF2X25Z02A25WO09L300** | 3.6° | 5.4° | 3.1° | 26,5 | 33,7 | 50 |
| | **KF2X28Z02A25WO09L200** | 3.1° | 4.6° | 2.5° | 31,6 | 38,8 | 56 |
| | **KF2X32Z03A32WO09L150** | 1.8° | 2.7° | 1.7° | 41,2 | 48,4 | 64 |
| | **KF2X32Z03A32WO09L200** | 1.8° | 2.7° | 1.7° | 41,2 | 48,4 | 64 |
| | **KF2X32Z03A32WO09L300** | 1.8° | 2.7° | 1.7° | 41,2 | 48,4 | 64 |
| | **KF2X35Z03A32WO09L200** | 1.6° | 2.4° | 1.4° | 46,8 | 54,0 | 70 |
| Face Mills | **KF2X40Z04WO09** | 1.3° | 2.0° | 1.2° | 56,4 | 63,6 | 80 |
| | **KF2X50Z05WO09** | 1.0° | 1.5° | 0.8° | 76,7 | 83,9 | 100 |
| | **KF2X52Z05WO09** | 1.0° | 1.4° | 0.8° | 80,7 | 87,9 | 104 |
| | **KF2X63Z05S22WO09** | 0.8° | 1.2° | 0.6° | 102,7 | 109,9 | 126 |
| | **KF2X63Z05WO09** | 0.8° | 1.2° | 0.6° | 102,7 | 109,9 | 126 |
| | **KF2X66Z06S22WO09** | 0.7° | 1.1° | 0.5° | 108,7 | 115,9 | 132 |
| | **KF2X66Z06WO09** | 0.7° | 1.1° | 0.5° | 108,7 | 115,9 | 132 |
| | **KF2X80Z07WO09** | 0.6° | 0.9° | 0.4° | 136,6 | 143,8 | 160 |

# Dodeka™ Mini • Leader in Advanced Face Milling Applications

The most comprehensive face milling booster on the market today, the Dodeka Mini series offers fast, accurate indexing — with only one screw! It is the first choice for long-reach face milling applications, or light fixtures with up to 40% shorter machining cycle time. With a standard offering of 15°, 45°, and 60° in combination with Beyond™ premium milling grades, expect up to 35% better tool life from light to heavy machining.

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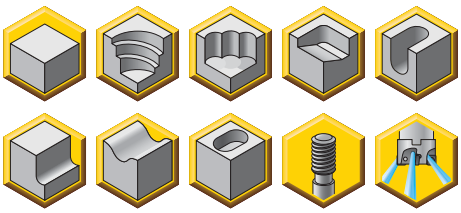
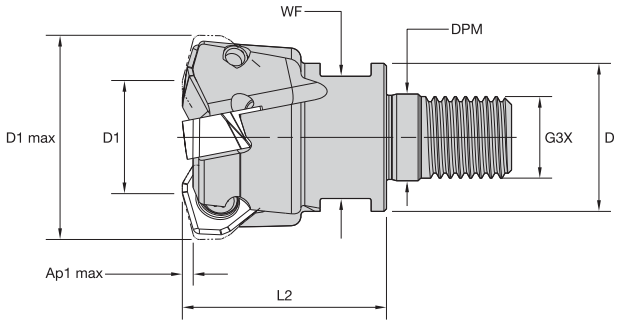
KENNAMETAL®

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 2,5mm fz.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.





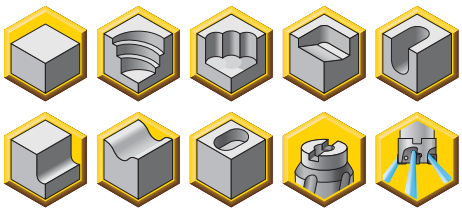
## Screw-On End Mills

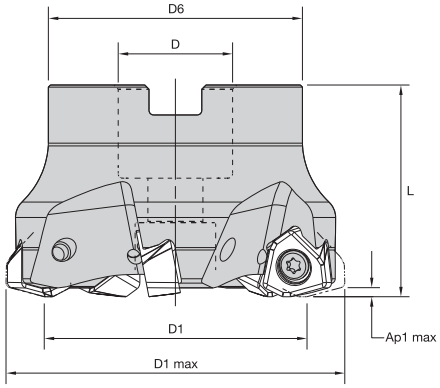
| order number | catalogue number | D1 max | D1 | D | WF | G3X | L2 | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5320996** | **KF2X40Z03M16WO13** | 40 | 22 | 29 | 24 | M16 | 40 | 2,1 | 3 | 0,20 | 22010 | WOEJ130713_R__ |
| **5320997** | **KF2X42Z03M16WO13** | 42 | 24 | 29 | 24 | M16 | 40 | 2,1 | 3 | 0,21 | 21480 | WOEJ130713_R__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 40 | **192.446** | 4,0 | **170.026** |
| 42 | **192.446** | 4,0 | **170.026** |

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 2,5mm fz.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.





## Face Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5320998** | **KF2X50Z04S22WO13** | 50 | 32 | 22 | 42 | 50 | 2,1 | 4 | 0,37 | 19690 | WOEJ130713_R__ |
| **5320999** | **KF2X52Z04S22WO13** | 52 | 34 | 22 | 49 | 50 | 2,1 | 4 | 0,46 | 19300 | WOEJ130713_R__ |
| **5321000** | **KF2X63Z04S22WO13** | 63 | 45 | 22 | 49 | 50 | 2,1 | 4 | 0,61 | 17540 | WOEJ130713_R__ |
| **5321001** | **KF2X63Z05S22WO13** | 63 | 45 | 22 | 49 | 50 | 2,1 | 5 | 0,62 | 17540 | WOEJ130713_R__ |
| **5396016** | **KF2X66Z05S22WO13** | 66 | 48 | 22 | 49 | 50 | 2,1 | 5 | 0,66 | 17130 | WOEJ130713_R__ |
| **5321002** | **KF2X66Z05S27WO13** | 66 | 48 | 27 | 60 | 50 | 2,1 | 5 | 0,77 | 17130 | WOEJ130713_R__ |
| **5321003** | **KF2X80Z05S27WO13** | 80 | 62 | 27 | 60 | 50 | 2,1 | 5 | 0,98 | 15560 | WOEJ130713_R__ |
| **5321004** | **KF2X80Z06S27WO13** | 80 | 62 | 27 | 60 | 50 | 2,1 | 6 | 0,99 | 15560 | WOEJ130713_R__ |
| **5321005** | **KF2X85Z06S27WO13** | 85 | 67 | 27 | 60 | 50 | 2,1 | 6 | 1,07 | 15100 | WOEJ130713_R__ |
| **5321006** | **KF2X100Z06S32WO13** | 100 | 82 | 32 | 78 | 50 | 2,1 | 6 | 1,43 | 13920 | WOEJ130713_R__ |
| **5321007** | **KF2X100Z07S32WO13** | 100 | 82 | 32 | 78 | 50 | 2,1 | 7 | 1,69 | 13920 | WOEJ130713_R__ |
| **5321008** | **KF2X125Z07S40WO13** | 125 | 107 | 40 | 90 | 63 | 2,1 | 7 | 2,56 | 12450 | WOEJ130713_R__ |
| **5321009** | **KF2X125Z09S40WO13** | 125 | 107 | 40 | 90 | 63 | 2,1 | 9 | 2,96 | 12450 | WOEJ130713_R__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver | socket-head cap screw | socket-head cap screw with coolant groove | coolant lock screw assembly |
|---|---|---|---|---|---|---|
| 50 | **192.446** | 4,0 | **170.026** | – | **KLSSM22-39-CG** | – |
| 52 | **192.446** | 4,0 | **170.026** | **12146120500** | – | – |
| 63 | **192.446** | 4,0 | **170.026** | **125.025** | – | – |
| 66 | **192.446** | 4,0 | **170.026** | **125.230** | – | – |
| 80 | **192.446** | 4,0 | **170.026** | **125.230** | – | – |
| 85 | **192.446** | 4,0 | **170.026** | **125.230** | – | – |
| 100 | **192.446** | 4,0 | **170.026** | – | – | **MS2189C** |
| 125 | **192.446** | 4,0 | **170.026** | – | – | **MS2189C** |

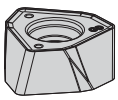
## Insert Selection Guide

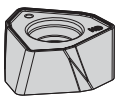
| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .S..GD | KC522M | **.S..GD** | **KCPK30** | .S..GD | KCPK30 |
| P3–P4 | .S..GD | KC522M | **.S..HD** | **KCPK30** | .S..HD | KCPK30 |
| P5–P6 | .S..GD | KCPK30 | **.S..HD** | **KCPK30** | .S..HD | KCPK30 |
| M1–M2 | .S..GD | KC522M | **.S..GD** | **KC725M** | .S..GD | KC725M |
| M3 | .S..GD | KC725M | **.S..GD** | **KCPM20** | .S..HD | KCPK30 |
| K1–K2 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| K3 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| N1–N2 | – | – | **–** | **–** | – | – |
| N3 | – | – | **–** | **–** | – | – |
| S1–S2 | .S..GD | KC522M | **.S..GD** | **KC725M** | – | – |
| S3 | .S..GD | KC725M | **.S..GD** | **KC725M** | – | – |
| S4 | .S..GD | KC725M | **.S..GD** | **KC725M** | .S..HD | KC725M |
| H1 | .S..HD | KC522M | **.S..HD** | **KCPM20** | – | – |

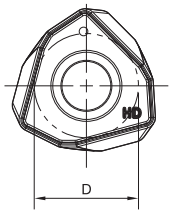


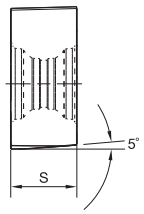
## Indexable Inserts • WOEJ13....

- Double-sided insert with six cutting edges.
- Unique and strong insert design that enables high-feed conditions, up to 2,5mm fz.
- -HD geometry is the first choice for high-strength steels and cast iron.
- -GD geometry provides lower cutting forces; first choice for steel and stainless steel.


WOEJ-GD


WOEJ-HD




● first choice
○ alternate choice

| | | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|
| P | | | ○ | ● | | ● | ● |
| M | | | ● | ● | | ○ | ○ |
| K | | ● | ○ | | ● | ○ | ○ |
| N | | | | | | | |
| S | | | ● | ● | | | |
| H | | | ○ | | | | |

## WOEJ-GD

| catalogue number | D | S | cutting edges | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| **WOEJ130713SRGD** | 13,00 | 7,30 | 6 | | ● | ● | | ● | ● |

## WOEJ-HD

| catalogue number | D | S | cutting edges | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| **WOEJ130713SRHD** | 13,00 | 7,30 | 6 | ● | ● | ● | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KCK15 | | | KC520M | | | KCPM20 | | | KC522M | | | KC725M | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | – | – | – | – | – | – | 660 | **580** | 535 | 395 | **345** | 325 | 315 | **275** | 255 | 545 | **475** | 440 |
| | 2 | – | – | – | – | – | – | 410 | **370** | 330 | 330 | **290** | 240 | 260 | **230** | 195 | 335 | **305** | 275 |
| | 3 | – | – | – | – | – | – | 370 | **330** | 305 | 305 | **255** | 215 | 240 | **205** | 170 | 305 | **275** | 250 |
| | 4 | – | – | – | – | – | – | 275 | **255** | 230 | 270 | **225** | 180 | 215 | **180** | 145 | 225 | **210** | 190 |
| | 5 | – | – | – | – | – | – | 330 | **300** | 275 | 225 | **200** | 180 | 180 | **160** | 145 | 310 | **275** | 255 |
| | 6 | – | – | – | – | – | – | 230 | **200** | 175 | 200 | **150** | 120 | 160 | **120** | 95 | 190 | **165** | – |
| M | 1 | – | – | – | – | – | – | 270 | **240** | 205 | 245 | **215** | 200 | 205 | **180** | 165 | 250 | **220** | 190 |
| | 2 | – | – | – | – | – | – | 245 | **215** | 190 | 225 | **190** | 160 | 185 | **160** | 130 | 225 | **195** | 170 |
| | 3 | – | – | – | – | – | – | 195 | **175** | 150 | 170 | **145** | 115 | 140 | **120** | 95 | 175 | **160** | 140 |
| K | 1 | 505 | **460** | 410 | 325 | **295** | 260 | 435 | **390** | 350 | 275 | **250** | 220 | – | – | – | – | – | – |
| | 2 | 400 | **355** | 330 | 255 | **225** | 215 | 345 | **310** | 280 | 215 | **195** | 180 | – | – | – | – | – | – |
| | 3 | 335 | **300** | 275 | 215 | **190** | 170 | 290 | **255** | 240 | 180 | **160** | 145 | – | – | – | – | – | – |
| N | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | – | – | – | – | – | – | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 2 | – | – | – | – | – | – | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 3 | – | – | – | – | – | – | – | – | – | 60 | **50** | 35 | 55 | **45** | 30 | 55 | **45** | 30 |
| | 4 | – | – | – | – | – | – | – | – | – | 85 | **60** | 45 | 75 | **55** | 35 | 75 | **55** | 35 |
| H | 1 | – | – | – | – | – | – | 170 | **140** | 115 | 145 | **110** | 85 | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

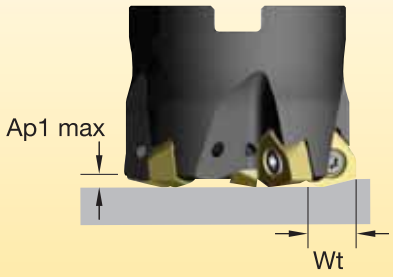
| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .S..GD | 0,65 | **1,53** | 3,01 | 0,48 | **1,13** | 2,21 | 0,42 | **0,99** | 1,91 | 0,39 | **0,92** | 1,78 | 0,39 | **0,90** | 1,75 | .S..GD |
| .S..HD | 0,65 | **1,71** | 3,46 | 0,48 | **1,26** | 2,53 | 0,42 | **1,10** | 2,19 | 0,39 | **1,03** | 2,04 | 0,39 | **1,00** | 2,00 | .S..HD |

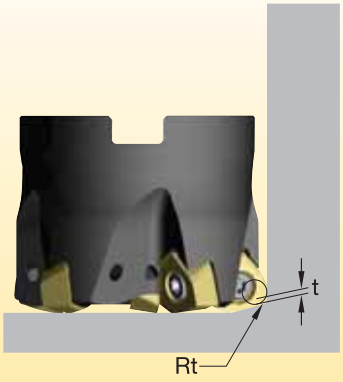
NOTE: Use “Light Machining” values as starting feed rate.

## CAM Programming Information

| Rt | Wt | t |
|---|---|---|
| 3.4 | 10 | 1.6 |



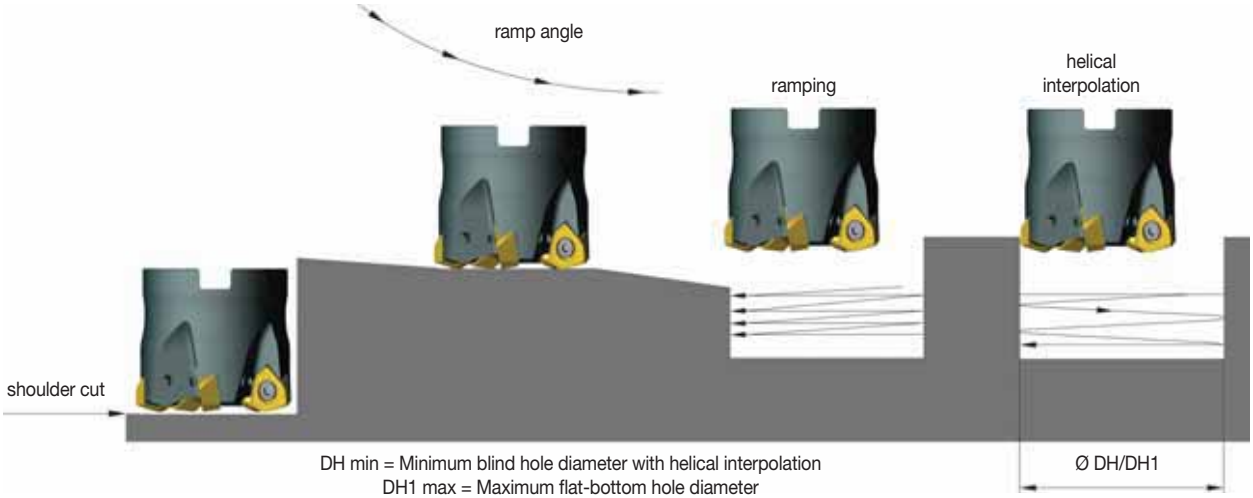

**Small Ap1 values and higher feed rates generate lower cutting forces versus traditional milling strategies.**




**For CAM programming, the loads can be programmed as a toroidal tool type by using the Rt value as the insert radius.**

**Recommended when long overhang is necessary due to lower radial forces. Maximum L/D ratio of 10 x D.**

## Maximum Linear Ramping and Helical Interpolation from Solid • Metric






| diameter | max ramp angle | max ramp angle for 360° helical interpolation | max plunge depth | min hole diameter (DH min) | max flat-bottom hole diameter (DH1 max) | max diameter (no flat bottom) |
|---|---|---|---|---|---|---|
| 40 | 4,3° | 1,76° | 1,92 | 51,68 | 60,20 | 80 |
| 42 | 5,0° | 1,62° | 1,92 | 55,48 | 64,17 | 84 |
| 50 | 4,5° | 1,21° | 1,92 | 71,05 | 80,12 | 100 |
| 52 | 4,2° | 1,14° | 1,92 | 74,49 | 84,11 | 104 |
| 63 | 3,0° | 0,86° | 1,92 | 96,78 | 106,07 | 126 |
| 66 | 2,8° | 0,81° | 1,92 | 102,74 | 112,06 | 132 |
| 80 | 2,1° | 0,63° | 1,92 | 130,63 | 140,04 | 160 |
| 85 | 1,9° | 0,58° | 1,92 | 140,61 | 150,03 | 170 |
| 100 | 1,6° | 0,47° | 1,92 | 170,55 | 180,02 | 200 |
| 125 | 1,2° | 0,36° | 1,92 | 220,50 | 230,01 | 250 |

# Beyond BLAST™ • KSSM™ 45°

## More than just the right tool — the ultimate solution for titanium machining

### Features and Benefits

- PCT — Precision Coolant Technology.
- Coolant delivery exactly to the cutting area.
- Increased heat transfer.
- Less tool/chip friction and shear stress.
- Improved chip control.
- True internal coolant assists chip evacuation.
- Beyond BLAST also works with regular low-pressure conditions.
- No need for investments in high-pressure equipment.
- Easy to convert from conventional to Beyond BLAST technology.
- Shop-floor-proven handling reduces costly downtime.
- Up to 100% better tool life.
- Performance leader in machining titanium.

beyond™ BLAST™

Experience the advantages at your Authorised Kennametal Distributor or at **www.kennametal.com**.

**www.kennametal.com**

KENNAMETAL®

# Beyond BLAST™ • KSSM™ High-Feed More than just the right tool — the ultimate solution

## Primary Application

Specially developed for machining titanium, the Beyond BLAST KSSM High-Feed utilises Precision Coolant Technology (PCT) to precisely apply coolant directly to the cutting area. Not only does this reduce heat at the cutting edge, but it also assists with reducing tool and chip friction, increasing chip evacuation, and relieving shear stress. Because Beyond BLAST technology can be applied in low-pressure conditions, there is no need to invest in additional equipment.

## Features and Benefits

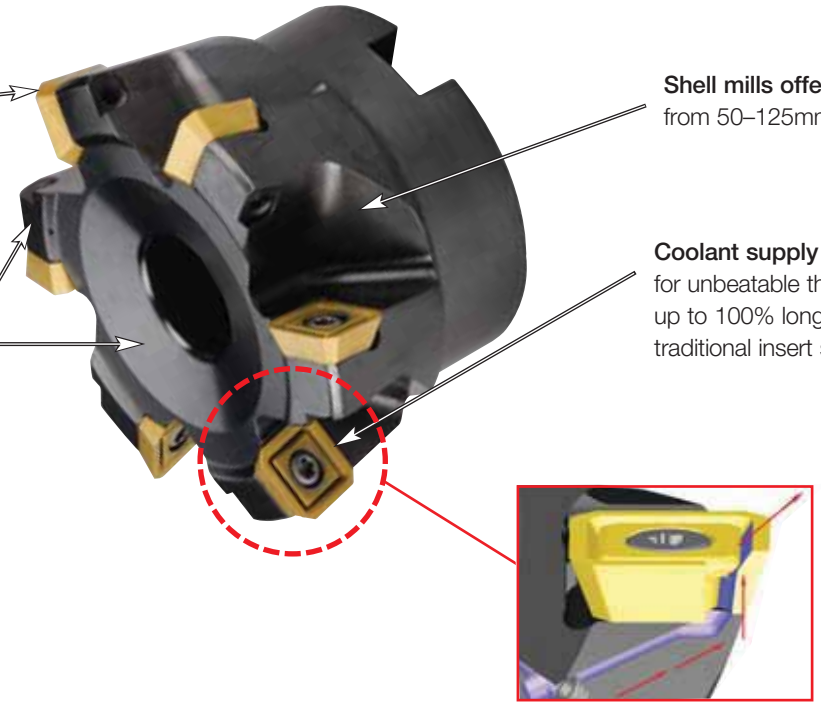
| Features | Benefits |
|---|---|
| Small depths of cut applied at higher feed rates. | Lower cutting forces and higher MRR. |
| Beyond BLAST increased heat transfer. | Less tool/chip friction and shear stress. |
| Beyond BLAST improved chip control. | True internal coolant assists chip evacuation. |
| Beyond BLAST also works with regular low-pressure conditions. | No need for investments in high-pressure equipment. |

**Four cutting edges**
Reliable, low cost per edge.

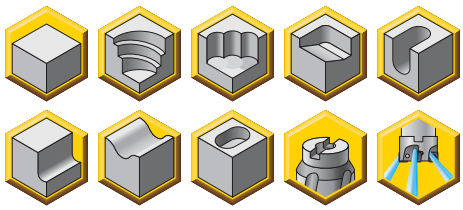
**Shell mills offered**
from 50–125mm.

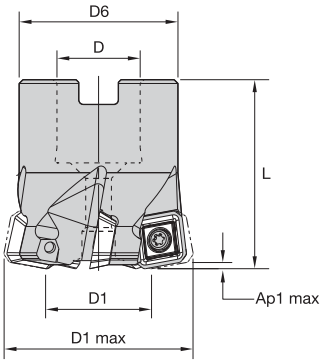
**Coolant supply through the insert**
for unbeatable thermal management: up to 100% longer tool life versus traditional insert style.

**Multitask cutter**
High clearance on the cutters for superior pocketing, plunging, ramping, and chip load capacities.



- Use PCT technology, coolant through the insert.
- Engineered to provide the maximum performance in titanium machining.
- Pocketing, ramping, plunging, and helical interpolation capabilities.





## Shell Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | max RPM | insert 1 | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5338778 | KSSM50Z04SD14BB-HF | 50 | 28 | 22 | 42 | 50 | 1,7 | 4 | 23200 | SE_X443AE_N7___ | 0,34 |
| 5338779 | KSSM50Z05SD14BB-HF | 50 | 28 | 22 | 42 | 50 | 1,7 | 5 | 23200 | SE_X443AE_N7___ | 0,35 |
| 5338800 | KSSM52Z05SD14BB-HF | 52 | 30 | 22 | 46 | 50 | 1,7 | 5 | 22500 | SE_X443AE_N7___ | 0,42 |
| 5338801 | KSSM63Z05SD14BB-HF | 63 | 41 | 22 | 50 | 40 | 1,7 | 5 | 19700 | SE_X443AE_N7___ | 0,44 |
| 5338802 | KSSM63Z06SD14BB-HF | 63 | 41 | 22 | 50 | 40 | 1,7 | 6 | 19700 | SE_X443AE_N7___ | 0,42 |
| 5338803 | KSSM66Z06SD14BB-HF | 66 | 44 | 22 | 50 | 40 | 1,7 | 6 | 19100 | SE_X443AE_N7___ | 0,46 |
| 5338804 | KSSM80Z06SD14BB-HF | 80 | 58 | 27 | 60 | 50 | 1,7 | 6 | 16900 | SE_X443AE_N7___ | 0,94 |
| 5338805 | KSSM80Z07SD14BB-HF | 80 | 58 | 27 | 60 | 50 | 1,7 | 7 | 16900 | SE_X443AE_N7___ | 0,94 |
| 5338807 | KSSM100Z10SD14BB-HF | 100 | 78 | 32 | 80 | 50 | 2,4 | 10 | 14700 | SE_X443AE_N7___ | 1,63 |
| 5338806 | KSSM100Z07SD14BB-HF | 100 | 78 | 32 | 80 | 50 | 2,4 | 7 | 14700 | SE_X443AE_N7___ | 1,63 |
| 5338809 | KSSM125Z12SD14BB-HF | 125 | 103 | 40 | 90 | 63 | 1,7 | 12 | 12900 | SE_X443AE_N7___ | 3,07 |
| 5338808 | KSSM125Z09SD14BB-HF | 125 | 103 | 40 | 90 | 63 | 1,7 | 9 | 12900 | SE_X443AE_N7___ | 3,07 |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver | socket-head cap screw | socket-head cap screw with coolant groove | coolant lock screw |
|---|---|---|---|---|---|---|
| 50 | MS2078 | 4,0 | DT15IP | – | KLSSM22-39-CG | – |
| 52 | MS2078 | 4,0 | DT15IP | – | KLSSM22-39-CG | – |
| 63 | MS2078 | 4,0 | DT15IP | MS1234 | – | – |
| 66 | MS2078 | 4,0 | DT15IP | MS1234 | – | – |
| 80 | MS2078 | 4,0 | DT15IP | MS2038 | – | – |
| 100 | MS2078 | 4,0 | DT15IP | – | – | MS2189C |
| 125 | MS2078 | 4,0 | DT15IP | – | – | MS2187C |

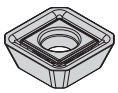
## Insert Selection Guide

| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | – | – | – | – | – | – |
| P3–P4 | – | – | – | – | – | – |
| P5–P6 | – | – | – | – | – | – |
| M1–M2 | – | – | – | – | – | – |
| M3 | – | – | – | – | – | – |
| K1–K2 | – | – | – | – | – | – |
| K3 | – | – | – | – | – | – |
| N1–N2 | – | – | – | – | – | – |
| N3 | – | – | – | – | – | – |
| S1–S2 | – | – | – | – | – | – |
| S3 | – | – | – | – | – | – |
| S4 | .E..NGD2 | KC725M | **.E..NGN** | **KC725M** | .S..NGN | KC725M |
| H1 | – | – | – | – | – | – |

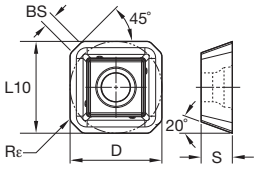


## Indexable Inserts

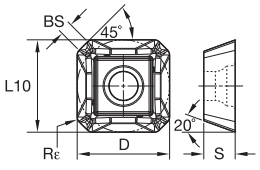
- -GD2 geometry for lower cutting forces.
- -GN geometry is the first choice for heavy applications.


SECX-SNGN

SECX-GD2



SECX-GN



SECX-GD2

beyond BLAST™

● first choice
○ alternate choice

## BB KSSM-HF

| catalogue number | D | BS | L10 | Rε | S | hm | cutting edges | KC725M |
|---|---|---|---|---|---|---|---|---|
| **SECX1404AEENGN** | 14,00 | 1,85 | 14,00 | 1,00 | 4,76 | 0,06 | 4 | ● |
| **SECX1404AESNGN** | 14,00 | 1,85 | 14,00 | 1,00 | 4,76 | 0,08 | 4 | ● |

## BB KSSM-HF

| catalogue number | D | BS | L10 | Rε | S | hm | cutting edges | KC725M |
|---|---|---|---|---|---|---|---|---|
| **SECX1404AEENGD2** | 14,00 | 1,85 | 14,00 | 1,00 | 4,76 | 0,06 | 4 | ● |

Indexable Milling

## Recommended Starting Speeds [m/min]

| Material Group | | KC725M | | |
|---|---|---|---|---|
| P | 1 | – | – | – |
| | 2 | – | – | – |
| | 3 | – | – | – |
| | 4 | – | – | – |
| | 5 | – | – | – |
| | 6 | – | – | – |
| M | 1 | – | – | – |
| | 2 | – | – | – |
| | 3 | – | – | – |
| K | 1 | – | – | – |
| | 2 | – | – | – |
| | 3 | – | – | – |
| N | 1 | – | – | – |
| | 2 | – | – | – |
| S | 1 | – | – | – |
| | 2 | – | – | – |
| | 3 | – | – | – |
| | 4 | 75 | **55** | 35 |
| H | 1 | – | – | – |
| | 2 | – | – | – |
| | 3 | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

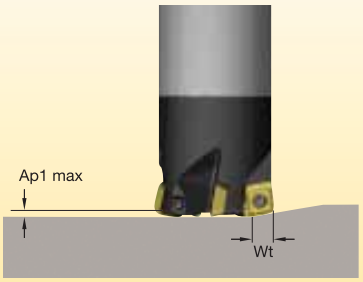
| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..NGD2 | 0,88 | **1,70** | 2,85 | 0,65 | **1,26** | 2,09 | 0,57 | **1,10** | 1,82 | 0,53 | **1,02** | 1,69 | 0,52 | **1,00** | 1,66 | .E..NGD2 |
| .E..NGN | 0,88 | **1,70** | 2,85 | 0,65 | **1,26** | 2,09 | 0,57 | **1,10** | 1,82 | 0,53 | **1,02** | 1,69 | 0,52 | **1,00** | 1,66 | .E..NGN |
| .S..NGN | 1,04 | **2,03** | 3,41 | 0,78 | **1,50** | 2,49 | 0,68 | **1,30** | 2,16 | 0,63 | **1,22** | 2,01 | 0,62 | **1,19** | 1,97 | .S..NGN |

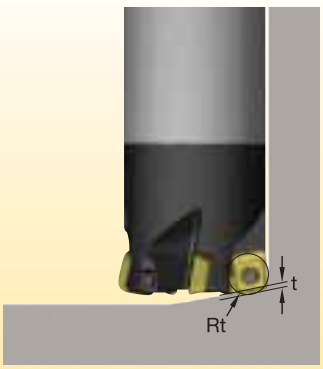
NOTE: Use “Light Machining” values as starting feed rate.

## General Programming Information

| Rt | Wt | t |
|---|---|---|
| 4,1 | 11,0 | 1,3 |



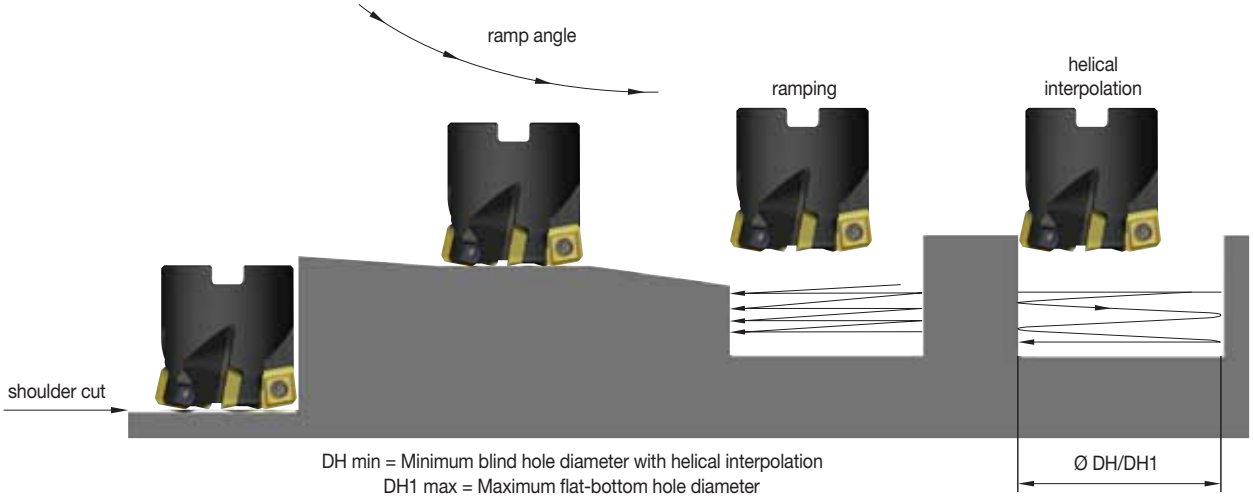

**Small Ap1 values and higher feed rates generate lower cutting forces versus traditional milling strategies.**




**For CAM programming, the loads can be programmed as a toroidal tool type by using the Rt value as the insert radius.**

**Recommended when long overhang is necessary due to lower radial forces. Maximum L/D ratio of 10 x D.**

## Maximum Linear Ramping and Helical Interpolation from Solid




| cutter diameter | maximum ramping | Ap1 max | min hole diameter (DH) | min flat-bottom hole diameter (DH1) | max hole diameter no flat bottom |
|---|---|---|---|---|---|
| 50mm | **2.11°** | 1,65 | 96,34 | 78,02 | 100 |
| 52mm | **1.97°** | 1,65 | 100,34 | 82,02 | 104 |
| 63mm | **1.46°** | 1,65 | 122,34 | 104,02 | 126 |
| 66mm | **1.37°** | 1,65 | 128,34 | 110,02 | 132 |
| 80mm | **1.04°** | 1,65 | 156,34 | 138,02 | 160 |
| 100mm | **0.78°** | 1,65 | 196,34 | 178,02 | 200 |
| 125mm | **0.59°** | 1,65 | 246,34 | 228,02 | 250 |

# Rodeka™ • The New Round Insert Generation

## Primary Application

Kennametal introduces a new and revolutionary double-sided round milling insert capable of running in multiple types of milling operations and workpiece materials, providing the latest double-sided insert technology to boost your productivity with the most efficient cost per edge.

*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*

# Features and Benefits

## Rodeka Double-Sided Round Inserts

- Three insert sizes: 10, 12, and 16mm.
- Innovative, cutting-edge design increases tool life and reduces cutting forces.
- Rodeka 12X is a tailor-made solution for turbine blade machining.

**Rodeka 10**
10mm iC insert
8 cutting edges

**Rodeka 12X**
12mm iC insert
8 cutting edges

**Rodeka 12**
12mm iC insert
12 cutting edges

**Rodeka 16**
16mm iC insert
12 cutting edges

Double-sided insert with up to 12 cutting edges for a more productive cutting process.

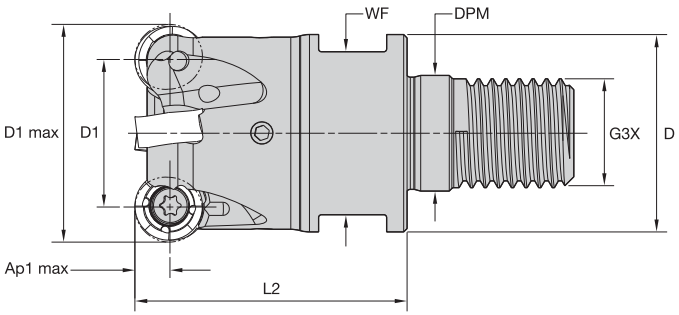
Screw-On, end mill, and shell mill cutters with internal coolant.

Higher clearance in bodies to permit pocketing, profiling, and 5-axis machining.

Unique anti-rotation feature for excellent stability with higher feed rates and cutting forces. User-friendly insert rotation.

Three different insert sizes and three topography styles per size cover any type of material, component, and application.

- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.



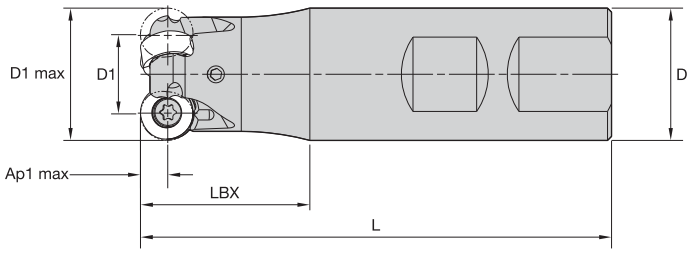
## Screw-On End Mills

| order number | catalogue number | D1 max | D1 | D | WF | G3X | L2 | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5152621** | **KDR25Z03M12RN10** | 25 | 15 | 21 | 17 | M12 | 32 | 5,0 | 3 | 0,07 | 54700 | RN_J10T3M0_N__ |
| **5152622** | **KDR32Z04M16RN10** | 32 | 22 | 29 | 24 | M16 | 40 | 5,0 | 4 | 0,18 | 48300 | RN_J10T3M0_N__ |
| **5152623** | **KDR35Z05M16RN10** | 35 | 25 | 29 | 24 | M16 | 40 | 5,0 | 5 | 0,20 | 46200 | RN_J10T3M0_N__ |
| **5152624** | **KDR40Z05M16RN10** | 40 | 30 | 29 | 24 | M16 | 40 | 5,0 | 5 | 0,23 | 43200 | RN_J10T3M0_N__ |
| **5152625** | **KDR42Z05M16RN10** | 42 | 32 | 29 | 24 | M16 | 40 | 5,0 | 5 | 0,25 | 42200 | RN_J10T3M0_N__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 25 | **191.848** | 2,0 | **170.025** |
| 32 | **191.848** | 2,0 | **170.025** |
| 35 | **191.848** | 2,0 | **170.025** |
| 40 | **191.848** | 2,0 | **170.025** |
| 42 | **191.848** | 2,0 | **170.025** |

- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing, profiling, ramping, and helical interpolation capabilities.



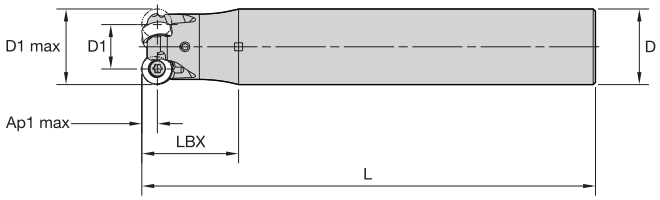
## Weldon End Mills

| order number | catalogue number | D1 max | D1 | D | L | LBX | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5152626** | **KDR25Z03B25RN10** | 25 | 15 | 25 | 89 | 32 | 5,0 | 3 | 0,27 | 54700 | RN_J10T3M0_N__ |
| **5152627** | **KDR32Z04B32RN10** | 32 | 22 | 32 | 101 | 40 | 5,0 | 4 | 0,53 | 48300 | RN_J10T3M0_N__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 25 | **191.848** | 2,0 | **170.025** |
| 32 | **191.848** | 2,0 | **170.025** |

- Double-sided round insert with eight indexable positions.
- Anti-rotation features enable higher cutting forces and extra stability.
- Pocketing and profiling capabilities.



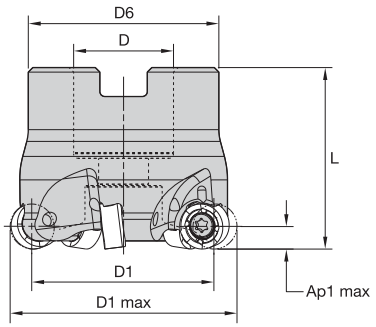
## Cylindrical End Mills

| order number | catalogue number | D1 max | D1 | D | L | LBX | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5152629** | **KDR25Z03A25RN10L150** | 25 | 15 | 25 | 150 | 32 | 5,0 | 3 | 0,50 | 54700 | RN_J10T3M0_N__ |
| **5152680** | **KDR25Z03A25RN10L200** | 25 | 15 | 25 | 200 | 32 | 5,0 | 3 | 0,69 | 54700 | RN_J10T3M0_N__ |
| **5152681** | **KDR25Z03A32RN10L250** | 25 | 15 | 32 | 250 | 32 | 5,0 | 3 | 1,42 | 54700 | RN_J10T3M0_N__ |
| **5152682** | **KDR28Z03A25RN10L200** | 28 | 18 | 25 | 200 | 40 | 5,0 | 3 | 0,70 | 51600 | RN_J10T3M0_N__ |
| **5152684** | **KDR32Z03A32RN10L250** | 32 | 22 | 32 | 250 | 40 | 5,0 | 3 | 1,44 | 48300 | RN_J10T3M0_N__ |
| **5152683** | **KDR32Z04A32RN10L200** | 32 | 22 | 32 | 200 | 40 | 5,0 | 4 | 1,14 | 48300 | RN_J10T3M0_N__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 32 | **191.848** | 2,0 | **170.025** |

- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.



## Shell Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5152685** | **KDR40Z04S16RN10** | 40 | 30 | 16 | 38 | 40 | 5,0 | 4 | 0,24 | 43200 | RN_J10T3M0_N__ |
| **5152686** | **KDR40Z06S16RN10** | 40 | 30 | 16 | 38 | 40 | 5,0 | 6 | 0,24 | 43200 | RN_J10T3M0_N__ |
| **5152687** | **KDR50Z05S22RN10** | 50 | 40 | 22 | 42 | 40 | 5,0 | 5 | 0,32 | 38600 | RN_J10T3M0_N__ |
| **5152688** | **KDR50Z06S22RN10** | 50 | 40 | 22 | 42 | 40 | 5,0 | 6 | 0,32 | 38600 | RN_J10T3M0_N__ |
| **5152689** | **KDR52Z06S22RN10** | 52 | 42 | 22 | 49 | 50 | 5,0 | 6 | 0,52 | 37900 | RN_J10T3M0_N__ |
| **5152690** | **KDR63Z07S22RN10** | 63 | 53 | 22 | 49 | 50 | 5,0 | 7 | 0,66 | 34400 | RN_J10T3M0_N__ |
| **5152691** | **KDR66Z07S27RN10** | 66 | 56 | 27 | 60 | 50 | 5,0 | 7 | 0,86 | 33600 | RN_J10T3M0_N__ |
| **5152692** | **KDR80Z08S27RN10** | 80 | 70 | 27 | 60 | 50 | 5,0 | 8 | 1,07 | 30500 | RN_J10T3M0_N__ |

## Spare Parts

| D1 max | insert screw | Nm | socket-head cap screw | Torx Plus driver |
|---|---|---|---|---|
| 40 | **191.848** | 2,0 | **MS1294** | **170.025** |
| 63 | **191.848** | 2,0 | **MS1242** | **170.025** |
| 80 | **191.848** | 2,0 | **MS2038** | **170.025** |

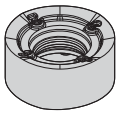
## Insert Selection Guide

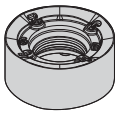
| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .E..LDJ | KC725M | **.S..GD** | **KCPK30** | .S..HD | KCPK30 |
| P3–P4 | .E..LDJ | KC522M | **.S..GD** | **KC522M** | .S..HD | KCPK30 |
| P5–P6 | .E..LD | KCMP30 | **.E..LD** | **KCMP30** | .S..GD | KCMP30 |
| M1–M2 | .E..LDJ | KC522M | **.E..LDJ** | **KC725M** | .S..GDJ | KC725M |
| M3 | .E..LDJ | KC725M | **.E..LD** | **KCMP30** | .S..GD | KCMP30 |
| K1–K2 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| K3 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| N1–N2 | .F..LDJ | KC422M | **.F..LDJ** | **KC422M** | – | – |
| N3 | .F..LDJ | KC422M | **.F..LDJ** | **KC422M** | – | – |
| S1–S2 | .E..LDJ | KC522M | **.E..LDJ** | **KC725M** | .S..GDJ | KC725M |
| S3 | .E..LDJ | KC522M | **.E..LDJ** | **KC725M** | .S..GDJ | KC725M |
| S4 | .E..LDJ | KC725M | **.E..LDJ** | **KC725M** | .S..GDJ | KC725M |
| H1 | .S..GD | KC522M | **.S..GD** | **KCPM20** | – | – |

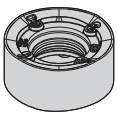


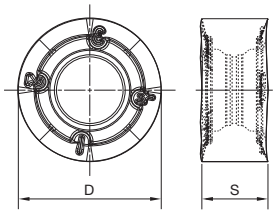
## Indexable Inserts

- -FLDJ geometry is for non-ferrous metals.
- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is for general use in steel and stainless steel.
- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.


RNGJ-LD


RNGJ-GD/
RNPJ-GD


RNPJ-HD




● first choice
○ alternate choice

| | KC422M | KC522M | KC725M | KCMP30 |
|---|---|---|---|---|
| P | ○ | ● | ● | ● |
| M | | ● | ● | ● |
| K | | ○ | | |
| N | ● | | | |
| S | | ● | ● | ○ |
| H | | ○ | | |

## RNGJ10...-LD/-GD

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCMP30 |
|---|---|---|---|---|---|---|---|---|
| **RNGJ10T3M0FLDJ** | 10,00 | 4,76 | 0,04 | 8 | ● | | | |
| **RNGJ10T3M0ELDJ** | 10,00 | 4,76 | 0,04 | 8 | | ● | ● | |
| **RNGJ10T3M0ELD** | 10,00 | 4,76 | 0,04 | 8 | | | | ● |
| **RNGJ10T3M0SGDJ** | 10,00 | 4,76 | 0,09 | 8 | | ● | ● | |
| **RNGJ10T3M0SGD** | 10,00 | 4,76 | 0,09 | 8 | | | | ● |

● first choice
○ alternate choice

| | KC510M | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|
| P | ○ | | ○ | ● | | ● | ● |
| M | | | ● | ● | | ○ | ○ |
| K | ○ | ● | ○ | | ● | | ○ |
| N | | | | | | | |
| S | | | ● | ● | | | |
| H | ● | | ○ | | | ○ | |

## RNPJ10...-GD/-HD

| catalogue number | D | S | hm | cutting edges | KC510M | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **RNPJ10T3M0SGD** | 10,00 | 4,76 | 0,09 | 8 | ● | | ● | | | | ● |
| **RNPJ10T3M0SHD** | 10,00 | 4,76 | 0,18 | 8 | | ● | | ● | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KC422M | | | KC510M | | | KCK15 | | | KC520M | | | KCPM20 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | – | – | – | – | – | – | – | – | – | – | – | – | 660 | **580** | 535 |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | 410 | **370** | 330 |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – | 370 | **330** | 305 |
| | 4 | – | – | – | 295 | **240** | 200 | – | – | – | – | – | – | 275 | **255** | 230 |
| | 5 | – | – | – | – | – | – | – | – | – | – | – | – | 330 | **300** | 275 |
| | 6 | – | – | – | – | – | – | – | – | – | – | – | – | 230 | **200** | 175 |
| M | 1 | – | – | – | – | – | – | – | – | – | – | – | – | 270 | **240** | 205 |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | 245 | **215** | 190 |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – | 195 | **175** | 150 |
| K | 1 | – | – | – | 350 | **315** | 285 | 505 | **460** | 410 | 325 | **295** | 260 | 435 | **390** | 350 |
| | 2 | – | – | – | 275 | **250** | 230 | 400 | **355** | 330 | 255 | **225** | 215 | 345 | **310** | 280 |
| | 3 | – | – | – | 235 | **205** | 190 | 335 | **300** | 275 | 215 | **190** | 170 | 290 | **255** | 240 |
| N | 1 | 1285 | **1135** | 1050 | 770 | **685** | 630 | – | – | – | – | – | – | – | – | – |
| | 2 | 1135 | **1050** | 915 | 695 | **640** | 585 | – | – | – | – | – | – | – | – | – |
| S | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 4 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| H | 1 | – | – | – | 190 | **155** | 110 | – | – | – | – | – | – | 170 | **140** | 115 |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

| Material Group | | KC522M | | | KC725M | | | KCMP30 | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 395 | **345** | 325 | 315 | **275** | 255 | 545 | **475** | 440 | 545 | **475** | 440 |
| | 2 | 330 | **290** | 240 | 260 | **230** | 195 | 335 | **305** | 275 | 335 | **305** | 275 |
| | 3 | 305 | **255** | 215 | 240 | **205** | 170 | 305 | **275** | 250 | 305 | **275** | 250 |
| | 4 | 270 | **225** | 180 | 215 | **180** | 145 | 225 | **210** | 190 | 225 | **210** | 190 |
| | 5 | 225 | **200** | 180 | 180 | **160** | 145 | 310 | **275** | 255 | 310 | **275** | 255 |
| | 6 | 200 | **150** | 120 | 160 | **120** | 95 | 190 | **165** | – | 190 | **165** | – |
| M | 1 | 245 | **215** | 200 | 205 | **180** | 165 | 250 | **220** | 190 | 250 | **220** | 190 |
| | 2 | 225 | **190** | 160 | 185 | **160** | 130 | 225 | **195** | 170 | 225 | **195** | 170 |
| | 3 | 170 | **145** | 115 | 140 | **120** | 95 | 175 | **160** | 140 | 175 | **160** | 140 |
| K | 1 | 275 | **250** | 220 | – | – | – | – | – | – | – | – | – |
| | 2 | 215 | **195** | 180 | – | – | – | – | – | – | – | – | – |
| | 3 | 180 | **160** | 145 | – | – | – | – | – | – | – | – | – |
| N | 1 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 2 | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 3 | 60 | **50** | 35 | 55 | **45** | 30 | 55 | **45** | 30 | 55 | **45** | 30 |
| | 4 | 85 | **60** | 45 | 75 | **55** | 35 | 75 | **55** | 35 | 75 | **55** | 35 |
| H | 1 | 145 | **110** | 85 | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

### At 5,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .F..LDJ | 0,09 | **0,29** | 0,27 | 0,07 | **0,21** | 0,2 | 0,06 | **0,19** | 0,18 | 0,05 | **0,17** | 0,16 | 0,05 | **0,17** | 0,16 | .F..LDJ |
| .E..LDJ | 0,09 | **0,29** | 0,38 | 0,07 | **0,21** | 0,29 | 0,06 | **0,19** | 0,25 | 0,05 | **0,17** | 0,23 | 0,05 | **0,17** | 0,23 | .E..LDJ |
| .E..LD | 0,09 | **0,29** | 0,57 | 0,07 | **0,21** | 0,43 | 0,06 | **0,19** | 0,37 | 0,05 | **0,17** | 0,35 | 0,05 | **0,17** | 0,34 | .E..LD |
| .S..GDJ | 0,21 | **0,42** | 0,66 | 0,15 | **0,31** | 0,49 | 0,13 | **0,27** | 0,43 | 0,13 | **0,26** | 0,40 | 0,12 | **0,25** | 0,39 | .S..GDJ |
| .S..GD | 0,21 | **0,42** | 0,66 | 0,15 | **0,31** | 0,49 | 0,13 | **0,27** | 0,43 | 0,13 | **0,26** | 0,40 | 0,12 | **0,25** | 0,39 | .S..GD |
| .S..HD | 0,33 | **0,42** | 0,71 | 0,25 | **0,31** | 0,53 | 0,22 | **0,27** | 0,46 | 0,20 | **0,26** | 0,43 | 0,20 | **0,25** | 0,42 | .S..HD |

### At 2,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .F..LDJ | 0,11 | **0,36** | 0,34 | 0,08 | **0,27** | 0,25 | 0,07 | **0,23** | 0,22 | 0,07 | **0,22** | 0,21 | 0,07 | **0,21** | 0,20 | .F..LDJ |
| .E..LDJ | 0,11 | **0,36** | 0,48 | 0,08 | **0,27** | 0,36 | 0,07 | **0,23** | 0,31 | 0,07 | **0,22** | 0,29 | 0,07 | **0,21** | 0,29 | .E..LDJ |
| .E..LD | 0,11 | **0,36** | 0,72 | 0,08 | **0,27** | 0,54 | 0,07 | **0,23** | 0,47 | 0,07 | **0,22** | 0,44 | 0,07 | **0,21** | 0,43 | .E..LD |
| .S..GDJ | 0,26 | **0,52** | 0,82 | 0,19 | **0,39** | 0,61 | 0,17 | **0,34** | 0,53 | 0,16 | **0,32** | 0,5 | 0,15 | **0,31** | 0,49 | .S..GDJ |
| .S..GD | 0,26 | **0,52** | 0,82 | 0,19 | **0,39** | 0,61 | 0,17 | **0,34** | 0,53 | 0,16 | **0,32** | 0,5 | 0,15 | **0,31** | 0,49 | .S..GD |
| .S..HD | 0,42 | **0,52** | 0,88 | 0,31 | **0,39** | 0,66 | 0,27 | **0,34** | 0,57 | 0,26 | **0,32** | 0,54 | 0,25 | **0,31** | 0,53 | .S..HD |

### At 1,00 Axial Depth of Cut (ap)

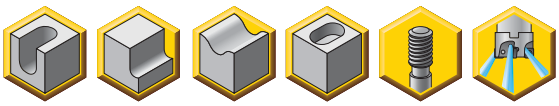
| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .F..LDJ | 0,15 | **0,48** | 0,45 | 0,11 | **0,36** | 0,34 | 0,10 | **0,31** | 0,29 | 0,09 | **0,29** | 0,27 | 0,09 | **0,29** | 0,27 | .F..LDJ |
| .E..LDJ | 0,15 | **0,48** | 0,64 | 0,11 | **0,36** | 0,48 | 0,10 | **0,31** | 0,41 | 0,09 | **0,29** | 0,39 | 0,09 | **0,29** | 0,38 | .E..LDJ |
| .E..LD | 0,15 | **0,48** | 0,96 | 0,11 | **0,36** | 0,71 | 0,10 | **0,31** | 0,62 | 0,09 | **0,29** | 0,58 | 0,09 | **0,29** | 0,57 | .E..LD |
| .S..GDJ | 0,34 | **0,70** | 1,10 | 0,26 | **0,52** | 0,82 | 0,22 | **0,45** | 0,71 | 0,21 | **0,43** | 0,67 | 0,21 | **0,42** | 0,65 | .S..GDJ |
| .S..GD | 0,34 | **0,70** | 1,10 | 0,26 | **0,52** | 0,82 | 0,22 | **0,45** | 0,71 | 0,21 | **0,43** | 0,67 | 0,21 | **0,42** | 0,65 | .S..GD |
| .S..HD | 0,56 | **0,70** | 1,18 | 0,42 | **0,52** | 0,88 | 0,36 | **0,45** | 0,76 | 0,34 | **0,43** | 0,71 | 0,33 | **0,42** | 0,70 | .S..HD |

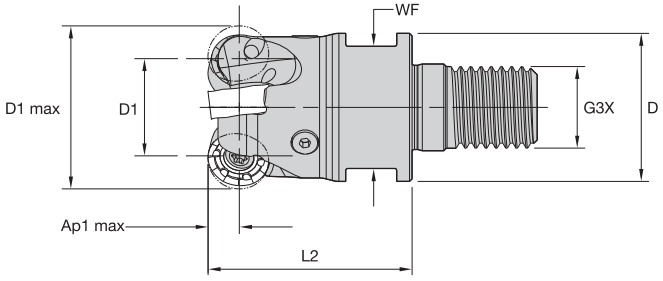
### At 0,50 Axial Depth of Cut (ap)

| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .F..LDJ | 0,21 | **0,66** | 0,62 | 0,15 | **0,49** | 0,46 | 0,13 | **0,43** | 0,4 | 0,13 | **0,40** | 0,38 | 0,12 | **0,39** | 0,37 | .F..LDJ |
| .E..LDJ | 0,21 | **0,66** | 0,88 | 0,15 | **0,49** | 0,66 | 0,13 | **0,43** | 0,57 | 0,13 | **0,40** | 0,53 | 0,12 | **0,39** | 0,52 | .E..LDJ |
| .E..LD | 0,21 | **0,66** | 1,33 | 0,15 | **0,49** | 0,99 | 0,13 | **0,43** | 0,86 | 0,13 | **0,40** | 0,80 | 0,12 | **0,39** | 0,78 | .E..LD |
| .S..GDJ | 0,47 | **0,97** | 1,52 | 0,35 | **0,72** | 1,13 | 0,31 | **0,63** | 0,98 | 0,29 | **0,59** | 0,92 | 0,28 | **0,57** | 0,90 | .S..GDJ |
| .S..GD | 0,47 | **0,97** | 1,52 | 0,35 | **0,72** | 1,13 | 0,31 | **0,63** | 0,98 | 0,29 | **0,59** | 0,92 | 0,28 | **0,57** | 0,90 | .S..GD |
| .S..HD | 0,77 | **0,97** | 1,63 | 0,58 | **0,72** | 1,21 | 0,50 | **0,63** | 1,05 | 0,47 | **0,59** | 0,98 | 0,46 | **0,57** | 0,96 | .S..HD |

NOTE: Use “Light Machining” values as starting feed rate.

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.





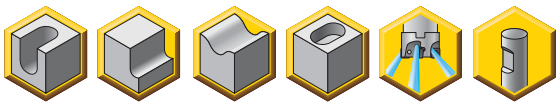
## Screw-On End Mills

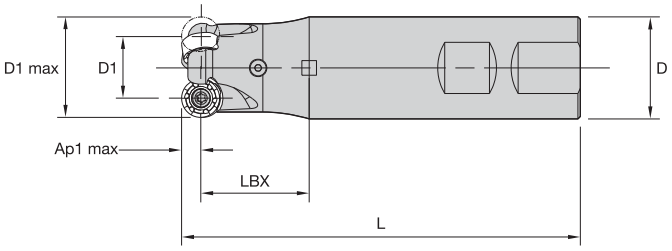
| order number | catalogue number | D1 max | D1 | D | WF | G3X | L2 | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4147001** | **KDR32Z03M16RN12** | 32 | 20 | 29 | 24 | M16 | 40 | 3,0 | 3 | 0,18 | 39160 | RN_J1204M0__ |
| **4147002** | **KDR35Z03M16RN12** | 35 | 23 | 29 | 24 | M16 | 40 | 3,0 | 3 | 0,20 | 37440 | RN_J1204M0__ |
| **4147033** | **KDR42Z04M16RN12** | 42 | 30 | 29 | 24 | M16 | 40 | 3,0 | 4 | 0,23 | 34180 | RN_J1204M0__ |

## Spare Parts

| D1 max | insert screw | Nm | wrench |
|---|---|---|---|
| 32 | **193.492** | 4,0 | **170.025** |
| 35 | **193.492** | 4,0 | **170.025** |
| 42 | **193.492** | 4,0 | **170.025** |

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing, profiling, ramping, and helical interpolation capabilities.





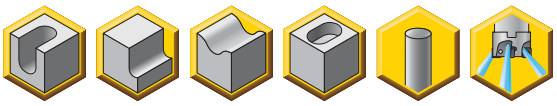
## Weldon End Mills

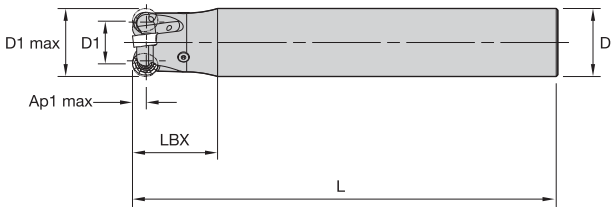
| order number | catalogue number | D1 max | D1 | D | L | LBX | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4147035** | **KDR32Z03B32RN12** | 32 | 20 | 32 | 125 | 40 | 3,0 | 3 | 0,64 | 39160 | RN_J1204M0__ |

## Spare Parts

| D1 max | insert screw | Nm | wrench |
|---|---|---|---|
| 32 | **193.492** | 4,0 | **170.025** |

- Double-sided round insert with 12 indexable positions.
- Anti-rotation feature, enable higher cutting forces and extra stability.
- Pocketing and profiling capabilities.





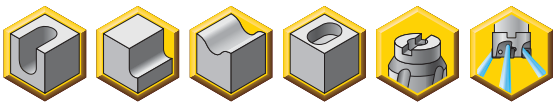
## Cylindrical End Mills

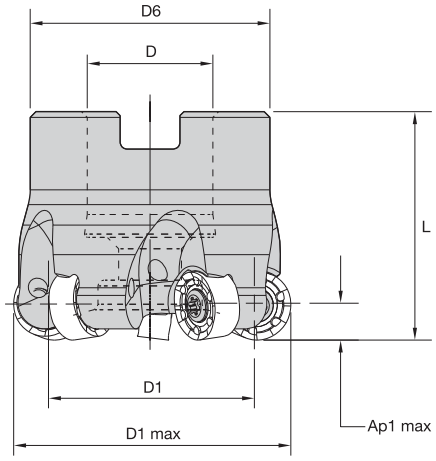
| order number | catalogue number | D1 max | D1 | D | L | LBX | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4147038** | **KDR32Z02A32RN12L250** | 32 | 20 | 32 | 250 | 40 | 3,0 | 2 | 1,41 | 39160 | RN_J1204M0__ |
| **4147037** | **KDR32Z03A32RN12L200** | 32 | 20 | 32 | 200 | 40 | 3,0 | 3 | 1,10 | 39160 | RN_J1204M0__ |

## Spare Parts

| D1 max | insert screw | Nm | wrench |
|---|---|---|---|
| 32 | **193.492** | 4,0 | **170.025** |
| 35 | **193.492** | 4,0 | **170.025** |
| 42 | **193.492** | 4,0 | **170.025** |

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.





## Shell Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4147039** | **KDR40Z04S16RN12** | 40 | 28 | 16 | 38 | 40 | 3,0 | 4 | 0,21 | 35020 | RN_J1204M0__ |
| **4147040** | **KDR50Z04S22RN12** | 50 | 38 | 22 | 42 | 40 | 3,0 | 4 | 0,81 | 31330 | RN_J1204M0__ |
| **4147041** | **KDR50Z05S22RN12** | 50 | 38 | 22 | 42 | 40 | 3,0 | 5 | 0,81 | 31330 | RN_J1204M0__ |
| **4147042** | **KDR52Z05S22RN12** | 52 | 40 | 22 | 49 | 50 | 3,0 | 5 | 0,81 | 30720 | RN_J1204M0__ |
| **4147043** | **KDR63Z05S22RN12** | 63 | 51 | 22 | 49 | 50 | 3,0 | 5 | 0,81 | 27910 | RN_J1204M0__ |
| **4147044** | **KDR63Z07S22RN12** | 63 | 51 | 22 | 49 | 50 | 3,0 | 7 | 0,81 | 27910 | RN_J1204M0__ |
| **4147045** | **KDR66Z07S27RN12** | 66 | 54 | 27 | 60 | 50 | 3,0 | 7 | 0,81 | 27260 | RN_J1204M0__ |
| **4147046** | **KDR80Z06S27RN12** | 80 | 68 | 27 | 60 | 50 | 3,0 | 6 | 1,07 | 24760 | RN_J1204M0__ |
| **4147047** | **KDR80Z08S27RN12** | 80 | 68 | 27 | 60 | 50 | 3,0 | 8 | 0,81 | 24760 | RN_J1204M0__ |
| **4147048** | **KDR100Z07S32RN12** | 100 | 88 | 32 | 78 | 50 | 3,0 | 7 | 1,57 | 22150 | RN_J1204M0__ |
| **4147049** | **KDR100Z09S32RN12** | 100 | 88 | 32 | 78 | 50 | 3,0 | 9 | 1,56 | 22150 | RN_J1204M0__ |

## Spare Parts

| D1 max | insert screw | Nm | low-head cap screw | socket-head cap screw | coolant lock screw assembly | wrench |
|---|---|---|---|---|---|---|
| 40 | **193.492** | 4,0 | – | **MS1294** | – | **170.025** |
| 50 | **193.492** | 4,0 | **MS1336** | – | – | **170.025** |
| 52 | **193.492** | 4,0 | – | **MS1242** | – | **170.025** |
| 63 | **193.492** | 4,0 | – | **MS1242** | – | **170.025** |
| 66 | **193.492** | 4,0 | – | **MS2038** | – | **170.025** |
| 80 | **193.492** | 4,0 | – | **MS2038** | – | **170.025** |
| 100 | **193.492** | 4,0 | – | – | **MS2195C** | **170.025** |

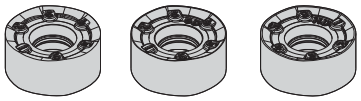
## Insert Selection Guide

| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .E..LD | KCPK30 | **.S..GD** | **KCPK30** | .S..HD | KCPK30 |
| P3–P4 | .S..GD | KC522M | **.S..HD** | **KCPM20** | .S..HD | KCPK30 |
| P5–P6 | .S..GD | KC522M | **.S..GD** | **KCPK30** | .S..HD | KCPM20 |
| M1–M2 | .E..LD | KC522M | **.E..LD** | **KC522M** | .S..GD | KC725M |
| M3 | .E..LD | KC522M | **.S..GD** | **KCPK30** | .S..HD | KCPK30 |
| K1–K2 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| K3 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| N1–N2 | .F..LDJ | KC422M | **.F..LDJ** | **KC422M** | – | – |
| N3 | .F..LDJ | KC422M | **.F..LDJ** | **KC422M** | – | – |
| S1–S2 | .E..LD | KC725M | **.S..GD** | **KC725M** | .S..HD | KC725M |
| S3 | .E..LD | KC725M | **.S..GD** | **KC725M** | .S..HD | KC725M |
| S4 | .E..LD | KC725M | **.E..LD** | **KC725M** | .S..GD | KC725M |
| H1 | .S..GD | KC522M | **.S..HD** | **KCPM20** | – | – |

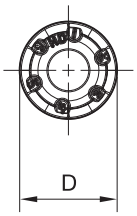




- -FLDJ geometry is for non-ferrous metals.
- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is for general use in steel and stainless steel.
- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.



RNGJ-LD | RNGJ-GD RNPJ-GD | RNGJ-HD RNPJ-HD




● first choice
○ alternate choice

| | | KC422M | KC510M | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| P | | | ○ | | ○ | ● | | ● | ● |
| M | | | | | ● | ● | | ○ | ○ |
| K | | | ○ | ● | ○ | | ● | | ○ |
| N | | ● | | | | | | | |
| S | | | | | ● | ● | | | |
| H | | | ● | | ○ | | | ○ | |

## RNGJ12...-LD/-GD/-HD

| catalogue number | D | S | hm | cutting edges | KC422M | KC510M | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RNGJ1204M0FLDJ** | 12,00 | 4,75 | 0,04 | 12 | ● | | | | | | | |
| **RNGJ1204M0ELD** | 12,00 | 4,75 | 0,04 | 12 | | | | ● | ● | | | ● |
| **RNGJ1204M0SGD** | 12,00 | 4,75 | 0,09 | 12 | | | | ● | ● | | | ● |
| **RNGJ1204M0SHD** | 12,00 | 4,75 | 0,19 | 12 | | | | | ● | ● | ● | ● |

## RNPJ12...-GD/-HD

| catalogue number | D | S | hm | cutting edges | KC422M | KC510M | KC520M | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RNPJ1204M0SGD** | 12,00 | 4,75 | – | 12 | | ● | | ● | ● | | | ● |
| **RNPJ1204M0SHD** | 12,00 | 4,75 | 0,18 | 12 | | | ● | | ● | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KC422M | | | KC510M | | | KCK15 | | | KC520M | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 4 | – | – | – | 295 | **240** | 200 | – | – | – | – | – | – |
| | 5 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 6 | – | – | – | – | – | – | – | – | – | – | – | – |
| M | 1 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |
| K | 1 | – | – | – | 350 | **315** | 285 | 505 | **460** | 410 | 325 | **295** | 260 |
| | 2 | – | – | – | 275 | **250** | 230 | 400 | **355** | 330 | 255 | **225** | 215 |
| | 3 | – | – | – | 235 | **205** | 190 | 335 | **300** | 275 | 215 | **190** | 170 |
| N | 1 | 1285 | **1135** | 1050 | 770 | **685** | 630 | – | – | – | – | – | – |
| | 2 | 1135 | **1050** | 915 | 695 | **640** | 585 | – | – | – | – | – | – |
| S | 1 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 4 | – | – | – | – | – | – | – | – | – | – | – | – |
| H | 1 | – | – | – | 190 | **155** | 110 | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |

| Material Group | | KCPM20 | | | KC522M | | | KC725M | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 660 | **580** | 535 | 395 | **345** | 325 | 315 | **275** | 255 | 545 | **475** | 440 |
| | 2 | 410 | **370** | 330 | 330 | **290** | 240 | 260 | **230** | 195 | 335 | **305** | 275 |
| | 3 | 370 | **330** | 305 | 305 | **255** | 215 | 240 | **205** | 170 | 305 | **275** | 250 |
| | 4 | 275 | **255** | 230 | 270 | **225** | 180 | 215 | **180** | 145 | 225 | **210** | 190 |
| | 5 | 330 | **300** | 275 | 225 | **200** | 180 | 180 | **160** | 145 | 310 | **275** | 255 |
| | 6 | 230 | **200** | 175 | 200 | **150** | 120 | 160 | **120** | 95 | 190 | **165** | – |
| M | 1 | 270 | **240** | 205 | 245 | **215** | 200 | 205 | **180** | 165 | 250 | **220** | 190 |
| | 2 | 245 | **215** | 190 | 225 | **190** | 160 | 185 | **160** | 130 | 225 | **195** | 170 |
| | 3 | 195 | **175** | 150 | 170 | **145** | 115 | 140 | **120** | 95 | 175 | **160** | 140 |
| K | 1 | 435 | **390** | 350 | 275 | **250** | 220 | – | – | – | – | – | – |
| | 2 | 345 | **310** | 280 | 215 | **195** | 180 | – | – | – | – | – | – |
| | 3 | 290 | **255** | 240 | 180 | **160** | 145 | – | – | – | – | – | – |
| N | 1 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 2 | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 3 | – | – | – | 60 | **50** | 35 | 55 | **45** | 30 | 55 | **45** | 30 |
| | 4 | – | – | – | 85 | **60** | 45 | 75 | **55** | 35 | 75 | **55** | 35 |
| H | 1 | 170 | **140** | 115 | 145 | **110** | 85 | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

### At 6,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .F..LDJ | 0,09 | **0,15** | 0,27 | 0,07 | **0,11** | 0,20 | 0,06 | **0,10** | 0,17 | 0,05 | **0,09** | 0,16 | 0,05 | **0,09** | 0,16 | .F..LDJ |
| .E..LD | 0,09 | **0,15** | 0,27 | 0,07 | **0,11** | 0,20 | 0,06 | **0,10** | 0,17 | 0,05 | **0,09** | 0,16 | 0,05 | **0,09** | 0,16 | .E..LD |
| .S..GD | 0,21 | **0,35** | 0,61 | 0,15 | **0,26** | 0,46 | 0,13 | **0,23** | 0,40 | 0,13 | **0,21** | 0,37 | 0,12 | **0,21** | 0,37 | .S..GD |
| .S..HD | 0,33 | **0,50** | 0,76 | 0,25 | **0,38** | 0,56 | 0,22 | **0,33** | 0,49 | 0,20 | **0,31** | 0,46 | 0,20 | **0,30** | 0,45 | .S..HD |

### At 3,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .F..LDJ | 0,10 | **0,18** | 0,31 | 0,08 | **0,13** | 0,23 | 0,07 | **0,11** | 0,20 | 0,06 | **0,11** | 0,19 | 0,06 | **0,11** | 0,18 | .F..LDJ |
| .E..LD | 0,10 | **0,18** | 0,31 | 0,08 | **0,13** | 0,23 | 0,07 | **0,11** | 0,20 | 0,06 | **0,11** | 0,19 | 0,06 | **0,11** | 0,18 | .E..LD |
| .S..GD | 0,24 | **0,40** | 0,71 | 0,18 | **0,30** | 0,53 | 0,16 | **0,26** | 0,46 | 0,15 | **0,25** | 0,43 | 0,14 | **0,24** | 0,42 | .S..GD |
| .S..HD | 0,39 | **0,58** | 0,87 | 0,29 | **0,43** | 0,65 | 0,25 | **0,38** | 0,57 | 0,24 | **0,35** | 0,53 | 0,23 | **0,35** | 0,52 | .S..HD |

### At 1,50 Axial Depth of Cut (ap)

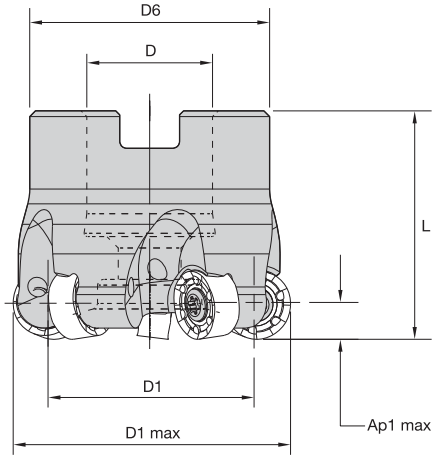
| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .F..LDJ | 0,14 | **0,23** | 0,40 | 0,10 | **0,17** | 0,30 | 0,09 | **0,15** | 0,26 | 0,08 | **0,14** | 0,25 | 0,08 | **0,14** | 0,24 | .F..LDJ |
| .E..LD | 0,14 | **0,23** | 0,40 | 0,10 | **0,17** | 0,30 | 0,09 | **0,15** | 0,26 | 0,08 | **0,14** | 0,25 | 0,08 | **0,14** | 0,24 | .E..LD |
| .S..GD | 0,31 | **0,53** | 0,93 | 0,23 | **0,40** | 0,69 | 0,20 | **0,34** | 0,60 | 0,19 | **0,32** | 0,56 | 0,19 | **0,32** | 0,55 | .S..GD |
| .S..HD | 0,51 | **0,76** | 1,15 | 0,38 | **0,57** | 0,85 | 0,33 | **0,50** | 0,74 | 0,31 | **0,46** | 0,69 | 0,30 | **0,45** | 0,68 | .S..HD |

### At 0,75 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .F..LDJ | 0,19 | **0,32** | 0,55 | 0,14 | **0,24** | 0,41 | 0,12 | **0,21** | 0,36 | 0,11 | **0,19** | 0,34 | 0,11 | **0,19** | 0,33 | .F..LDJ |
| .E..LD | 0,19 | **0,32** | 0,55 | 0,14 | **0,24** | 0,41 | 0,12 | **0,21** | 0,36 | 0,11 | **0,19** | 0,34 | 0,11 | **0,19** | 0,33 | .E..LD |
| .S..GD | 0,43 | **0,72** | 1,28 | 0,32 | **0,54** | 0,95 | 0,28 | **0,47** | 0,82 | 0,26 | **0,44** | 0,77 | 0,25 | **0,43** | 0,75 | .S..GD |
| .S..HD | 0,69 | **1,04** | 1,58 | 0,52 | **0,78** | 1,17 | 0,45 | **0,68** | 1,02 | 0,42 | **0,63** | 0,95 | 0,41 | **0,62** | 0,93 | .S..HD |

NOTE: Use “Light Machining” values as starting feed rate.

- Double-sided round inserts with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.



## Shell Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5153837** | **KDR50Z04S22RN16** | 50 | 34 | 22 | 42 | 50 | 4,0 | 4 | 0,36 | 26700 | RNGJ1605M0___ |
| **5153838** | **KDR52Z04S22RN16** | 52 | 36 | 22 | 42 | 50 | 4,0 | 4 | 0,39 | 26000 | RNGJ1605M0___ |
| **5153839** | **KDR63Z04S22RN16** | 63 | 47 | 22 | 49 | 50 | 4,0 | 4 | 0,59 | 22700 | RNGJ1605M0___ |
| **5153890** | **KDR63Z06S22RN16** | 63 | 47 | 22 | 49 | 50 | 4,0 | 6 | 0,57 | 22700 | RNGJ1605M0___ |
| **5153891** | **KDR66Z05S27RN16** | 66 | 50 | 27 | 60 | 50 | 4,0 | 5 | 0,69 | 22000 | RNGJ1605M0___ |
| **5153892** | **KDR80Z05S27RN16** | 80 | 64 | 27 | 60 | 50 | 4,0 | 5 | 0,88 | 19500 | RNGJ1605M0___ |
| **5153893** | **KDR80Z07S27RN16** | 80 | 64 | 27 | 60 | 50 | 4,0 | 7 | 0,88 | 19500 | RNGJ1605M0___ |
| **5153894** | **KDR100Z06S32RN16** | 100 | 84 | 32 | 78 | 50 | 4,0 | 6 | 1,51 | 17000 | RNGJ1605M0___ |
| **5153895** | **KDR100Z08S32RN16** | 100 | 84 | 32 | 78 | 50 | 4,0 | 8 | 1,52 | 17000 | RNGJ1605M0___ |
| **5153898** | **KDR125Z10S40RN16** | 125 | 109 | 40 | 90 | 63 | 4,0 | 10 | 2,92 | 14900 | RNGJ1605M0___ |
| **5153897** | **KDR125Z08S40RN16** | 125 | 109 | 40 | 90 | 63 | 4,0 | 8 | 2,88 | 14900 | RNGJ1605M0___ |
| **5338057** | **KDR160Z12S40RN16** | 160 | 144 | 40 | 100 | 63 | 4,0 | 12 | 4,05 | 13000 | RNGJ1605M0___ |

## Spare Parts

| D1 max | insert screw | Nm | socket-head cap screw | coolant lock screw assembly | wrench |
|---|---|---|---|---|---|
| 50 | **MS2260** | 4,0 | **MS1242** | **–** | **170.026** |
| 52 | **MS2260** | 4,0 | **MS1242** | **–** | **170.026** |
| 63 | **MS2260** | 4,0 | **MS1242** | **–** | **170.026** |
| 66 | **MS2260** | 4,0 | **MS2038** | **–** | **170.026** |
| 80 | **MS2260** | 4,0 | **MS2038** | **–** | **170.026** |
| 100 | **MS2260** | 4,0 | **–** | **MS2195C** | **170.026** |
| 125 | **MS2260** | 4,0 | **–** | **MS2187C** | **170.026** |

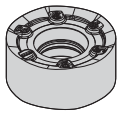
## Insert Selection Guide

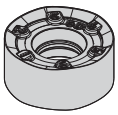
| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .S..LDJ | KC725M | **.S..GD** | **KCPK30** | .S..HD | KCPK30 |
| P3–P4 | .S..LDJ | KC522M | **.S..GD** | **KC522M** | .S..HD | KCPK30 |
| P5–P6 | .S..LD | KCMP30 | **.S..LD** | **KCMP30** | .S..GD | KCPK30 |
| M1–M2 | .S..LDJ | KC522M | **.S..LDJ** | **KC725M** | .S..GD | KC725M |
| M3 | .S..LDJ | KC725M | **.S..LD** | **KCMP30** | .S..HD | KCPK30 |
| K1–K2 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| K3 | .S..HD | KCK15 | **.S..HD** | **KCK15** | .S..HD | KCPK30 |
| N1–N2 | – | – | **–** | **–** | – | – |
| N3 | – | – | **–** | **–** | – | – |
| S1–S2 | .S..LDJ | KC522M | **.S..GD** | **KC725M** | .S..HD | KC725M |
| S3 | .S..LDJ | KC522M | **.S..GD** | **KC725M** | .S..HD | KC725M |
| S4 | .S..LDJ | KC725M | **.S..LDJ** | **KC725M** | .S..GD | KC725M |
| H1 | .S..GD | KC522M | **.S..HD** | **KCPM20** | – | – |

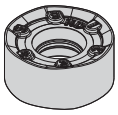


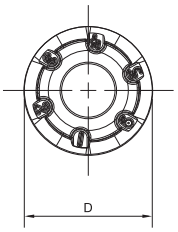
## Indexable Inserts

- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is for general use in steel and for stainless steel.
- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.


RNGJ-LD


RNPJ-GD


RNPJ-HD




● first choice
○ alternate choice

| | | KC522M | KC725M | KCK15 | KCPM20 | KCMP30 |
|---|---|---|---|---|---|---|
| P | | ○ | ● | | ● | ● |
| M | | ● | ● | | ○ | ○ |
| K | | ○ | | ● | | ○ |
| N | | | | | | |
| S | | ● | ● | | | |
| H | | ○ | | | ○ | |

## RNGJ16...-LD

| catalogue number | D | S | hm | cutting edges | KC522M | KC725M | KCK15 | KCPM20 | KCMP30 |
|---|---|---|---|---|---|---|---|---|---|
| **RNGJ1605M0ELD** | 16,00 | 6,35 | 0,04 | 12 | | | | | ● |
| **RNGJ1605M0ELDJ** | 16,00 | 6,35 | 0,04 | 12 | ● | ● | | | |

## RNPJ16...-GD/-HD

| catalogue number | D | S | hm | cutting edges | KC522M | KC725M | KCK15 | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| **RNPJ1605M0SGD** | 16,00 | 6,35 | 0,09 | 12 | ● | ● | | | ● |
| **RNPJ1605M0SHD** | 16,00 | 6,35 | 0,23 | 12 | | ● | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KCK15 | | | KC520M | | | KCPM20 | | | KC522M | | | KC725M | | | KCMP30 | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | – | – | – | – | – | – | 660 | **580** | 535 | 395 | **345** | 325 | 315 | **275** | 255 | 545 | **475** | 440 | 545 | **475** | 440 |
| | 2 | – | – | – | – | – | – | 410 | **370** | 330 | 330 | **290** | 240 | 260 | **230** | 195 | 335 | **305** | 275 | 335 | **305** | 275 |
| | 3 | – | – | – | – | – | – | 370 | **330** | 305 | 305 | **255** | 215 | 240 | **205** | 170 | 305 | **275** | 250 | 305 | **275** | 250 |
| | 4 | – | – | – | – | – | – | 275 | **255** | 230 | 270 | **225** | 180 | 215 | **180** | 145 | 225 | **210** | 190 | 225 | **210** | 190 |
| | 5 | – | – | – | – | – | – | 330 | **300** | 275 | 225 | **200** | 180 | 180 | **160** | 145 | 310 | **275** | 255 | 310 | **275** | 255 |
| | 6 | – | – | – | – | – | – | 230 | **200** | 175 | 200 | **150** | 120 | 160 | **120** | 95 | 190 | **165** | – | 190 | **165** | – |
| M | 1 | – | – | – | – | – | – | 270 | **240** | 205 | 245 | **215** | 200 | 205 | **180** | 165 | 250 | **220** | 190 | 250 | **220** | 190 |
| | 2 | – | – | – | – | – | – | 245 | **215** | 190 | 225 | **190** | 160 | 185 | **160** | 130 | 225 | **195** | 170 | 225 | **195** | 170 |
| | 3 | – | – | – | – | – | – | 195 | **175** | 150 | 170 | **145** | 115 | 140 | **120** | 95 | 175 | **160** | 140 | 175 | **160** | 140 |
| K | 1 | 505 | **460** | 410 | 325 | **295** | 260 | 435 | **390** | 350 | 275 | **250** | 220 | – | – | – | – | – | – | – | – | – |
| | 2 | 400 | **355** | 330 | 255 | **225** | 215 | 345 | **310** | 280 | 215 | **195** | 180 | – | – | – | – | – | – | – | – | – |
| | 3 | 335 | **300** | 275 | 215 | **190** | 170 | 290 | **255** | 240 | 180 | **160** | 145 | – | – | – | – | – | – | – | – | – |
| N | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | – | – | – | – | – | – | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 2 | – | – | – | – | – | – | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 3 | – | – | – | – | – | – | – | – | – | 60 | **50** | 35 | 55 | **45** | 30 | 55 | **45** | 30 | 55 | **45** | 30 |
| | 4 | – | – | – | – | – | – | – | – | – | 85 | **60** | 45 | 75 | **55** | 35 | 75 | **55** | 35 | 75 | **55** | 35 |
| H | 1 | – | – | – | – | – | – | 170 | **140** | 115 | 145 | **110** | 85 | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

### At 8,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LDJ | 0,09 | **0,29** | 0,38 | 0,07 | **0,21** | 0,29 | 0,06 | **0,19** | 0,25 | 0,05 | **0,17** | 0,23 | 0,05 | **0,17** | 0,23 | .E..LDJ |
| .S..GD | 0,21 | **0,50** | 0,58 | 0,15 | **0,38** | 0,44 | 0,13 | **0,33** | 0,38 | 0,13 | **0,31** | 0,36 | 0,12 | **0,30** | 0,35 | .S..GD |
| .S..HD | 0,38 | **0,50** | 0,76 | 0,29 | **0,38** | 0,56 | 0,25 | **0,33** | 0,49 | 0,23 | **0,31** | 0,46 | 0,23 | **0,30** | 0,45 | .S..HD |

### At 4,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .E..LDJ | 0,10 | **0,33** | 0,44 | 0,08 | **0,25** | 0,33 | 0,07 | **0,22** | 0,29 | 0,06 | **0,20** | 0,27 | 0,06 | **0,20** | 0,26 | .E..LDJ |
| .S..GD | 0,24 | **0,58** | 0,67 | 0,18 | **0,43** | 0,50 | 0,16 | **0,38** | 0,44 | 0,15 | **0,35** | 0,41 | 0,14 | **0,35** | 0,40 | .S..GD |
| .S..HD | 0,44 | **0,58** | 0,87 | 0,33 | **0,43** | 0,65 | 0,29 | **0,38** | 0,57 | 0,27 | **0,35** | 0,53 | 0,27 | **0,35** | 0,52 | .S..HD |

### At 2,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .E..LDJ | 0,14 | **0,43** | 0,58 | 0,10 | **0,32** | 0,43 | 0,09 | **0,28** | 0,38 | 0,08 | **0,26** | 0,35 | 0,08 | **0,26** | 0,34 | .E..LDJ |
| .S..GD | 0,31 | **0,76** | 0,89 | 0,23 | **0,57** | 0,66 | 0,20 | **0,50** | 0,57 | 0,19 | **0,46** | 0,54 | 0,19 | **0,45** | 0,53 | .S..GD |
| .S..HD | 0,58 | **0,76** | 1,15 | 0,44 | **0,57** | 0,85 | 0,38 | **0,50** | 0,74 | 0,35 | **0,46** | 0,69 | 0,35 | **0,45** | 0,68 | .S..HD |

### At 1,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed feed per tooth (fz) as a % of radial depth of cut (ae) of working diameter (dw) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .E..LDJ | 0,19 | **0,59** | 0,79 | 0,14 | **0,44** | 0,59 | 0,12 | **0,39** | 0,51 | 0,11 | **0,36** | 0,48 | 0,11 | **0,35** | 0,47 | .E..LDJ |
| .S..GD | 0,43 | **1,04** | 1,21 | 0,32 | **0,78** | 0,90 | 0,28 | **0,68** | 0,79 | 0,26 | **0,63** | 0,73 | 0,25 | **0,62** | 0,72 | .S..GD |
| .S..HD | 0,80 | **1,04** | 1,58 | 0,60 | **0,78** | 1,17 | 0,52 | **0,68** | 1,02 | 0,48 | **0,63** | 0,95 | 0,48 | **0,62** | 0,93 | .S..HD |

NOTE: Use “Light Machining” values as starting feed rate.

# Screw-On Milling Cutter Adaptors

## The Complete Solution to Milling

### Features and Benefits

- High metal removal rates.
- High runout accuracy.
- Maximum performance capability.
- Optimising productivity with long reach and short overhang to support all types of applications.
- Cutter is kept on centre for precision and maximum performance compared to Weldon® shank system.
- Ability to extend with standard offering extensions and reducers.
- Ground face contact for rigidity and accuracy.

Experience the advantages at your Authorised Kennametal Distributor or at **www.kennametal.com**.

**www.kennametal.com**

KENNAMETAL®

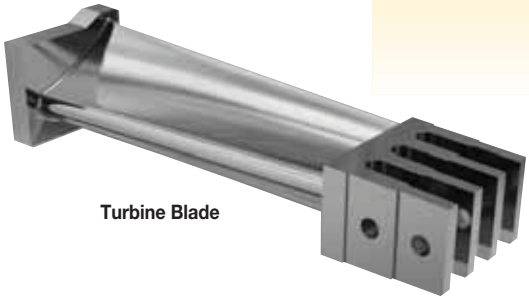
## Rodeka 12X Turbine Blade Version

Revolutionary double-sided round insert engineered for turbine blade machining. Special geometries, insert styles, and dedicated cutter bodies have been developed to serve this demanding application.

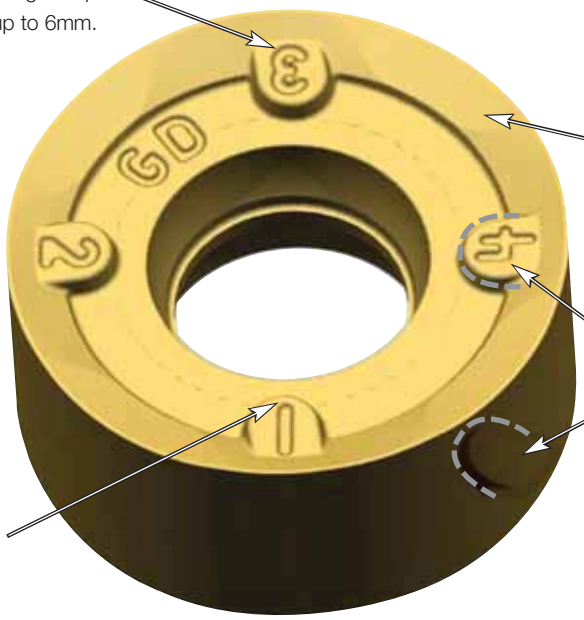
Power Plant

Steam Turbine

Rodeka 12X



Turbine Blade



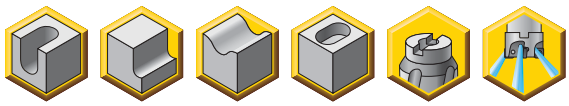

Four indexes per side, in total eight cutting edges. With higher Ap capabilities, up to 6mm.

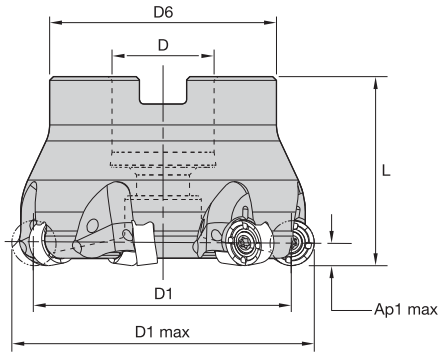
Specific high positive geometries with improved chip forming and higher tool life.

Insert location twisted by 45° between top and bottom side for equal performance over all eight cutting edges.

Unique anti-rotation feature with higher contact area for excellent stability, allowing higher feed rates.

- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Engineered for turbine blade machining.





## Shell Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5104420** | **KDR40Z04S16RN12X** | 40 | 28 | 16 | 38 | 40 | 6,0 | 4 | 0,23 | 35020 | RN_J1204M0___ |
| **5104421** | **KDR50Z05S22RN12X** | 50 | 38 | 22 | 42 | 40 | 6,0 | 5 | 0,30 | 31330 | RN_J1204M0___ |
| **5104422** | **KDR50Z05S22RN12XL** | 50 | 38 | 22 | 49 | 40 | 6,0 | 5 | 0,37 | 31330 | RN_J1204M0___ |
| **5104423** | **KDR52Z05S22RN12X** | 52 | 40 | 22 | 42 | 40 | 6,0 | 5 | 0,30 | 30720 | RN_J1204M0___ |
| **5104424** | **KDR63Z06S22RN12X** | 63 | 51 | 22 | 49 | 40 | 6,0 | 6 | 0,48 | 27910 | RN_J1204M0___ |
| **5104425** | **KDR66Z06S27RN12X** | 66 | 54 | 27 | 60 | 40 | 6,0 | 6 | 0,62 | 27260 | RN_J1204M0___ |
| **5104426** | **KDR80Z07S27RN12X** | 80 | 68 | 27 | 60 | 50 | 6,0 | 7 | 1,05 | 24760 | RN_J1204M0___ |

## Spare Parts

| D1 max | insert screw | Nm | socket-head cap screw | wrench |
|---|---|---|---|---|
| 40 | **193.492** | 4,0 | **MS1294** | **170.025** |
| 50 | **193.492** | 4,0 | **125.025** | **170.025** |
| 52 | **193.492** | 4,0 | **125.025** | **170.025** |
| 63 | **193.492** | 4,0 | **125.025** | **170.025** |
| 66 | **193.492** | 4,0 | **125.230** | **170.025** |
| 80 | **193.492** | 4,0 | **MS2038** | **170.025** |

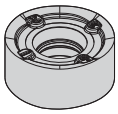
## Insert Selection Guide

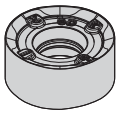
| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .E..LDX | KCMP30 | **.S..GDX** | **KCMP30** | .S..GDX | KCMP30 |
| P3–P4 | .E..LDX | KCMP30 | **.S..GDJX** | **KC522M** | .S..GDX | KCMP30 |
| P5–P6 | .E..LDX | KCMP30 | **.E..LDX** | **KCMP30** | .S..GDX | KCMP30 |
| M1–M2 | .E..LDJX | KC522M | **.E..LDJX** | **KC725M** | .S..GDJX | KC725M |
| M3 | .E..LDJX | KC725M | **.E..LDX** | **KCMP30** | .S..GDX | KCMP30 |
| K1–K2 | – | – | **–** | **–** | – | – |
| K3 | – | – | **–** | **–** | – | – |
| N1–N2 | – | – | **–** | **–** | – | – |
| N3 | – | – | **–** | **–** | – | – |
| S1–S2 | .E..LDJX | KC522M | **.E..LDJX** | **KC725M** | .S..GDJX | KC725M |
| S3 | .E..LDJX | KC522M | **.E..LDJX** | **KC725M** | .S..GDJX | KC725M |
| S4 | .E..LDJX | KC725M | **.E..LDJX** | **KC725M** | .S..GDJX | KC725M |
| H1 | – | – | **.S..GDJX** | **KC522M** | – | – |

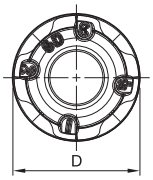


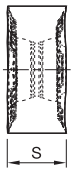
## Indexable Inserts • RNGJ12....

- -LD geometry is for general use on blades from a solid block.
- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is the first choice for forged blades.
- -GD geometry is for general use in steel and stainless steel.


RNGJ-LDX


RNGJ-GDX




● first choice
○ alternate choice

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

### RNGJ-LDX

| catalogue number | D | S | hm | cutting edges | KC522M | KC725M | KCMP30 |
|---|---|---|---|---|---|---|---|
| **RNGJ1204M0ENLDJX** | 12,00 | 4,75 | 0,03 | 8 | ● | ● | |
| **RNGJ1204M0ENLDX** | 12,00 | 4,75 | 0,03 | 8 | | | ● |

### RNGJ-GDX

| catalogue number | D | S | hm | cutting edges | KC522M | KC725M | KCMP30 |
|---|---|---|---|---|---|---|---|
| **RNGJ1204M0SNGDJX** | 12,00 | 4,75 | 0,09 | 8 | ● | ● | |
| **RNGJ1204M0SNGDX** | 12,00 | 4,75 | 0,09 | 8 | | | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KC522M | | | KC725M | | | KCMP30 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 395 | **345** | 325 | 315 | **275** | 255 | 545 | **475** | 440 |
| | 2 | 330 | **290** | 240 | 260 | **230** | 195 | 335 | **305** | 275 |
| | 3 | 305 | **255** | 215 | 240 | **205** | 170 | 305 | **275** | 250 |
| | 4 | 270 | **225** | 180 | 215 | **180** | 145 | 225 | **210** | 190 |
| | 5 | 225 | **200** | 180 | 180 | **160** | 145 | 310 | **275** | 255 |
| | 6 | 200 | **150** | 120 | 160 | **120** | 95 | 190 | **165** | – |
| M | 1 | 245 | **215** | 200 | 205 | **180** | 165 | 250 | **220** | 190 |
| | 2 | 225 | **190** | 160 | 185 | **160** | 130 | 225 | **195** | 170 |
| | 3 | 170 | **145** | 115 | 140 | **120** | 95 | 175 | **160** | 140 |
| K | 1 | 275 | **250** | 220 | – | **–** | – | – | **–** | – |
| | 2 | 215 | **195** | 180 | – | **–** | – | – | **–** | – |
| | 3 | 180 | **160** | 145 | – | **–** | – | – | **–** | – |
| N | 1–2 | – | **–** | – | – | **–** | – | – | **–** | – |
| | 3 | – | **–** | – | – | **–** | – | – | **–** | – |
| S | 1 | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 2 | 50 | **45** | 35 | 45 | **35** | 30 | 45 | **35** | 30 |
| | 3 | 60 | **50** | 35 | 55 | **45** | 30 | 55 | **45** | 30 |
| | 4 | 85 | **60** | 45 | 75 | **55** | 35 | 75 | **55** | 35 |
| H | 1 | 145 | **110** | 85 | – | **–** | – | – | **–** | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

### At 6,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LDJX | 0,08 | **0,29** | 0,59 | 0,06 | **0,22** | 0,44 | 0,06 | **0,19** | 0,38 | 0,05 | **0,18** | 0,36 | 0,05 | **0,18** | 0,35 | .E..LDJX |
| .E..LDX | 0,08 | **0,29** | 0,59 | 0,06 | **0,22** | 0,44 | 0,06 | **0,19** | 0,38 | 0,05 | **0,18** | 0,36 | 0,05 | **0,18** | 0,35 | .E..LDX |
| .S..GDJX | 0,12 | **0,41** | 0,68 | 0,09 | **0,31** | 0,51 | 0,08 | **0,27** | 0,44 | 0,07 | **0,25** | 0,41 | 0,07 | **0,25** | 0,41 | .S..GDJX |
| .S..GDX | 0,12 | **0,41** | 0,68 | 0,09 | **0,31** | 0,51 | 0,08 | **0,27** | 0,44 | 0,07 | **0,25** | 0,41 | 0,07 | **0,25** | 0,41 | .S..GDX |

### At 3,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .E..LDJX | 0,1 | **0,34** | 0,68 | 0,07 | **0,25** | 0,51 | 0,06 | **0,22** | 0,44 | 0,06 | **0,21** | 0,41 | 0,06 | **0,2** | 0,4 | .E..LDJX |
| .E..LDX | 0,1 | **0,34** | 0,68 | 0,07 | **0,25** | 0,51 | 0,06 | **0,22** | 0,44 | 0,06 | **0,21** | 0,41 | 0,06 | **0,2** | 0,4 | .E..LDX |
| .S..GDJX | 0,13 | **0,47** | 0,79 | 0,1 | **0,35** | 0,59 | 0,09 | **0,31** | 0,51 | 0,08 | **0,29** | 0,48 | 0,08 | **0,28** | 0,47 | .S..GDJX |
| .S..GDX | 0,13 | **0,47** | 0,79 | 0,1 | **0,35** | 0,59 | 0,09 | **0,31** | 0,51 | 0,08 | **0,29** | 0,48 | 0,08 | **0,28** | 0,47 | .S..GDX |

### At 2,50 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .E..LDJX | 0,1 | **0,36** | 0,72 | 0,08 | **0,27** | 0,54 | 0,07 | **0,24** | 0,47 | 0,06 | **0,22** | 0,44 | 0,06 | **0,22** | 0,43 | .E..LDJX |
| .E..LDX | 0,1 | **0,36** | 0,72 | 0,08 | **0,27** | 0,54 | 0,07 | **0,24** | 0,47 | 0,06 | **0,22** | 0,44 | 0,06 | **0,22** | 0,43 | .E..LDX |
| .S..GDJX | 0,14 | **0,51** | 0,84 | 0,11 | **0,38** | 0,63 | 0,09 | **0,33** | 0,55 | 0,09 | **0,31** | 0,51 | 0,09 | **0,3** | 0,5 | .S..GDJX |
| .S..GDX | 0,14 | **0,51** | 0,84 | 0,11 | **0,38** | 0,63 | 0,09 | **0,33** | 0,55 | 0,09 | **0,31** | 0,51 | 0,09 | **0,3** | 0,5 | .S..GDX |

### At 1,50 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50%–100% | | | |
| .E..LDJX | 0,13 | **0,44** | 0,89 | 0,1 | **0,33** | 0,66 | 0,08 | **0,29** | 0,58 | 0,08 | **0,27** | 0,54 | 0,08 | **0,26** | 0,53 | .E..LDJX |
| .E..LDX | 0,13 | **0,44** | 0,89 | 0,1 | **0,33** | 0,66 | 0,08 | **0,29** | 0,58 | 0,08 | **0,27** | 0,54 | 0,08 | **0,26** | 0,53 | .E..LDX |
| .S..GDJX | 0,18 | **0,62** | 1,04 | 0,13 | **0,46** | 0,77 | 0,12 | **0,4** | 0,67 | 0,11 | **0,38** | 0,63 | 0,11 | **0,37** | 0,61 | .S..GDJX |
| .S..GDX | 0,18 | **0,62** | 1,04 | 0,13 | **0,46** | 0,77 | 0,12 | **0,4** | 0,67 | 0,11 | **0,38** | 0,63 | 0,11 | **0,37** | 0,61 | .S..GDX |

NOTE: Use “Light Machining” values as starting feed rate.

# KSRM Series • 12mm and 16mm iCs Line Expansion

## Primary Application

Specially developed for machining titanium and stainless steel. KSRM platform enables you to pocket, profile, ramp, and plunge with consistent performance, providing outstanding metal removal rates with the lowest cutting forces.

## Features and Benefits

- Up to eight cutting edges per insert.
- Anti-rotation feature achieving excellent stability.
- Engineered to provide longer tool life in titanium and stainless steel.
- Roughing and semi-finishing operations with lower cutting forces.

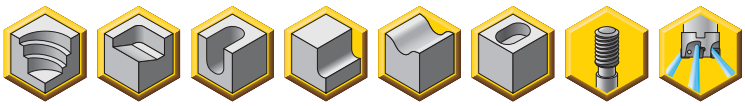
**High clearance on the cutters** for superior plunging, ramping, and chip load capacities.

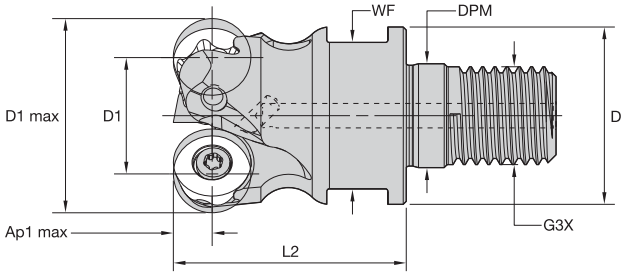
All toolholders with **internal coolant** capabilities.

**Up to eight index positions** for fast and accurate insert changes.

**Anti-rotation feature provides** excellent stability with higher feed rates and cutting forces.

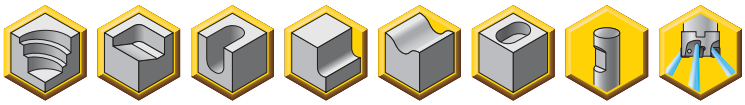
- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.

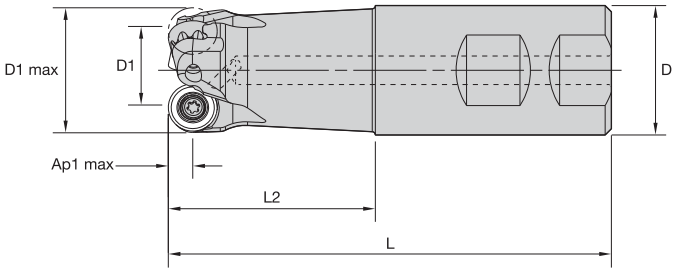




## Screw-On End Mills

| order number | catalogue number | D1 max | D1 | D | DPM | G3X | L2 | Ap1 max | Z | max ramp angle | max RPM | kg | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4043046** | **32E03R045M16RP12** | 32 | 20 | 29 | 17,0 | M16 | 45 | 6,0 | 3 | 6° | 43400 | 0,18 | RP.T1204M0… |
| **4043047** | **40E04R045M16RP12** | 40 | 28 | 29 | 17,0 | M16 | 45 | 6,0 | 4 | 9° | 38800 | 0,21 | RP.T1204M0… |





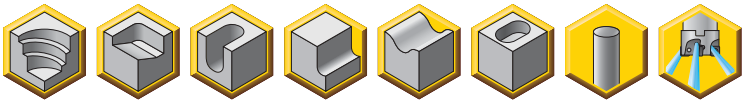
## Weldon End Mills

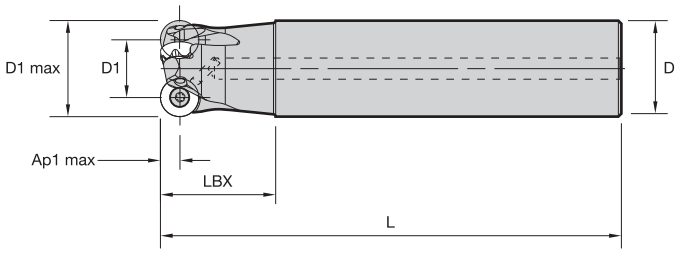
| order number | catalogue number | D1 max | D1 | D | L | L2 | Ap1 max | Z | max ramp angle | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4043048** | **32A03R040B32RP12** | 32 | 20 | 32 | 101 | 40 | 6,0 | 3 | 6.0° | 0,51 | 43400 | RP.T1204M0… |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 32 | **MS2077** | 2,3 | **DT15IP** |
| 40 | **MS2077** | 2,3 | **DT15IP** |

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.





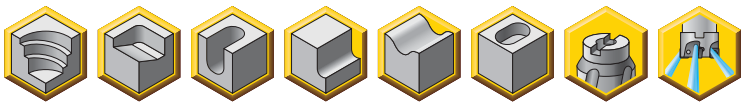
## Cylindrical End Mills

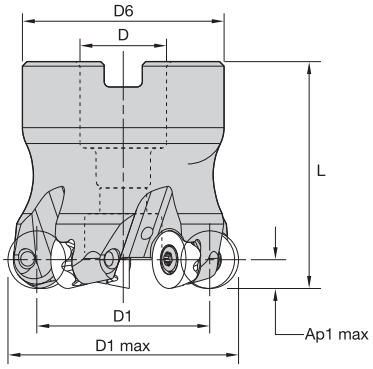
| order number | catalogue number | D1 max | D1 | D | L | LBX | Ap1 max | Z | max ramp angle | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4043049** | **32A03R040A32RP12L190** | 32 | 20 | 32 | 190 | 40 | 6,0 | 3 | 6.0° | 1,05 | 43400 | RP_T1204M0__ |
| **4177164** | **35E03R050A32RP12L200** | 35 | 23 | 32 | 200 | 50 | 6,0 | 3 | 5.5° | 1,11 | 41400 | RP_T1204M0__ |
| **4177052** | **35E04R050A32RP12L200** | 35 | 23 | 32 | 200 | 50 | 6,0 | 4 | 7.0° | 1,11 | 41400 | RP_T1204M0__ |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 32 | **MS2077** | 2,3 | **DT15IP** |
| 35 | **MS2077** | 2,3 | **DT15IP** |

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.





## Face Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | max ramp angle | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4043050** | **40A04RS90RP12** | 40 | 28 | 16 | 38 | 40 | 6,0 | 4 | 9.0° | 0,21 | 38800 | RP.T1204M0… |
| **4177163** | **42A04RS90RP12** | 42 | 30 | 16 | 38 | 40 | 6,0 | 4 | 10.0° | 0,22 | 37800 | RP.T1204M0.. |
| **4043051** | **50A04RS90RP12** | 50 | 38 | 22 | 42 | 40 | 6,0 | 4 | 10.8° | 0,26 | 34700 | RP.T1204M0... |
| **4043052** | **50A05RS90RP12** | 50 | 38 | 22 | 42 | 40 | 6,0 | 5 | 7.9° | 0,26 | 34700 | RP.T1204M0... |
| **3891914** | **52A05RS90RP12** | 52 | 40 | 22 | 49 | 50 | 6,0 | 5 | 10.2° | 0,50 | 34000 | RP.T1204M0... |
| **4043063** | **63A05RS90RP12** | 63 | 51 | 22 | 49 | 50 | 6,0 | 5 | 7.7° | 0,56 | 30900 | RP.T1204M0… |
| **4025498** | **63A07RS90RP12** | 63 | 51 | 22 | 49 | 50 | 6,0 | 7 | 2.6° | 0,56 | 30900 | RP.T1204M0… |
| **4005063** | **66A06RS90RP12** | 66 | 54 | 27 | 60 | 50 | 6,0 | 6 | 6.6° | 0,74 | 30200 | RP.T1204M0… |
| **4043064** | **80A06RS90RP12** | 80 | 68 | 27 | 60 | 50 | 6,0 | 6 | 5.1° | 0,95 | 27300 | RP.T1204M0… |
| **4024763** | **80A08RS90RP12** | 80 | 68 | 27 | 60 | 50 | 6,0 | 8 | 4.1° | 0,96 | 27300 | RP.T1204M0… |
| **4043065** | **100B07RS90RP12** | 100 | 88 | 32 | 78 | 50 | 6,0 | 7 | 4.0° | 1,39 | 24000 | RP.T1204M0… |
| **4027389** | **100B09RS90RP12** | 100 | 88 | 32 | 78 | 50 | 6,0 | 9 | 3.1° | 1,39 | 24000 | RP.T1204M0… |

## Spare Parts

| D1 max | insert screw | Nm | low-head cap screw | socket-head cap screw | socket-head cap screw with coolant groove* | coolant lock screw assembly | Torx Plus driver |
|---|---|---|---|---|---|---|---|
| 40 | **MS2077** | 2,3 | **–** | **MS1294** | **MS1294CG** | **–** | **DT15IP** |
| 42 | **MS2077** | 2,3 | **–** | **MS1294** | **MS1294CG** | **–** | **DT15IP** |
| 50 | **MS2077** | 2,3 | **MS1336** | **–** | **MS2072CG** | **–** | **DT15IP** |
| 52 | **MS2077** | 2,3 | **–** | **MS1242** | **MS1242CG** | **–** | **DT15IP** |
| 63 | **MS2077** | 2,3 | **–** | **MS1242** | **MS1242CG** | **–** | **DT15IP** |
| 66 | **MS2077** | 2,3 | **–** | **MS2038** | **MS2038CG** | **–** | **DT15IP** |
| 80 | **MS2077** | 2,3 | **–** | **MS2038** | **MS2038CG** | **–** | **DT15IP** |
| 100 | **MS2077** | 2,3 | **–** | **–** | **–** | **MS2195C** | **DT15IP** |

*Socket-head cap screw with coolant groove sold separately as a spare part.

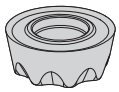
## Insert Selection Guide

| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..GP | KC725M |
| P3–P4 | .E..LE | KCPK30 | **.S..GE** | **KCPK30** | .S..GP | KCPK30 |
| P5–P6 | .S..GDX | KCMP30 | **.S..GDX** | **KCMP30** | .S..GP | KCPK30 |
| M1–M2 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..GP | KC725M |
| M3 | .S..GDX | KCMP30 | **.S..GDX** | **KCMP30** | .S..GDX | KCMP30 |
| K1–K2 | – | – | **.S..GP** | **KCPK30** | – | – |
| K3 | – | – | **.S..GP** | **KCPK30** | – | – |
| N1–N2 | .E..LEJ | KC422M | **.E..LEJ** | **KC422M** | .E..LEJ | KC422M |
| N3 | .E..LEJ | KC422M | **.E..LEJ** | **KC422M** | .E..LEJ | KC422M |
| S1–S2 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..GDX | KC725M |
| S3 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..GDX | KC725M |
| S4 | .E..LEJ | KC725M | **.E..LEJ** | **KC725M** | .S..GEJ | KC725M |
| H1 | – | – | **.S..GP** | **KCPM20** | – | – |

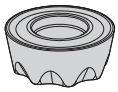


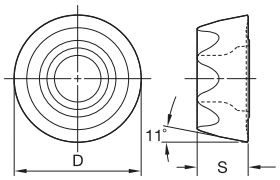


- -SGEJ and -ELEJ are the first choice for titanium machining.
- -SGDX is the first choice for martensitic stainless steel and turbine blade applications.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edge.
- -GP geometry is mainly for heavy applications.


-LE
-GE

-GDX


-GP




● first choice
○ alternate choice

beyond

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

### RPET-LE

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCPM20 | KCMP30 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RPET1204M0ELEJ** | 12,00 | 4,76 | 0,03 | 8 | ● | ● | ● | | | |
| **RPET1204M0ELE** | 12,00 | 4,76 | 0,05 | 8 | | | | | | ● |

### RPET-GE

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCPM20 | KCMP30 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RPET1204M0SGEJ** | 12,00 | 4,76 | 0,11 | 8 | | ● | ● | | | |
| **RPET1204M0SGE** | 12,00 | 4,76 | 0,10 | 8 | | | | | | ● |

### RPPT-GDX

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCPM20 | KCMP30 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RPPT1204M0SGDX** | 12,00 | 4,76 | 0,18 | 8 | | | ● | | ● | |

### RPPT-GP

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCPM20 | KCMP30 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RPPT1204M0SGP** | 12,00 | 4,76 | 0,13 | 8 | | | ● | ● | | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KC422M | | | KC522M | | | KC725M | | | KCPM20 | | | KCMP30 | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | – | – | – | 395 | **345** | 325 | 315 | **275** | 255 | 660 | **580** | 535 | 545 | **475** | 440 | 545 | **475** | 440 |
| | 2 | – | – | – | 330 | **290** | 240 | 260 | **230** | 195 | 410 | **370** | 330 | 335 | **305** | 275 | 335 | **305** | 275 |
| | 3 | – | – | – | 305 | **255** | 215 | 240 | **205** | 170 | 370 | **330** | 305 | 305 | **275** | 250 | 305 | **275** | 250 |
| | 4 | – | – | – | 270 | **225** | 180 | 215 | **180** | 145 | 275 | **255** | 230 | 225 | **210** | 190 | 225 | **210** | 190 |
| | 5 | – | – | – | 225 | **200** | 180 | 180 | **160** | 145 | 330 | **300** | 275 | 310 | **275** | 255 | 310 | **275** | 255 |
| | 6 | – | – | – | 200 | **150** | 120 | 160 | **120** | 95 | 230 | **200** | 175 | 190 | **165** | – | 190 | **165** | – |
| M | 1 | – | – | – | 245 | **215** | 200 | 205 | **180** | 165 | 270 | **240** | 205 | 250 | **220** | 190 | 250 | **220** | 190 |
| | 2 | – | – | – | 225 | **190** | 160 | 185 | **160** | 130 | 245 | **215** | 190 | 225 | **195** | 170 | 225 | **195** | 170 |
| | 3 | – | – | – | 170 | **145** | 115 | 140 | **120** | 95 | 195 | **175** | 150 | 175 | **160** | 140 | 175 | **160** | 140 |
| K | 1 | – | – | – | 275 | **250** | 220 | – | – | – | 435 | **390** | 350 | – | – | – | 355 | **320** | 285 |
| | 2 | – | – | – | 215 | **195** | 180 | – | – | – | 345 | **310** | 280 | – | – | – | 280 | **255** | 230 |
| | 3 | – | – | – | 180 | **160** | 145 | – | – | – | 290 | **255** | 240 | – | – | – | 235 | **210** | 195 |
| N | 1–2 | 1285 | **1135** | 1050 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | 1135 | **1050** | 915 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | – | – | – | 45 | **35** | 30 | – | – | – |
| | 2 | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | – | – | – | 45 | **35** | 30 | – | – | – |
| | 3 | – | – | – | 60 | **50** | 35 | 55 | **45** | 30 | – | – | – | 55 | **45** | 30 | – | – | – |
| | 4 | – | – | – | 85 | **60** | 45 | 75 | **55** | 35 | – | – | – | 75 | **55** | 35 | – | – | – |
| H | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

### At 6,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,08 | **0,12** | 0,18 | 0,06 | **0,09** | 0,13 | 0,05 | **0,08** | 0,11 | 0,05 | **0,07** | 0,11 | 0,05 | **0,07** | 0,11 | .E..LEJ |
| .E..LE | 0,12 | **0,26** | 0,51 | 0,09 | **0,19** | 0,38 | 0,08 | **0,17** | 0,33 | 0,07 | **0,16** | 0,31 | 0,07 | **0,15** | 0,31 | .E..LE |
| .S..GEJ | 0,17 | **0,34** | 0,60 | 0,13 | **0,26** | 0,45 | 0,11 | **0,22** | 0,39 | 0,10 | **0,21** | 0,37 | 0,10 | **0,21** | 0,36 | .S..GEJ |
| .S..GE | 0,17 | **0,34** | 0,60 | 0,13 | **0,26** | 0,45 | 0,11 | **0,22** | 0,39 | 0,10 | **0,21** | 0,36 | 0,10 | **0,20** | 0,36 | .S..GE |
| .S..GDX | 0,17 | **0,42** | 0,74 | 0,13 | **0,31** | 0,55 | 0,11 | **0,27** | 0,48 | 0,10 | **0,26** | 0,45 | 0,10 | **0,25** | 0,44 | .S..GDX |
| .S..GP | 0,17 | **0,42** | 0,77 | 0,13 | **0,31** | 0,57 | 0,11 | **0,27** | 0,50 | 0,10 | **0,26** | 0,47 | 0,10 | **0,25** | 0,46 | .S..GP |

### At 3,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,10 | **0,14** | 0,20 | 0,07 | **0,10** | 0,15 | 0,06 | **0,09** | 0,13 | 0,06 | **0,08** | 0,12 | 0,06 | **0,08** | 0,12 | .E..LEJ |
| .E..LE | 0,14 | **0,30** | 0,59 | 0,10 | **0,22** | 0,44 | 0,09 | **0,19** | 0,39 | 0,09 | **0,18** | 0,36 | 0,08 | **0,18** | 0,35 | .E..LE |
| .S..GEJ | 0,19 | **0,40** | 0,70 | 0,14 | **0,30** | 0,52 | 0,13 | **0,26** | 0,45 | 0,12 | **0,24** | 0,42 | 0,12 | **0,24** | 0,41 | .S..GEJ |
| .S..GE | 0,19 | **0,39** | 0,69 | 0,14 | **0,29** | 0,52 | 0,13 | **0,26** | 0,45 | 0,12 | **0,24** | 0,42 | 0,12 | **0,24** | 0,41 | .S..GE |
| .S..GDX | 0,19 | **0,48** | 0,86 | 0,14 | **0,36** | 0,64 | 0,13 | **0,32** | 0,56 | 0,12 | **0,29** | 0,52 | 0,12 | **0,29** | 0,51 | .S..GDX |
| .S..GP | 0,19 | **0,48** | 0,89 | 0,14 | **0,36** | 0,66 | 0,13 | **0,32** | 0,58 | 0,12 | **0,29** | 0,54 | 0,12 | **0,29** | 0,53 | .S..GP |

### At 1,50 Axial Depth of Cut (ap)

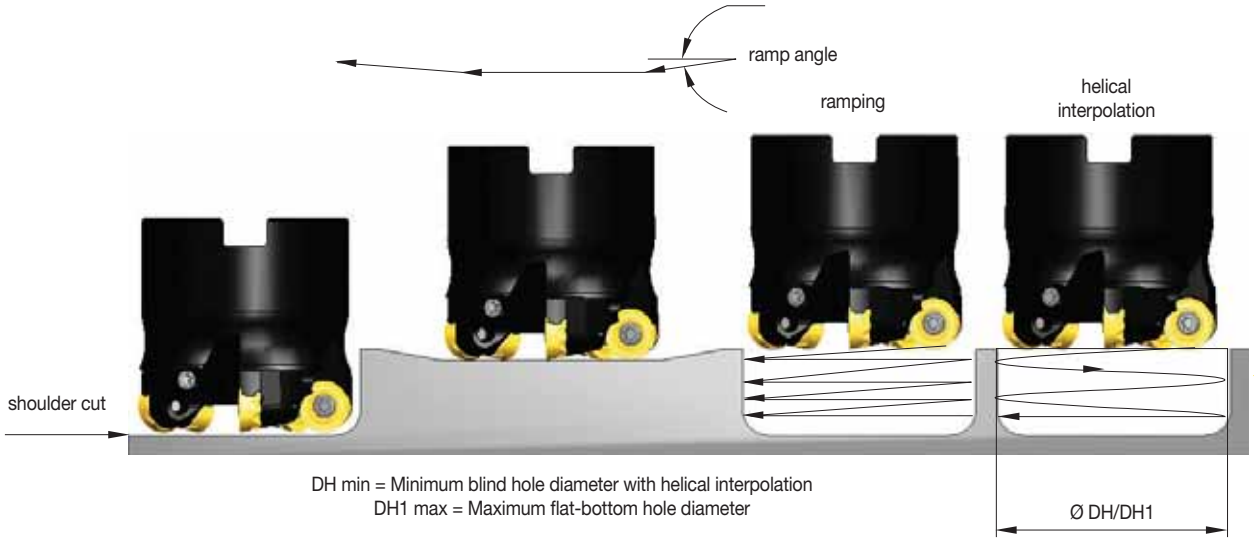
| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,13 | **0,18** | 0,27 | 0,09 | **0,14** | 0,2 | 0,08 | **0,12** | 0,17 | 0,08 | **0,11** | 0,16 | 0,08 | **0,11** | 0,16 | .E..LEJ |
| .E..LE | 0,18 | **0,39** | 0,78 | 0,14 | **0,29** | 0,58 | 0,12 | **0,25** | 0,51 | 0,11 | **0,24** | 0,47 | 0,11 | **0,23** | 0,46 | .E..LE |
| .S..GEJ | 0,25 | **0,52** | 0,91 | 0,19 | **0,39** | 0,68 | 0,17 | **0,34** | 0,59 | 0,15 | **0,32** | 0,55 | 0,15 | **0,31** | 0,54 | .S..GEJ |
| .S..GE | 0,25 | **0,52** | 0,91 | 0,19 | **0,39** | 0,68 | 0,17 | **0,34** | 0,59 | 0,15 | **0,31** | 0,55 | 0,15 | **0,31** | 0,54 | .S..GE |
| .S..GDX | 0,25 | **0,63** | 1,13 | 0,19 | **0,47** | 0,84 | 0,17 | **0,41** | 0,73 | 0,15 | **0,39** | 0,68 | 0,15 | **0,38** | 0,67 | .S..GDX |
| .S..GP | 0,25 | **0,63** | 1,17 | 0,19 | **0,47** | 0,87 | 0,17 | **0,41** | 0,76 | 0,15 | **0,39** | 0,71 | 0,15 | **0,38** | 0,69 | .S..GP |

### At 0,75 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,17 | **0,25** | 0,36 | 0,13 | **0,19** | 0,27 | 0,11 | **0,16** | 0,24 | 0,11 | **0,15** | 0,22 | 0,10 | **0,15** | 0,22 | .E..LEJ |
| .E..LE | 0,25 | **0,53** | 1,07 | 0,19 | **0,40** | 0,79 | 0,16 | **0,35** | 0,69 | 0,15 | **0,32** | 0,65 | 0,15 | **0,32** | 0,63 | .E..LE |
| .S..GEJ | 0,35 | **0,71** | 1,25 | 0,26 | **0,53** | 0,93 | 0,23 | **0,46** | 0,81 | 0,21 | **0,43** | 0,76 | 0,21 | **0,42** | 0,74 | .S..GEJ |
| .S..GE | 0,35 | **0,71** | 1,25 | 0,26 | **0,53** | 0,93 | 0,23 | **0,46** | 0,81 | 0,21 | **0,43** | 0,75 | 0,21 | **0,42** | 0,74 | .S..GE |
| .S..GDX | 0,35 | **0,87** | 1,55 | 0,26 | **0,65** | 1,15 | 0,23 | **0,56** | 1,00 | 0,21 | **0,53** | 0,93 | 0,21 | **0,52** | 0,91 | .S..GDX |
| .S..GP | 0,35 | **0,87** | 1,60 | 0,26 | **0,65** | 1,19 | 0,23 | **0,56** | 1,03 | 0,21 | **0,53** | 0,96 | 0,21 | **0,52** | 0,94 | .S..GP |

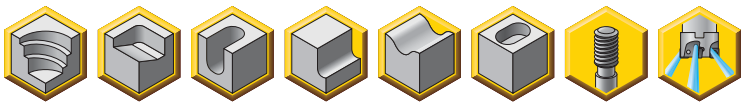
NOTE: Use “Light Machining” values as starting feed rate.

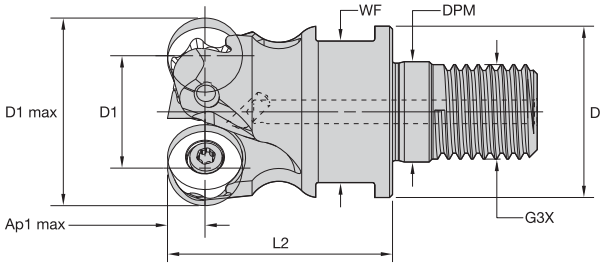
## Maximum Linear Ramping and Helical Interpolation from Solid




| catalogue number | max ramp angle | max plunging depth | min hole diameter (DH min) | min flat-bottomed hole diameter (DHl min) | max hole diameter (flat bottom) |
|---|---|---|---|---|---|
| **32E03R045M16RP12** | 6.0° | 1,65 | 43,95 | 52 | 64 |
| **40E04R045M16RP12** | 9.0° | 3,50 | 57,24 | 68 | 80 |
| **32A03R040B32RP12** | 6.0° | 1,65 | 43,95 | 52 | 64 |
| **32A03R040A32RP12L190** | 6.0° | 1,65 | 43,95 | 52 | 64 |
| **40A04RS90RP12** | 9.0° | 3,50 | 57,24 | 68 | 80 |
| **42A04RS90RP12** | 9.6° | 4,20 | 60,68 | 72 | 84 |
| **50A04RS90RP12** | 10.8° | 6,00 | 76,04 | 88 | 100 |
| **50A05RS90RP12** | 7.9° | 4,40 | 76,50 | 88 | 100 |
| **52A05RS90RP12** | 10.2° | 6,00 | 80,05 | 92 | 104 |
| **63A05RS90RP12** | 7.7° | 6,00 | 102,02 | 114 | 126 |
| **63A07RS90RP12** | 2.6° | 2,10 | 105,08 | 114 | 126 |
| **66A06RS90RP12** | 6.6° | 5,50 | 108,14 | 120 | 132 |
| **80A06RS90RP12** | 5.1° | 5,50 | 136,04 | 148 | 160 |
| **80A08RS90RP12** | 4.1° | 4,40 | 136,58 | 148 | 160 |
| **100B07RS90RP12** | 4.0° | 5,70 | 176,04 | 188 | 200 |
| **100B09RS90RP12** | 3.1° | 4,40 | 176,55 | 188 | 200 |

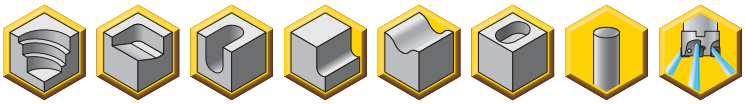
- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.

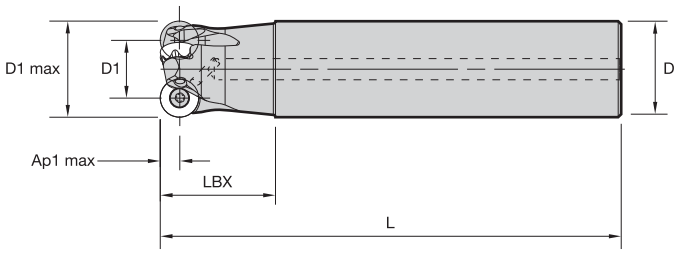




## Screw-On End Mills

| order number | catalogue number | D1 max | D1 | D | DPM | G3X | L2 | Ap1 max | Z | max ramp angle | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4042581** | **40E03R045M16RP16** | 40 | 24 | 29 | 17,0 | M16 | 45 | 8,0 | 3 | 8.4° | 0,19 | 27300 | RP..T1605M0… |





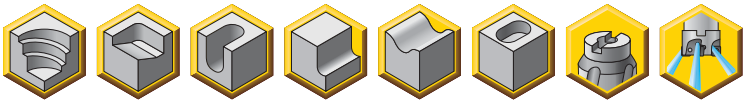
## Cylindrical End Mills

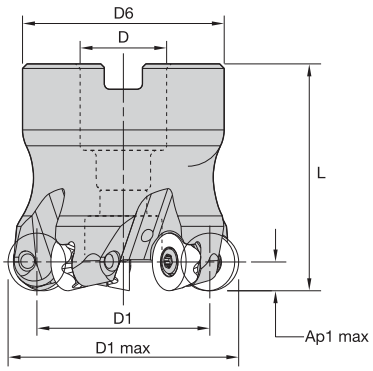
| order number | catalogue number | D1 max | D1 | D | L | LBX | Ap1 max | Z | max ramp angle | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4042582** | **40E02R040A32RP16L200** | 40 | 24 | 32 | 200 | 40 | 8,0 | 2 | 11.1° | 1,13 | 27300 | RP..T1605M0… |

## Spare Parts

| D1 max | insert screw | Nm | Torx Plus driver |
|---|---|---|---|
| 40 | **MS-2071** | 4,0 | **DT15IP** |

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.





## Face Mills

| order number | catalogue number | D1 max | D1 | D | D6 | L | Ap1 max | Z | max ramp angle | kg | max RPM | insert 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4164868** | **50A04RS90RP16** | 50 | 34 | 22 | 42 | 50 | 8,0 | 4 | 9° | 0,32 | 24400 | RP..T1605M0# |
| **4042693** | **52A04RS90RP16** | 52 | 36 | 22 | 49 | 50 | 8,0 | 4 | 11° | 0,42 | 23900 | RP..T1605M0… |
| **4042694** | **63A04RS90RP16** | 63 | 47 | 22 | 49 | 50 | 8,0 | 4 | 12° | 0,50 | 21700 | RP..T1605M0… |
| **4042695** | **63A06RS90RP16** | 63 | 47 | 22 | 49 | 50 | 8,0 | 6 | 4° | 0,51 | 21700 | RP..T1605M0… |
| **4042696** | **80A05RS90RP16** | 80 | 64 | 27 | 60 | 50 | 8,0 | 5 | 8° | 0,87 | 19200 | RP..T1605M0… |
| **4042697** | **80A07RS90RP16** | 80 | 64 | 27 | 60 | 50 | 8,0 | 7 | 5° | 0,90 | 19200 | RP..T1605M0… |
| **4042698** | **100B06RS90RP16** | 100 | 84 | 32 | 78 | 50 | 8,0 | 6 | 6° | 1,29 | 16700 | RP..T1605M0… |
| **4042699** | **100B08RS90RP16** | 100 | 84 | 32 | 78 | 50 | 8,0 | 8 | 5° | 1,29 | 16700 | RP..T1605M0… |
| **4042700** | **125B09RS90RP16** | 125 | 109 | 40 | 90 | 63 | 8,0 | 9 | 4° | 2,48 | 14700 | RP..T1605M0… |

## Spare Parts

| D1 max | insert screw | Nm | socket-head cap screw | socket-head cap screw with coolant groove* | coolant lock screw assembly | Torx Plus driver |
|---|---|---|---|---|---|---|
| 50 | **MS-2071** | 4,0 | **MS1242** | **MS1242CG** | **–** | **DT15IP** |
| 52 | **MS-2071** | 4,0 | **MS1242** | **MS1242CG** | **–** | **DT15IP** |
| 63 | **MS-2071** | 4,0 | **MS1242** | **MS1242CG** | **–** | **DT15IP** |
| 80 | **MS-2071** | 4,0 | **MS2038** | **MS2038CG** | **–** | **DT15IP** |
| 100 | **MS-2071** | 4,0 | **–** | **–** | **MS2195C** | **DT15IP** |
| 125 | **MS-2071** | 4,0 | **–** | **–** | **MS2187C** | **DT15IP** |

*Socket-head cap screw with coolant groove sold separately as a spare part.

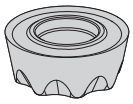
## Insert Selection Guide

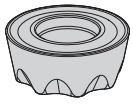
| Material Group | Light Machining | | General Purpose | | Heavy Machining | |
|---|---|---|---|---|---|---|
| | Geometry | Grade | Geometry | Grade | Geometry | Grade |
| P1–P2 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..HP | KC725M |
| P3–P4 | .E..LEJ | KC725M | **.S..GE** | **KCPK30** | .S..HP | KCPK30 |
| P5–P6 | .S..GE | KCPK30 | **.S..HP** | **KCPK30** | .S..HP | KCPK30 |
| M1–M2 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..GEJ | KC725M |
| M3 | .E..LE | KCPK30 | **.S..GE** | **KCPK30** | .S..GE | KCPK30 |
| K1–K2 | – | – | **.S..HP** | **KCPK30** | – | – |
| K3 | – | – | **.S..HP** | **KCPK30** | – | – |
| N1–N2 | .E..LEJ | KC422M | **.E..LEJ** | **KC422M** | .E..LEJ | KC422M |
| N3 | .E..LEJ | KC422M | **.E..LEJ** | **KC422M** | .E..LEJ | KC422M |
| S1–S2 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..GEJ | KC725M |
| S3 | .E..LEJ | KC725M | **.S..GEJ** | **KC725M** | .S..GEJ | KC725M |
| S4 | .E..LEJ | KC725M | **.E..LEJ** | **KC725M** | .S..GEJ | KC725M |
| H1 | – | – | **.S..HP** | **KCPM20** | – | – |

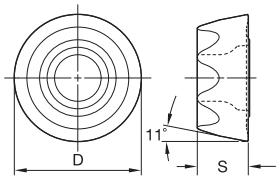


## Indexable Round Inserts • KSRM

- -SGEJ and -ELEJ are the first choice for titanium machining.
- -SGE geometry is the first choice for medium and heavy applications.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edge.
- -HP geometry is for high-strength steels and heavy applications.


RPET-LE
RPET-GE


RPPT-HP




● first choice
○ alternate choice

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

### RPET-LE

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| **RPET1605M0ELEJ** | 16,00 | 5,56 | 0,03 | 8 | ● | ● | ● | | |
| **RPET1605M0ELE** | 16,00 | 5,56 | 0,05 | 8 | | | | | ● |

### RPET-GE

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| **RPET1605M0SGEJ** | 16,00 | 5,56 | 0,11 | 8 | | ● | ● | | |
| **RPET1605M0SGE** | 16,00 | 5,56 | 0,10 | 8 | | | | | ● |

### RPPT-HP

| catalogue number | D | S | hm | cutting edges | KC422M | KC522M | KC725M | KCPM20 | KCPK30 |
|---|---|---|---|---|---|---|---|---|---|
| **RPPT1605M0SHP** | 16,00 | 5,56 | 0,18 | 8 | | | ● | ● | ● |

## Recommended Starting Speeds [m/min]

| Material Group | | KC422M | | | KC522M | | | KC725M | | | KCPM20 | | | KCPK30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | – | – | – | 395 | **345** | 325 | 315 | **275** | 255 | 660 | **580** | 535 | 545 | **475** | 440 |
| | 2 | – | – | – | 330 | **290** | 240 | 260 | **230** | 195 | 410 | **370** | 330 | 335 | **305** | 275 |
| | 3 | – | – | – | 305 | **255** | 215 | 240 | **205** | 170 | 370 | **330** | 305 | 305 | **275** | 250 |
| | 4 | – | – | – | 270 | **225** | 180 | 215 | **180** | 145 | 275 | **255** | 230 | 225 | **210** | 190 |
| | 5 | – | – | – | 225 | **200** | 180 | 180 | **160** | 145 | 330 | **300** | 275 | 310 | **275** | 255 |
| | 6 | – | – | – | 200 | **150** | 120 | 160 | **120** | 95 | 230 | **200** | 175 | 190 | **165** | – |
| M | 1 | – | – | – | 245 | **215** | 200 | 205 | **180** | 165 | 270 | **240** | 205 | 250 | **220** | 190 |
| | 2 | – | – | – | 225 | **190** | 160 | 185 | **160** | 130 | 245 | **215** | 190 | 225 | **195** | 170 |
| | 3 | – | – | – | 170 | **145** | 115 | 140 | **120** | 95 | 195 | **175** | 150 | 175 | **160** | 140 |
| K | 1 | – | – | – | 275 | **250** | 220 | – | – | – | 435 | **390** | 350 | 355 | **320** | 285 |
| | 2 | – | – | – | 215 | **195** | 180 | – | – | – | 345 | **310** | 280 | 280 | **255** | 230 |
| | 3 | – | – | – | 180 | **160** | 145 | – | – | – | 290 | **255** | 240 | 235 | **210** | 195 |
| N | 1–2 | 1285 | **1135** | 1050 | – | – | – | – | – | – | – | – | – | – | – | – |
| | 3 | 1135 | **1050** | 915 | – | – | – | – | – | – | – | – | – | – | – | – |
| S | 1 | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | – | – | – | – | – | – |
| | 2 | – | – | – | 50 | **45** | 35 | 45 | **35** | 30 | – | – | – | – | – | – |
| | 3 | – | – | – | 60 | **50** | 35 | 55 | **45** | 30 | – | – | – | – | – | – |
| | 4 | – | – | – | 85 | **60** | 45 | 75 | **55** | 35 | – | – | – | – | – | – |
| H | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

## Recommended Starting Feeds [mm]

| Light Machining | General Purpose | Heavy Machining |
|---|---|---|

### At 8,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,08 | **0,12** | 0,18 | 0,06 | **0,09** | 0,13 | 0,05 | **0,08** | 0,11 | 0,05 | **0,07** | 0,11 | 0,05 | **0,07** | 0,11 | .E..LEJ |
| .E..LE | 0,12 | **0,26** | 0,51 | 0,09 | **0,19** | 0,38 | 0,08 | **0,17** | 0,33 | 0,07 | **0,16** | 0,31 | 0,07 | **0,15** | 0,31 | .E..LE |
| .S..GEJ | 0,17 | **0,33** | 0,63 | 0,13 | **0,25** | 0,47 | 0,11 | **0,22** | 0,41 | 0,10 | **0,20** | 0,38 | 0,10 | **0,20** | 0,37 | .S..GEJ |
| .S..GE | 0,17 | **0,33** | 0,62 | 0,13 | **0,25** | 0,46 | 0,11 | **0,22** | 0,40 | 0,10 | **0,20** | 0,38 | 0,10 | **0,20** | 0,37 | .S..GE |
| .S..HP | 0,17 | **0,42** | 0,75 | 0,13 | **0,31** | 0,56 | 0,11 | **0,27** | 0,49 | 0,10 | **0,26** | 0,45 | 0,10 | **0,25** | 0,45 | .S..HP |

### At 4,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,10 | **0,14** | 0,2 | 0,07 | **0,10** | 0,15 | 0,06 | **0,09** | 0,13 | 0,06 | **0,08** | 0,12 | 0,06 | **0,08** | 0,12 | .E..LEJ |
| .E..LE | 0,14 | **0,30** | 0,59 | 0,10 | **0,22** | 0,44 | 0,09 | **0,19** | 0,39 | 0,09 | **0,18** | 0,36 | 0,08 | **0,18** | 0,35 | .E..LE |
| .S..GEJ | 0,19 | **0,38** | 0,73 | 0,14 | **0,29** | 0,54 | 0,13 | **0,25** | 0,47 | 0,12 | **0,23** | 0,44 | 0,12 | **0,23** | 0,43 | .S..GEJ |
| .S..GE | 0,19 | **0,39** | 0,72 | 0,14 | **0,29** | 0,54 | 0,13 | **0,25** | 0,47 | 0,12 | **0,24** | 0,44 | 0,12 | **0,23** | 0,43 | .S..GE |
| .S..HP | 0,19 | **0,48** | 0,86 | 0,14 | **0,36** | 0,64 | 0,13 | **0,32** | 0,56 | 0,12 | **0,29** | 0,52 | 0,12 | **0,29** | 0,51 | .S..HP |

### At 2,00 Axial Depth of Cut (ap)

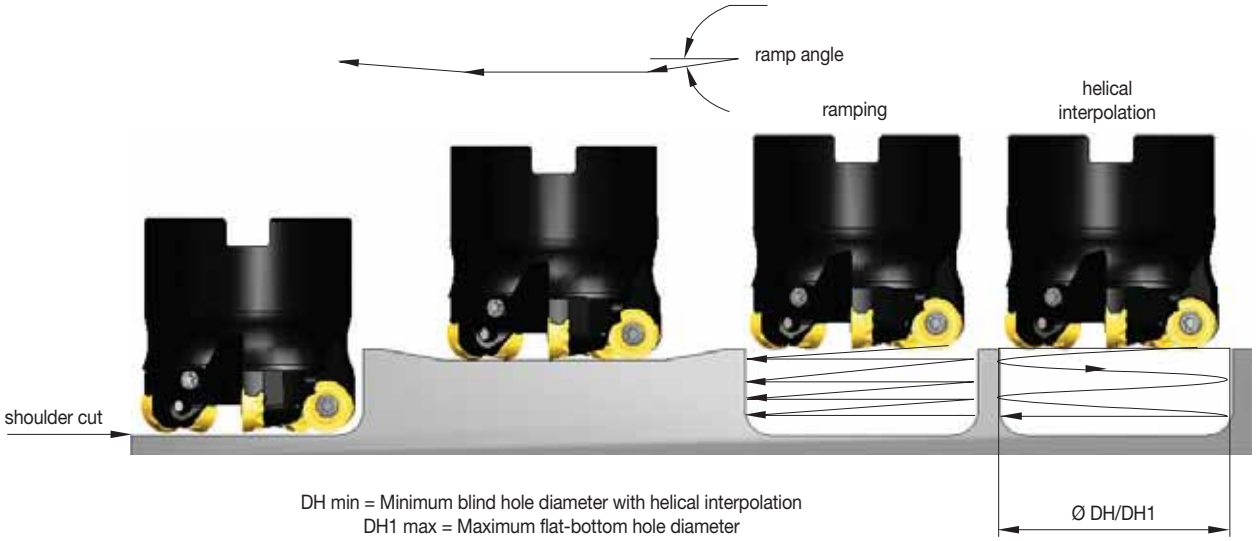
| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,13 | **0,18** | 0,27 | 0,09 | **0,14** | 0,2 | 0,08 | **0,12** | 0,17 | 0,08 | **0,11** | 0,16 | 0,08 | **0,11** | 0,16 | .E..LEJ |
| .E..LE | 0,18 | **0,39** | 0,78 | 0,14 | **0,29** | 0,58 | 0,12 | **0,25** | 0,51 | 0,11 | **0,24** | 0,47 | 0,11 | **0,23** | 0,46 | .E..LE |
| .S..GEJ | 0,25 | **0,50** | 0,95 | 0,19 | **0,37** | 0,71 | 0,17 | **0,33** | 0,62 | 0,15 | **0,31** | 0,58 | 0,15 | **0,30** | 0,57 | .S..GEJ |
| .S..GE | 0,25 | **0,51** | 0,94 | 0,19 | **0,38** | 0,70 | 0,17 | **0,33** | 0,61 | 0,15 | **0,31** | 0,57 | 0,15 | **0,30** | 0,56 | .S..GE |
| .S..HP | 0,25 | **0,63** | 10,14 | 0,19 | **0,47** | 0,84 | 0,17 | **0,41** | 0,74 | 0,15 | **0,39** | 0,69 | 0,15 | **0,38** | 0,67 | .S..HP |

### At 1,00 Axial Depth of Cut (ap)

| Insert Geometry | Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) | | | | | | | | | | | | | | | Insert Geometry |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10% | | | 20% | | | 30% | | | 40% | | | 50–100% | | | |
| .E..LEJ | 0,17 | **0,25** | 0,36 | 0,13 | **0,19** | 0,27 | 0,11 | **0,16** | 0,24 | 0,11 | **0,15** | 0,22 | 0,10 | **0,15** | 0,22 | .E..LEJ |
| .E..LE | 0,25 | **0,53** | 1,07 | 0,19 | **0,40** | 0,79 | 0,16 | **0,35** | 0,69 | 0,15 | **0,32** | 0,65 | 0,15 | **0,32** | 0,63 | .E..LE |
| .S..GEJ | 0,35 | **0,69** | 1,31 | 0,26 | **0,51** | 0,97 | 0,23 | **0,45** | 0,84 | 0,21 | **0,42** | 0,79 | 0,21 | **0,41** | 0,77 | .S..GEJ |
| .S..GE | 0,35 | **0,69** | 1,29 | 0,26 | **0,52** | 0,96 | 0,23 | **0,45** | 0,84 | 0,21 | **0,42** | 0,78 | 0,21 | **0,41** | 0,77 | .S..GE |
| .S..HP | 0,35 | **0,87** | 1,56 | 0,26 | **0,65** | 1,16 | 0,23 | **0,56** | 1,00 | 0,21 | **0,53** | 0,94 | 0,21 | **0,52** | 0,92 | .S..HP |

NOTE: Use “Light Machining” values as starting feed rate.

## Maximum Linear Ramping and Helical Interpolation from Solid




| catalogue number | max ramp angle | max plunging depth | min hole diameter (DH min) | max flat-bottom hole diameter (DH1 max) | max diameter (no flat bottom) |
|---|---|---|---|---|---|
| **40E03R045M16RP16** | 8.3° | 2,6 | 52.4 | 64 | 80 |
| **40E02R040A32RP16L200** | 11.1° | 3,3 | 51,2 | 64 | 80 |
| **50A04RS90RP16** | 9.2° | 4,3 | 70 | 84 | 100 |
| **52A04RS90RP16** | 10.7° | 5,25 | 73,14 | 88 | 104 |
| **63A04RS90RP16** | 11.8° | 8,0 | 94,05 | 110 | 126 |
| **63A06RS90RP16** | 4.3° | 3,07 | 97,71 | 110 | 126 |
| **80A05RS90RP16** | 8.2° | 8,0 | 128,02 | 144 | 160 |
| **80A07RS90RP16** | 4.5° | 4,5 | 129,89 | 144 | 160 |
| **100B06RS90RP16** | 6.1° | 8,0 | 168,01 | 184 | 200 |
| **100B08RS90RP16** | 4.7° | 6,22 | 168,58 | 184 | 200 |
| **125B09RS90RP16** | 4,3° | 7,5 | 218,08 | 234 | 250 |

# KM4X™

## The Next Generation Spindle Interface for Heavy-Duty Machining!

KM4X is designed to take on your most aggressive machining jobs. This next generation KM™ spindle interface should be your first choice for heavy-duty machining applications. It's especially suited for large structural components, like titanium aerospace components.

We engineered these rotating and static tool adaptors to handle 3x more bending capacity than similar competitive models.

### What does this mean for you?

- Enables full use of machine and cutting tools for the highest productivity.
- Higher metal removal rates.
- Can retrofit to existing machines to boost throughput without buying new equipment.
- Ideal for aerospace and transportation industry machining jobs.

Experience the advantages at your Authorised Kennametal Distributor or at **www.kennametal.com**.

**www.kennametal.com**

KENNAMETAL®

DBJS-252
ID:5876475

# Tooling Systems

**KM Quick Change** . . . . . **E2–E5**
**KM4X 100** . . . . . **E6–E39**
Automatic Clamping Units . . . . . E8–E9
Cutting Units . . . . . E10–E21
Shank Tools . . . . . E22–E35
Technical Information . . . . . E37–E39
**HSK63A Shank Tools** . . . . . **E40–E44**

# KM™ Quick Change

**KM™ Quick Change Tooling is a central component in achieving dramatic improvement in machine and cutting tool use. It's the choice of manufacturers requiring maximum machine output.**

The necessary tasks of changing, setting up, and gaging tools create an excess of machine downtime. For small batch manufacturing operations requiring these frequent setups, KM™ Quick Change Tooling is the most efficient method for reducing lost time and improving the overall quality of the machining process by generating greater productivity and increasing profits.

Aside from Quick Change Clamping units, KM™ has other economical means to improving machine utility. For example, Shrink Fit technology and Hydraulic Chucks are other methods offered for Quick Change Tooling.

There's no better way to begin maximising production than switching to KM™ Quick Change Tooling. Whether you're looking to purchase a new machine or to gain greater output from your current equipment, Kennametal offers a variety of methods to upgrade your tooling system. The cost of these improvements will be justified by time saved, production increased, and profits.

**The KM™ portfolio has three distinctive sub-families, KM Micro™ and KM™ Mini, KM-TS™ (ISO), and KM4X™:**

**KM Micro and KM Mini:** This unique quick-change system is specially designed to support and mount on Swiss-style turning centres, gang machines, and smaller lathes.

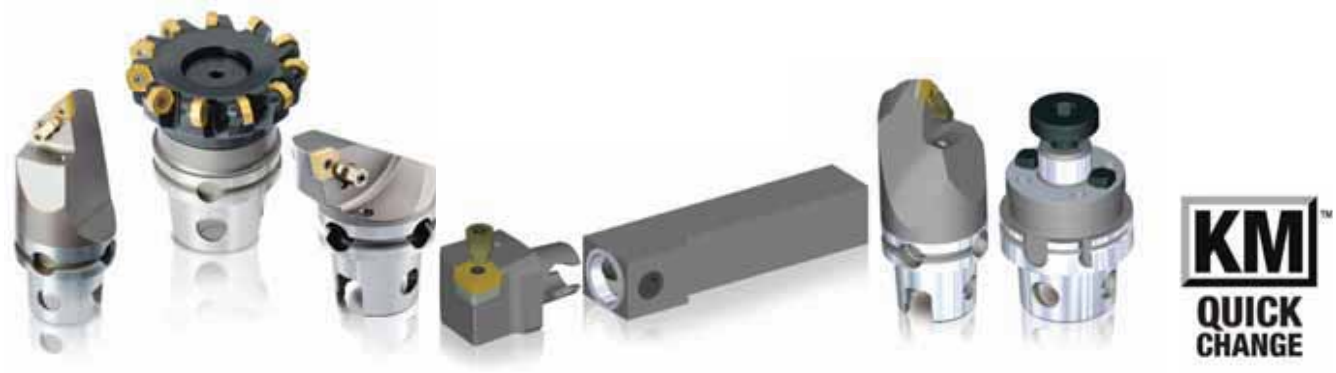
**KM-TS:** The ISO 26622 quick-change tooling system delivers the greatest value to customers by maximising downtime and gaining optimum productivity with rigidity, accuracy, and enabling pre-gaging off line. This tooling system supports both lathe and machining centres.

**KM4X:** The next generation of KM offers higher clamping forces and interference levels that lead to a robust connection and extremely high stiffness and bending load capacity resulting in unmatched performance from both lathe and machining centres.

**Uniquely Designed**

A uniquely designed clamping mechanism is the driving force of KM™ Quick Change Tooling technology, which is designed around a single shank tapered at a shallow angle.

Using a simple mechanism involving lock rods and a ball track, a high clamping force is generated from a minimal amount of input force. This design is universal, and enables faster tool changes, reducing downtime.



## Extremely Rigid

The most heavy-duty, rigid modular quick-change tooling available on the market today. The strength of the metal-to-metal locking device is extremely rigid, reducing vibration between components.

## Reliability

Not only is KM™ Quick Change Tooling faster and more economical, it's also more reliable. The rigid coupling design enables a high degree of accuracy and repeatability. Low activation forces and decreased vibration provide longer life for clamping units and protect the mechanism in the event of a crash. Clamp strength enables operators to run machines at high maximum speeds without loss of force after continuous use.

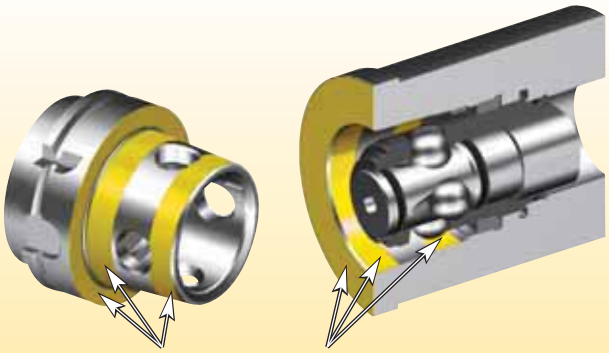
## Versatility

The KM™ System is a true modular system. It has been designed for all metalcutting operations and provides a standard platform for use throughout your shop. The KM™ clamping mechanism is designed to be used on all types of manufacturing equipment. Available in manual, VDI, KM-LOC II™, automatic, and rotating spindles.

KM™ QUICK CHANGE

## KM4X — The Next Generation Spindle Connection System

- Heavy-duty, rigid configuration with evenly distributed clamping force.
- Simple design enables front-loaded spindle configuration.
- Balanced-by-design for high spindle speed capacity.
- Capable of performing in a wide range of operations from low speed, high torque to high speed, low torque.

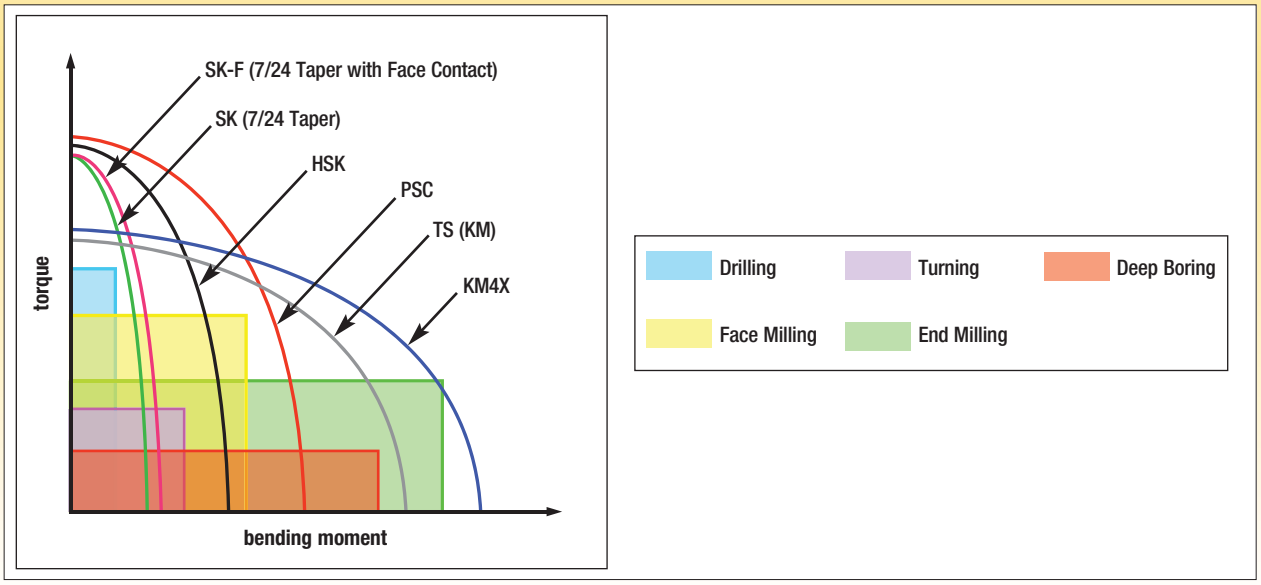


KM4X three-surface contact for improved stability and accuracy. Optimised clamping force distribution and interference fit provides higher stiffness.



The graph below represents the load capacity of HSK, PSC, and KM4X. The shaded areas represent the typical requirements for heavy duty in various machining processes. KM4X is the only system that can deliver the torque and bending required to achieve high-performance machining.

Some systems may be able to transmit considerable amount of torque, but the cutting forces also generate bending moments that will exceed the interface's limits before torque limits are exceeded.



## Choosing What's Right

When machining tough materials like titanium, cutting speeds are relatively low due to thermal effects on cutting tools. In response, machine tool builders have improved stiffness and damping on spindles and machine structures over the years. Spindles have been designed with abundant torque at low rotational speeds. Nevertheless, the spindle connection remains the weak link in the system.

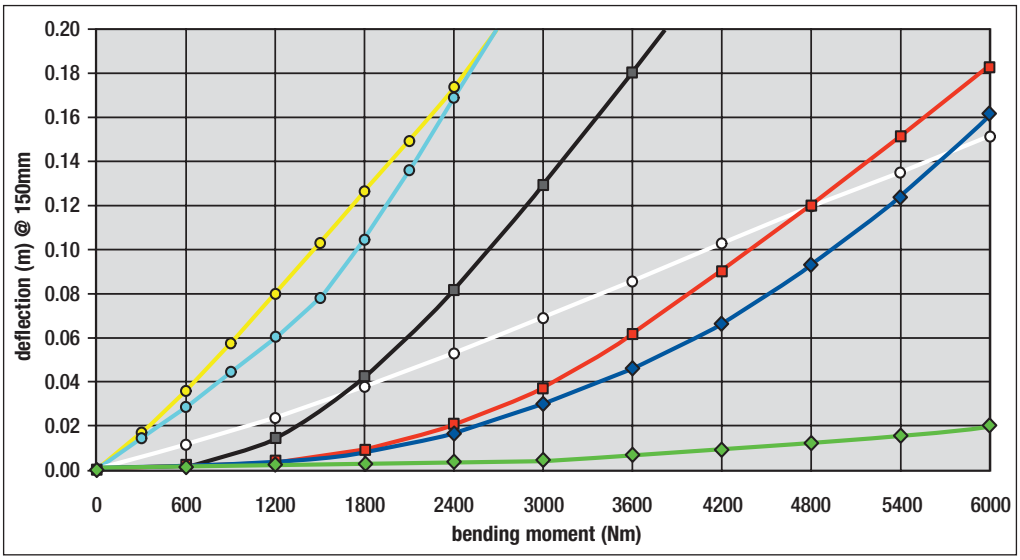
The spindle connection must provide torque and bending capacity compatible with the machine tool specifications and the requirements for higher productivity. It becomes obvious that in end milling applications where the projection lengths are typically greater, the limiting factor is bending capacity of the spindle interface.

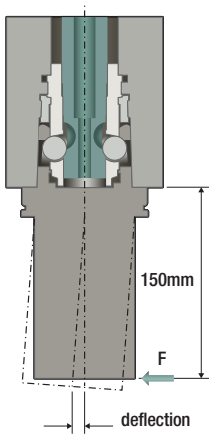
With more materials that are tougher to machine and require considerably higher cutting forces from the machine tool, choosing wisely on the spindle interface to maximise cutting edge performance is the key to success.

The KM spindle connections greatly outperform the conventional 7/24 steep taper and its face taper contact derivative. HSK and PSC systems with their greater stiffness advantages help minimise undesirable vibrations, gaining the best possible productivity from the machine tool. The KM4X is the best large, heavy-duty spindle connection, where optimal rigidity is necessary. It has superb balance between bending and torsion capabilities from the machine tool.

As an example, an indexable helical cutter with 250mm projection from spindle face and 80mm in diameter generates 4620 Nm of bending moment and less than 900 Nm of torque.

Chart shows a comparison of Steep Taper with and without face contact, HSK, and KM4X.



# KM4X™ • The New Choice for Heavy-Duty Milling

## Primary Application

The KM4X 4-ball spindle interface provides up to 3x more bending capacity than HSK.
The greater bending capacity enables customers to fully utilise the capabilities of their machine and cutting tools when working with tough materials like titanium or during heavy machining.
Increased metal removal rates optimise machine production and decrease overall manufacturing cost.

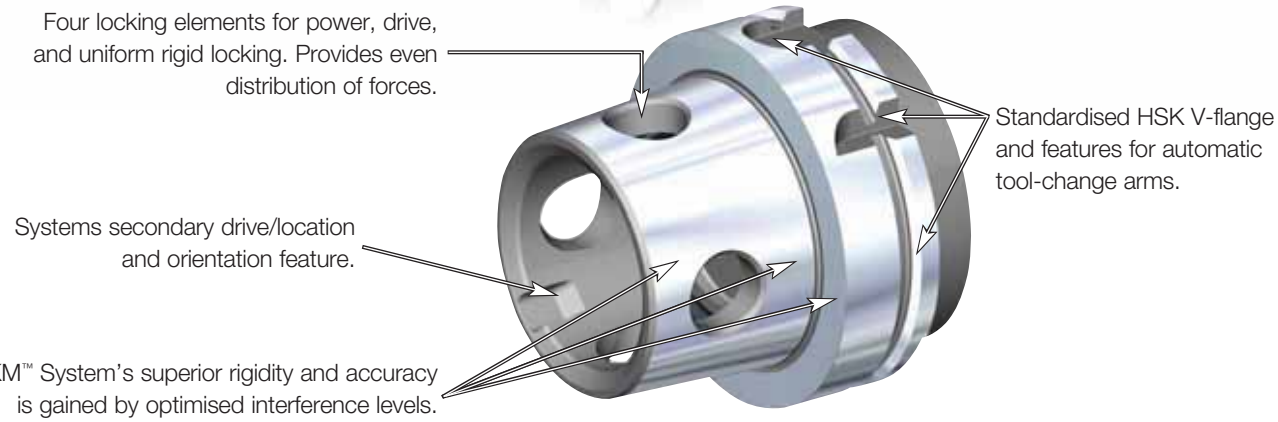
- Heavy-duty, rigid configuration.
- 3x more bending capacity than HSK.
- Increased metal removal rates.
- Full utilisation of machine tools.
- Decreased manufacturing costs.
- Balanced-by-design for higher spindle speeds.
- Highest maximum speed capability.

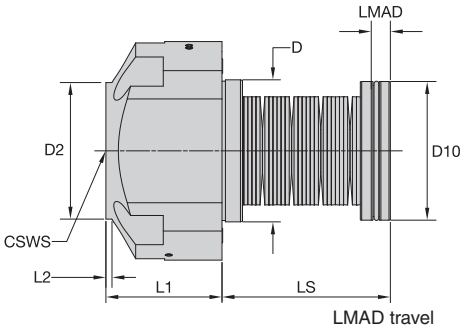
# Features and Benefits

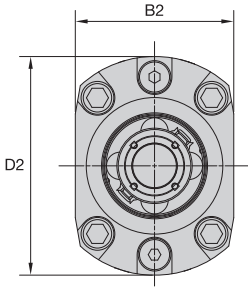
## The Latest Innovation in Spindle Interface Technology

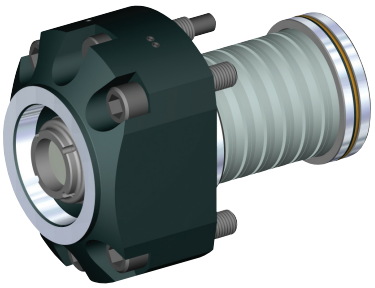
- KM4X offers the most rigid connection able to withstand extremely high bending due to a combination of high interference and high clamping forces.
- KM™ is the only connection that maintains stiffness at elevated rotational speeds and is suitable for a range of applications from low speeds with high torque to very high spindle speeds.
- KM4X is better balanced between bending and torsion capabilities.

*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxv.*


Four locking elements for power, drive, and uniform rigid locking. Provides even distribution of forces.
Standardised HSK V-flange and features for automatic tool-change arms.
Systems secondary drive/location and orientation feature.
The KM™ System's superior rigidity and accuracy is gained by optimised interference levels. Three surface areas of contact develop when clamped, resulting in superior performance.



KM QUICK CHANGE

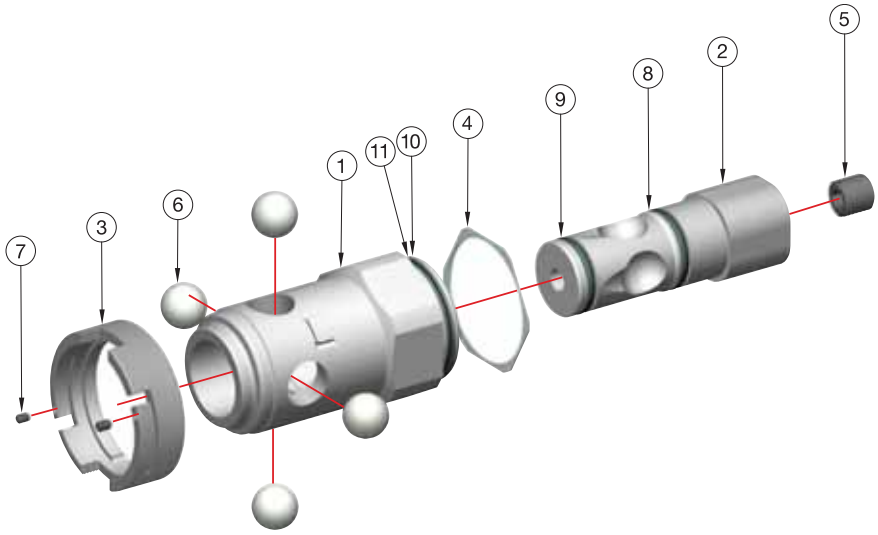


## NACA

| order number | catalogue number | CSWS system size | D | F | L1 | LS | D2 | LMAD travel |
|---|---|---|---|---|---|---|---|---|
| **5326071** | **KM4X100NCADS85** | KM4X100 | 104 | 0 | 85,0 | 123 | 100 | 13,00 |

## Actuating Force

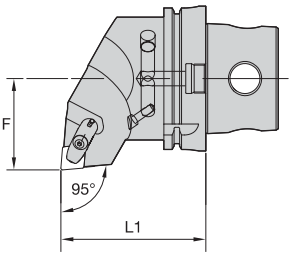
| catalogue number | actuating force (kN) | actuating force (lbs) |
|---|---|---|
| KM4X100NCADS85 | 70 | 15700 |

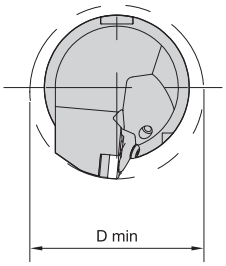



KM QUICK CHANGE

## KIT

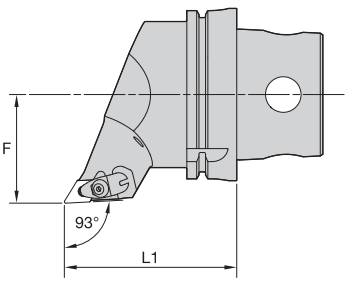
| detail number | description | catalogue number | order number |
|---|---|---|---|
| 1 | canister | **2699630** | **5408797** |
| 2 | lockrod | **2404270** | **5408798** |
| 3 | canister ring | **2404272** | **5408799** |
| 4 | canister spacer | **2699631** | **5413745** |
| 5 | modified set screw | **(M16 x 2,0)** | **5408990** |
| 6 | chrome ball | **LMB200025** | **5413539** |
| 7 | set screw | **S-1786** | **5413744** |
| 8 | O-ring | **OR01109139V75** | **5413740** |
| 9 | O-ring | **OR01046139V75** | **5413741** |
| 10 | back-up ring | **BUR135V90** | **5413742** |
| 11 | O-ring | **OR01925103V75** | **5413743** |

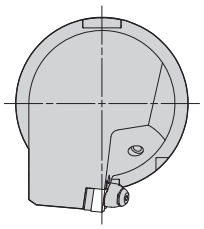


## DCLN 95°

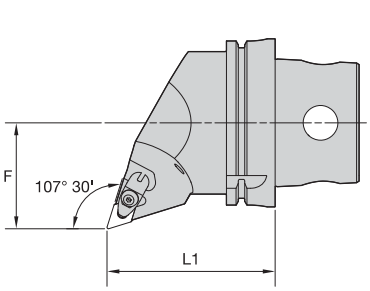
| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | shim screw | clamp assembly | pin | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | |
| 5345267 | KM4X100DCLNR12KC04 | 100 | 3.937 | 63 | 2.480 | 120 | 4.72 | CN..120408/CN..432 | ICSN443 | KMSP415IP | CM234R ASSY | SSP025016M | 4,52 |
| 5345268 | KM4X100DCLNR16KC06 | 100 | 3.937 | 63 | 2.480 | 120 | 4.72 | CN..160612/CN..543 | ICSN543 | KMSP515IP | CM209R ASSY | SSP025018M | 4,51 |
| | left hand | | | | | | | | | | | | |
| 5345265 | KM4X100DCLNL12KC04 | 100 | 3.937 | 63 | 2.480 | 120 | 4.72 | CN..120408/CN..432 | ICSN443 | KMSP415IP | CM234R ASSY | SSP025016M | 4,52 |
| 5345266 | KM4X100DCLNL16KC06 | 100 | 3.937 | 63 | 2.480 | 120 | 4.72 | CN..160612/CN..543 | ICSN543 | KMSP515IP | CM209R ASSY | SSP025018M | 4,51 |

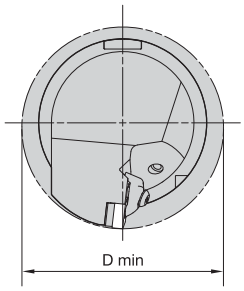


## DDJN 93°

| order number | catalogue number | L1 mm | L1 in | F mm | F in | gage insert | shim | shim screw | clamp assembly | pin | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | |
| 5345310 | KM4X100DDJNR15KC06 | 100 | 3.937 | 63 | 2.480 | DN..150608/DN..442 | IDSN433 | KMSP415IP | CM234R ASSY | SSP025016M | 4,19 |
| | left hand | | | | | | | | | | |
| 5345269 | KM4X100DDJNL15KC06 | 100 | 3.937 | 63 | 2.480 | DN..150608/DN..442 | IDSN433 | KMSP415IP | CM234R ASSY | SSP025016M | 4,19 |

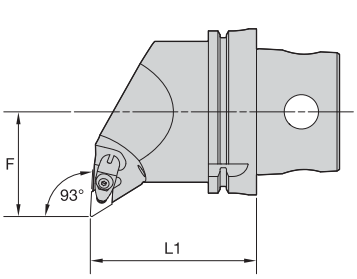


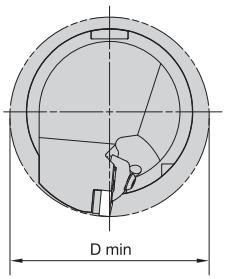



KM QUICK CHANGE

## DDQN 107,5°

| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | shim screw | clamp assembly | pin | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | |
| 2265440 | KM63TSDDQNR15KC04 | 60 | 2.362 | 43 | 1.693 | 86 | 3.39 | DN..150408/DN..432 | IDSN443 | KMSP415IP | CM234R ASSY | SSP025016M | 1,11 |
| 2265442 | KM63TSDDQNR15KC06 | 60 | 2.362 | 43 | 1.693 | 86 | 3.39 | DN..150608/DN..442 | IDSN433 | KMSP415IP | CM234R ASSY | SSP025016M | 1,11 |
| | left hand | | | | | | | | | | | | |
| 2265441 | KM63TSDDQNL15KC04 | 60 | 2.362 | 43 | 1.693 | 86 | 3.39 | DN..150408/DN..432 | IDSN443 | KMSP415IP | CM234R ASSY | SSP025016M | 1,11 |
| 2265443 | KM63TSDDQNL15KC06 | 60 | 2.362 | 43 | 1.693 | 86 | 3.39 | DN..150608/DN..442 | IDSN433 | KMSP415IP | CM234R ASSY | SSP025016M | 1,11 |

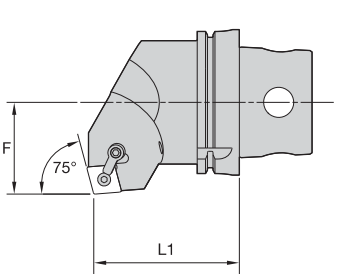


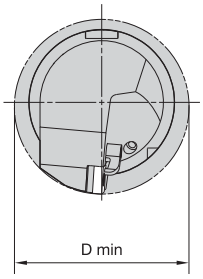



KM QUICK CHANGE

## DDUN 93°

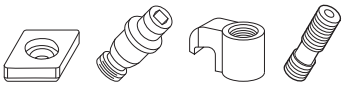
| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | shim screw | clamp assembly | pin | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | |
| 5345315 | KM4X100DDUNR15KC06 | 100 | 3.937 | 63 | 2.480 | 120 | 4.72 | DN..150608/DN..442 | IDSN433 | KMSP415IP | CM234R ASSY | SSP025016M | 4,56 |
| | left hand | | | | | | | | | | | | |
| 5345314 | KM4X100DDUNL15KC06 | 100 | 3.937 | 63 | 2.480 | 120 | 4.72 | DN..150608/DN..442 | IDSN433 | KMSP415IP | CM234R ASSY | SSP025016M | 4,56 |



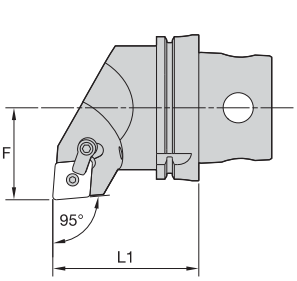



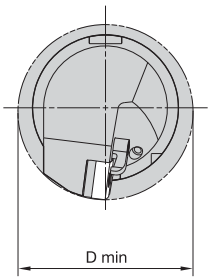
KM QUICK CHANGE

## MCKN 75°



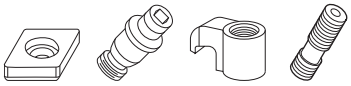
| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | | |
| 5337807 | KM4X100MCKNR19 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | CN..190612/CN..643 | ICSN633 | KLM68 | CKM12 | STCM4 | 4,80 | 10.58 |
| | left hand | | | | | | | | | | | | | |
| 5337806 | KM4X100MCKNL19 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | CN..190612/CN..643 | ICSN633 | KLM68 | CKM12 | STCM4 | 4,87 | 10.74 |



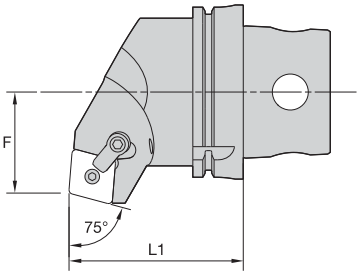



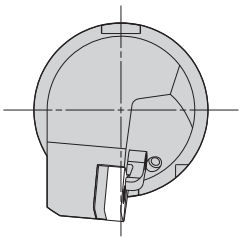
KM QUICK CHANGE

## MCLN 95°



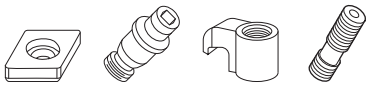
| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | | |
| 5337810 | KM4X100MCLNR19 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | CN..190612/CN..643 | ICSN633 | KLM68 | CKM12 | STCM4 | 4,45 | 9.82 |
| 5337811 | KM4X100MCLNR25 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | CN..250924/CN..866 | ICSN846 | KLM810 | CKM24 | STCM19 | 4,48 | 9.88 |
| | left hand | | | | | | | | | | | | | |
| 5337808 | KM4X100MCLNL19 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | CN..190612/CN..643 | ICSN633 | KLM68 | CKM12 | STCM4 | 4,49 | 9.89 |
| 5337809 | KM4X100MCLNL25 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | CN..250924/CN..866 | ICSN846 | KLM810 | CKM24 | STCM19 | 4,53 | 9.98 |



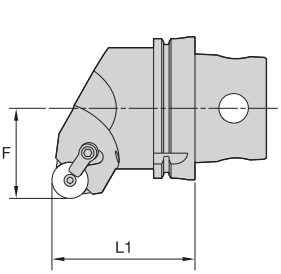



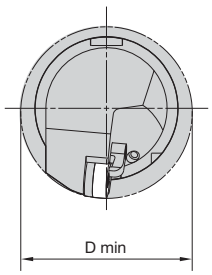
KM QUICK CHANGE

## MCRN 75°



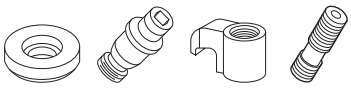
| order number | catalogue number | L1 mm | L1 in | F mm | F in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | |
| 5337814 | KM4X100MCRNR19 | 100 | 3.937 | 58 | 2.283 | CN..190612/CN..643 | ICSN633 | KLM68 | CKM12 | STCM4 | 4,47 | 9.86 |
| 5337815 | KM4X100MCRNR25 | 100 | 3.937 | 58 | 2.283 | CN..250924/CN..866 | ICSN846 | KLM810 | CKM24 | STCM19 | 4,58 | 10.09 |
| | left hand | | | | | | | | | | | |
| 5337812 | KM4X100MCRNL19 | 100 | 3.937 | 58 | 2.283 | CN..190612/CN..643 | ICSN633 | KLM68 | CKM12 | STCM4 | 4,53 | 9.98 |
| 5337813 | KM4X100MCRNL25 | 100 | 3.937 | 58 | 2.283 | CN..250924/CN..866 | ICSN846 | KLM810 | CKM24 | STCM19 | 4,57 | 10.06 |



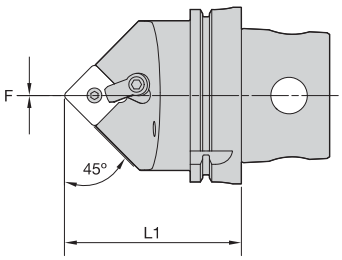



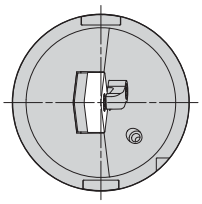
KM QUICK CHANGE

## MRGN 0°



| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | | |
| 5337734 | KM4X100MRGNR12 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | RN..120400/RN..43 | IRSN43 | KLM46 | CKM9 | STCM4 | 1,52 | 9.97 |
| 5337735 | KM4X100MRGNR19 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | RN..190600/RN..64 | IRSN63 | KLM68 | CKM12 | STCM4 | 4,52 | 9.97 |
| 5337736 | KM4X100MRGNR25 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | RN..250900/RN..86 | IRSN84 | KLM810 | CKM24 | STCM19 | 4,55 | 10.03 |
| | left hand | | | | | | | | | | | | | |
| 5337737 | KM4X100MRGNL12 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | RN..120400/RN..43 | IRSN43 | KLM46 | CKM9 | STCM4 | 4,59 | 10.13 |
| 5337738 | KM4X100MRGNL19 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | RN..190600/RN..64 | IRSN63 | KLM68 | CKM20 | STCM4 | 4,60 | 10.15 |
| 5337739 | KM4X100MRGNL25 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | RN..250900/RN..86 | IRSN84 | KLM810 | CKM24 | STCM19 | 4,62 | 10.20 |



KM QUICK CHANGE

■ MSDN 45°

| order number | catalogue number | L1 mm | L1 in | F mm | F in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5337697** | **KM4X100MSDNN19** | 100 | 3.937 | 0 | .000 | SN..190612/SN..643 | **ISSN633** | **KLM68** | **CKM12** | **STCM4** | 3,97 | 8.76 |
| **5337698** | **KM4X100MSDNN25** | 100 | 3.937 | 0 | .000 | SN..250924/SN..856 | **ISSN846** | **KLM810** | **CKM24** | **STCM19** | 3,97 | 8.76 |



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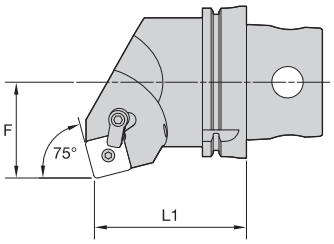
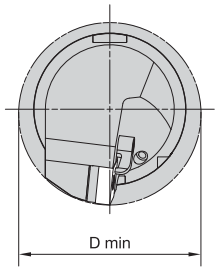
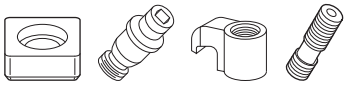


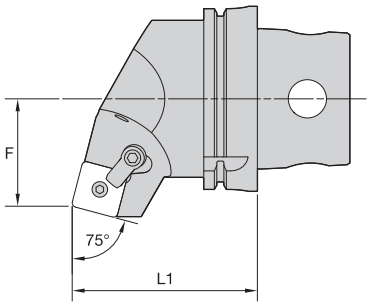



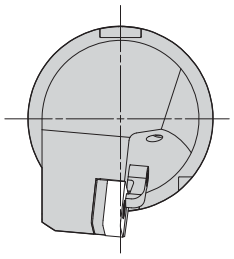
KM QUICK CHANGE

## MSKN 75°



| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | | |
| **5337711** | **KM4X100MSKNR19** | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | SN..190612/SN..643 | **ISSN633** | **KLM68** | **CKM12** | **STCM4** | 4,59 | 10.12 |

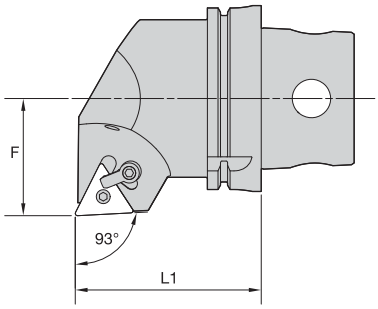


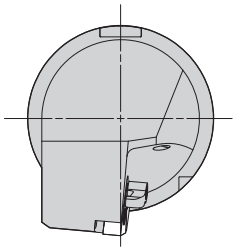



KM QUICK CHANGE

## MSRN 75°

| order number | catalogue number | L1 mm | L1 in | F mm | F in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | |
| 5337715 | KM4X100MSRNR19 | 100 | 3.937 | 58 | 2.283 | SN..190612/SN..643 | ISSN633 | KLM68 | CKM12 | STCM4 | 4,47 | 9.85 |
| 5337716 | KM4X100MSRNR25 | 100 | 3.937 | 58 | 2.283 | SN..250924/SN..856 | ISSN846 | KLM810 | CKM24 | STCM19 | 4,46 | 9.83 |
| | left hand | | | | | | | | | | | |
| 5337713 | KM4X100MSRNL19 | 100 | 3.937 | 58 | 2.283 | SN..190612/SN..643 | ISSN633 | KLM68 | CKM12 | STCM4 | 4,44 | 9.78 |
| 5337714 | KM4X100MSRNL25 | 100 | 3.937 | 58 | 2.283 | SN..250924/SN..856 | ISSN846 | KLM810 | CKM24 | STCM19 | 4,41 | 9.73 |

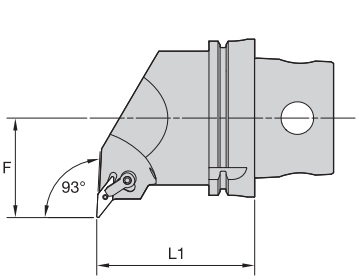


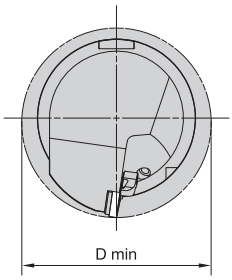



KM QUICK CHANGE

## MTJN 93°

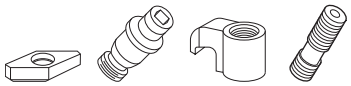
| order number | catalogue number | L1 mm | L1 in | F mm | F in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | |
| 5337717 | KM4X100MTJNR27 | 100 | 3.937 | 63 | 2.480 | TN..270612/TN..543 | ITSN534 | KLM58 | CKM12 | STCM4 | 4,75 | 10.49 |
| 5337718 | KM4X100MTJNR33 | 100 | 3.937 | 63 | 2.480 | TN..330912/TN..663 | ITSN636 | KLM68L | CKM12 | STCM4 | 4,76 | 10.49 |
| | left hand | | | | | | | | | | | |
| 5337719 | KM4X100MTJNL27 | 100 | 3.937 | 63 | 2.480 | TN..270612/TN..543 | ITSN534 | KLM58 | CKM12 | STCM4 | 4,82 | 10.62 |
| 5337730 | KM4X100MTJNL33 | 100 | 3.937 | 63 | 2.480 | TN..330912/TN..663 | ITSN636 | KLM68L | CKM12 | STCM4 | 4,79 | 10.57 |



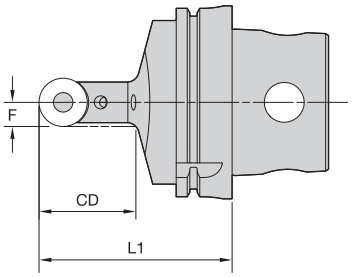



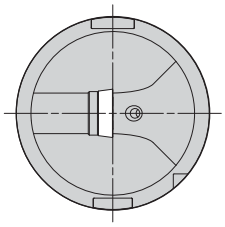
KM QUICK CHANGE

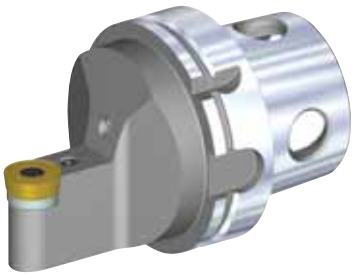
## MVUN 93°



| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | shim | lock pin | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | | | |
| **5337732** | **KM4X100MVUNR16** | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | VN..160408/VN..332 | **IVSN322** | **KLM34L** | **CKM22** | **STCM20** | 4,57 | 10.08 |
| | left hand | | | | | | | | | | | | | |
| **5337731** | **KM4X100MVUNL16** | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | VN..160408/VN..332 | **IVSN322** | **KLM34L** | **CKM22** | **STCM20** | 4,90 | 10.81 |



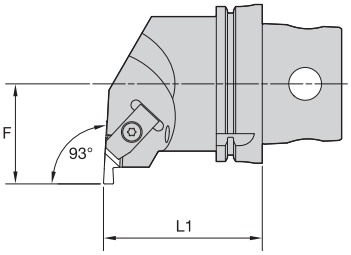



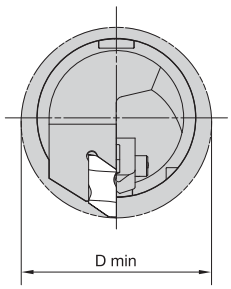


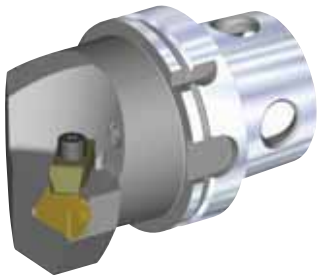
KM QUICK CHANGE

## PRDCN

| order number | catalogue number | L1 mm | L1 in | F mm | F in | CD mm | CD in | gage insert | shim | clamp screw | clamp stud | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | left hand | | | | | | | | | | | | |
| **5337750** | **KM4X100PRDCN20** | 100 | 3.937 | 10 | .394 | 40 | 1.581 | RCMT2006M0 | **169.333** | **121.820** | **119.073** | 3,63 | 8.00 |
| **5337751** | **KM4X100PRDCN25** | 100 | 3.937 | 13 | .492 | 50 | 1.975 | RCMT2507M0RP | **169.337** | **121.820** | **118.404** | 3,31 | 7.29 |
| **5337752** | **KM4X100PRDCN32** | 110 | 4.331 | 16 | .630 | 60 | 2.368 | RCMX3209M0RP | **169.339** | **121.030** | **118.604** | 3,50 | 7.93 |



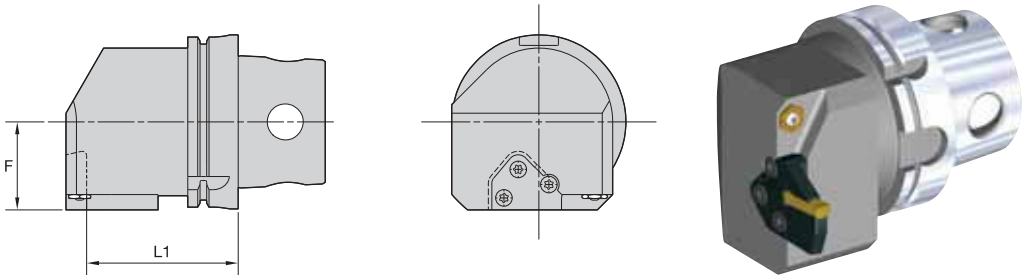



KM QUICK CHANGE

■ NE



| order number | catalogue number | L1 mm | L1 in | F mm | F in | D min mm | D min in | gage insert | clamp | clamp screw | kg | lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | | | |
| 5337758 | KM4X100NER3 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG3L | CM73 | MS1489 | 4,44 | 9.79 |
| 5337759 | KM4X100NER4 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG4L | CM73 | MS1489 | 4,49 | 9.90 |
| 5337770 | KM4X100NER5 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG5L | CM81 | MS1490 | 4,59 | 10.13 |
| 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 | CM72 | MS1489 | 4,44 | 9.79 |
| 5337755 | KM4X100NEL4 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG4R | CM72 | MS1489 | 4,49 | 9.90 |
| 5337756 | KM4X100NEL5 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG5R | CM80 | MS1490 | 4,59 | 10.13 |
| 5337757 | KM4X100NEL6 | 100 | 3.937 | 63 | 2.480 | 120 | 4.724 | NG6R | CM120 | MS1489 | 4,48 | 9.88 |

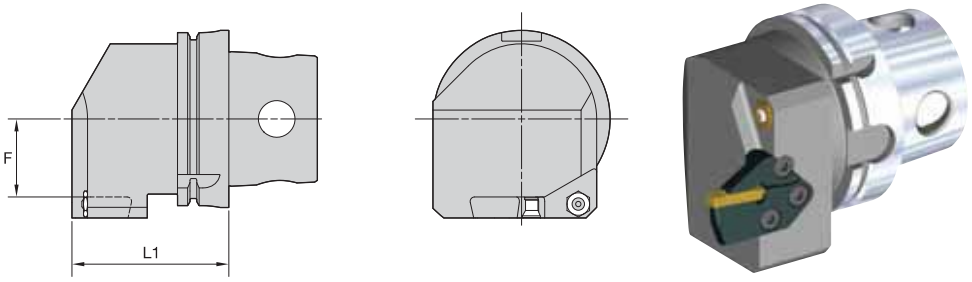



KM QUICK CHANGE

## KGME

| order number | catalogue number | L1 mm | L1 in | F mm | F in | cartridge size | blade screw | clamp screw | nozzle | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | |
| 5337789 | KM4X100KGMER50 | 88 | 3.47 | 50,5 | 1.988 | 50 | – | – | – | 4,89 |
| 5337800 | KM4X100KGMER65C | 87 | 3.43 | 50,5 | 1.988 | 65 | – | – | – | 5,73 |
| | left hand | | | | | | | | | |
| 5337787 | KM4X100KGMEL50 | 88 | 3.47 | 50,5 | 1.988 | 50 | – | – | – | 4,89 |
| 5337788 | KM4X100KGMEL65C | 87 | 3.43 | 50,5 | 1.988 | 65 | – | – | – | 5,73 |

NOTE: For A3/A4 modular blades, see the Kennametal Innovations Master Catalogue Cutting Tools 2013.
Right-hand cutting units use left-hand blades.

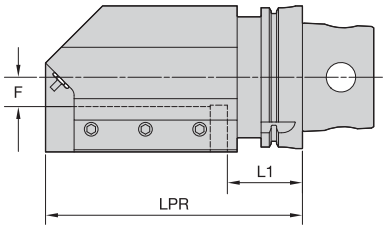


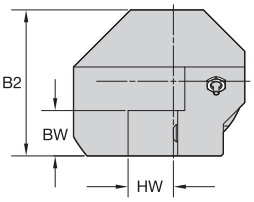

KM QUICK CHANGE

## KGMS

| order number | catalogue number | L1 mm | L1 in | F mm | F in | cartridge size | blade screw | clamp screw | nozzle | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | | |
| 5337803 | KM4X100KGMSR50 | 89 | 3.48 | 51,0 | 2.008 | 50 | MS1162 | MS2002 | PMT04525 | 4,17 |
| 5337804 | KM4X100KGMSR65C | 89 | 3.48 | 44,0 | 1.732 | 65 | – | – | – | 5,31 |
| | left hand | | | | | | | | | |
| 5337801 | KM4X100KGMSL50 | 89 | 3.48 | 51,0 | 2.008 | 50 | MS1162 | MS2002 | PMT04525 | 4,17 |
| 5337802 | KM4X100KGMSL65C | 89 | 3.48 | 44,0 | 1.732 | 65 | – | – | – | 5,31 |

NOTE: For A3/A4 modular blades, see the Kennametal Innovations Master Catalogue Cutting Tools 2013.
Right-hand cutting units use right-hand blades.

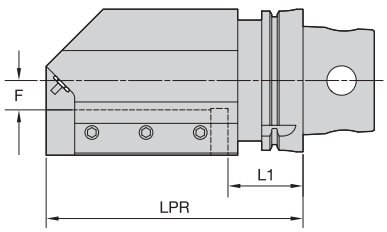


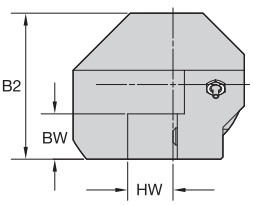



KM QUICK CHANGE

## STA • Metric

| order number | catalogue number | B2 | BW | F | HW | L1 | LPR | nozzle | kg |
|---|---|---|---|---|---|---|---|---|---|
| | **right hand** | | | | | | | | |
| **5337782** | **KM4X100STAR20** | 102 | 32 | 21 | 32 | 53 | 180 | **PMT04526** | 12,09 |
| **5337783** | **KM4X100STAR24** | 102 | 38 | 14 | 38 | 53 | 180 | **PMT04526** | 11,61 |
| **5337784** | **KM4X100STAR2525M** | 102 | 25 | 27 | 25 | 55 | 180 | **PMT04526** | 12,52 |
| **5337785** | **KM4X100STAR3232M** | 102 | 32 | 20 | 32 | 55 | 180 | **PMT04526** | 12,09 |
| | **left hand** | | | | | | | | |
| **5337779** | **KM4X100STAL24** | 102 | 38 | 14 | 38 | 53 | 180 | **PMT04526** | 11,61 |
| **5337780** | **KM4X100STAL2525M** | 102 | 25 | 27 | 25 | 55 | 180 | **PMT04526** | 12,52 |
| **5337781** | **KM4X100STAL3232M** | 102 | 32 | 20 | 32 | 55 | 180 | **PMT04526** | 12,09 |

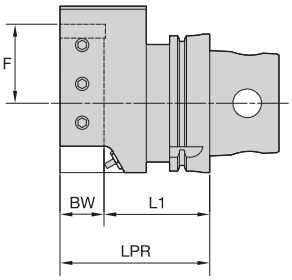


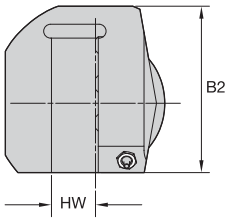



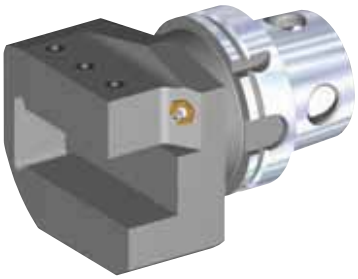
KM QUICK CHANGE

## STA • Inch

| order number | catalogue number | B2 | BW | F | HW | L1 | LPR | nozzle | lbs |
|---|---|---|---|---|---|---|---|---|---|
| | **right hand** | | | | | | | | |
| **5337782** | **KM4X100STAR20** | 4.028 | 1.250 | .809 | 1.250 | 2.071 | 7.087 | **PMT04526** | 26.66 |
| **5337783** | **KM4X100STAR24** | 4.028 | 1.500 | .559 | 1.500 | 2.071 | 7.087 | **PMT04526** | 25.60 |
| **5337784** | **KM4X100STAR2525M** | 4.028 | .984 | 1.075 | .984 | 2.165 | 7.087 | **PMT04526** | 27.60 |
| **5337785** | **KM4X100STAR3232M** | 4.028 | 1.260 | .799 | 1.260 | 2.165 | 7.087 | **PMT04526** | 26.67 |
| | **left hand** | | | | | | | | |
| **5337779** | **KM4X100STAL24** | 4.028 | 1.500 | .559 | 1.500 | 2.071 | 7.087 | **PMT04526** | 25.60 |
| **5337780** | **KM4X100STAL2525M** | 4.028 | .984 | 1.075 | .984 | 2.165 | 7.087 | **PMT04526** | 27.60 |
| **5337781** | **KM4X100STAL3232M** | 4.028 | 1.260 | .799 | 1.260 | 2.165 | 7.087 | **PMT04526** | 26.67 |



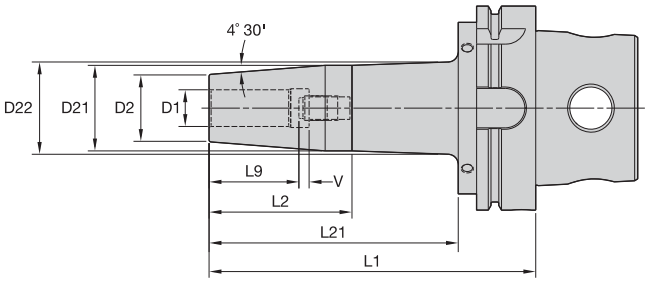



KM QUICK CHANGE

■ ETA • Inch

| order number | catalogue number | B2 | BW | F | HW | L1 | LPR | nozzle | lbs |
|---|---|---|---|---|---|---|---|---|---|
| | right hand | | | | | | | | |
| 5337778 | KM4X100ETAR20 | 4.724 | 1.250 | -2.244 | 1.250 | 3.002 | 4.252 | PMT04526 | 16.52 |
| | left hand | | | | | | | | |
| 5337777 | KM4X100ETAL20 | 4.724 | 1.250 | -2.244 | 1.250 | 3.002 | 4.252 | PMT04526 | 16.52 |



KM QUICK CHANGE

- Balanceable — fine tune with optional M6 set screws.
- Suitable for carbide and HSS cutting tools.

**Cutting Tool Shank Requirements metric (ISO standard)**

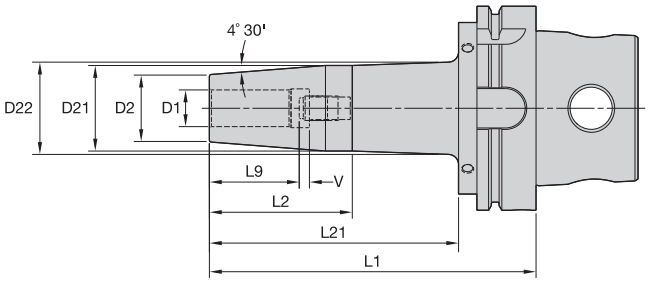
| cutting tool shank diameter | | tolerance |
|---|---|---|
| 6 | h6 | 0,000/-0,008 |
| 8 & 10 | h6 | 0,000/-0,009 |
| 12, 14, 16, & 18 | h6 | 0,000/-0,011 |
| 20 & 25 | h6 | 0,000/-0,013 |
| 32, 40, & 50 | h6 | 0,000/-0,016 |



## TT GP HPV MM-KM4X • Metric

| order number | catalogue number | D1 | D2 | D21 | D22 | L1 | L2 | L9 | L21 | V | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4156046 | KM4X100HPVTT06085M | 6 | 21 | 27 | — | 85 | 56 | 26 | — | 10 | TTSS05014M | 2,5mm |
| 4156047 | KM4X100HPVTT06160M | 6 | 21 | 27 | 32 | 160 | 50 | 26 | 122 | 10 | TTSS05014M | 2,5mm |
| 4156048 | KM4X100HPVTT08085M | 8 | 21 | 27 | — | 85 | 56 | 26 | — | 10 | TTSS06014M | 3mm |
| 4156049 | KM4X100HPVTT08160M | 8 | 21 | 27 | 32 | 160 | 50 | 26 | 122 | 10 | TTSS06014M | 3mm |
| 4156050 | KM4X100HPVTT10090M | 10 | 24 | 32 | — | 90 | 61 | 31 | — | 10 | TTSS08014M | 4mm |
| 4156051 | KM4X100HPVTT10160M | 10 | 24 | 32 | 36 | 160 | 63 | 31 | 122 | 10 | TTSS08014M | 4mm |
| 4156052 | KM4X100HPVTT12095M | 12 | 24 | 32 | — | 95 | 66 | 36 | — | 10 | TTSS10014M | 5mm |
| 4156113 | KM4X100HPVTT12160M | 12 | 24 | 32 | 36 | 160 | 63 | 36 | 122 | 10 | TTSS10014M | 5mm |
| 4156114 | KM4X100HPVTT14095M | 14 | 27 | 34 | — | 95 | 66 | 36 | — | 10 | TTSS10014M | 5mm |
| 4156115 | KM4X100HPVTT14160M | 14 | 27 | 34 | 38 | 160 | 57 | 36 | 122 | 10 | TTSS10014M | 5mm |
| 4156116 | KM4X100HPVTT16100M | 16 | 27 | 34 | — | 100 | 71 | 39 | — | 10 | TTSS12014M | 6mm |
| 4156117 | KM4X100HPVTT16160M | 16 | 27 | 34 | 38 | 160 | 57 | 39 | 122 | 10 | TTSS12014M | 6mm |
| 4156118 | KM4X100HPVTT18100M | 18 | 33 | 42 | — | 100 | 71 | 39 | — | 10 | TTSS12014M | 6mm |
| 4156119 | KM4X100HPVTT18160M | 18 | 33 | 42 | 46 | 160 | 69 | 39 | 122 | 10 | TTSS12014M | 6mm |
| 4156120 | KM4X100HPVTT20105M | 20 | 33 | 42 | — | 105 | 76 | 41 | — | 10 | TTSS16014M | 8mm |
| 4156121 | KM4X100HPVTT20160M | 20 | 33 | 42 | 46 | 160 | 69 | 41 | 122 | 10 | TTSS16014M | 8mm |
| 4156122 | KM4X100HPVTT25115M | 25 | 44 | 53 | — | 115 | 86 | 47 | — | 10 | TTSS16014M | 8mm |
| 4156123 | KM4X100HPVTT25160M | 25 | 44 | 53 | 57 | 160 | 69 | 47 | 122 | 10 | TTSS16014M | 8mm |
| .4156124 | KM4X100HPVTT32120M | 32 | 44 | 53 | — | 120 | 91 | 51 | — | 10 | TTSS16014M | 8mm |
| 4156125 | KM4X100HPVTT32160M | 32 | 44 | 53 | 57 | 160 | 69 | 51 | 122 | 10 | TTSS16014M | 8mm |

NOTE: Do not overheat. Overheating will destroy the accuracy and functionality of the toolholder.
Supplied with stop screw.
Optional M6~1.0P x 5 lg fine-balancing screw set (10 pieces) available. Order number: MS1276PKG. Must be ordered separately.



KM QUICK CHANGE

- Balanceable — fine tune with optional M6 set screws.
- Suitable for carbide and HSS cutting tools.

**Cutting Tool Shank Requirements**
**inch (industry standard)**

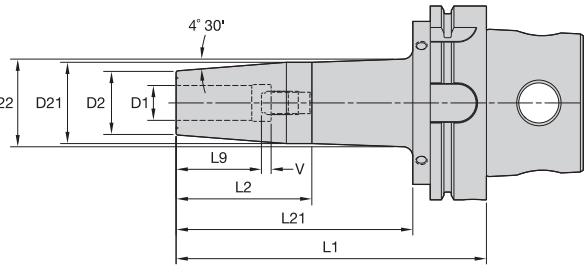
| cutting tool shank diameter | tolerance |
|---|---|
| 1/4, 5/16, & 3/8 | -.0001/-.0004 |
| 7/16, 1/2, 9/16, 5/8, & 11/16 | .0000/-.0004 |
| 3/4, 7/8, 1, 1-1/4, 1-1/2, & 2 | .0000/-.0005 |



## TT GP HPV IN-KM4X • Inch

| order number | catalogue number | D1 | D2 | D21 | D22 | L1 | L2 | L9 | L21 | V | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4155746** | **KM4X100HPVTT025335** | 1/4 | 0.83 | 1.06 | — | 3.35 | 2.21 | 1.02 | — | 0.39 | **TTSS05014M** | 2,5mm |
| **4155747** | **KM4X100HPVTT025630** | 1/4 | 0.83 | 1.06 | 1.26 | 6.30 | 1.97 | 1.02 | 4.81 | 0.39 | **TTSS05014M** | 2,5mm |
| **4155748** | **KM4X100HPVTT031335** | 5/16 | 0.83 | 1.06 | — | 3.35 | 2.21 | 1.02 | — | 0.39 | **TTSS06014M** | 3mm |
| **4155749** | **KM4X100HPVTT031630** | 5/16 | 0.83 | 1.06 | 1.26 | 6.30 | 1.97 | 1.02 | 4.81 | 0.39 | **TTSS06014M** | 3mm |
| **4155750** | **KM4X100HPVTT038354** | 3/8 | 0.95 | 1.24 | — | 3.54 | 2.40 | 1.22 | — | 0.39 | **TTSS08014M** | 4mm |
| **4155751** | **KM4X100HPVTT038630** | 3/8 | 0.95 | 1.26 | 1.42 | 6.30 | 2.48 | 1.22 | 4.81 | 0.39 | **TTSS08014M** | 4mm |
| **4155752** | **KM4X100HPVTT050374** | 1/2 | 0.95 | 1.26 | — | 3.74 | 2.60 | 1.42 | — | 0.39 | **TTSS10014M** | 5mm |
| **4156153** | **KM4X100HPVTT050630** | 1/2 | 0.95 | 1.26 | 1.42 | 6.30 | 2.48 | 1.42 | 4.81 | 0.39 | **TTSS10014M** | 5mm |
| **4156154** | **KM4X100HPVTT062394** | 5/8 | 1.06 | 1.34 | — | 3.94 | 2.80 | 1.54 | — | 0.39 | **TTSS12014M** | 6mm |
| **4156155** | **KM4X100HPVTT062630** | 5/8 | 1.06 | 1.34 | 1.51 | 6.30 | 2.24 | 1.54 | 4.81 | 0.39 | **TTSS12014M** | 6mm |
| **4156156** | **KM4X100HPVTT075413** | 3/4 | 1.30 | 1.65 | — | 4.13 | 2.99 | 1.61 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156157** | **KM4X100HPVTT075630** | 3/4 | 1.30 | 1.65 | 1.8 | 6.30 | 2.72 | 1.61 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156158** | **KM4X100HPVTT088413** | 7/8 | 1.30 | 1.65 | — | 4.13 | 2.99 | 1.61 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156159** | **KM4X100HPVTT088630** | 7/8 | 1.30 | 1.65 | 1.8 | 6.30 | 2.72 | 1.61 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156160** | **KM4X100HPVTT100453** | 1 | 1.73 | 2.08 | — | 4.53 | 3.39 | 1.85 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156161** | **KM4X100HPVTT100630** | 1 | 1.73 | 2.08 | 2.23 | 6.30 | 2.72 | 1.85 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156162** | **KM4X100HPVTT125472** | 1 1/4 | 1.73 | 2.08 | — | 4.72 | 3.59 | 2.01 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156163** | **KM4X100HPVTT125630** | 1 1/4 | 1.73 | 2.08 | 2.23 | 6.30 | 2.72 | 2.01 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156164** | **KM4X100HPVTT150531** | 1 1/2 | 2.36 | 2.75 | — | 5.31 | 4.18 | 2.01 | — | 0.39 | **TTSS20014M** | 10mm |

NOTE: Do not overheat. Overheating will destroy the accuracy and functionality of the toolholder.
Supplied with stop screw.
Optional M6~1.0P x 5 lg fine-balancing screw set (10 pieces) available. Order number: MS1276PKG. Must be ordered separately.



KM QUICK CHANGE

SHRINKER

- 30–50% higher clamping torque compared to GP line.
- Balanceable — fine tune with optional M6 set screws.
- Suitable for carbide only, designated by groove in front face.
- 10 kW power or greater Shrink Fit device must be used.

**Cutting Tool Shank Requirements inch (industry standard)**

| cutting tool shank diameter | tolerance |
|---|---|
| 1/2 & 5/8 | .0000/-.0004 |
| 3/4, 7/8, 1, 1-1/4, & 1-1/2 | .0000/-.0005 |

**Cutting Tool Shank Requirements metric (ISO standard)**

| cutting tool shank diameter | tolerance | |
|---|---|---|
| 12, 14, 16, & 18 | h6 | 0,000/-0,011 |
| 20 & 25 | h6 | 0,000/-0,013 |
| 32, 40, & 50 | h6 | 0,000/-0,016 |



## TT HT HPV MM-KM4X • Metric

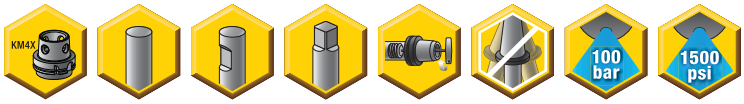
| order number | catalogue number | D1 | D2 | D21 | L1 | L2 | L9 | V | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|
| **4156182** | **KM4X100HPVTTHT12095M** | 12 | 24 | 31,9 | 95 | 66 | 36 | 10 | **TTSS10014M** | 5mm |
| **4156193** | **KM4X100HPVTTHT14095M** | 14 | 27 | 33,9 | 95 | 66 | 36 | 10 | **TTSS10014M** | 5mm |
| **4156194** | **KM4X100HPVTTHT16100M** | 16 | 27 | 33,9 | 100 | 71 | 39 | 10 | **TTSS12014M** | 6mm |
| **4156195** | **KM4X100HPVTTHT18100M** | 18 | 33 | 41,9 | 100 | 71 | 39 | 10 | **TTSS12014M** | 6mm |
| **4156196** | **KM4X100HPVTTHT20105M** | 20 | 33 | 41,9 | 105 | 76 | 41 | 10 | **TTSS16014M** | 8mm |
| **4156197** | **KM4X100HPVTTHT25115M** | 25 | 44 | 52,9 | 115 | 86 | 47 | 10 | **TTSS16014M** | 8mm |
| **4156198** | **KM4X100HPVTTHT32120M** | 32 | 44 | 52,9 | 120 | 91 | 51 | 10 | **TTSS16014M** | 8mm |

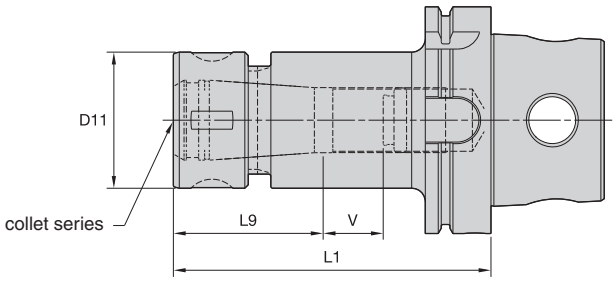
*(continued)*

## TT HT HPV IN-KM4X • Inch

| order number | catalogue number | D1 | D2 | D21 | D22 | L1 | L2 | L9 | L21 | V | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4156166** | **KM4X100HPVTTHT050374** | 1/2 | 0.95 | 1.26 | — | 3.74 | 2.60 | 1.42 | — | 0.39 | **TTSS10014M** | 5mm |
| **4156167** | **KM4X100HPVTTHT050630** | 1/2 | 0.95 | 1.26 | 1.42 | 6.30 | 2.48 | 1.42 | 4.81 | 0.39 | **TTSS10014M** | 5mm |
| **4156168** | **KM4X100HPVTTHT062394** | 5/8 | 1.06 | 1.34 | — | 3.94 | 2.80 | 1.54 | — | 0.39 | **TTSS12014M** | 6mm |
| **4156169** | **KM4X100HPVTTHT062630** | 5/8 | 1.06 | 1.34 | 1.51 | 6.30 | 2.24 | 1.54 | 4.81 | 0.39 | **TTSS12014M** | 6mm |
| **4156170** | **KM4X100HPVTTHT075413** | 3/4 | 1.30 | 1.65 | — | 4.13 | 2.99 | 1.61 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156171** | **KM4X100HPVTTHT075630** | 3/4 | 1.30 | 1.65 | 1.8 | 6.30 | 2.72 | 1.61 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156172** | **KM4X100HPVTTHT088413** | 7/8 | 1.30 | 1.65 | — | 4.13 | 2.99 | 1.61 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156203** | **KM4X100HPVTTHT088630** | 7/8 | 1.30 | 1.65 | 1.8 | 6.30 | 2.72 | 1.61 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156204** | **KM4X100HPVTTHT100453** | 1 | 1.73 | 2.08 | — | 4.53 | 3.39 | 1.85 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156205** | **KM4X100HPVTTHT100630** | 1 | 1.73 | 2.08 | 2.23 | 6.30 | 2.72 | 1.85 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156206** | **KM4X100HPVTTHT125472** | 1 1/4 | 1.73 | 2.08 | — | 4.72 | 3.59 | 2.01 | — | 0.39 | **TTSS16014M** | 8mm |
| **4156207** | **KM4X100HPVTTHT125630** | 1 1/4 | 1.73 | 2.08 | 2.23 | 6.30 | 2.72 | 2.01 | 4.81 | 0.39 | **TTSS16014M** | 8mm |
| **4156208** | **KM4X100HPVTTHT150531** | 1 1/2 | 2.36 | 2.75 | — | 5.31 | 4.18 | 2.01 | — | 0.39 | **TTSS20014M** | 10mm |

NOTE: Do not overheat. Overheating will destroy the accuracy and functionality of the toolholder.
Supplied with stop screw.
Optional M6~1.0P x 5 lg fine-balancing screw set (10 pieces) available. Order number: MS1276PKG. Must be ordered separately.



- Tremendous Grip (3:1 advantage).

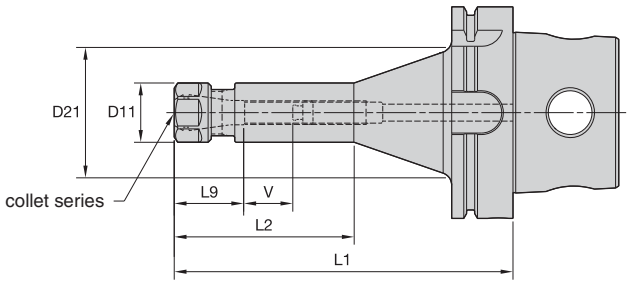
| | Collet Capacity | | | |
|---|---|---|---|---|
| | mm | | inch | |
| TG collet series | min | max | min | max |
| TG50 | 1,1 | 13,5 | 1/32 | 17/32 |
| TG75 | 2,6 | 20,0 | 3/64 | 3/4 |
| TG100 | 2,6 | 25,5 | 5/64 | 1 |
| TG150 | 11,6 | 40,0 | 23/64 | 1-1/2 |

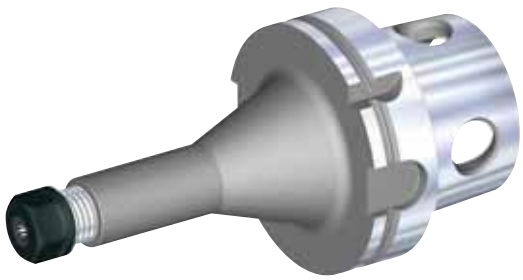


## TG Round-KM4X

| order number | catalogue number | collet series | D11 | L1 | L9 | V | locknut | locknut wrench | Nm | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4156445** | **KM4X100TG050105M** | TG50 | 38 | 105 | 42 | 40 | **LNA050M** | **HSW34M** | 68 | **SS056041G** | 4mm & 5/32 |
| **4156446** | **KM4X100TG050160M** | TG50 | 38 | 160 | 42 | 58 | **LNA050M** | **HSW34M** | 68 | **SS056041G** | 4mm & 5/32 |
| **4156447** | **KM4X100TG075120M** | TG75 | 50 | 120 | 54 | 46 | **LNA075M** | **HSW45M** | 136 | **SS081041G** | 4mm & 5/32 |
| **4156448** | **KM4X100TG100140M** | TG100 | 60 | 140 | 70 | 45 | **LNA100M** | **HSW58M** | 203 | **SS112041G** | 4mm & 5/32 |
| **4156449** | **KM4X100TG150165M** | TG150 | 85 | 165 | 84 | 46 | **LNA150M** | **HSW80M** | 271 | **SS162062G** | 4mm & 5/32 |

NOTE: First, load collet into locknut. Before loading into the chuck body, insert cutting tool, then tighten to recommended tightening torque.
Supplied with locknut and stop screw.
Locknut wrench must be ordered separately.



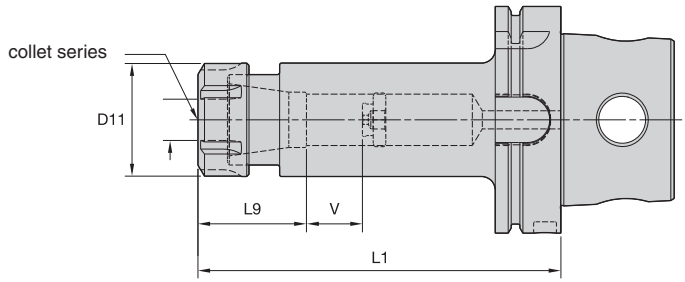
• Grip (2:1 advantage).

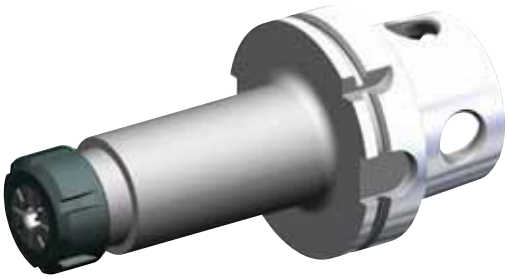
| | Collet Capacity | | | |
|---|---|---|---|---|
| | mm | | inch | |
| ER collet series | min | max | min | max |
| ER16 | 0,5 | 10,0 | .02 | .41 |
| ER20 | 0,5 | 13,0 | .02 | .50 |
| ER25 | 1,0 | 16,0 | .04 | .63 |
| ER32 | 2,0 | 20,0 | .08 | .81 |
| ER40 | 3,0 | 26,0 | .12 | 1.00 |



## ER Hex-KM4X

| order number | catalogue number | collet series | D11 | D21 | L1 | L2 | L9 | V | locknut | locknut wrench | Nm | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4159999** | **KM4X100ER16100M** | ER16 | 28 | — | 100 | — | 32 | 53 | **LNHSER16M** | **OEW25M** | 56 | **SS044038G** | 4mm & 5/32 |
| **4160000** | **KM4X100ER16160M** | ER16 | 28 | 60 | 160 | 85 | 32 | 68 | **LNHSER16M** | **OEW25M** | 56 | **SS044038G** | 4mm & 5/32 |
| **4160001** | **KM4X100ER20100M** | ER20 | 34 | — | 100 | — | 36 | 35 | **LNHSER20M** | **OEW30M** | 80 | **SS056041G** | 4mm & 5/32 |

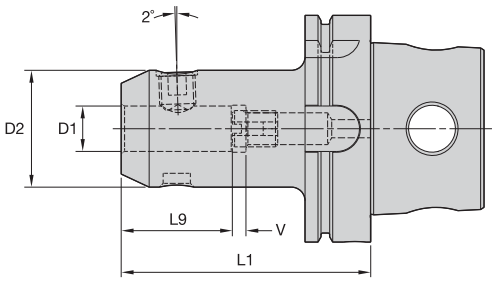


## ER Round-KM4X

| order number | catalogue number | collet series | D11 | L1 | L9 | V | locknut | locknut wrench | Nm | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4160002** | **KM4X100ER25100M** | ER25 | 42 | 100 | 40 | 33 | **LNSER25M** | **ER25WM** | 104 | **SS075041G** | 4mm & 5/32 |
| **4160043** | **KM4X100ER32100M** | ER32 | 50 | 100 | 45 | 32 | **LNSER32M** | **ER32WM** | 136 | **SS094041G** | 4mm & 5/32 |
| **4160044** | **KM4X100ER32160M** | ER32 | 50 | 160 | 45 | 92 | **LNSER32M** | **ER32WM** | 136 | **SS094041G** | 4mm & 5/32 |
| **4160045** | **KM4X100ER40120M** | ER40 | 63 | 120 | 52 | 38 | **LNSER40M** | **ER40WM** | 175 | **SS112041G** | 4mm & 5/32 |

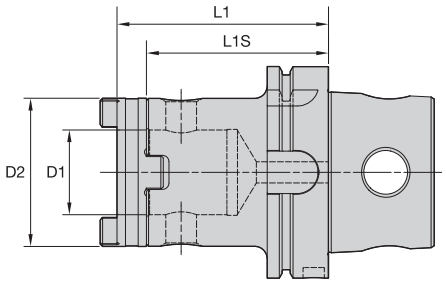
NOTE: First, load collet into locknut. Before loading into the chuck body, insert cutting tool, then tighten to recommended tightening torque.
Supplied with locknut and stop screw.
Locknut wrench must be ordered separately.



## WN MM-KM4X • Metric

| order number | catalogue number | D1 | D2 | L1 | L9 | V | clamp screw | wrench size clamp screw | Nm | stop screw | wrench size stop screw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4160047** | **KM4X100WN06090M** | 6 | 24,5 | 90 | 30 | 10 | **SS03M012** | 3mm | 7 | **571.060** | 2,5mm |
| **4160048** | **KM4X100WN08090M** | 8 | 27,5 | 90 | 30 | 10 | **SS03M014** | 4mm | 15 | **571.067** | 3mm |
| **4160049** | **KM4X100WN10090M** | 10 | 34,5 | 90 | 35 | 10 | **SS03M018** | 5mm | 25 | **571.068** | 4mm |
| **4160050** | **KM4X100WN12100M** | 12 | 41,5 | 100 | 40 | 10 | **SS03M023** | 6mm | 35 | **571.074** | 5mm |
| **4160051** | **KM4X100WN14100M** | 14 | 43,5 | 100 | 40 | 10 | **SS03M023** | 6mm | 35 | **571.074** | 5mm |
| **4160052** | **KM4X100WN16100M** | 16 | 47,5 | 100 | 43 | 10 | **SS03M025** | 6mm | 50 | **571.069** | 6mm |
| **4160073** | **KM4X100WN18100M** | 18 | 49,5 | 100 | 43 | 10 | **SS03M025** | 6mm | 50 | **571.069** | 6mm |
| **4160074** | **KM4X100WN20110M** | 20 | 51,5 | 110 | 45 | 10 | **SS03M026** | 8mm | 95 | **571.076** | 6mm |
| **4160075** | **KM4X100WN25120M** | 25 | 64,5 | 120 | 50 | 10 | **SS03M027** | 10mm | 135 | **571.077** | 6mm |
| **4160076** | **KM4X100WN32120M** | 32 | 71,5 | 120 | 54 | 10 | **SS03M029** | 10mm | 160 | **571.077** | 6mm |

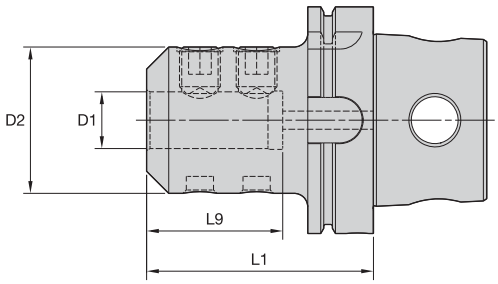
NOTE: Do not overtighten clamp screw; use torque recommendations above.
Supplied with clamp screw and stop screw.
Clamp screw and stop screw wrenches not included.



## HTS-KM4X

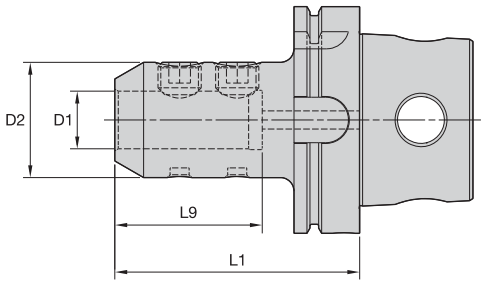
| order number | catalogue number | D1 | D2 | L1 | L1S | clamp screw | hex wrench | drive ring | ft. lbs. | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **4159439** | **KM4X100HTS40085M** | 40 | 70 | 99 | 85 | **191.728** | **170.008** | **192.424** | 26 | 3.80 |
| **4159440** | **KM4X100HTS50090M** | 50 | 80 | 106 | 90 | **191.728** | **170.008** | **192.425** | 26 | 4.27 |

NOTE: Shipped with drive ring and clamping screw.
Assemble components using recommended torque values.



## EM MM-KM4X • Metric

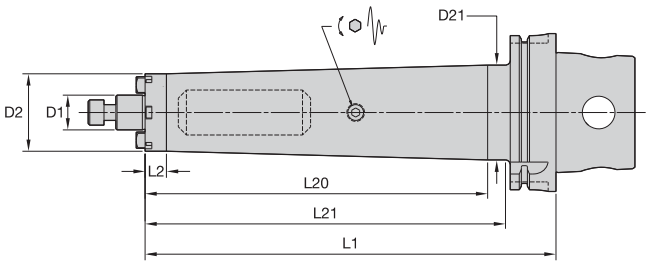
| order number | catalogue number | D1 | D2 | L1 | L9 | clamp screw | wrench size clamp screw | Nm |
|---|---|---|---|---|---|---|---|---|
| 4160510 | KM4X100EM06080M | 6 | 24,5 | 80 | 52 | SS03M012 | 3mm | 7 |
| 4160511 | KM4X100EM08080M | 8 | 27,5 | 80 | 52 | SS03M014 | 4mm | 15 |
| 4160512 | KM4X100EM10080M | 10 | 34,5 | 80 | 52 | SS03M018 | 5mm | 25 |
| 4160533 | KM4X100EM12080M | 12 | 41,5 | 80 | 49 | SS03M023 | 6mm | 35 |
| 4160534 | KM4X100EM14080M | 14 | 43,5 | 80 | 49 | SS03M023 | 6mm | 35 |
| 4160535 | KM4X100EM16100M | 16 | 47,5 | 100 | 53 | SS03M025 | 6mm | 50 |
| 4160536 | KM4X100EM18100M | 18 | 49,5 | 100 | 53 | SS03M025 | 6mm | 50 |
| 4160537 | KM4X100EM20100M | 20 | 51,5 | 100 | 55 | SS03M026 | 8mm | 95 |
| 4160538 | KM4X100EM25100M | 25 | 64,5 | 100 | 60 | SS03M027 | 10mm | 135 |
| 4160539 | KM4X100EM32100M | 32 | 71,5 | 100 | 65 | SS03M029 | 10mm | 160 |
| 4160540 | KM4X100EM40120M | 40 | 89,5 | 120 | 75 | SS03M032 | 10mm | 160 |
| 4160541 | KM4X100EM50130M | 50 | 99,5 | 130 | 85 | SS03M030 | 12mm | 200 |



## EM IN-KM4X • Inch

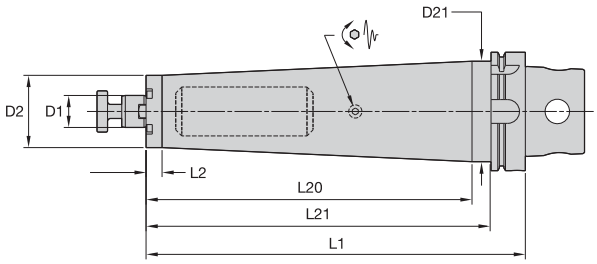
| order number | catalogue number | D1 | D2 | L1 | L9 | clamp screw | wrench size clamp screw | ft. lbs. |
|---|---|---|---|---|---|---|---|---|
| 4160518 | KM4X100EM025300 | 1/4 | 1.000 | 3.000 | 1.89 | ELS025025 | 1/8 | 8 |
| 4160519 | KM4X100EM038300 | 3/8 | 1.000 | 3.000 | 1.89 | ELS038031 | 3/16 | 15 |
| 4160520 | KM4X100EM050325 | 1/2 | 1.375 | 3.250 | 1.97 | ELS044038 | 7/32 | 20 |
| 4160521 | KM4X100EM062375 | 5/8 | 1.625 | 3.750 | 2.09 | ELS056050 | 1/4 | 40 |
| 4160522 | KM4X100EM075375 | 3/4 | 1.750 | 3.750 | 2.22 | ELS062050 | 5/16 | 70 |
| 4160573 | KM4X100EM100425 | 1 | 2.000 | 4.250 | 2.46 | ELS075056 | 3/8 | 110 |
| 4160574 | KM4X100EM125425 | 1 1/4 | 2.500 | 4.250 | 2.51 | ELS075062 | 3/8 | 110 |
| 4160575 | KM4X100EM150450 | 1 1/2 | 2.750 | 4.500 | 2.93 | ELS075069 | 3/8 | 110 |
| 4160576 | KM4X100EM200550 | 2 | 3.750 | 5.500 | 3.53 | ELS100088 | 1/2 | 150 |
| 4160577 | KM4X100EM250575 | 2 1/2 | 4.188 | 5.750 | 3.63 | ELS100088 | 1/2 | 150 |

NOTE: Do not overtighten clamp screw; use torque recommendations above.
Supplied with clamp screw.
Clamp screw wrench not included.



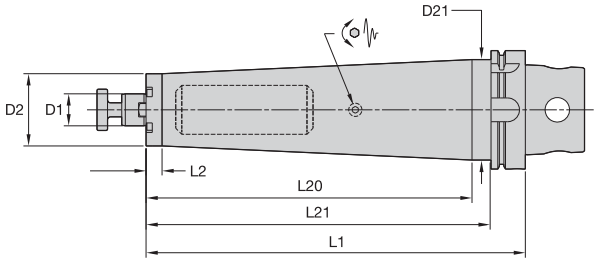
## SMC TD CAP MM-KM4X • Metric

| order number | catalogue number | D1 | D2 | D21 | L1 | L2 | L20 | L21 | lock screw | wrench size lock screw |
|---|---|---|---|---|---|---|---|---|---|---|
| **4169583** | **KM4X100TDSMC22260M** | 22 | 49 | 65 | 260 | 13,5 | 215 | 231 | **MS-1234** | 8mm |



## SMC TD Lock MM-KM4X • Metric

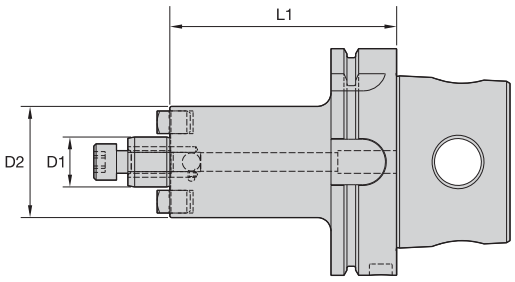
| order number | catalogue number | D1 | D2 | D21 | L1 | L2 | L20 | L21 | lock screw | wrench size lock screw |
|---|---|---|---|---|---|---|---|---|---|---|
| **4169584** | **KM4X100TDSMC27320M** | 27 | 61 | 85 | 320 | 13,5 | 275 | 291 | **KLSS27M** | 10mm |
| **4169585** | **KM4X100TDSMC32330M** | 32 | 78 | — | 330 | 299 | — | — | **KLSS32M** | 14mm |

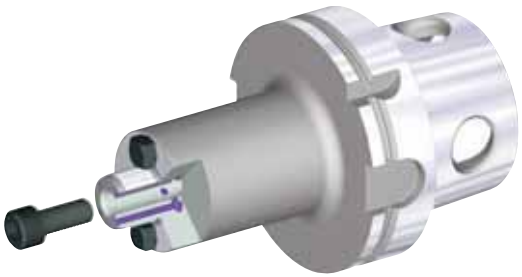


## SMC TD Lock IN-KM4X • Inch

| order number | catalogue number | D1 | D2 | D21 | L1 | L2 | L20 | L21 | clamp screw | wrench size clamp screw |
|---|---|---|---|---|---|---|---|---|---|---|
| **4169586** | **KM4X100TDSMC0751050** | 3/4 | 1.75 | 2.56 | 10.5 | .53 | 8.73 | 9.24 | **KLS07** | 1/4 |
| **4169587** | **KM4X100TDSMC1001250** | 1 | 2.75 | 3.33 | 12.5 | .53 | 10.73 | 11.36 | **KLS10** | 5/16 |
| **4169588** | **KM4X100TDSMC1251300** | 1 1/4 | 2.88 | 3.33 | 13 | .63 | 11.23 | 11.86 | **KLS12** | 5/16 |

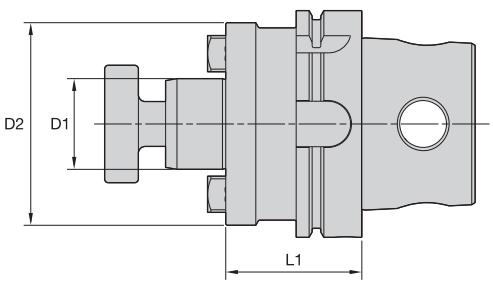
NOTE: Do not overtighten lock screw; use torque recommendations above.
Supplied with lock screw and drive keys.
Lock screw wrench not included.

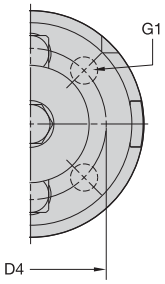


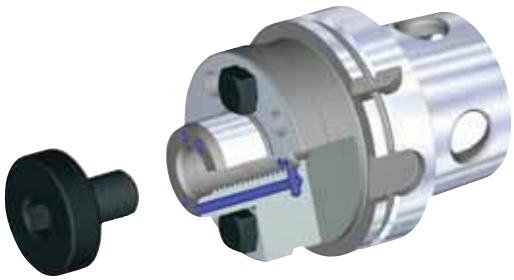



## SMC CAP MM-KM4X • Metric

| order number | catalogue number | D1 | D2 | L1 | lock screw | wrench size lock screw |
|---|---|---|---|---|---|---|
| 4160335 | KM4X100SMC22050M | 22 | 49 | 50 | MS1234 | 8mm |
| 4160337 | KM4X100SMC22100M | 22 | 49 | 100 | MS1234 | 8mm |
| 4160338 | KM4X100SMC22160M | 22 | 49 | 160 | MS1234 | 8mm |

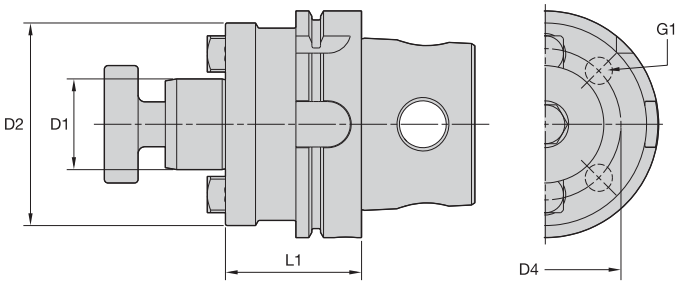


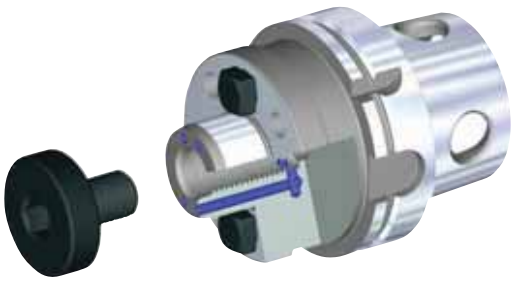



## SMC Lock MM-KM4X • Metric

| order number | catalogue number | D1 | D2 | D4 | G1 | L1 | lock screw | wrench size lock screw |
|---|---|---|---|---|---|---|---|---|
| 4160340 | KM4X100SMC27050M | 27 | 60 | – | – | 50 | KLSS27M | 10mm |
| 4160341 | KM4X100SMC27100M | 27 | 60 | – | – | 100 | KLSS27M | 10mm |
| 4160342 | KM4X100SMC27160M | 27 | 60 | – | – | 160 | KLSS27M | 10mm |
| 4160343 | KM4X100SMC32050M | 32 | 78 | – | – | 50 | KLSS32M | 14mm |
| 4160344 | KM4X100SMC32100M | 32 | 78 | – | – | 100 | KLSS32M | 14mm |
| 4160345 | KM4X100SMC32160M | 32 | 78 | – | – | 160 | KLSS32M | 14mm |
| 4160346 | KM4X100SMC40060M | 40 | 89 | 67 | M12x1,75 | 60 | KLSS40M | 17mm |
| 4160347 | KM4X100SMC40100M | 40 | 89 | 67 | M12x1,75 | 100 | KLSS40M | 17mm |
| 4160348 | KM4X100SMC40160M | 40 | 89 | 67 | M12x1,75 | 160 | KLSS40M | 17mm |
| 4160350 | KM4X100SMC50070M | 50 | 98 | – | – | 70 | KLS50M | SMW50M |
| 4160351 | KM4X100SMC50100M | 50 | 98 | – | – | 100 | KLS50M | SMW50M |
| 4160352 | KM4X100SMC50160M | 50 | 98 | – | – | 160 | KLS50M | SMW50M |
| 4160353 | KM4X100SMC60070M | 60 | 129 | 102 | M16x2,0 | 70 | – | – |
| 4160354 | KM4X100SMC60100M | 60 | 129 | 102 | M16x2,0 | 100 | – | – |
| 4160355 | KM4X100SMC60160M | 60 | 129 | 102 | M16x2,0 | 160 | – | – |

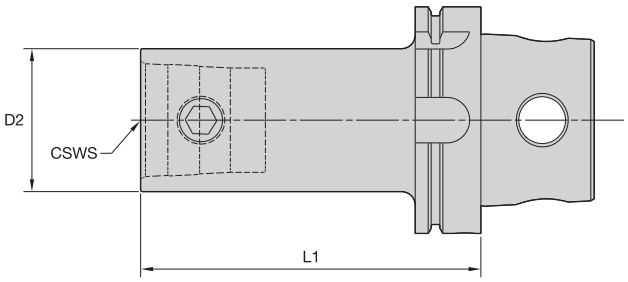


## SMC Lock IN-KM4X • Inch

| order number | catalogue number | D1 | D2 | D4 | G1 | L1 | lock screw | wrench size lock screw |
|---|---|---|---|---|---|---|---|---|
| **4160286** | **KM4X100SMC075400** | 3/4 | 1.75 | – | – | 4.00 | **KLS07** | 1/4 |
| **4160287** | **KM4X100SM2C075400** | 3/4 | 1.46 | – | – | 4.00 | **KLS07** | 1/4 |
| **4160289** | **KM4X100SMC075600** | 3/4 | 1.75 | – | – | 6.00 | **KLS07** | 1/4 |
| **4160290** | **KM4X100SM2C075600** | 3/4 | 1.46 | – | – | 6.00 | **KLS07** | 1/4 |
| **4160291** | **KM4X100SMC100400** | 1 | 2.75 | – | – | 4.00 | **KLS10** | 5/16 |
| **4160292** | **KM4X100SM2C100400** | 1 | 2.19 | – | – | 4.00 | **KLS10** | 5/16 |
| **4160313** | **KM4X100SMC100600** | 1 | 2.75 | – | – | 6.00 | **KLS10** | 5/16 |
| **4160314** | **KM4X100SM2C100600** | 1 | 2.19 | – | – | 6.00 | **KLS10** | 5/16 |
| **4160315** | **KM4X100SMC125400** | 1 1/4 | 2.88 | – | – | 4.00 | **KLS12** | 5/16 |
| **4160316** | **KM4X100SMC125600** | 1 1/4 | 2.88 | – | – | 6.00 | **KLS12** | 5/16 |
| **4160317** | **KM4X100SMC150400** | 1 1/2 | 3.81 | – | – | 4.00 | **KLS15** | 3/8 |
| **4160318** | **KM4X100SMC150600** | 1 1/2 | 3.81 | – | – | 6.00 | **KLS15** | 3/8 |
| **4160319** | **KM4X100SMC200400** | 2 | 4.88 | 4.00 | 5/8 - 11 | 4.00 | **KLS20** | 9/16 |
| **4160320** | **KM4X100SMC200600** | 2 | 4.88 | 4.00 | 5/8 - 11 | 6.00 | **KLS20** | 9/16 |
| **4160321** | **KM4X100SMC250400** | 2 1/2 | 4.88 | 4.00 | 5/8 - 11 | 4.00 | **–** | 1/2 |
| **4160322** | **KM4X100SMC250600** | 2 1/2 | 4.88 | 4.00 | 5/8 - 11 | 6.00 | **–** | 1/2 |

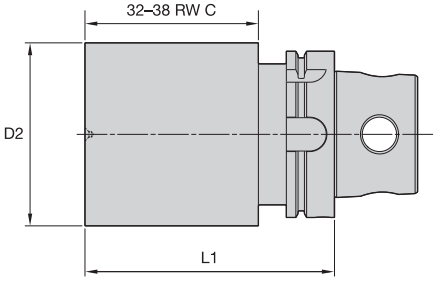
NOTE: Do not overtighten lock screw; use torque recommendations above.
Supplied with lock screw and drive keys.
Lock screw wrench not included.



## KM-KM4X

| order number | catalogue number | CSWS | D2 | L1 | spare parts package | wrench size actuation screw | Nm |
|---|---|---|---|---|---|---|---|
| **4161856** | **KM4X100KM32075M** | 32 | 32 | 75 | **KM32PKGS** | 5mm | 8 - 11 |
| **4161858** | **KM4X100KM40080M** | 40 | 40 | 80 | **KM40PKGS** | 6mm | 12 - 16 |
| **4161859** | **KM4X100KM40100M** | 40 | 40 | 100 | **KM40PKGS** | 6mm | 12 - 16 |
| **4161860** | **KM4X100KM40150M** | 40 | 40 | 150 | **KM40PKGS** | 6mm | 12 - 16 |
| **4161861** | **KM4X100KM50100M** | 50 | 50 | 100 | **KM50PKGS** | 10mm | 27 - 34 |
| **4161862** | **KM4X100KM50150M** | 50 | 50 | 150 | **KM50PKGS** | 10mm | 27 - 34 |
| **4161863** | **KM4X100KM50200M** | 50 | 50 | 200 | **KM50PKGS** | 10mm | 27 - 34 |
| **4161864** | **KM4X100KM63100M** | 63 | 63 | 100 | **KM63PKGS** | 12mm | 47 - 54 |
| **4161865** | **KM4X100KM63150M** | 63 | 63 | 150 | **KM63PKGS** | 12mm | 47 - 54 |
| **4161866** | **KM4X100KM63200M** | 63 | 63 | 200 | **KM63PKGS** | 12mm | 47 - 54 |
| **4161867** | **KM4X100KM80100M** | 80 | 80 | 100 | **KM80PKGS** | 14mm | 79 - 85 |
| **4161868** | **KM4X100KM80150M** | 80 | 80 | 150 | **KM80PKGS** | 14mm | 79 - 85 |
| **4161869** | **KM4X100KM80200M** | 80 | 80 | 200 | **KM80PKGS** | 14mm | 79 - 85 |

NOTE: Do not overtorque actuation screw; use torque recommendations above.
Supplied with KM actuation mechanism.

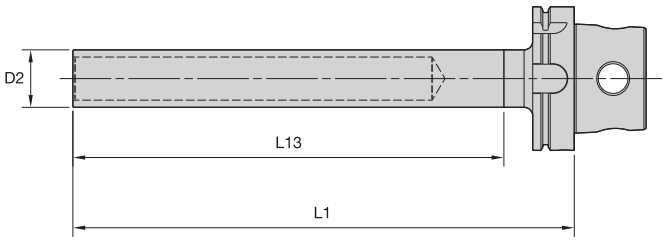


- Machinable front 32–38 RW C.

## BB-KM4X

| order number | catalogue number | D2 | L1 |
|---|---|---|---|
| **4160571** | **KM4X100BN080150M** | 80 | 150 |
| **4160572** | **KM4X100BN110150M** | 110 | 150 |
| **4160613** | **KM4X100BN130200M** | 130 | 200 |





- For acceptance testing on machine tool spindles.
- 0,003mm (.0001") maximum TIR.
- Precision ground.

## GB-KM4X

| order number | catalogue number | D2 | L1 | L13 |
|---|---|---|---|---|
| **4160529** | **KM4X100GB40349M** | 40 | 349 | 330 |

# Looking for a product that's not shown in this catalogue?
# Check the Kennametal website!

## Tooling Systems

### Online product catalogue available 24/7

Visit **http://www.kennametal.com/toolingsystems/** to browse our electronic catalogue any time you're looking for Kennametal's best tooling solutions. It's fast, free, and always available. The online e-catalogue is updated weekly with products and solutions for milling, turning, holemaking, and tooling systems applications.

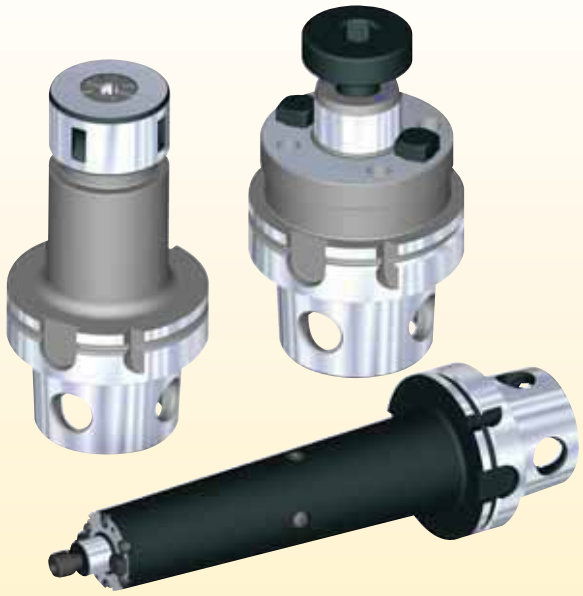
KENNAMETAL

You Tube

## KM4X — The Next Generation Spindle Connection System

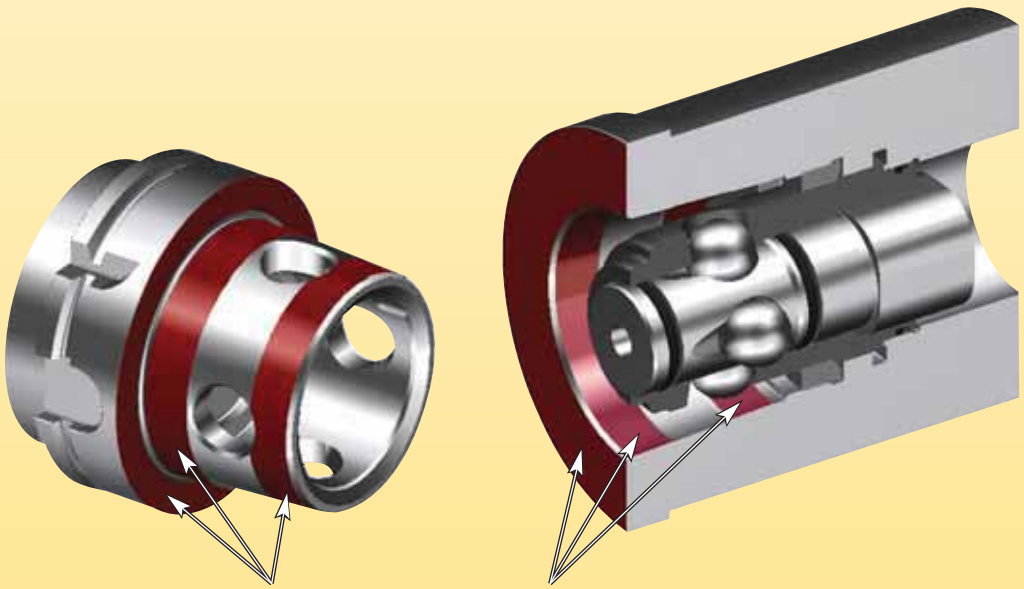
As a global tooling supplier and a true customer support partner, we recognise the need to offer tooling products for all spindle interfaces and make available solutions to provide the best cutting edges to gain maximum productivity at the spindle system connection.

KM4X is the latest version of the KM™ spindle interface targeted at heavy-duty machining operations and is a top choice for machining large, structural tough-to-machine materials like titanium for the aerospace industry.



### The Latest Innovation in Spindle Interface Technology

- KM4X offers the most rigid connection able to withstand extremely high bending due to a combination of high interference and high clamping forces.
- KM4X provides 3x more bending capacity than comparable face contact systems.
- KM is the only connection that maintains stiffness at elevated rotational speeds and is suitable for a range of applications from low speeds with high torque to very high spindle speeds with low torque.
- KM4X maintains a better balance between bending and torsion capabilities.
- The ability to retrofit KM4X to an existing machine tool offers the added advantage of increasing throughput.
- Heavy-duty, rigid configuration with evenly distributed clamping force.
- Simple design enables front-loaded spindle configuration.
- Balanced-by-design for high spindle speed capacity.



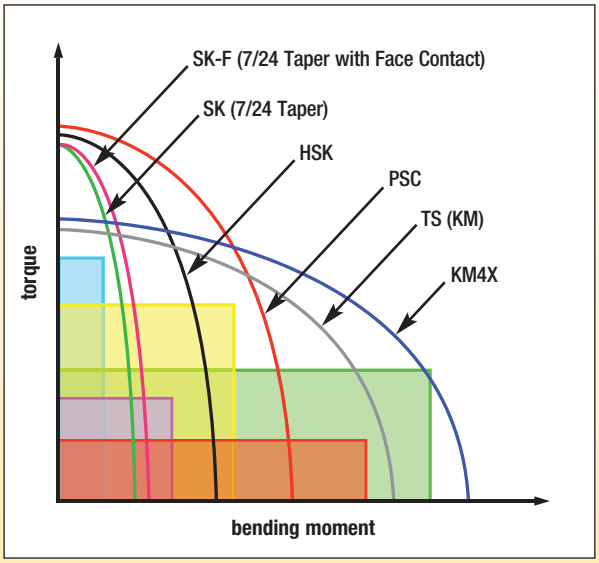
**KM4X three-surface contact for improved stability and accuracy.
Optimised clamping force distribution and interference fit provides higher stiffness.**

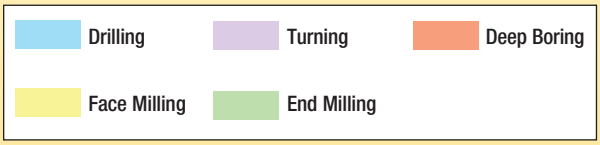
## Why Bending Load Capacity Is Important

When machining tough materials like titanium, cutting speeds are relatively low due to thermal effects on cutting tools. Over the years, machine tool builders responded to this issue by improving stiffness and damping on spindles and machine structures. Spindles have been designed with abundant torque at low rotational speeds. Nevertheless, the spindle connection has remained the weak link in the system.

The spindle connection must provide torque and bending load capacity compatible with the machine tool specifications and the requirements for higher productivity. It becomes obvious that in end-milling applications where the projection lengths are typically greater, the limiting factor is the bending load capacity of the spindle interface.

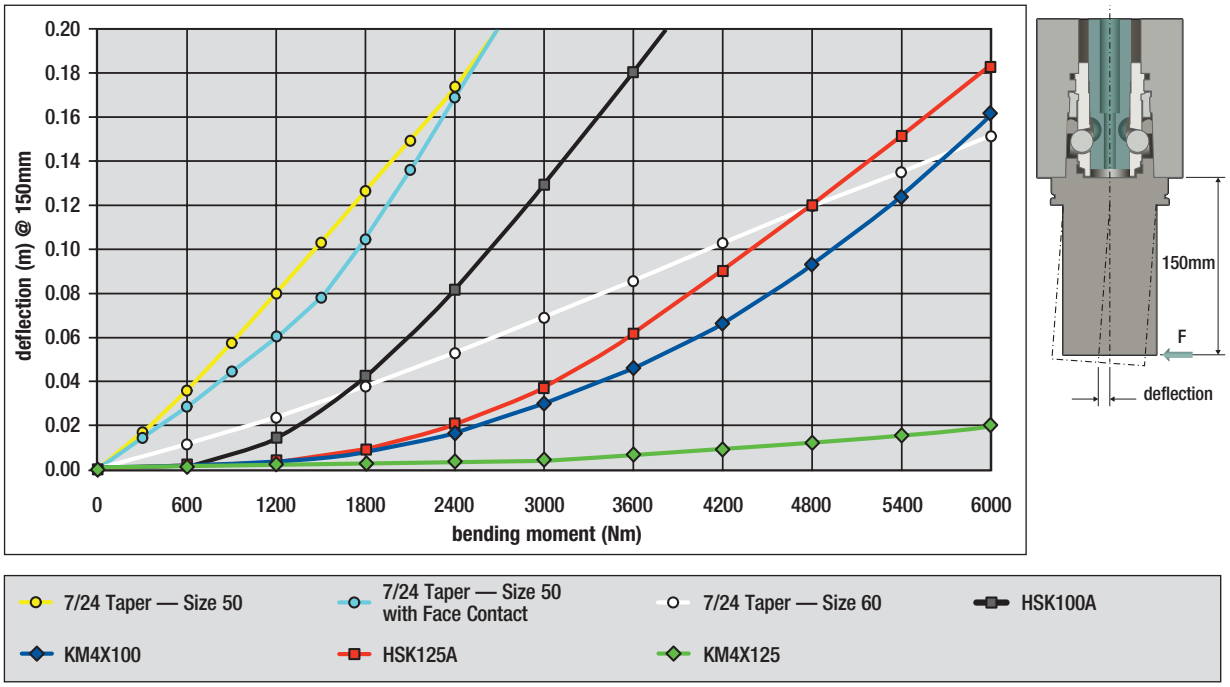
The lines on the chart to the right represent the load capacity of HSK, PSC, and KM4X. The shaded areas represent the typical requirements for heavy-duty applications in various machining processes. KM4X is the only system that can deliver the torque and bending capacity required for achieving high-performance machining. Some systems may be able to transmit considerable amounts of torque, but the cutting forces also generate bending moments that exceed the interface's limits before torque limits are exceeded.

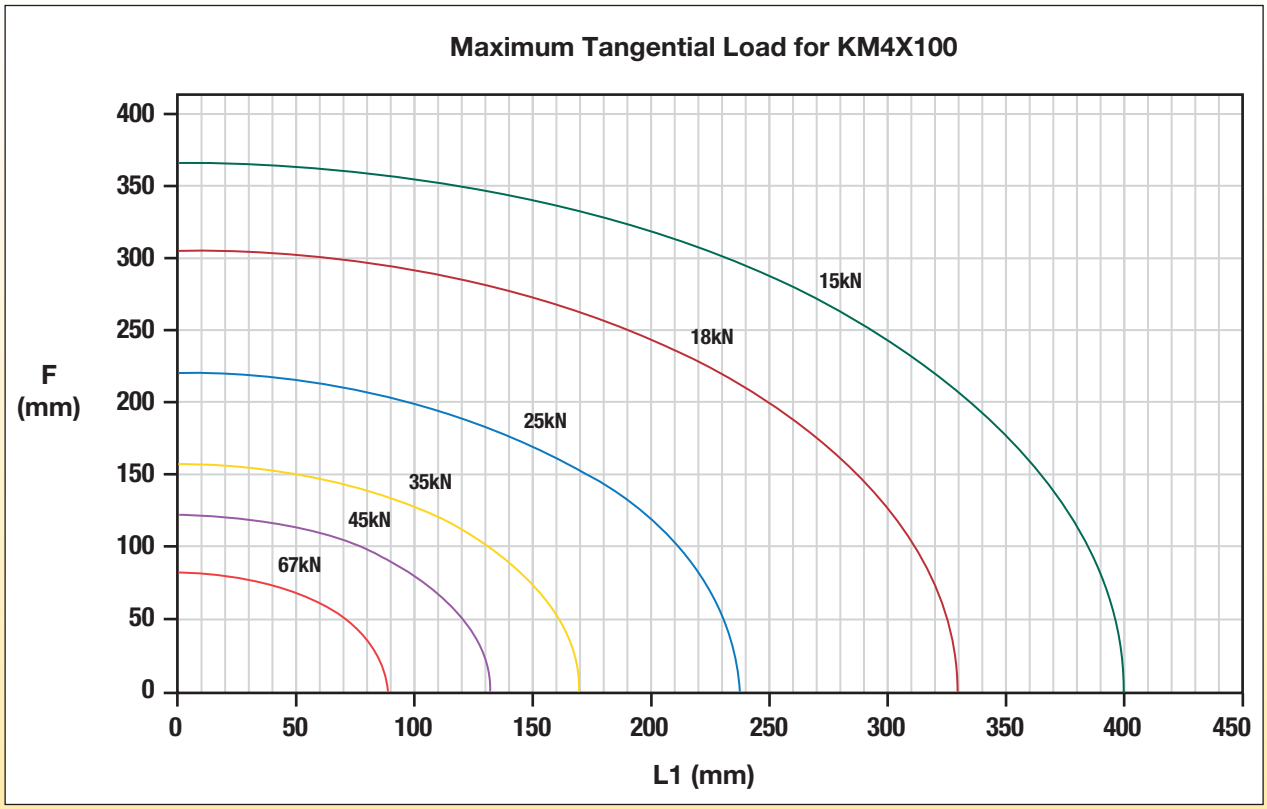



**IMPORTANT**
Information shown on the following charts was developed exclusively for use with KM™ tooling in static conditions. Do not use for any other tooling system because the results will not apply. To account for cutting force fluctuations in dynamic conditions, a reduction of 20–30% should be applied to the loads shown in charts.

Chart shows load-deflection comparison of steep taper with and without face contact — HSK and KM4X.






The KM4X system is the best large, heavy-duty connection. A weak connection can fail to deliver the desired cutting edge performance. KM4X superior rigidity equals maximum productivity.

**IMPORTANT**
Information shown on the following charts was developed exclusively for use with KM™ tooling in static conditions. Do not use for any other tooling system because the results will not apply. To account for cutting force fluctuations in dynamic conditions, a reduction of 20–30% should be applied to the loads shown in charts.

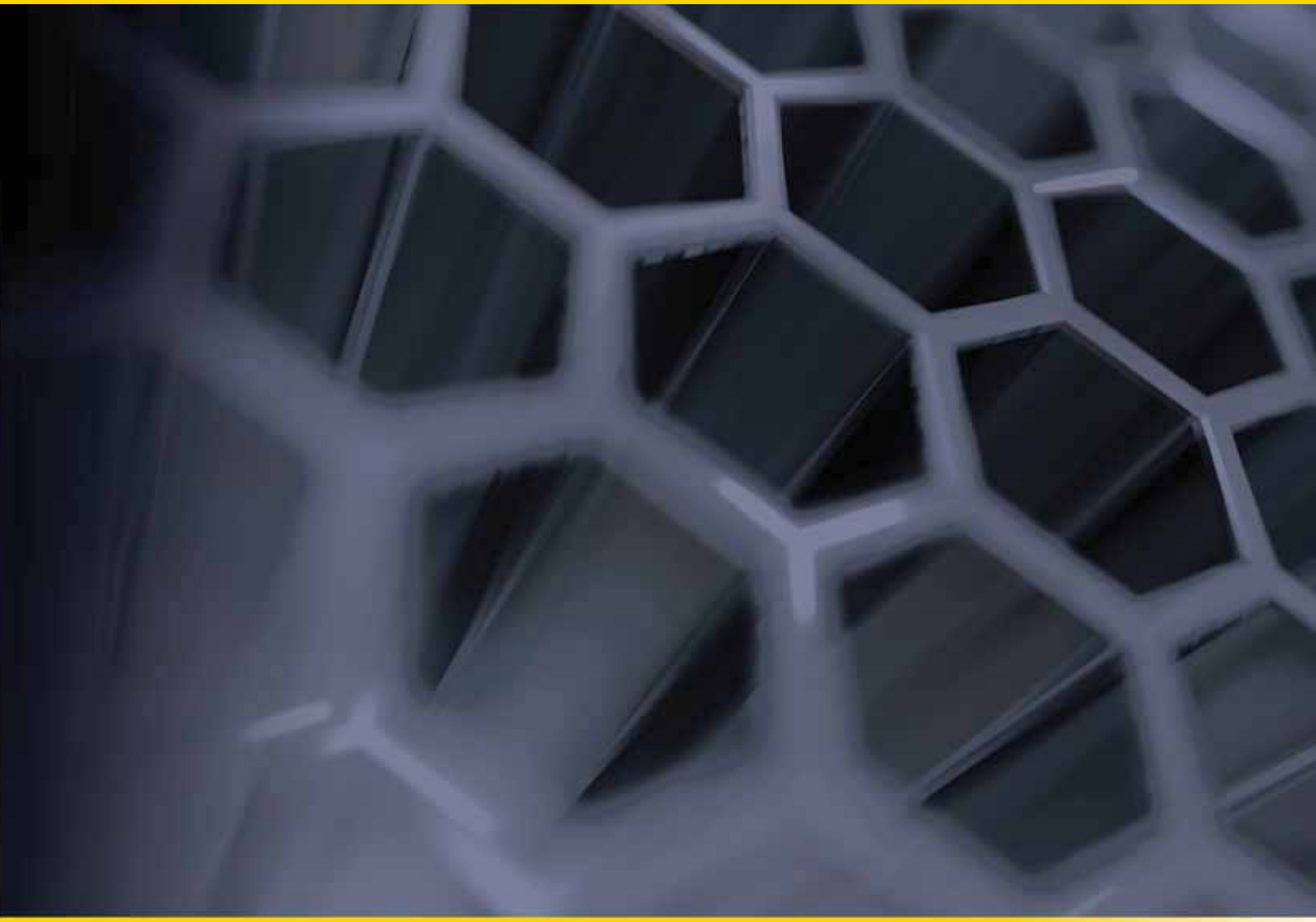
# ERICKSON™ HSK Shank Tooling System • HSK63A Series

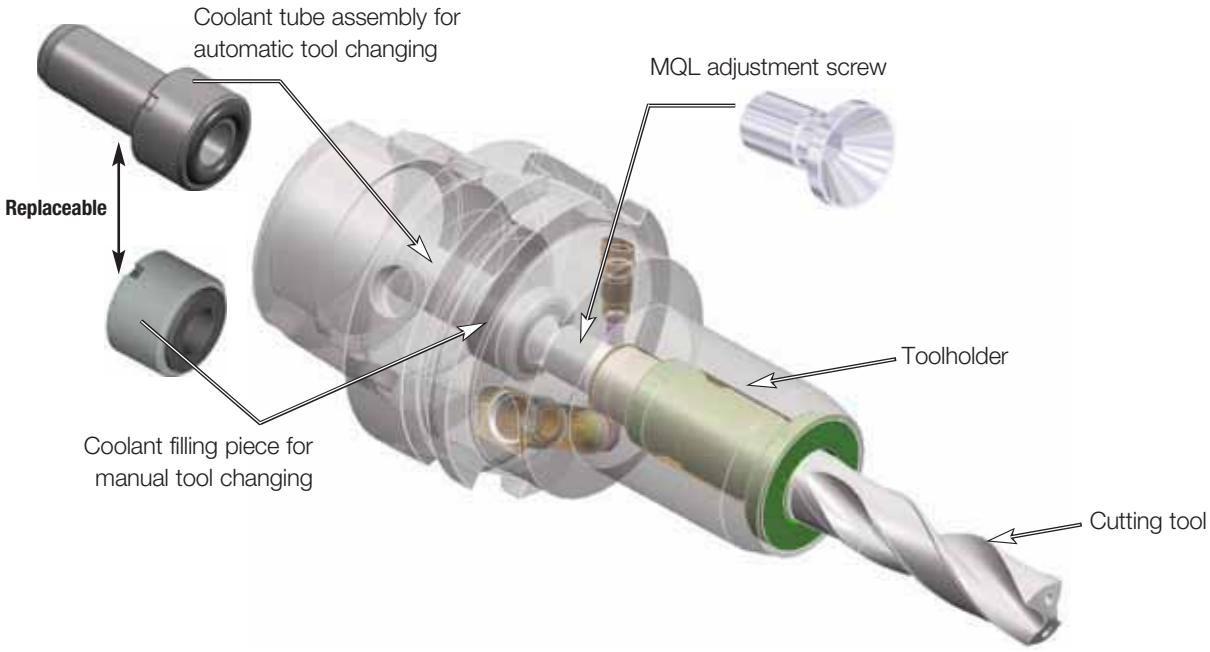
## Primary Application

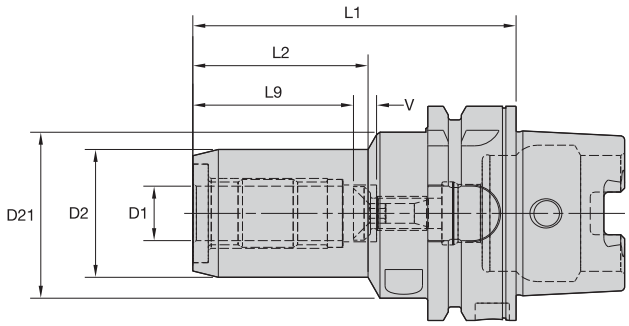
Kennametal has further developed their successful products, hydraulic chucks and Shrink Fit toolholders, by replacing the individual components for use in wet, dry, and MQL (Minimum Quantity Lubrication) machining applications.
The HSK63A Series, well known in the automotive industry, is mainly used for holemaking applications.
In dry/MQL machining, more than 70% of the heat is dissipated by the chips, creating less abrasive wear.

## Features and Benefits

- DIN 69090 1–3 standard.
- Open-source solution.
- Universal for wet, MQL, or dry machining.
- Designed for all straight shanks.
- Equal dimensions for wet and MQL tools.

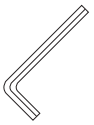



Coolant tube assembly for
automatic tool changing
MQL adjustment screw
Replaceable
Toolholder
Coolant filling piece for
manual tool changing
Cutting tool



## ERICKSON

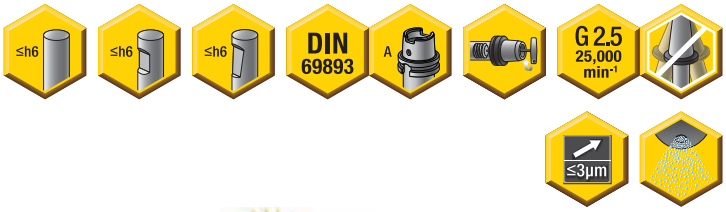
■ HCT • MQL • Metric

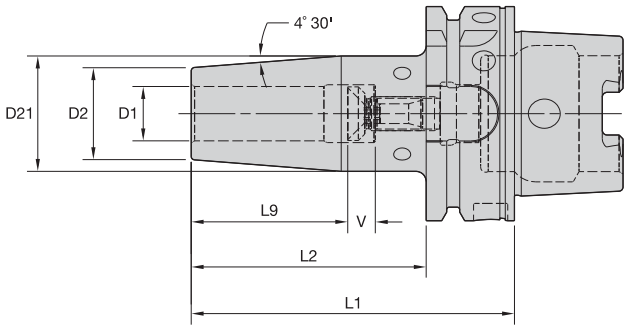


| order number | catalogue number | D1 | D2 | D21 | L1 | L2 | L9 | V | actuation wrench | wrench size actuation screw | length adjustment wrench | wrench size stop screw | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5006410** | **HSK63AHCTMQL1C06080M** | 6 | 25,7 | 50 | 80 | 34 | 27 | 10 | **170.135** | 5 mm | **170.002** | 2.5 mm | 1,00 |
| **5006411** | **HSK63AHCTMQL1C08080M** | 8 | 27,7 | 50 | 80 | 34 | 27 | 10 | **170.135** | 5 mm | **170.003** | 3 mm | 1,02 |
| **5006413** | **HSK63AHCTMQL1C10085M** | 10 | 29,7 | 50 | 85 | 39 | 31 | 10 | **170.135** | 5 mm | **170.004** | 4 mm | 1,06 |
| **5006414** | **HSK63AHCTMQL1C12090M** | 12 | 31,6 | 50 | 90 | 45 | 36 | 10 | **170.135** | 5 mm | – | 5 mm | 1,09 |
| **5006415** | **HSK63AHCTMQL1C14090M** | 14 | 33,6 | 50 | 90 | 46 | 36 | 10 | **170.135** | 5 mm | – | 5 mm | 1,11 |
| **5006416** | **HSK63AHCTMQL1C16095M** | 16 | 37,6 | 50 | 95 | 52 | 39 | 10 | **170.135** | 5 mm | – | 5 mm | 1,21 |
| **5006417** | **HSK63AHCTMQL1C18095M** | 18 | 39,6 | 50 | 95 | 52 | 39 | 10 | **170.135** | 5 mm | – | 5 mm | 1,24 |
| **5006418** | **HSK63AHCTMQL1C20100M** | 20 | 41,6 | 50 | 100 | 58 | 41 | 10 | **170.135** | 5 mm | – | 5 mm | 1,31 |
| **5006419** | **HSK63AHCTMQL1C25120M** | 25 | 49,8 | 70 | 120 | 53 | 47 | 10 | **170.136** | 6 mm | **170.005** | 5 mm | 2,10 |
| **5006430** | **HSK63AHCTMQL1C32125M** | 32 | 59,8 | 75 | 125 | 59 | 51 | 10 | **170.136** | 6 mm | **170.005** | 5 mm | 2,45 |

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Wrenches must be ordered separately.
Supplied with adjusting stop screw.
Reduction sleeves are available and must be ordered separately.
HSK coolant unit and wrench are available and must be ordered separately.
Shank of the cutting tool according to DIN 69090.

- Balanceable — fine tune with optional M6 set screws.
- Suitable for carbide and HSS cutting tools (requirements below).



**Cutting Tool Shank Requirements metric (ISO standard)**

| cutting tool shank diameter | | tolerance |
|---|---|---|
| 3 | h4 | 0,000/-0,003 |
| 4 | h4 | 0,000/-0,004 |
| 5 | h5 | 0,000/-0,005 |
| 6 | h6 | 0,000/-0,008 |
| 8 & 10 | h6 | 0,000/-0,009 |
| 12, 14, 16, & 18 | h6 | 0,000/-0,011 |
| 20 & 25 | h6 | 0,000/-0,013 |
| 32 | h6 | 0,000/-0,016 |

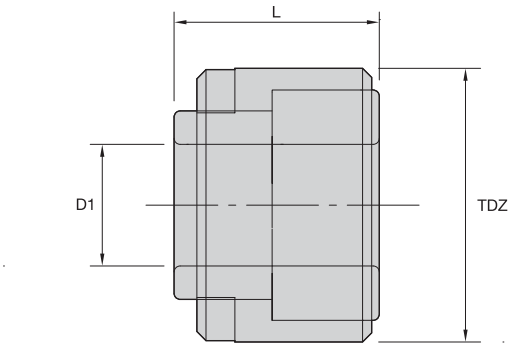


## ERICKSON

### HPVTT • MQL • Metric

| order number | catalogue number | D1 | D2 | D21 | L1 | L2 | L9 | V | screw | wrench size stop screw | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5008181 | HSK63AHPVTTMQL1C06080M | 6 | 21 | 27 | 80 | 54 | 26 | 10,0 | 06ASMQL1C05170M | 2.5 mm | 0,82 |
| 5008182 | HSK63AHPVTTMQL1C08080M | 8 | 21 | 27 | 80 | 54 | 26 | 10,0 | 08ASMQL1C06180M | 3 mm | 0,82 |
| 5008183 | HSK63AHPVTTMQL1C10085M | 10 | 24 | 32 | 85 | 59 | 31 | 10,0 | 10ASMQL1C08180M | 4 mm | 0,90 |
| 5008184 | HSK63AHPVTTMQL1C12090M | 12 | 24 | 32 | 90 | 64 | 36 | 10,0 | 12ASMQL1C10180M | 5 mm | 0,91 |
| 5008185 | HSK63AHPVTTMQL1C14090M | 14 | 27 | 34 | 90 | 64 | 36 | 10,0 | 14ASMQL1C10195M | 5 mm | 0,96 |
| 5008186 | HSK63AHPVTTMQL1C16095M | 16 | 27 | 34 | 95 | 69 | 39 | 10,0 | 16ASMQL1C10220M | 5 mm | 0,97 |
| 5008187 | HSK63AHPVTTMQL1C18095M | 18 | 33 | 42 | 95 | 69 | 39 | 10,0 | 18ASMQL1C10220M | 5 mm | 1,14 |
| 5008188 | HSK63AHPVTTMQL1C20100M | 20 | 33 | 42 | 100 | 74 | 41 | 10,0 | 20ASMQL1C10235M | 5 mm | 1,16 |
| 5008189 | HSK63AHPVTTMQL1C25115M | 25 | 44 | 53 | 115 | 89 | 47 | 10,0 | 25ASMQL1C10275M | 5 mm | 1,73 |
| 5008210 | HSK63AHPVTTMQL1C32120M | 32 | 44 | 53 | 120 | 94 | 51 | 10,0 | 32ASMQL1C10305M | 5 mm | 1,61 |

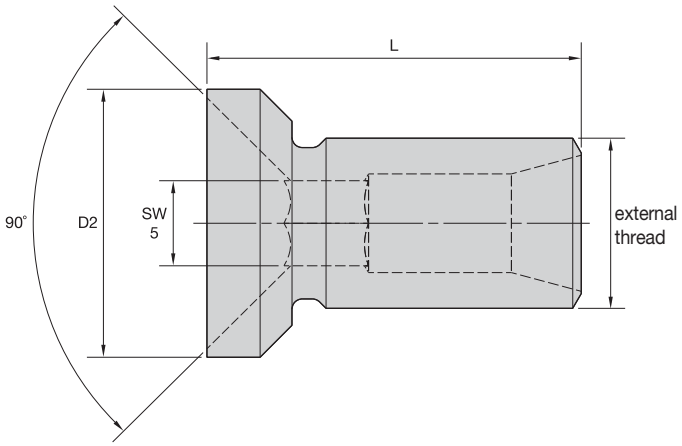
NOTE: Do not overheat. Overheating will destroy the accuracy and functionality of the toolholder.
Supplied with adjusting stop screw.
Optional M6~1.0P x 5mm lg fine-balancing screw set (10 pieces) is available.
Order number is MS1276PKG and must be ordered separately.
HSK coolant unit and wrench are available and must be ordered separately.
Shank of the cutting tool according to DIN 69090.



## FP • MQL

| order number | catalogue number | D1 mm | D1 in | L mm | L in | TDZ |
|---|---|---|---|---|---|---|
| 5086819 | HSK40AFPMQL1C050095M | 5,00 | .197 | 9,50 | .374 | M12 X 1.0 |
| 5086840 | HSK50AFPMQL1C064115M | 6,40 | .252 | 11,50 | .453 | M16 X 1.0 |
| 5086841 | HSK63AFPMQL1C080135M | 8,00 | .315 | 13,50 | .532 | M18 X 1.0 |
| 5086842 | HSK80AFPMQL1C080155M | 8,00 | .315 | 15,50 | .610 | M20 X 1.5 |
| 5086843 | HSK100AFPMQL1C080175M | 8,00 | .315 | 17,50 | .689 | M24 X 1.5 |





## AS • MQL

| order number | catalogue number | D2 mm | D2 in | L mm | L in | external thread size | I.D. drive size |
|---|---|---|---|---|---|---|---|
| 5086710 | 06ASMQL1C05170M | 6 | .226 | 17,00 | .669 | M5 | 2.5 mm |
| 5086711 | 08ASMQL1C06180M | 8 | .305 | 18,00 | .709 | M6 | 3 mm |
| 5086712 | 10ASMQL1C08180M | 10 | .384 | 18,00 | .709 | M8 X 1 | 4 mm |
| 5086713 | 12ASMQL1C10180M | 12 | .463 | 18,00 | .709 | M10 X 1 | 5 mm |
| 5086714 | 14ASMQL1C10195M | 14 | .541 | 19,50 | .768 | M10 X 1 | 5 mm |
| 5086715 | 16ASMQL1C10220M | 16 | .620 | 22,00 | .866 | M10 X 1 | 5 mm |
| 5086716 | 18ASMQL1C10220M | 18 | .699 | 22,00 | .866 | M10 X 1 | 5 mm |
| 5086717 | 20ASMQL1C10235M | 20 | .778 | 23,50 | .925 | M10 X 1 | 5 mm |
| 5086718 | 25ASMQL1C10275M | 25 | 1.026 | 27,50 | 1.083 | M10 X 1 | 5 mm |
| 5086719 | 32ASMQL1C10305M | 32 | 1.250 | 30,50 | 1.201 | M10 X 1 | 5 mm |

KENNAMETAL

# REPAIR SERVICES

## Getting Started, and Getting Finished, Is Easy.

**Follow these 4 simple steps and be on your way to restored tools and great savings.**

1. Visit www.kennametal.com to find the tool you're looking to have repaired.
2. Download and complete the form. Mail the completed form and the tooling to the Kennametal Service and Repair Department.
3. Kennametal will quickly respond to your request with a cost estimate and timetable for the completion of the repair.
4. Within 60 days of receiving the estimate, notify Kennametal whether you'd like the tooling repaired, returned, or scrapped.

**Please note that the tap adaptors are not cost effective to repair.*

## Repair Services

**Tools are valuable. Protect them and get the most from your investment.**

You can be assured that when your advanced tooling products need to be serviced, the Kennametal Service and Repair Department has the highly trained, experienced staff to provide expert assistance. For about half the cost of a new tool purchase, you can have your existing, damaged tools serviced and repaired to like-new condition.

KENNAMETAL®

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## Holemaking Icons

| | | | | |
|---|---|---|---|---|
| Drilling into Solid | Reaming: Through Hole | Reaming: Blind Hole | Reaming: Through and Cross Holes | Reaming: Blind and Cross Holes |
| Tapping: Through Hole | Tapping: Blind Hole | Tapping: Pipe Thread | HSS-E-PM | Drilling Depth: 3x |
| Drilling Depth: 5x | Drilling Depth: 8x | Drilling Depth: 10x | Shank: Cylindrical Plain | Shank: Cylindrical Plain ≤h6 |
| Shank: Cylindrical Weldon® | Shank: WD | Shank: KM | HSK Shank: A (DIN 69893) | Chamfer Form C (2–3) |
| Chamfer Form D (3.5–5) | Tapping Helix Angle: 0° | Tapping Helix Angle: L15° | Balance (G 6.3/15,000) | DIN Numbers 371 |
| DIN Number 376 | DIN Number 69893 | Through Coolant: Radial: Drilling | Through Coolant: Radial: Reaming | Through Coolant: Radial: Reaming |
| Flood Coolant: Tapping | Through Coolant: Axial: Drilling | Through Coolant: Axial: Reaming | Through Coolant: Axial: Tapping | Class of Fit: 2BX |
| Class of Fit: 3BX | Unified Fine Thread | Unified Coarse Thread | Tool Dimensions: Flute Configuration: 4 | |

## Solid End Milling Icons

| | | | | |
|---|---|---|---|---|
| Face Milling | Plunge Milling Slotting | Ramping: Blank | Slotting: Ball Nose | Slotting: Ball Nose with AP Dimension |
| Slotting: Square End | Slotting: Square End with AP Dimension | Side/Shoulder Milling: Ball Nose | Side/Shoulder Milling: Ball Nose with AE/AP Dimensions | Side/Shoulder Milling: Ball Nose |
| Side/Shoulder Milling: Square End with AE/AP Dimensions | 3D Profiling | 3D Profiling with Square End Mill | 3D Profiling with Square End Mill AE/AP Dimensions | Corner Style: Ball Nose |
| Corner Style: Corner Chamfer | Corner Style: Corner Radius | Corner Style: Square End | Helix Angle: 20° | Helix Angle: 30° |
| Helix Angle: 38° | Helix Angle: 40° | Helix Angle: 45° | Helix Angle: 43° | DIN Number 6527 |
| Through Coolant: Radial: Drilling | Tool Dimensions: Flute Configuration: X (variable) | Tool Dimensions: Flute Configuration: 2 | Tool Dimensions: Flute Configuration: 3 | Tool Dimensions: Flute Configuration: 4 |

*(continued)*

## Solid End Milling Icons *(continued)*

| | | | | |
|---|---|---|---|---|
| Tool Dimensions: Flute Configuration: 5 | Tool Dimensions: Flute Configuration: 6 | | | |

## Indexable Milling Icons

| | | | | |
|---|---|---|---|---|
| Face Milling | Helical Milling | Plunge Milling | Ramping: Blank | Slotting: Ball Nose |
| Slotting: Square End | Side/Shoulder Milling: Ball Nose | Side/Shoulder Milling: Square End | Side/Shoulder Milling: Eased Chamfer | 3D Profiling |
| Pocketing | Shank: Cylindrical Plain | Shank: Cylindrical Weldon® | Shank: Screw-On | Shank: Shell Mill Shank |
| Milling: Through Coolant | | | | |

## Tooling Systems Icons

| | | | | |
|---|---|---|---|---|
| Shank: Cylindrical Plain | Shank: Cylindrical Plain ≤h6 | Shank: Cylindrical Weldon® | Shank: Cylindrical Weldon ≤h5 | Shank: Cylindrical Whistle Notch™ |
| Shank: Cylindrical Whistle Notch ≤h6 | Shank HSK A/DIN 69893 | Shank: Shell Mill | Shank: KM-TS (ISO 26622) | Shank: Square Shank |
| Shank: KM4X™ | Axial Adjustments: End | Axial Adjustments: Side | Balance-by-Design | Balance— G 2.5@ 15,000 min |
| Balance— G 2.5@ 15,000 | Balance— G 2.5@ 25,000 | DIN Number 1835/E | DIN Number 1835/B | ER Collet DIN 6499 |
| Runout ≤3 | Through Coolant: Radial: Drilling | Through Coolant: Radial: Indexable Milling | Through Coolant: MQL (Minimum Quantity Lubricant): Axial Drilling | Through Coolant: Axial: Drilling |
| Through Coolant: 100 bar | Through Coolant: 1500 psi | ISO 26622 | Milling: Tunable Bar/Milling | |

*DIN — German Institute for Standardisation*

*ANSI — American National Standards Institute*

Kennametal Innovations Master

# Tooling Systems

2013 Catalogue

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KENNAMETAL®

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

# Material Overview • DIN

| material group | description | content | tensile strength RM (MPa)* | hardness (HB) | hardness (HRC) | material number |
|---|---|---|---|---|---|---|
| P0 | Low-Carbon Steels, Long Chipping | C <0,25% | <530 | <125 | – | – |
| P1 | Low-Carbon Steels, Short Chipping, Free Machining | C <0,25% | <530 | <125 | – | C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38 |
| P2 | Medium- and High-Carbon Steels | C >0,25% | >530 | <220 | <25 | ST52, S355JR, C35, GS60, Cf53 |
| P3 | Alloy Steels and Tool Steels | C >0,25% | 600–850 | <330 | <35 | 16MnCr5, Ck45, 21CrMoV5-7, 38SMn28 |
| P4 | Alloy Steels and Tool Steels | C >0,25% | 850–1400 | 340–450 | 35–48 | 100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12 |
| P5 | Ferritic, Martensitic, and PH Stainless Steels | – | 600–900 | <330 | <35 | 100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12 |
| P6 | High-Strength Ferritic, Martensitic, and PH Stainless Steels | – | 900–1350 | 350–450 | 35–48 | X102CrMo17, G-X120Cr29 |
| M1 | Austenitic Stainless Steel | – | <600 | 130–200 | – | X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12 |
| M2 | High-Strength Austenitic Stainless and Cast Stainless Steels | – | 600–800 | 150–230 | <25 | X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20 |
| M3 | Duplex Stainless Steel | – | <800 | 135–275 | <30 | X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4 |
| K1 | Grey Cast Iron | – | 125–500 | 120–290 | <32 | GG15, GG25, GG30, GG40, GTW40 |
| K2 | Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI) | – | <600 | 130–260 | <28 | GGG40, GTS35 |
| K3 | High-Strength Ductile Irons and Austempered Ductile Iron (ADI) | – | >600 | 180–350 | <43 | GGG60, GTW55, GTS65 |
| N1 | Wrought Aluminium | – | – | – | – | AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, ALMgSiPb |
| N2 | Low-Silicon Aluminium Alloys and Magnesium Alloys | Si <12,2% | – | – | – | GAlSiCu4, GDAlSi10Mg |
| N3 | High-Silicon Aluminium Alloys and Magnesium Alloys | Si > 12,2% | – | – | – | G-ALSi12, G-AlSi17Cu4, G-AlSi21CuNiMg |
| N4 | Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100 | – | – | – | – | CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn |
| N5 | Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass | – | – | – | – | Lexan®, Hostalen™, Polystyrol, Makralon® |
| 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, Stelllite® 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 | – |

# 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 Kennametal's 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 stylized K, A3, A4, Beyond, Beyond BLAST, Beyond Drive, Beyond Shield, DFC, DFR, DFT, Dodeka, Drill Fix, Erickson, Fix-Perfect, GOmill, Green Box, HARVI, HARVI I, HARVI II, HARVI III,K605, KB1340, KB1630, KB5610, KB5625, KB5630, KBH20, KBK35, KBK35, KC522M, KC643M, KC7140, KC7225, KC725M, KC7315, KC7320, KC7410, KC7410, KC7512, KC7515, KC7542, KCK10, KCM15, KCP15, KCPK15, KCPK30, KCPM15, KCSM15, KCU10, ,KCU25 KCU40, KCU45, KD1400, KD1405, KD1425, Kenclamp, Kendex, KenFeed, KenFeed 2X, Kenloc, Kenna Perfect, Kennametal Conforma Clad, Kennametal Extrude Hone, KenTIP, KM, KM Micro, KM-LOC, KM-LOC II, KM-TS, KM4X, KP6505, KP6525, KSEM, KSEM PLUS, KSOM, KSRM, KSSM, KT325, KYK10, KYK25, KYS25, KYS30, KYS40, MaxiMet, Mill 1, Mill 1-7, ModBORE, RHM, RHM-E, RIQ, RIR, RMB, RMB-E, RMS, Rodeka, Romicron, SEFAS, SIF, Stellite, ToolBOSS, Top Notch, Whistle Notch 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 Kennametal's trademark or other intellectual property rights concerning that name or logo.*

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